

MITCHELL INSTITUTE REPORT NO. 02/2017

Counting the costs of lost opportunity in Australian education

JUNE 2017

Stephen Lamb
Shuyan Huo

About the Centre for International Research on Education Systems

This report has been prepared by the Centre for International Research on Education Systems (CIRES) for Mitchell Institute. Located at Victoria University, CIRES conducts strategic research that identifies how well education systems work, for whom, and how they can be improved to work well for all. The Centre undertakes large-scale survey and policy-related projects covering every state and territory in Australia and every sector of education and training. It also undertakes international comparative research examining the features and performance of education systems around the world.



Authors

Professor Stephen Lamb, Research Chair in Education and Director CIRES

Dr Shuyan Huo, Senior Research Fellow CIRES

Acknowledgements

Mitchell Institute thanks Andrew Wade, CIRES; Dr Janine Dixon, Victoria University Centre of Policy Studies and Professor Hank Levin, Columbia University Teachers College for their contribution to this work.

About Mitchell Institute

Mitchell Institute at Victoria University works to improve the connection between evidence and policy reform. We promote the principle that high-quality education, from the early years through to early adulthood, is fundamental to individual wellbeing and to a prosperous society. We believe in an education system that is oriented towards the future, creates pathways for individual success, and meets the needs of a globalised economy. Mitchell Institute was established in 2013 by Victoria University with foundational investment from the Harold Mitchell Foundation.

Please cite this report as: Lamb, S. and Huo, S. Counting the costs of lost opportunity in Australian education. Mitchell Institute report No. 02/2017. Mitchell Institute, Melbourne. Available from: www.mitchellinstitute.org.au

DOI: 10.4226/80/591e74a01d950

■ Table of contents

Executive summary.....	2
1. Introduction.....	8
2. Importance of education and opportunity	10
3. Early school leaving and disengagement	15
4. Method for calculating costs of lost opportunity.....	24
5. Estimates of the costs of lost opportunity.....	30
6. Accumulated costs of lost opportunity.....	46
7. Conclusion	52

Executive summary

Roughly one-quarter of Australia's 19 year olds do not complete Year 12 or equivalent qualifications and a similar proportion of 24 year olds are not actively engaged in work or education, according to a major recent study (Lamb et al., 2015). This situation is at odds with our national goals and represents major lost opportunity.

Having all young Australians become successful learners, confident and creative individuals, and active and informed citizens is the expectation (MCEETYA, 2008). Mass completion of school and high quality preparation for careers through further education and training are vital for achieving this and for ensuring the nation's ongoing economic prosperity and social cohesion. Large numbers of young people not completing school and being disconnected from education and work reduces Australia's human capital with negative consequences not only for the present, but also for the future. This relates not just to the individuals and what they risk in terms of gaining secure employment, adequate income across a lifetime and flexible career paths. It also has implications for economic growth, productivity, creativity, innovation, social progress and wealth. Lost opportunity creates both fiscal and social costs.

In this report, we calculate the fiscal and social costs associated with both early school leaving and not being actively engaged in work and study in the post-school years. For individuals, missing out on the benefits of education generates costs not only because it affects occupational prospects, wages and job satisfaction, but also because it influences decisions people make and behaviours affecting health, marriage, parenting, and roles as citizens. These costs accumulate as those who miss out progress through adulthood until the end of their working lives. There are costs to the taxpayer which include things such as reduced tax revenue as well as increased public expenditure on crime, health, welfare, housing and income support, and associated services. There are also costs both to the individual and the community (social costs), such as loss of personal earnings, the social consequences of crime and excess burden of higher taxes required for additional social services.

The economic model used to estimate the costs uses national research evidence and national survey and census data. The approach to calculating costs using the data draws on methods applied in a collection of well-regarded US studies that examine the financial costs to government and society of cohorts of young people not well prepared for further study and work (see, for example, Belfield and Levin, 2007; Belfield, Levin and Rosen, 2012; WestEd, 2014; Carroll and Erkut, 2009). The model creates lifetime economic profiles for early leavers in comparison to those who completed Year 12 or equivalent qualifications, and for disengaged young people in comparison to other young people. The profiles are expressed as present values at age 19 for early leavers and at age 24 for disengaged young people and estimated in 2014 prices. Estimates of annual and lifetime (working age) costs are derived in the areas of health, government assistance, crime, earnings and employment.

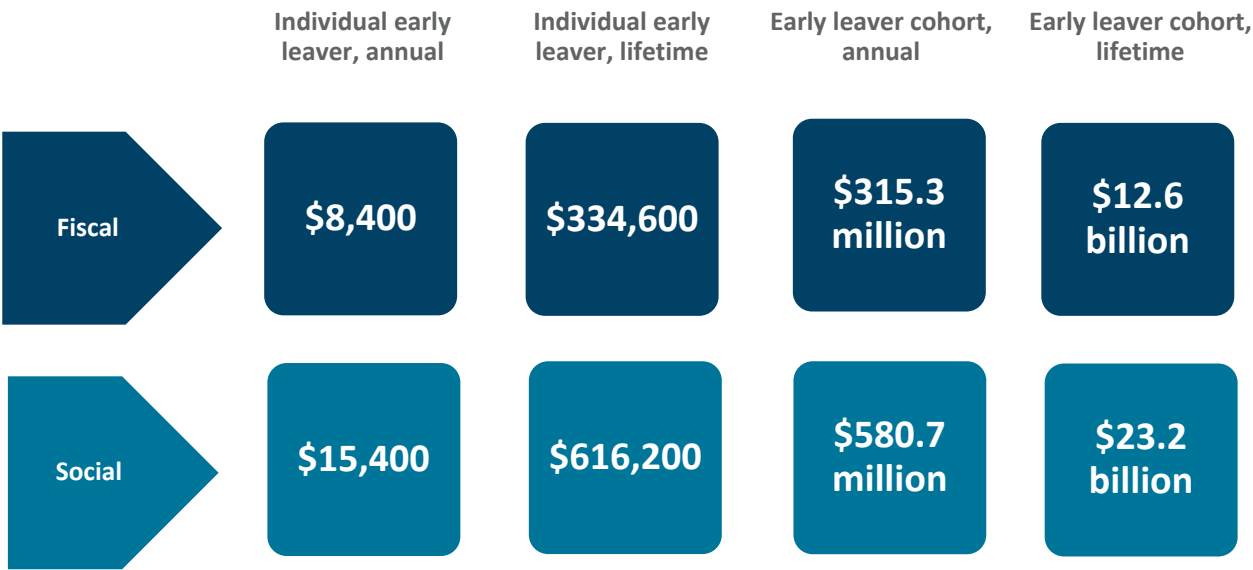
Cost of early school leaving

Students who fail to complete Year 12 or equivalent by age 19 are classed in this study as early leavers. An initial task in the modelling process was to estimate, using longitudinal data, the numbers of early leavers who were likely after age 19 to complete Year 12 or equivalent and those who were likely to remain early leavers across their lifetime. This was to ensure that the numbers of early school-leavers were not overstated when looking at impacts or costs, because some early school-leavers after age 19 continue their education and complete Year 12 equivalent qualifications. Our

estimate is that in 2014 there were approximately 37,700 19 year old early school leavers who would remain as lifetime early leavers. This is 12 per cent of the 19 year old population. The rates are higher for males (15.7 per cent) than for females (8.1 per cent).

Based on modelling of lifetime costs associated with early school leaving, the average lifetime fiscal cost to Australian governments or the taxpayer is \$334,600 for each early leaver (at the 2014 net present value). Across the 37,700 19 year olds in 2014 in Australia who were likely to remain lifetime early leavers, this fiscal cost amounts to \$12.6 billion (at the 2014 net present value). **Early Leaver Annual (\$ Thousand)**

Fiscal and social costs of early school leaving at net present value (\$)



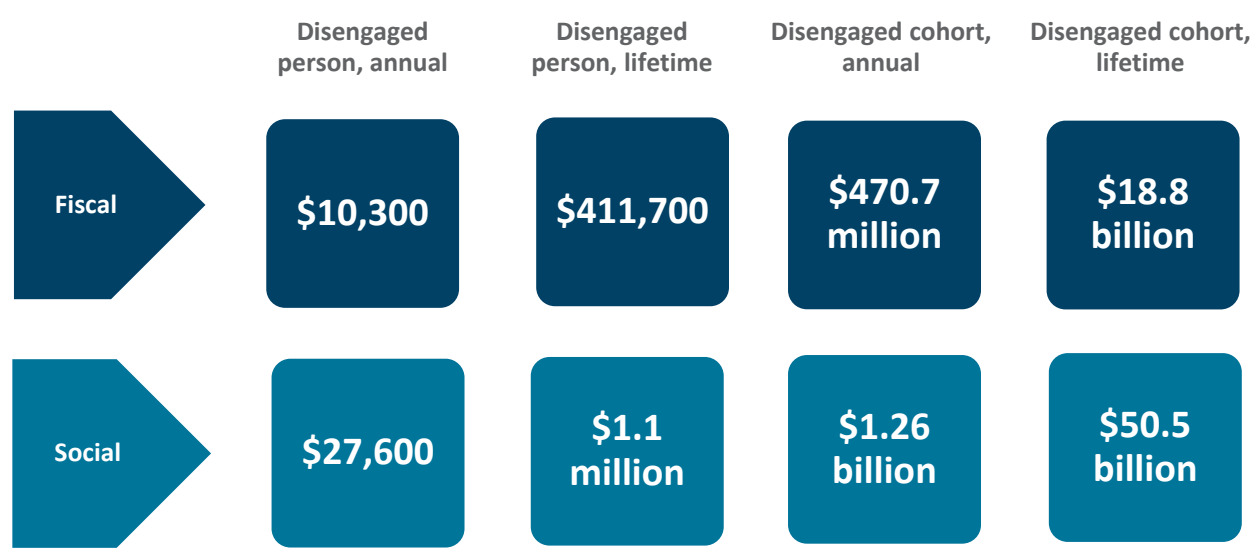
The social costs from early leaving are very large. For each student who does not complete Year 12 or equivalent, compared to a student who does, the social impact is \$616,200 over the adult years (25-64), or an annual cost per early leaver of \$15,400. Most of this impact is attributable to lower earnings of early leavers across their working life, but there are also substantial economic impacts in terms of crime and marginal tax burden. Aggregated across a cohort of students aged 19 in any given year, the 37,700 early leavers in Australia contribute to a social loss of \$23.2 billion.

Costs of being disengaged from work and study

Young people not in full-time work or study at age 24 are treated here as disengaged. Using longitudinal data on labour market and education experiences we estimated how many of those at 24 years of age would be likely to remain disengaged for the majority of their adult life (25-64 years of age). This was to ensure that the numbers of disengaged young people were not overstated when looking at impacts or costs, because a number of them after age 24 actively re-engage in study and work. We also excluded from the long term disengaged those who were in child-rearing roles for the majority of their time disconnected from work and study because parents not in the labour force contribute substantially to economic productivity through large amounts of unpaid work, such as child-rearing, which often remains unaccounted for in economic assessments. Our estimate is that in 2014 there were about 45,700 young people at age 24 who will remain disconnected from full-time work and study over most of their adult life. This was 13 per cent of the 24 year old population in 2014, with a rate higher for females (18.9 per cent) than for males (7.2 per cent).

To the taxpayer, each disengaged young person imposes a cost which is equivalent to \$411,700 as a current lump sum across their adult years. The full lifetime fiscal burden amounts to \$18.8 billion across the cohort of 45,700 disengaged young people in 2014.

Fiscal and social costs of lifetime disengagement at net present value (\$)



In terms of social costs, or costs to the broader community, each disengaged young person imposes a lifetime burden which is equivalent to \$1,103,700 as a current lump sum. The full lifetime burden amounts to \$50.5 billion across the cohort of 45,700 disengaged young people nationally who remain disengaged across their lifetime.

The sum of the fiscal and social costs for the long term disengaged are higher than for the long term early school leavers in large part because the number of disengaged is greater, but also because of higher levels of costs associated with personal income, tax revenue, public health and welfare.

Cost estimates provided here are very conservative

The costs of lost opportunity in Australian education may seem enormous. But, it is important to note that the estimates provided in this study are very conservative, that is, the actual costs to the nation from early leaving and disengagement are likely to be much larger than those outlined here. We have not included the immediate fiscal and social costs of early school leavers or of the disengaged before they turn 25 years of age because our focus is on future costs related to the main period associated with the adult working life (25-64). Belfield et al (2012) estimated that on average, costs incurred up to age 24 can be as much as one-third of the costs incurred after that age. In addition to this, the calculations for each of the components were deliberately based on conservative numbers of early leavers and disengaged. For example, to be included as disengaged individuals needed to be identified as not likely to be in full-time work or study for more than half of their adult life. Therefore, many may be inactive for many years and yet still not be treated as disengaged. Similarly, early leavers who later complete may be without equivalent qualifications for long periods of time and yet are treated here as Year 12 completers.

Need for reform

The costs outlined in this report, of having many young Australians leave school early and grow up without the skills needed to thrive in the twenty-first century, emphasises the need for educational reform and reveals the extent to which it will burden the nation if we do nothing. Every student who fails to complete Year 12 or equivalent qualifications, or every young person who is not able to actively engage in work or study after they leave school, produces a direct cost on Australian taxpayers and government through lower tax revenues, higher dependence on public health and higher costs on crime and law enforcement system.

In the determination of how much economic potential is being lost it is equally vital to identify the policies that might harness the lost potential. It remains an important task to look at what strategies are needed to transform our schools and make our education system work well for all.

List of Tables

Table 2.1	Components of the economic costs of early school leaving and disengagement	11
Table 3.1	Estimated numbers of early school leavers and disengaged young people (2014)	17
Table 3.2	Estimated numbers of long-term early leavers and disengaged young people: results based on HILDA (14-year) and the Census (5-year) compared	20
Table 3.3	Estimated numbers of long-term early leavers and disengaged young people: results based on HILDA	23
Table 4.1	Domains for estimating the costs of lost opportunity, with data sources	26
Table 5.1	Earning status and average weekly earnings, by educational attainment: 25-64 year olds	30
Table 5.2	Projected annual costs in personal income per early school leaver and disengaged young person (at 2014 prices) (\$)	33
Table 5.3	Projected annual costs in personal income per early school leaver and disengaged young person (at 2014 prices) (\$)	35
Table 5.4	Projected annual costs on government welfare payments, per early school leaver and disengaged young person (at 2014 prices) (\$)	38
Table 5.5	Projected crime costs for early leavers and disengaged, by gender (at 2014 prices)	41
Table 5.6	Projected annual costs on the use of public hospitals, by early leavers and disengaged young person	44
Table 5.7	Projected annual marginal excess tax burden, by early leaver and disengaged cohorts	45
Table 6.1	Estimated baseline costs per person and per cohort for early school leavers at net present value	47
Table 6.2	Estimated baseline costs per person and per cohort for disengaged young people at net present value (\$)	49
Table 6.3	Sensitivity analysis of lifetime cost estimates	50
Table 6.4	Simulating the differences between using age-varying estimates and constant annual mean estimates	51

List of Figures

Figure 2.1	Mean weekly earnings of 25-64 year olds employed full-time, by educational attainment: 2014 (\$)	12
Figure 2.2	Flow-on benefits of Year 12 or equivalent completion over early school leaving	14
Figure 3.1	Intercensal estimates of the proportions of early leavers and disengaged young people who change status: 25-44 year olds, 2006-2011	17
Figure 3.2	Comparisons of the proportions of early leavers and disengaged working-age Australians, 25-44 year olds, who remain in the same status over 14 years (HILDA) and five years (Census) (%)	19
Figure 3.3	Long term disengagement by Year 12 or equivalent completion	21
Figure 3.4	Activities of 15 to 24 year olds not in the labour force and not attending an educational institution, Australia, 2013 (%)	22
Figure 3.5	Long-term disengagement, by Year 12 or equivalent completion over early school leaving	23
Figure 5.1	Estimated average annual earning, by early leaver and disengagement status, 2014 (\$)	32
Figure 5.2	Estimated average annual tax payments, by early leaver and engagement status, 2013-2014	34

Figure 5.3 Differences in annual average income support from government payments and allowances, by early leaver and disengaged status: population aged 25-64 years, 2014.....	36
Figure 5.4 Projected offender and imprisonment rates, by age, gender and education status.....	40
Figure 5.5 Proportion of the working age population with private health insurance and proportion of those with a long-term health condition, by early leaver and disengagement status:2013.....	42
Figure 6.1 Fiscal and social costs of early school leaving at net present value.....	46
Figure 6.2 Fiscal and social costs of lifetime disengagement at net present value, excluding those mainly in care and child-rearing roles	48

1. Introduction

There is widespread support in Australia for the fundamental principle of equality of educational opportunity. It is the central tenet of the Melbourne Declaration on educational goals for young Australians signed by all government education ministers which commits our education system to the goal of working well for all (MCEETYA, 2008). Yet, as a recent study revealed, the opportunities offered and outcomes achieved by Australia's education system are far from fairly and evenly distributed (Lamb et al., 2015).

While Australia's highest-achieving students (who are more frequently drawn from wealthier families) are among the highest achievers in the world based on international comparisons, there are vast differences in educational outcomes across social groups, challenging Australia's promise of a fair education system.

Using comprehensive sets of data covering the main stages of learning and development, the 2015 study found that around one in four young people are missing out or are behind at key educational milestones. While some catch up at the next milestone, up to 10 per cent of all Australian students miss out on every milestone—from school entry right through to young adulthood. The results also show that more students fall behind than catch up as they progress through education, with students from low socio-economic backgrounds and remote areas least equipped to take up the challenges ahead. Current arrangements lead to one in four (26 per cent) 24 year olds being disengaged from both study and work, and at-risk of long-term marginalisation.

What does this level of failure across our system cost the nation and what does it cost the individuals and their families? Australia's current education system does not ensure that all students will complete school and enter adulthood fully prepared for productive citizenship. In this report, we calculate the fiscal and social costs of early school leavers and young people disconnected from education and work (those not in full-time work or further study). For individuals, missing out on the benefits of education generates costs not only because it affects occupational prospects, wages and job satisfaction, but also because it influences decisions affecting health, marriage, parenting, civic engagement and preparing for retirement. These costs accumulate as those who miss out progress through adulthood till the end of their working lives, which we estimate here. Those who are disengaged and struggling to find their way into work can impose costs to the government and taxpayer, through lost taxes and increased government spending on crime, health, and welfare. Although this can be significant, there can be larger social costs, the costs to the community, which involve things such as lost earnings, the costs of collecting taxes, and social consequences of crime. Individual outcomes have social consequences, and affect both government finances—by lowering tax revenues and increasing welfare benefit payments—and social welfare and well-being, because of their effects on crime, attitudes and civic engagement.

Focus of the report

The report presents the results of an analysis of the fiscal and social costs of failure in Australian education, measured in terms of the consequences of early school leaving and young people becoming disconnected from education, training and work. Two cohorts of young people are examined:

1. those who had not attained Year 12 or equivalent qualifications by age 19, sometimes referred to as early school leavers or non-completers, and
2. those not fully engaged in education, training, work or a full-time combination of these at age 24.

Organisation of the report

The report begins by looking at the importance of education and opportunity to the welfare and well-being of Australians, looking at the links education has to economic prosperity in Australia. The next section reports on trends in Australia's rates of school completion and early leaving, and examines differences in these trends across different groups. There is also an outline of the numbers of young Australians not engaged in education, training and work, those described by the Australian Bureau of Statistics as not fully engaged in education or employment.¹ The following section outlines the economic framework used to model the costs associated with early school leaving and disengagement, reporting the calculations and the datasets used to derive values for the cost estimate models for the different dimensions. We then estimate the fiscal and social costs of educational failure in terms of domains such as personal income, government tax revenue, government expenditure on public hospitals and crime and law enforcement. The report concludes by estimating the gross fiscal benefits that would accrue to the state by permanently reducing the rates of early leaving and disengagement in Australia.

¹ People who are not fully engaged in education or work fall into three main categories: those who are neither studying nor working, those who are studying part-time and not working, and those who are working part-time and not studying (ABS, 2011). Being fully engaged is defined as being in full-time work or in full-time education, or in part-time work combined with part-time education (ABS, 2011).

2. Importance of education and opportunity

Education is one of the main mechanisms through which opportunity and success are determined, and is a key predictor of a person's level of engagement in lifelong work and study. Individuals with higher levels of education have higher-paying jobs, better general health, and a lower likelihood of engaging in crime. They also gain from a range of family household benefits, such as more effective household management and care of their children's health and education.

These private gains to individuals and their households also produce a wider public benefit. As education boosts incomes, it increases tax payments and reduces reliance on government health, welfare, and social support programs. In addition, education may also generate important spillover benefits for local economies and neighbourhoods². Civic participation is strongly correlated with education, as is interest in social and political issues. Improved education also promises a wide range of potential benefits to the nation, including increased workforce participation, labour productivity and economic growth as well as social equality.

All of this points to the value of nations investing in education in a way that ensures that education systems work well and work well for all. Yet, failing to complete school for some and unequal opportunity to participate in further study remain features of Australia's system and this comes with significant costs. Young people without the skills demanded by the labour market are at risk of poor economic, social and personal outcomes over the life course. It presents costs for individuals, for taxpayers, and for our community.

The main consequence of having large early leaver populations and disengagement from study and work are private, fiscal and social (see Belfield, 2008; Psacharopoulos, 2007). Table 2-1, taken from Belfield et al. (2012), is a good summary of the expected costs from having less education and a higher likelihood of disengagement from work and study. It is based on calculations of the economic burden from the perspective of both the taxpayer and the broader community. These perspectives overlap slightly but are based on different interpretations of resource use. The social perspective counts all of the resource implications, regardless of who 'pays' for them. Private effects include the weaker earnings and less wealth, poorer health, shorter life expectancy and lower lifetime satisfaction.

The social cost is composed of lost earnings, additional health expenditures, and crime costs. Welfare and social services which are not direct transfers from government to individuals may also be included in the social cost. The public and private cost of education is also considered in the cost calculations. An important, but often neglected, component of the social burden is the economic distortion imposed by raising taxes to pay for government programs. This cost is called the excess burden of taxation, also known as the deadweight loss or cost of taxation, which is the economic loss that society suffers as the result of collecting taxes or providing subsidies. Deadweight losses represent the disincentive costs of tax. For example, if income taxes rise, some people might decide to work fewer hours, or they might stay on welfare rather than look for a job, or be deterred from the risk of setting up a company of their own, leading to reduced economic activity and revenue generation. Another social cost to early leaving and disengagement

² 'Spillover' benefits are benefits that third parties or society receive from having a more highly educated population (see Moretti, 2004). Classically, this has been thought of in terms of more highly educated workers helping lift overall economic productivity. But, the benefits can also be in social terms such as engagement in social life, health and civic participation.

is lost productivity spillover associated with having a more productive or skilled workforce. Having a more skilled workforce can help improve the productivity of co-workers, as well as incomes, and hence increase the consumption of goods and services (Moretti, 2004; Cadence Economics, 2016).

Table 2.1 **Components of the economic costs of early school leaving and disengagement**

Cost Component		Description	Cost Type
Labour market	Lost earnings	Gross income including fringe benefits (health and pension)	Social
	Lost tax payments	Includes federal and state income/consumption taxes	Fiscal
Crime	Public expenditures	Criminal justice system, policing, and corrections expenditures (federal, state, and local)	Fiscal
	Victim costs	Reduced quality of life, monetary damages, lost earnings	Social
Health	Public expenditures	Medicare for persons under 65, and other government agency expenditures on health	Fiscal
	Private burdens	Private expenditures on medical treatments (out-of-pocket, private insurance) and private valuations of health	Social
Welfare	Support programs	Expenditures on social supports (e.g. workforce retraining)	Fiscal
	Transfer payments	Amounts paid to individuals who receive government supports	Fiscal
Education	Public savings	Lower schooling and further education subsidies from government agencies	Fiscal
	Private fee savings	Lower fees and further education expenses for families	Social
Productivity spillovers		General economic gains from a more educated workforce	Social
Marginal excess tax burden		Cost of raising taxes to pay for public services	Social

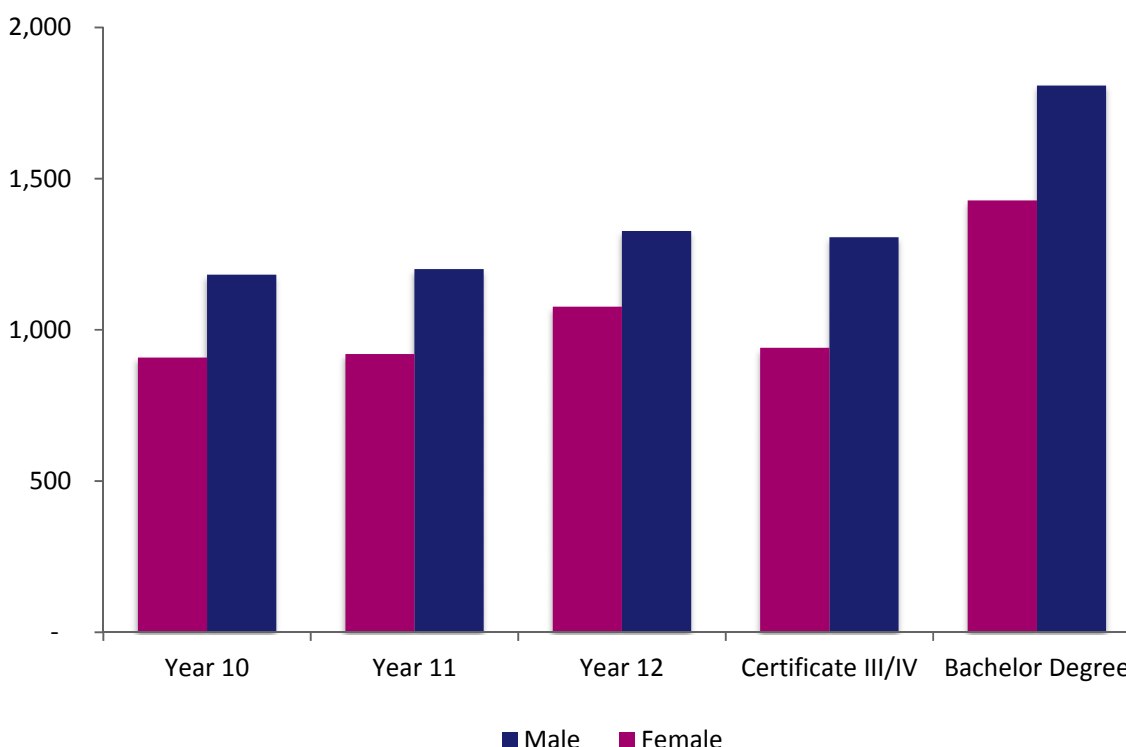
Source: Belfield et al. (2012).

It is important to note that there are other components of the social and fiscal burden that have not been or cannot be accounted for. First, there are costs to families for their members who are not economically independent – they include paying for health costs and providing residence or care. Second, there are resource commitments by non-governmental agencies or charities to support vulnerable disengaged young people. Third, there are intergenerational burdens as disadvantage—either economic or health-related—is transferred from disengaged young people to their children. These burdens may be substantial but they are omitted because there is insufficient data or evidence available on their size or impact.

Australian research on the benefits of education

In modern Australia, education is essential for individual prosperity and well-being. The amount of education an individual gains has an important impact on labour market experience. This is apparent when looking at earnings where there is a direct relationship between educational attainment and income. For example, on average, in 2014, adult male Australians whose highest attainment was Year 10 earned \$1,182 per week, on average, whereas school completers with a three-year bachelor degree earned approximately \$1,808, or 1.5 times the earnings of early leavers. Estimates for women also show large returns to education with degree-qualified earners receiving salaries 1.6 times higher than for those with only Year 10 (see Figure 2.1).

Figure 2.1 Mean weekly earnings of 25-64 year olds employed full-time, by educational attainment: 2014 (\$)



Source: ABS Survey of Income and Housing 2013-2014 (CURF person file, accessed through ABS Remote Access Data Laboratory (RADL))

Better chances of employment also result from having more education. In 2016, people with higher levels of educational attainment were more likely to be employed, with 80 per cent of persons with a Bachelor degree or above and 75 per cent of persons with an Advanced Diploma or Diploma being employed (ABS, 2016c). This compares with an employment rate of 67 per cent for persons with Year 12 as their highest attainment and 44 per cent with Year 11 or below as their highest attainment.

There is a small but growing body of Australian evidence that shows that individuals with higher levels of education are more likely to be employed, receive higher wages, commit more hours to the labour force and have higher productivity than individuals with lower levels of education (Deloitte Access Economics, 2015). For example, Wilkins (2015) found that individuals receive significant positive returns from education (particularly higher education) in the form of higher earnings and an increased likelihood of being employed full-time. Wilkins reported that completion of high school is associated with an 18.6 per cent increase in earnings for men and a 14.5 per cent increase in earnings for women. Importantly, these results are determined after controlling for demographic factors and prior attainment (Wilkins, 2015). The Productivity Commission has also estimated that the average earning gain for Year 12 completers is 13 per cent for males and 10 per cent for females compared to non-completers. This increases to around 40 per cent for those with a university degree for both males and females (Forbes et al., 2010). Similar results have been reported in several other studies over time (for example, Blandy and Goldsworthy, 1975; Borland et al., 2000; Leigh, 2008; Miller, 1982; Sinning, 2014).

Evaluations of the returns to education often analyse labour market returns. However, the benefits of education are not limited to employment and salaries, as suggested in Figure 2.2. Education often affects the quality of life in ways less frequently thought about or recognised.

The economic and social consequences of low attainment are profound, particularly in those communities where children fail to complete school at disproportionately higher rates. Disparities in educational attainment lead to major

differences in life outcomes. Estimates of outcomes in adulthood show that early school leavers tend more to criminality, public welfare dependency, and poorer health than do those with higher levels of attainment.

In 2009, entrants to prison aged 25-34 years were four a half times less likely than the same age general population to have a Year 12 qualification (14 per cent as against 63 per cent), and more than 16 times more likely to have completed less than Year 9 (17 per cent compared to 1 per cent) (AIHW, 2009).

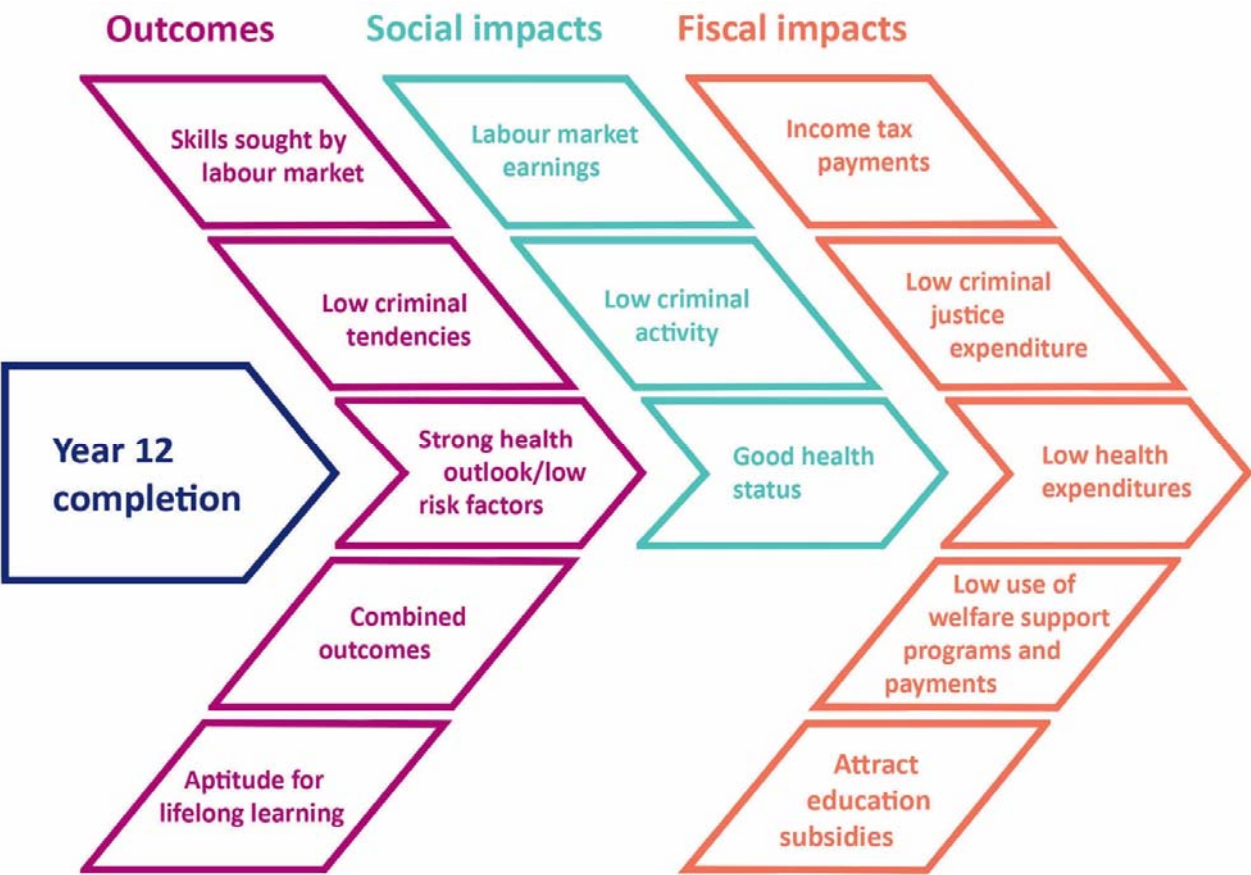
Moreover, persons aged between 15 and 64 years of age without any qualifications were almost twice as likely as those with a qualification, and more than two and a half times as likely as peers with a university degree, to live in families dependent on government income support (Tseng and Wilkins, 2003). If on income support, those with low educational attainment (no qualifications) were almost twice as likely to remain reliant on income support for long periods of time (more than 12 months) compared to those on income support with university qualifications.

Finally, previous studies have shown that lower levels of educational attainment are associated with heart conditions, strokes, hypertension, high cholesterol, depression, diabetes, and other adverse health outcomes, as well as the behaviours, such as poor diet and less exercise and substance abuse, that might lead to these outcomes (e.g. ABS, 2012; ABS, 2015c). Other work shows that education is strongly linked to determinants of health such as risky health behaviours and preventative service use (ABS, 2012). It influences health and wellbeing through a range of mechanisms linked to income such as access to health care, and the development of information, choices and skills obtained through participation in social networks and workplaces.

Beyond these individual economic and social consequences, those with low educational attainment and young people who are disengaged from education and work place a substantial fiscal burden on the Australian economy. This fiscal burden results from lower tax revenue because of lower incomes, and elevated government expenses stemming from crime, welfare, and poor health.

The National Centre for Social and Economic Modelling in 1999 estimated that on average over a lifetime each early school leaver costs taxpayers more than \$74,000 (\$116,448 in 2015 dollars) in reduced tax revenue, higher governmental support payments, and higher incarceration costs (King, 1999). Half this cost was estimated as a direct monetary cost with the remaining half estimated as a social cost falling to government and the community. Based on 1999 prices, the overall cost to Australia of one year's cohort of early school-leavers at the time was an estimated \$2.6 billion, which in 2015 prices would be \$4.1 billion.

Figure 2.2 Flow-on benefits of Year 12 or equivalent completion over early school leaving



In light of these realities, this study considers both the fiscal (taxpayer) and social (community) consequences of Australia’s populations of early school leavers and young people disconnected from study and work. We frame our analysis of the consequences in terms of the labour market, tax revenue, and government expenditure on crime, welfare and public hospitals. By quantifying these effects, we seek to provide education policymakers with information on the financial and social implications as well as the potential economic benefits that would be gained by addressing the failure and inequities in our education system.

3. Early school leaving and disengagement

How many early school-leavers are there and how many young people are not actively engaged in education and work?

The 2015 study on educational opportunity in Australia drew together information on the opportunities being provided to young Australians at various stages of education and transition to workforce and adulthood (Lamb et al., 2015). The study showed that in 2013 just over one-quarter (26 per cent) of young Australians had not attained Year 12 or equivalent by age 19. This is equivalent to 81,199 young people who did not succeed in school.

Completion of a Year 12 qualification provides an indication whether young people have developed knowledge and skills for further study or participation in the workforce. For example, among the 57,000 19-year-old Year 12 completers in 2011, around 47 per cent of them continued in further study and attained a tertiary qualification at age of 24 years (estimate based on 2006-2011 longitudinal Census data). The rate is higher for females (53 per cent) than for males (39 per cent).

At age 24, while most young people (73.5 per cent) are fully engaged in education or work, many Australians are neither enrolled in study nor participating full-time in the labour market; they are not investing in their human capital or earning income. This represents a significant loss of economic opportunity for the nation as well as vulnerability for the young people themselves.

Participation in education, training and work is often used as an indicator of the wellbeing of young people. Research suggests that young people who are not fully engaged in education or employment (or a combination of both) are at greater risk of unemployment, cycles of low pay, and employment insecurity in the longer term (Lamb & Mason, 2008; Pech et al., 2009). Participation in education and training, and engagement in employment, are considered important aspects of developing individual capability and building a socially inclusive society (Australian Social Inclusion Board, 2010).

In 2014, the numbers of young people not fully engaged in education or work amounted to 93,289 24 year olds nationally.

A variety of factors are associated with early school leaving and disengagement. Location is strongly linked to Year 12 attainment, and with disengagement. Remote and very remote communities have high numbers of young people not completing school, over 40 per cent, and at age 24 there is a 25-point gap between major city areas and very remote areas in the numbers not in full-time work or study. Year 12 attainment among 19 year olds varies substantially by socio-economic background. About 40 per cent of young people from the lowest SES backgrounds do not complete Year 12 or its equivalent by age 19, with a similar proportion disengaged from work and study at age 24. Indigenous students have low rates of Year 12 completion and high rates not engaged in education and work at age 24.

A considerable body of evidence suggests that the paths towards early leaving and disengagement begin early (for further discussion see Audas & Willms, 2001; Lamb et al. 2004; Bowlby & McMullen, 2005; Bushnik et al, 2004). As such, an understanding of the factors associated with early leaving and disengagement and potential interventions need to be considered as a part of a long term or life course process, and certain segments of the population appear to

be particularly at risk. The risk factors are related to socio-economic status, family structure, school type, geographic locale, unemployment, and psychological variables such as low self-esteem.

Audas and Willms (2001) offer a model that considers six broad categories of factors affecting individuals' chances from early childhood: individual effects, family effects, engagement, peers, schools and communities. While long-term processes place various groups of young people at risk, other studies have also pointed to students leaving school early not as a result of protracted difficulties but in response to situations that emerge late in their schooling careers, such as health problems, family disruption and severe peer victimisation (Dupere et al., 2015).

Long-term disengagement and low attainment

Estimating numbers based on the Census

According to the 2011 Australian Census of Population and Housing (Census), among the 13 million working age members of the population (aged 20-64 years) in Australia, around 59 per cent held Year 12 or equivalent qualifications, with the rate lower for males (57 per cent) than for females (61 per cent). Among those with Year 12 or equivalent qualifications, 53 per cent had attained further qualifications. Among those who did not complete Year 12 or equivalent only a relatively small proportion attained further education qualifications—11 per cent for females and 7 per cent for males.

The focus of this study is on those who had not attained Year 12 or equivalent qualifications by age 19, and those not fully engaged in education, training or work at age 24.

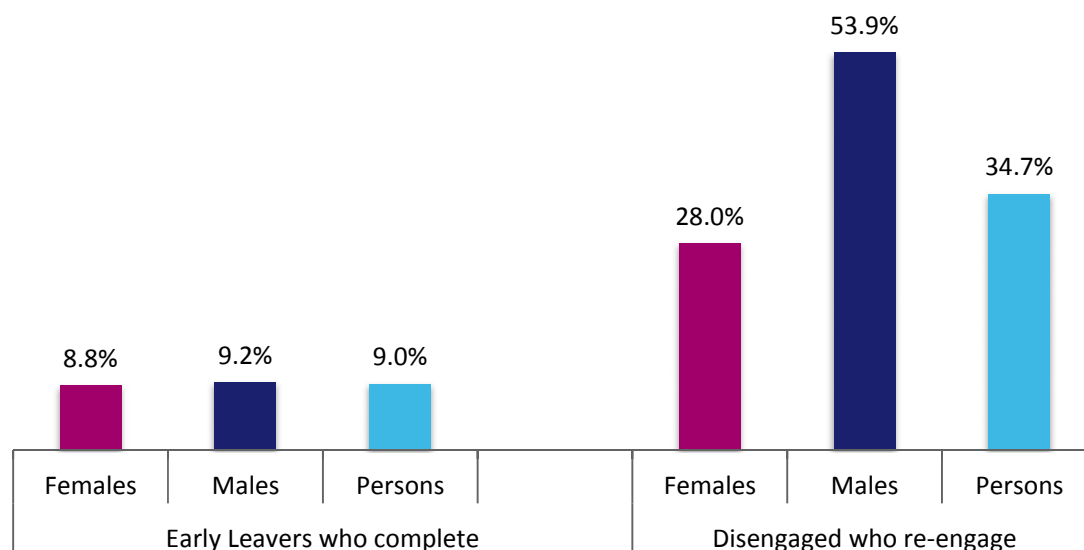
There is good information on how many people leave school each year without having completed Year 12 or equivalent. However, just using these estimates would exaggerate the numbers of early school-leavers when looking at impacts or costs over a lifetime. This is because a large number of early school-leavers subsequently continue their education, by either returning to complete their secondary schooling, or more usually continuing with some other form of equivalent further education. Those early school-leavers who do not later attain a formal education or training qualification are effectively 'lifetime' or 'long-term' early school-leavers. There are, however, no exact figures available on the number of lifetime early leavers.

One source of data to help estimate the numbers of early school leavers who later return to study to complete Year 12 or equivalent qualifications, or not, is the five-yearly Australian Census of population and housing. The Australian Bureau of Statistics has created a longitudinal matched unit record file between the 2006 Census of Population and Housing and the 2011 Census which makes it possible to look at changes in attainment of individuals of different ages over a five-year intercensal period. With the matched records, it is possible to identify the proportions of early leavers who return to study and complete Year 12 or equivalent qualifications. This approach deals with some of the methodological complexity in deriving accurate estimates of change in Year 12 or equivalent completion status using annual cross-sectional surveys of educational attainment, which can be confounded by issues such as migration which influence the estimation of population changes in attainment.

The same intercensal matched records approach can be applied to those who are disengaged from full-time study and work. Using matched census records it is possible to estimate the change in status from being disengaged at one census point, to being engaged in full-time study or work at the next census.

Figure 3-1 presents the intercensal estimates of change in status for both early leavers and the disengaged. The population used for the estimates comprised all 25-44 year olds. The results show that 9.0 per cent of the adult population (aged 25-64 years) who did not hold Year 12 or equivalent qualifications in 2006 had undertaken study or training and completed Year 12 or equivalent qualifications by 2011. The rate was slightly higher for males (9.2 per cent) than for females (8.8 per cent), keeping in mind that across the population females are more likely to hold Year 12 or equivalent qualifications.

Figure 3.1 Intercensal estimates of the proportions of early leavers and disengaged young people who change status: 25-44 year olds, 2006-2011



Source: ABS, Australian Census Longitudinal Dataset, 2006-11.

Note: estimates were derived using a total sample base of 228,851 records.

The rates of transition to full-time work or study in 2011 from being disengaged in 2006 are reported in the right-hand panel of Figure 3-1. Over half of the males aged 25-44 who were disengaged in 2006, 53.9 per cent, were in full-time work or study five years later. The rate for females was much lower, 28.0 per cent, reflecting the influence of family and child-rearing activities. For all 25-44 year olds who were disconnected from full-time study or work the rate of re-engagement was 34.7 per cent.

Using the longitudinal Census data it is possible to estimate lifetime or long-term status in order to calculate costs associated with early school leaving and disengagement. Table 3-1 shows nationally in 2014 there were 312,965 19 year olds (161,523 males and 151,442 females). Of this cohort, 26.0 per cent, or 81,825, at age 19 did not hold a Year 12 certificate or equivalent. Using estimates based on the intercensal changes (2006 to 2011) in educational attainment for the population aged 25-64 years, we estimate that 12.6 per cent of the 2014 cohort of 19 year olds, or 39,340 in actual number, will remain lifetime early leavers. This means that nearly half of the 19 year old school leavers (51.9 per cent or 42,484) found an alternative pathway and completed a Year 12 or equivalent certificate by age 24, largely through VET training and apprenticeships.

Table 3.1 Estimated numbers of early school leavers and disengaged young people (2014)

	Male		Female		All	
	No.	%	No.	%	No.	%
Early school leavers						
Population of 19 year olds (a)	161,523	100.0	151,442	100.0	312,965	100.0
Early school leavers at age 19 (b)	49,265	30.5	32,560	21.5	81,825	26.0
Early school leavers at age 24 (c)	28,278	17.5	14,978	9.9	43,255	13.8
Long term early leavers	25,633	15.9	13,707	9.1	39,340	12.6

Disengaged young people						
Population of 24 year olds (a)	179,820	100.0	172,953	100.0	352,773	100.0
Not actively engaged at age 24 (b)	37,762	21.0	55,345	32.0	93,107	26.5
Long term disengagement (c)	17,400	9.7	39,827	23.0	57,228	16.2

Sources: (a) ABS Australian Demographic Statistics (2014, Cat. No. 3101.0); (b) Estimates based on rates in Lamb et al. (2015); (c) Estimates based on Australian Census Longitudinal Dataset, 2006-11.

Notes: The numbers of long-term early leavers and disengaged were derived using a national Census sample of 135,727 25-44 year olds without Year 12 or equivalent qualifications in 2006, and 92,616 25-44 year olds not in full-time study or work in 2006.

Table 3.1 also reports the lifetime estimates for those disengaged from full-time study or work. The figures show that nationally there were 352,773 24 year olds in 2013 (179,820 males and 172,953 females). Of this cohort, 26.5 per cent or 93,485 at age 24 were not actively engaged in education or work. Using estimates based on the intercensal changes in work and study status, we estimate that 16.2 per cent of the cohort of 24 year olds, or 57,228 in actual number, will remain disengaged across their lifetime. The rates vary for males and females. The rate for females is 23 per cent or 39,827 of the cohort of 24 year olds, compared to 9.7 per cent of males, or 17,400. The difference between males and females is in part due to differences in family and child-rearing activities.

Combined, the data show that across Australia approximately one-in-eight people will not attain a Year 12 certificate or equivalent, and one in six will be disengaged from full-time work, study or training for most of their lives. These two groups overlap and share many similar life and economic circumstances.

Estimating numbers and change over time based on national surveys

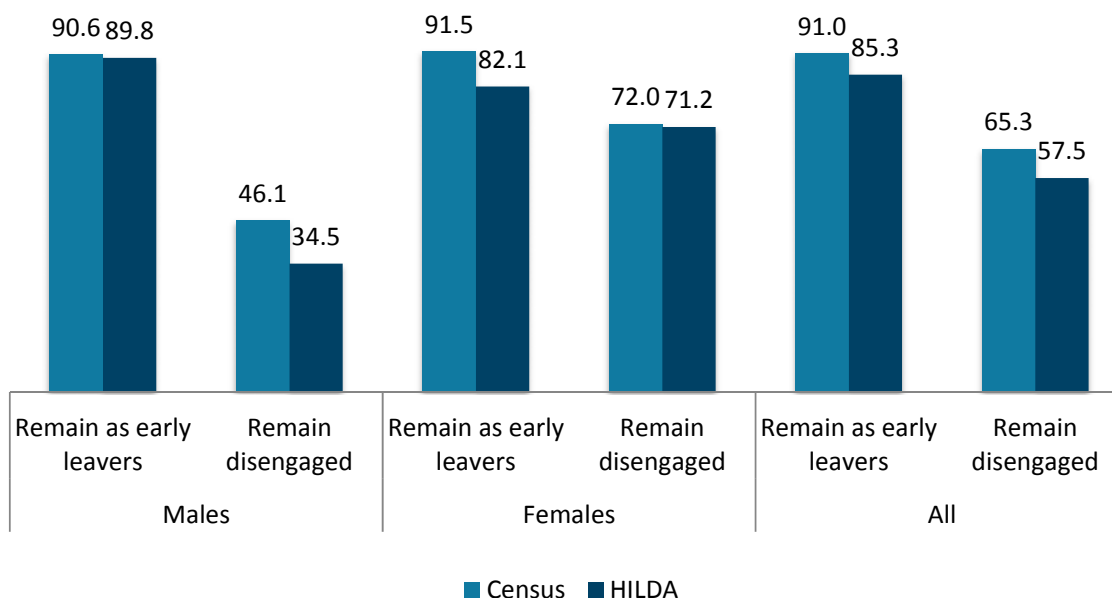
The intercensal estimates of status and change are based on only a five-year period of transition, even if the calculations relate to a wide age-range (25-44 year olds). A longer-term view of attainment and engagement is possible to obtain using national panel or cohort studies which track populations over more extended periods of time.

One potential source is the Household, Income and Labour Dynamics in Australia (HILDA) Survey which is a household-based panel study commencing in 2001. HILDA collects information about economic and subjective well-being, labour market dynamics and family dynamics with interviews conducted annually with all adult members of each household. The panel members are followed over time. The Wave 1 panel in 2001 consisted of 7,682 households and 19,914 individuals. At Wave 11, surveyed in 2012, the base sample was topped up with an additional 2,153 households and 5,477 individuals.

The value of HILDA, compared to the longitudinal unit record Census data file, is that it can provide a longer-term view of status and change in status, though a weakness compared to the Census is that the survey sample is much smaller and is subject to differential attrition across categories of participants which can potentially bias estimates. An important role for HILDA in the current study is to see whether estimates on changes in early leaving status and in disengagement measured over fourteen years are largely consistent or whether they diverge from estimates calculated using the census over a five-year period.

Figure 3.2 presents the proportions of early leavers and disengaged working-age Australians, 25-44 year olds, who remained as early leavers not completing Year 12 or equivalent qualifications over 14 years from 2001. The results from the Census for a five-year period are provided for comparison. Rates for those who remained not engaged in full-time study or work for the majority of the time (more than seven years) are also provided.

Figure 3.2 Comparisons of the proportions of early leavers and disengaged working-age Australians, 25-44 year olds, who remain in the same status over 14 years (HILDA) and five years (Census) (%)



Sources: ABS, Australian Census Longitudinal Dataset, 2006-11; Household Income and Labour Dynamics in Australia (HILDA) survey.

Focusing on change in early leaving status and attainment, the results derived using HILDA show that 89.8 per cent of males aged 25-44 who were early leavers in 2001 did not return to study and training and complete Year 12 or equivalent qualifications over the 14 years to 2014. Based on these figures it would seem reasonable to conclude that Year 12 attainment status by age 25 is largely locked in and does not vary much past that age for males. If you have not attained Year 12 or equivalent by age 25, you are unlikely to do so throughout your lifetime. The fourteen-year rate from Hilda (89.8 per cent) is very similar to the five-year rate calculated using the Census—90.6 per cent. For females, the 14 year HILDA rate was 82.1 per cent compared to the five-year Census estimate of 91.5 per cent.

For the rates of continuous, or long-term, disengagement, the differences vary between males and females. For males, the percentage remaining disengaged for the major part of 14 years, derived from the national cohort study (HILDA), was lower than that derived from the census for a five-year period—34.5 per cent (HILDA) compared to 46.1 per cent (Census). For females, the estimate calculated from HILDA was about the same as the Census derived estimate—71.2 per cent (HILDA) compared to 72.0 per cent (Census). The rate for all persons is 57.5 per cent based on HILDA compared to 65.3 per cent based on the matched Census records.

Table 3.2 Estimated numbers of long-term early leavers and disengaged young people: results based on HILDA (14-year) and the Census (5-year) compared

	Male		Female		All	
	No.	%	No.	%	No.	%
Early school leavers						
Population of 19 year olds 2014(a)	161,523	100.0	151,442	100.0	312,965	100.0
Early school leavers at age 19 2014 (b)	49,265	30.5	32,560	21.45	81,825	26.0
Early school leavers at age 24 2014 (b)	28,278	17.5	14,978	9.9	43,255	13.8
Long term early leavers (Census) (c)	25,633	15.9	13,707	9.1	39,340	12.6
Long term early leavers (HILDA) (d)	25,394	15.7	12,299	8.1	37,692	12.0
Disengaged young people						
Population of 24 year olds 2014 (a)	179,820	100.0	172,953	100.0	352,773	100.0
Not actively engaged at age 24 2014 (b)	37,762	21.0	55,345	32.0	93,107	26.5
Long term disengaged (Census) (c)	17,400	9.7	39,827	23.0	57,228	16.2
Long term disengaged (HILDA) (d)	13,030	7.2	39,387	22.8	52,416	14.9

Sources: (a) ABS Australian Demographic Statistics (2014, Cat. No. 3101.0); (b) Estimates based on rates in Lamb et al. (2015); (c) Estimates based on Australian Census Longitudinal Dataset, 2006-11; (d) Estimates based on Household Income and Labour Dynamics in Australia (HILDA) survey.

Notes: Estimates from the Census were derived using a national sample of 135,727 25-44 year olds without Year 12 or equivalent qualifications, and 92,616 25-44 year olds not in full-time study or work. Estimates from the HILDA survey were derived using a national sample of 827 25-44 year olds without Year 12 or equivalent qualifications, and 573 25-44 year olds not in full-time study or work. Estimates for both the Census and HILDA were population weighted.

Table 3-2 translates the HILDA estimates into long term (lifetime) early leaver and disengaged numbers based on the 2014 population of 19 year olds (early leavers) and 24 year olds (disengaged). The census figures are included for comparison.

Using 14 year HILDA rates, we estimate that 14.9 per cent of the cohort of 24 year olds will remain disengaged across their lifetime and 12 per cent of the 19-year-old cohort will not complete Year 12 qualification over lifetime. The rates for both early school leaver and disengaged cohorts vary for males and females. Females are less likely to be long-term early school leavers, but more likely to be in long-term disengagement.

The HILDA estimates are based on data tracking survey respondents' education and labour market activities over a 14-year period while the intercensal estimates are based on a snapshot over 5 years. Despite the differences in measurement period between the Census and HILDA results, the estimated numbers of lifetime or long-term early leavers are generally consistent, with the estimated numbers of lifetime or long-term early leaver males roughly the same—25,491 compared to 25,394. For females, the difference is also fairly small, less than 1,500. For all persons, the HILDA estimates would suggest lifetime early leavers for the 19 year old cohort of 37,692, compared to 39,122 based on the intercensal results.

Interrelated nature of early leaving and disengagement

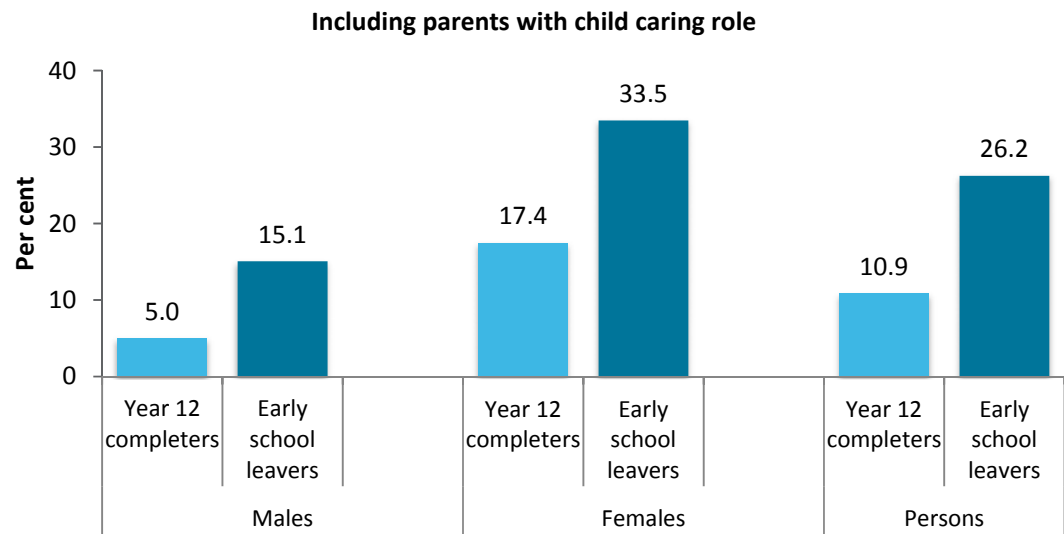
Early school leavers and young people disengaged from education and work are categories which overlap and share many similar life and economic circumstances. Those who did not complete Year 12 or equivalent qualifications by age 19 were more likely than those who completed Year 12 qualifications to be disengaged in further studying or training or full time work at age 24. Over half (54 per cent) of female early leavers at age 19 were not engaged in full-time education and work at age 24, whereas a quarter of female Year 12 completers at age 19 were not in full-time work or study at age 24. Roughly one-third (32 per cent) of 19 year old male early leavers were not actively engaged in work or study at age 24, whereas 19 per cent of male Year 12 completers were disengaged from work and study at age 24 (estimated based on 2006-2011 longitudinal Census data).

The analysis using 14 waves of HILDA data from 2001 to 2014 found that those who did not complete Year 12 or equivalent qualifications (non-completers) were much more likely than Year 12 completers to be disengaged from full-time education, training and work for the long term. Figure 3-3 shows long term disengagement from education and work, by early leaver status. The rate of long term disengagement for male early leavers is three times that of Year 12 completers. For female early leavers, it is about twice that of female Year 12 completers.

Main activities of those disconnected from full-time study and work

Table 3.2 showed that among 24 year olds, 21.0 per cent of males and 32.0 per cent of females were not in full-time education or work and were not in the labour force. Information about the main activity of young people neither employed nor seeking to enter the labour force can be derived from the ABS survey *Persons Not in the Labour Force*, conducted in September each year as a supplement to the monthly *Labour Force Survey* (LFS).

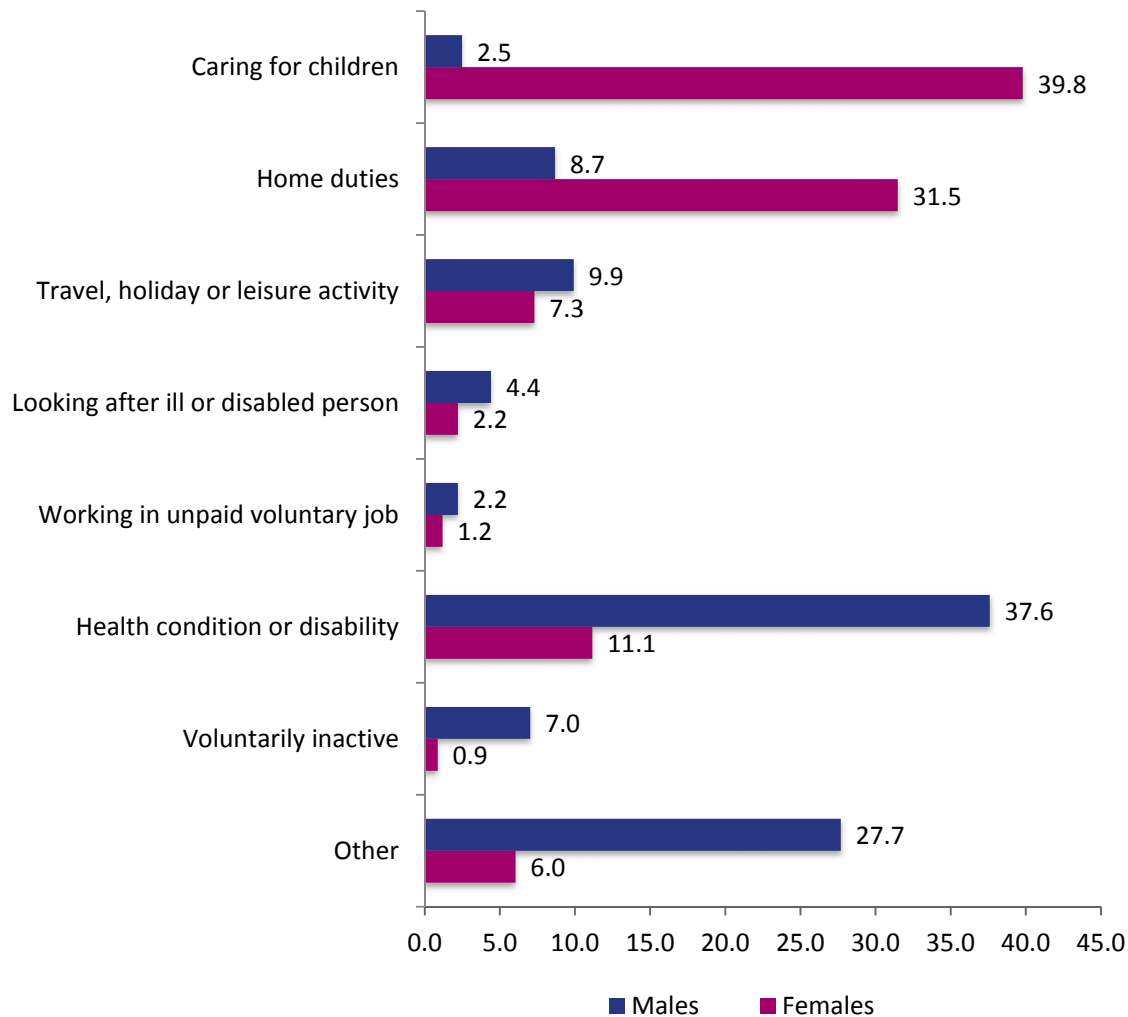
Figure 3.3 Long term disengagement by Year 12 or equivalent completion



Source: Source: Estimates derived from the Household Income and Labour Dynamics in Australia (HILDA) survey.

The activities of the 15-24 year olds in 2013 not in the labour force are presented in Figure 3.4. It shows that among young women approximately four in 10 were engaged in caring for children, while a further three in 10 were engaged in home or domestic duties. For males, health condition or disability (37.6 per cent) was the main reason for not being actively engaged in work or study.

Figure 3.4 Activities of 15 to 24 year olds not in the labour force and not attending an educational institution, Australia, 2013 (%)



Source: ABS *Persons Not in the Labour Force*, Australia, September 2013, Catalogue No. 6220.0.

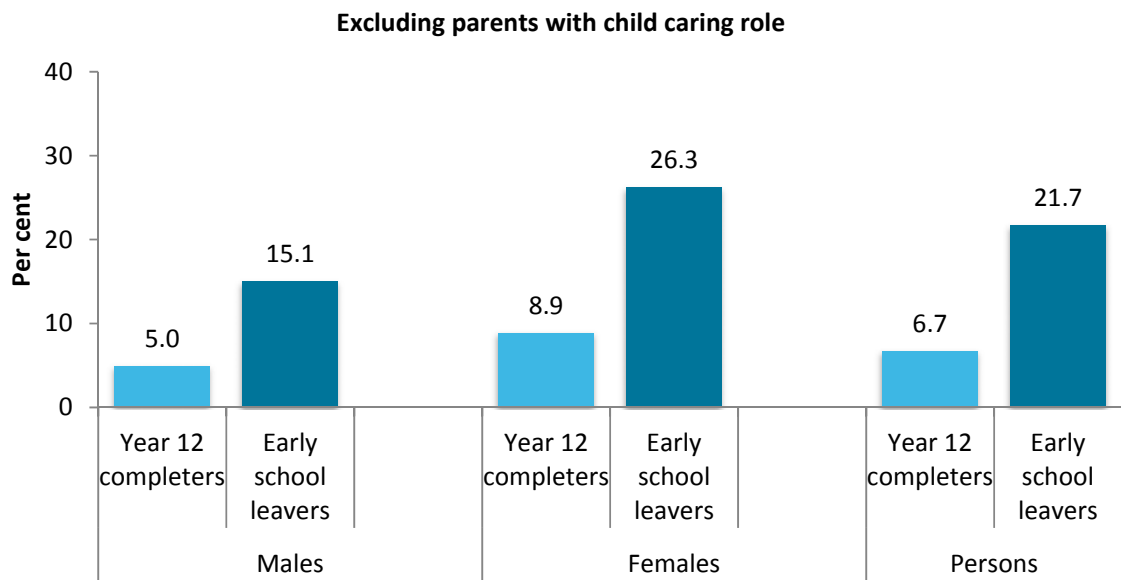
The large number of young women in child-rearing roles raises questions about whether or not different groups disconnected from the labour market should be treated in the same way in the estimation of costs.

Disengaged young people are not a homogeneous group in terms of activity or context. The critical group from this perspective is those who are raising young children. Levin et al. (2012) argue that having children at relatively young ages may be viewed as a decision based upon incentives and costs, and incentives may be considerably greater than costs when individuals have poor academic or work prospects. If better opportunities were available with better prospects other choices might be made, and creating better prospects can offer more choices.

Yet, it is also the case that parents not in the labour force contribute substantially to economic productivity through large amounts of unpaid work, such as child-rearing, which often remains unaccounted for in economic assessments. To recognise this situation, in the current study, we exclude those people (mainly women) who were not in work and study and deemed to be the primary carer of a child 5 years or younger for the major part of their disengagement. To not do this would mean counting this unpaid caring work as having no value to the nation.

Excluding from the long-term disengaged those who were in child-rearing roles for most of the time they were disconnected from work and study reduced the percentage of long-term disengaged from 14.9 per cent of 24 year olds (52,416) to 13.0 per cent (45,724). This involved mainly women for whom the percentage reduced to 8.9 per cent for Year 12 completers and 26.3 per cent for early leavers (Figure 3-5).

Figure 3.5 Long term disengagement by Year 12 or equivalent completion, excluding parents with child caring role



Source: Estimates derived from the Household Income and Labour Dynamics in Australia (HILDA) survey.

Numbers to be used in this study

While there are some differences in the long-term estimates of the numbers of early leavers and disengaged young people based on whether we use the matched unit record Census data or the national longitudinal survey sample data—HILDA—the figures are roughly similar. Consistent with an endeavour to be conservative in estimating the costs associated with early leaving and disengagement, this report applies the HILDA cohort sizes to calculate the long-term costs of low attainment and disengagement as the numbers were the lower of the two sources.

The final numbers of long-term early leavers based on the 2014 national population of 19 year olds and the final numbers of long-term disengaged based on the 2014 population of 24 year olds are presented in Table 3.3.

Table 3.3 Estimated numbers of long-term early leavers and disengaged young people: results based on HILDA

	Number			Percentage		
	Male	Female	All	Male	Female	All
Long term early leavers (19 year olds)	25,394	12,299	37,692	15.7	8.1	12.0
Long term disengaged (24 year olds)	13,030	32,694	45,724	7.2	18.9	13.0

Sources: ABS Australian Demographic Statistics (2014, Cat. No. 3101.0); Lamb et al. (2015); Household Income and Labour Dynamics in Australia (HILDA) survey.

These are the numbers on which the costs of lost opportunity provided in this report are estimated.

4. Method for calculating costs of lost opportunity

This section outlines the methods used to calculate the fiscal and social costs of early leaving and disengagement. It briefly discusses the broad approach used in other studies to estimate costs associated with early school leaving and disengaged youth, and then provides an illustration of the steps taken to calculate costs for Australia. It ends with a brief mention of some limitations that need to be taken into consideration when looking at the results.

Main approach

The economic modelling used to calculate the fiscal and social costs of educational failure is part of a well-established tradition. The approach to calculating costs draws on the methods used in a collection of studies by US economists and researchers that examine the financial costs to society of cohorts of young people under-prepared for lifelong learning and work (see for example, Belfield and Levin, 2007; Belfield, Levin and Rosen, 2012; Wested, 2014; Trostel, 2009; Carroll and Erkut 2009). The approach estimates annual and lifetime (working age) costs in the areas of health, government assistance, crime, labour and employment associated with early school leaving and disengagement from full-time work and study.

The standard methodological approach is to estimate the relationship of educational attainment to labour and employment outcomes, such as earnings, employs cross-sectional national survey data. Specifically, it compares the distribution of employment outcomes over age groups by level of education and then uses the differences to estimate the lifetime costs accrued by early leavers (compared to Year 12 completion) or by disengaged young people (compared to those in full-time work or study). Given different lifetime profiles of education and employment for early leavers and disengaged young people compared to others, it is possible to calculate the costs.

For someone of a particular age, such as a 19 or 20 year old, it is possible to predict their total lifetime earnings if they are an early leaver, in the same way it is possible to predict the total lifetime earnings if they are a Year 12 completer. The difference between the two estimated salaries is the gain in earnings from completing Year 12. It is important to remember, though, that early leavers and Year 12 completers differ in background and other attributes and so the gaps in earnings are adjusted to account for the background differences by sex and race as well as probability of going on to further study (equated to low income Year 12 completers). A similar process is applied for health, crime, and welfare status.

A similar approach is taken for disengaged young people whereby disengaged young people are compared with all other young people using profiles based on projected differences in earnings, employment, health, crime, and government assistance.

Early leavers and disengaged young people with low skills face worse economic, social, and personal outcomes. These outcomes can be calculated as economic losses both from a social and a taxpayer or fiscal perspective. The social

perspective counts the full resource implications of early leaving and disengagement, while the fiscal perspective counts resources for which the taxpayer is responsible (Belfield and Levin 2007). The main fiscal consequence is lower earnings and so reduced tax revenues due to lower earnings, but there is also increased spending on young people who either have inferior health status, have greater criminal involvement, or rely more heavily on social services. The social perspective takes into account all these consequences.

Several steps are used in the standard model. First is to estimate for given age cohorts the numbers of early leavers (18 year olds) and disengaged young people (16-24 years). Second is to calculate using available data the lifetime profiles of each of the following:

Fiscal	Social
 Reduced tax payments	Private individual losses
 Higher reliance on government health programs	Social costs of poorer health
 Increased expenditure on criminal justice	Loss from increased crime
 Higher reliance on welfare	Excess burden of taxation
	Reduced productivity spillovers

The final step is to calculate the monetary benefits or economic/cost consequences from each impact for each population cohort.

Steps taken to estimate costs in the current study

The numbers and costs of early leavers and of disengaged young people were calculated in a similar way for both categories, but using different comparison groups.

Students who fail to complete Year 12 or equivalent by age 19 are classed as early leavers. An initial task in the modelling process was to estimate, using longitudinal data, the numbers of early leavers who were likely after age 19 to complete Year 12 or equivalent and those who were likely to remain early leavers across their lifetime. This is to ensure that the numbers of early school-leavers are not overstated when looking at impacts or costs, because a number of early school-leavers after age 19 continue their education and complete Year 12 equivalent qualifications.

After estimating the numbers of 'long-term' or 'lifetime' early leavers, profiles of employment, adult earnings and taxes were created across broad age groups—25-34, 35-44, 45-54, and 55-64 years of age. The profiles were compared with those of adults in the same age group who had attained Year 12 or equivalent qualifications. The gaps in earnings and employment between early leavers and completers were derived for each age group and aggregated. The early leavers face worse economic, social, and personal outcomes over a lifetime. The economic consequences were calculated for each early leaver and for the long-term or lifetime cohort of early leavers.

The same process for estimating outcomes for early leavers was applied to health, crime, welfare status and productivity.

For disengaged young people, profiles were created based on education and employment status. Having estimated the numbers of those disengaged from full-time study and work at age 24, it was possible to calculate using longitudinal data the numbers of young people who were likely to remain disengaged for a major part of their lifetime. The model operates by comparing profiles of the long-term disengaged in employment and their earnings compared to those who were in full-time work or study. The comparison group for disengaged young people includes all other young people, i.e. those who are working full-time or in further study.

Table 4.1 presents the fiscal and social domains for which costs were calculated, along with the source of data used and the method of calculation. The domains cover four areas of costs:

1. income and taxes,
2. government income support and welfare services,
3. costs of crime, and
4. publicly financed health care.

Economic costs are calculated from both fiscal and social perspectives. Social costs are estimated by counting all of the resource impacts regardless of who pays for them. The fiscal perspective is narrower, counting only costs for which the taxpayer is responsible. The main consequence of early leaving and disengagement is the loss of personal earnings and loss of government tax revenues. But there are other consequences including poorer health, more criminal activity, and greater reliance on income support, and welfare services. Social costs are composed of lost earnings, additional health expenditures, and crime costs.

The methods in estimating costs vary according to the availability of data and information. Estimating costs for each domain generally involved four steps:

1. Estimate the average gaps for each cost domain between the two sets of comparison groups—early school leavers compared to Year 12 completers, and disengaged young people compared to those in full-time work or study. This is done using the best available data or research evidence.
2. Calculate the monetary cost for each domain per person and per cohort.
3. Calculate the cumulative cost for each domain per person and per cohort over the period of average working life (from 25 to 64 years of age).
4. Aggregate costs to provide a full assessment of accumulated costs. In this step lifetime profiles extrapolated to age 64 are discounted back to present value in 2014, at age 19 for early leavers and at age 24 for the disengaged. Discounting is used to adjust projected future payments and costs to be in present values. The discount rate to do this was 3.5 per cent per annum which is the gap between the long term CPI and Beneficiary Living Cost Index set by the 2015-2016 Commonwealth Budget Paper (Commonwealth, 2016) at 2.5 per cent per annum and the discount rate of 6.0 per cent per annum used by the Department of Social Services Valuation Report (DSS, 2016) which was set to the value of the Commonwealth's defined benefit superannuation liabilities, and representing a longer term average of the 10 year government bond yield.

Table 4.1 Domains for estimating the costs of lost opportunity, with data sources

Domain	Method	Source of data
Income and Tax	<ul style="list-style-type: none"> Estimate the annual gap in personal income and total tax payments between Year 12 completers and early leavers and between disengaged young people and others. 	ABS <i>Survey of Income and Housing 2013-2014</i> (CURF file, accessed through ABS Remote Access Data Laboratory (RADL))

Welfare payments	<ul style="list-style-type: none"> Estimate the annual gap in welfare (what the government pays in income and non-income support) between the two sets of comparison groups. 	ABS <i>Survey of Income and Housing 2013-2014</i> (CURF file); HILDA (Wave1-14)
Crime and law enforcement	<ul style="list-style-type: none"> Estimate the life time probability of offending and imprisonment by sex, education and engagement status. Estimate the extra number of offenders and prisoners per early leaver cohort and per disengaged cohort due to a higher probability of offending and imprisonment. Calculate the average annual cost of justice administration per offender and per prisoner 	ABS (2015a) ABS (2015B) SCRGSP (2017) AIHW (2015b)
Public health	<ul style="list-style-type: none"> Estimate the annual gap in the probability of having private health care cover by age, sex, school education and engagement status. Estimate the gap in the probability of annual public hospital overnight admissions and emergency department (ED) visits by age, sex, school education and engagement status. Estimate extra annual numbers of early leavers and disengaged young people who use publicly financed health care as a result of a higher probability of public hospital admissions and a lower rate of private health cover. Estimate the annual costs on public health care per cohort of early leavers and per cohort disengaged young. 	HILDA (Wave13) SCRGSP (2017)

The broad methodology, coverage and assumptions employed in the calculations for this report are similar to those used by Belfield and Levin (2007) and by Belfield, Levin and Rosen (2012). It is relevant to note some differences, though. For the early leaver comparison group, Belfield and Levin use high school graduates adjusted for a probability of going to college equivalent to low income graduates whereas in the current study Year 12 or equivalent completers are used without such adjustment. Disengagement in the current study is based on an estimate at age 24 whereas in Belfield and Levin it is estimated as being disengaged for more than half the time between the ages of 16 and 24. In the current study, early leavers who complete Year 12 or equivalent qualifications after age 24 are treated as Year 12 completers, whereas in Belfield and Levin they are not. Similarly, disengaged young people who are in full-time work or study for most of the time after age 24 are not treated as disengaged in the current study, reducing the numbers of disengaged compared to the approach taken by Belfield and Levin (2007) and by Belfield, Levin and Rosen (2012). There are also some cost components that are not included in the current study because of a lack of available data or information which were covered in the work by Belfield and Levin (2007) and by Belfield, Levin and Rosen (2012). This includes productivity spillovers (estimate of the economic impact of the educational attainment level of the population), out of pocket private health expenses, and personal economic losses for incarcerated criminals.

There is another important difference. Belfield and Levin (2007) and Belfield, Levin and Rosen (2012) estimate two sets of costs based on age. The first could be described as short term or immediate costs estimated over the period when the dropouts or disconnected youth are between age 18 and 24. The second are described as long-term costs (25-64 years of age) during the adult working-age years. In the current study the focus is on the costs over the main years covering adult working life, 25-64 years of age. This excludes the short term or immediate costs of early school leaving and disengagement.

Limitations

Whilst this study is intended to provide useful information it is important to understand its limitations. There are several limitations and sensitivity issues related to the fiscal cost estimates that are worth noting.

1. Changing economic conditions

This study simulates the future costs of lost opportunity due to early school leaving and disengagement under the assumption that current economic conditions and policy settings persist over the next 40 years, such as labour force participation, employment and major tax rates. Of course, changes can occur (take, for example, the impact of the global financial crisis in the mid-late-2000s and its residual effects) which could alter the size of losses. Results presented in this study represent the mean of the lifetime costs derived from the range of modelled future outcomes. Many of the assumptions underlying the cost estimates are developed by considering patterns based on the current population, which may reflect the past and current economic conditions and policy settings. These conditions and settings may change year to year into the future. People may also behave differently in the future compared to the past. These considerations therefore involve assumptions and the actual future experiences may differ from that modelled. The long-term nature of the lifetime cost results means they are highly sensitive to some of the assumptions.

2. Productivity spillovers

As a population becomes more educated, there are positive effects experienced across the labour force raising the overall productivity of the economy. This is sometimes referred to as productivity spillovers and arises if the presence of educated workers helps make other workers more productive regardless of their education level (e.g. Moretti, 2004). Some researchers have attempted to estimate the size of spillovers due to education by comparing the wages of like-individuals who work in contexts (factories, cities, states) with different average levels of education or by comparing outputs against inputs for matched individuals in contexts with different average levels of skills or education (see Moretti, 2014, as an example). In a review of a large number of studies on sources of economic growth in the mid-1990s, Dowrick (2002) concluded that social returns to education are consistent with micro-economic evidence on individual earnings. An increase of one year of schooling in average educational attainment in the workforce can be expected to increase the level of output by around 8.8 per cent in a typical OECD country. The effect on the Australia economy would be an increase of 0.28 percentage point in the annual growth rate-coming both from human capital deepening and more rapid adoption of new technology. A recent study by Cadence Economics (2016) estimated strong productivity spillovers for the Australian economy brought about by university graduates, including creating new jobs for people without a university degree and increasing wages of workers without a university degree.

3. Fiscal savings on education

Some estimations on the losses associated with early school leaving or disengagement from work and study include deductions in costs due to benefits related to things such as foregone savings to the taxpayer in education expenses (for example, see King, 1999). One such saving from early school leaving is in education spending: young people aged 24 or younger who are not in school or college are not receiving government subsidised study or training, and not attracting government allowances for education. There is also personal saving from fees and expenses for schooling or training. However, these savings have not been considered in the current study because the focus is on future losses during the adult years (25-64 years of age) because most of the savings to the taxpayer and society would be incurred before young people turn 24 years of age.

4. General equilibrium effects

With an improved Year 12 attainment rate, Year 12 completers and university graduates become more common, placing downward pressure on their income premium. As a result, the returns to Year 12 completion, such as wages and earnings, might be expected to fall. This “general equilibrium effect” may cause a fall in value in the return to Year 12 qualifications given an increase in competition for skilled jobs. However, there is historical evidence that the income benefits to school completers have risen even though overall education levels have increased, suggesting that the

economic return of Year 12 qualifications have endured even as the supply of completers in the labour force has grown (Belfield and Levin, 2007). Also, research from both overseas and Australia suggests that having a more skilled workforce does not only help improve the productivity of co-workers, but also increases the income of all workers, and hence increases their consumption of goods and services (Moretti, 2004; Cadence Economics, 2016).

5. The quality of equivalence and variations among Year 12 completers

In the estimation of costs associated with early school leaving, no account is taken of differences in the quality of Year 12 completion, i.e. of whether equivalence (vocational certificates) provides the same sorts of returns as a Year 12 school certificate. No distinction is made between Year 12 school certificate completers and what are treated as 'equivalent' certificates. No distinction is made between Year 12 completers who also attained university or other tertiary degrees and those did not continue to further pursue tertiary studies. Several studies have shown that there are significant private and public returns in tertiary education for the Year 12 completers (Wei, 2014; Daly et al., 2015; Weidmann and Norton, 2012). These limitations involve an assumption that the economic return to all Year 12 completers is the same, which may not be the case.

6. Differences by culture, language and locality

Education effects on an individual lifetime economic outcomes may differ according to personal traits, cultural and language background and location. Due to limitations of data, these effects are not taken into account in this report. The estimates in this report were derived based on probabilities of different events occurring across people's lives and the likely costs of the resultant life trajectories. The estimates rely on broad associations between an individual's behaviours and the economic consequences which may vary into the future for different groups of young people based on demographic and cultural characteristics. For each person, the actual life outcomes may vary.

5. Estimates of the costs of lost opportunity

Impact on individual earnings and government tax revenue

The main economic consequence of early school leaving and disengagement is lower earnings to individuals, and the associated reduction in tax revenue to the government. This section estimates losses on individual earnings and tax payments to the government, separately, but begins by looking more broadly at the relationship between educational attainment and the labour market.

Education and the labour market

Educational attainment is correlated with several labour market outcomes. International comparisons show that in Australia, as in other OECD countries, people with higher qualifications are more likely to be employed full time, and they are more likely to earn higher salaries (OECD, 2016). On the other hand, while there is still work for those with lower levels of attainment, such as early school leavers, they are at greater risk of being unemployed, and their average earnings are lower.

Table 5.1 reports the percentages of full-time earners, part-time earners and people without paid employment, by educational attainment. It also shows mean weekly earnings of full-time workers, by educational attainment.

Table 5.1 Earning status and average weekly earnings, by educational attainment: 25-64 year olds

		Earnings status (%) ^a				Mean weekly earnings (\$) ^b
		Full-time earners	Part-time earners	No earnings	Total	Full-time earners
Males	Early leavers	58.2	9.3	32.7	100.0	1157
	Year 12 or equivalent	75.3	8.1	16.5	100.0	1316
	Tertiary education	79.2	10.0	10.8	100.0	1819
Females	Early leavers	21.6	25.7	52.8	100.0	913
	Year 12 or equivalent	34.7	31.8	33.6	100.0	1001
	Tertiary education	47.7	30.0	22.3	100.0	1417
Persons	Early leavers	38.5	18.0	43.5	100.0	1085
	Year 12 or equivalent	57.6	18.6	23.9	100.0	1231
	Tertiary education	61.4	21.3	17.3	100.0	1650

Source: a Year of reference = 2012, sourced from OECD, 2016. b Year of reference = 2014, sourced from ABS Survey of Income and Housing 2013-2014 (CURF person file, accessed through ABS Remote Access Data Laboratory (RADL))

The figures reveal that the likelihood of being a full-time earner rises with educational attainment, while the likelihood of not being in paid employment falls. The rate of no earnings among non-completers is two and a half times that of those with tertiary qualifications (43.5 per cent compared to 17.3 per cent, respectively).

After controlling for earning status, the amount of weekly earnings also vary by educational attainment. While adults with tertiary education earn on average about 34 per cent more than those with upper secondary education for full-time employment, earnings advantages amount to 55 per cent when compared with early leavers. Similarly, earnings of adult early leavers are on average about 13 per cent less than those with Year 12 or equivalent qualifications.

In addition to education, several other factors influence labour market outcomes. As in many countries, earnings in Australia and full-time employment are generally lower for women than men across all levels of educational attainment. This may be related to the gender differences in the sectors where they work and the types of occupation as well as higher numbers not in the labour force (OECD, 2016). Full-time earning rates for men are higher than those for women across all levels of educational attainment, but the gender gap reduces as educational attainment increases. The gender difference in full-time earning rates among 25-64 year olds is 37 percentage points for early leavers and 31 percentage points for tertiary-educated adults (OECD, 2016).

Variations in earnings also reflect the influence of other factors, including the demand for skills in the labour market, the supply of workers and their skills, the minimum wage and other labour market laws, structures and practices, such as the strength of labour unions, the coverage of collective bargaining agreements and the quality of working environments.

Costs on personal earnings

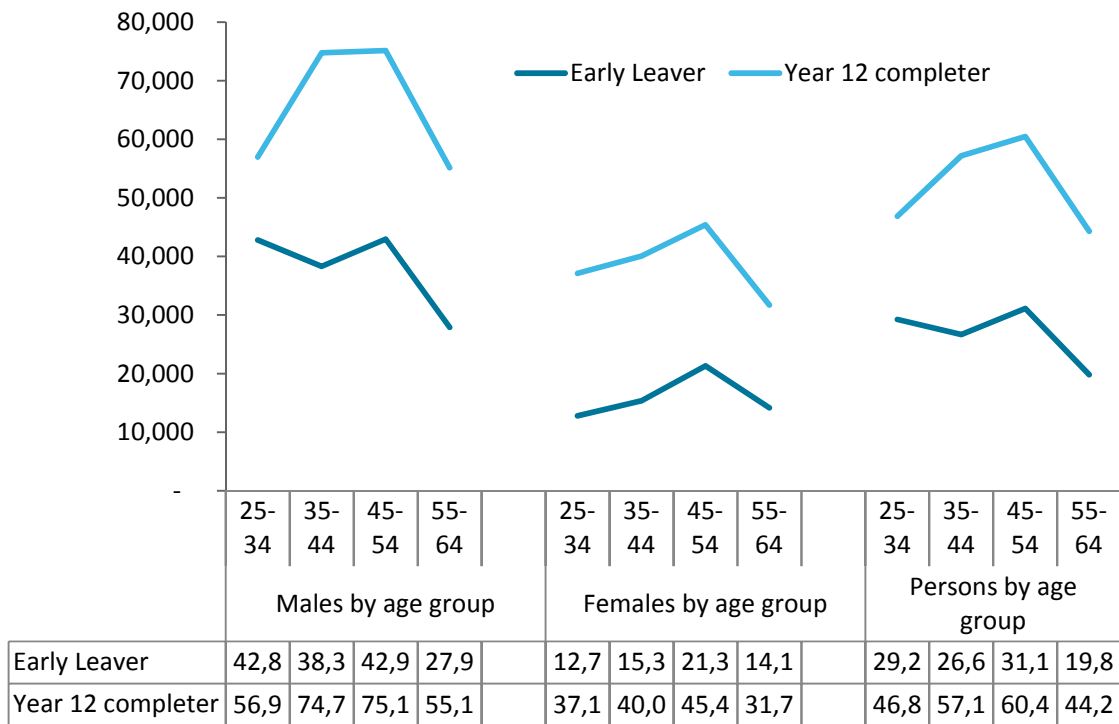
To calculate the effect of early leaving and disengagement, earnings were created for four cohorts: (1) long-term early leavers compared to (2) Year 12 or equivalent completers, and (3) those not actively engaged in study or work compared to (4) all others. The four cohorts were each grouped by age band—25-34, 35-44, 45-44 and 55-64—representing a range of stages in working lives: those who are just starting their working life, those in the middle, and those at later stages of their working life.

Earnings data were taken from the *ABS Survey of Income and Housing 2013-2014*. The Survey of Income and Housing (SIH) collects detailed information about persons aged 15 years and over who are residents in private dwellings in urban and rural areas of Australia (excluding Very remote areas). The SIH surveyed a sample of Australian dwellings between July 2013 and June 2014. In 2013–14, dwellings were selected through a stratified, multi-stage cluster design from the private dwelling framework of the ABS Population Survey Master Sample. The SIH is intended to identify population attributes with national precision.

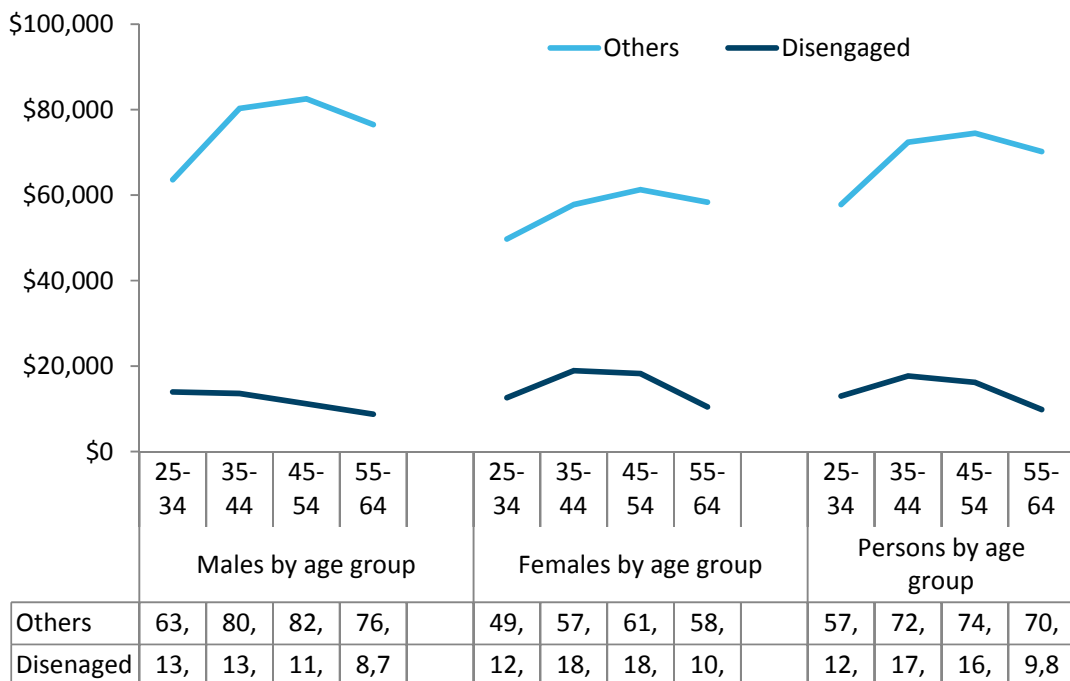
Figure 5.1 shows the gaps in average annual earnings. The first panel compares estimated average annual earnings, by early leaver status. The second panel compares earnings, by disengagement.

Figure 5.1 Estimated average annual earning, by early leaver and disengagement status, 2014 (\$)

By early leaver status



By disengagement status



Source: Estimates based on ABS Survey of Income and Housing 2013-2014 (CURF person file, accessed through ABS Remote Access Data Laboratory (RADL)).

To estimate the costs in personal income of early school leavers and disengaged young people, we estimated the average annual earnings among the adult population using the age bands applied to each cohort broken down by gender. The cohorts can then be compared in terms of the differences in lifetime earnings. From these figures we then calculated the mean annual cost per early leaver and per disengaged young person. The results are presented in Table 5.2.

Early school leavers, regardless of age and sex, have lower earnings than Year 12 or equivalent completers. The gaps can be quite substantial. For example, among 45-54 year old males those who held Year 12 or equivalent qualifications earned on average roughly \$32,000 more per year than those who were early leavers. Among females the gap was about \$24,000. For the youngest age group the gap between early leavers and Year 12 completers was roughly \$14,000 for males and roughly \$24,000 for females.

Few of the disengaged have jobs, though some work on a part-time or casual basis. Where they are employed, their work is often low-wage and temporary. Thus, one of the main effects for those not actively engaged is the loss in earnings. The gap for 35-44 year old males is \$71,361 on average and \$41,734 for females. The average gap between the disengaged cohort and those actively engaged taking into account all age groups is just on \$63,867 for males and \$41,734 for females.

To estimate the costs in personal income of early school leavers and disengaged young people, we estimated the average annual earnings among the adult population using the age bands applied to each cohort broken down by gender. From these figures, we then calculated the mean annual costs per early leaver and per disengaged young person as at 2014. The results are presented in Table 5-2. The results show that the average annual loss is estimated at around \$27,513 per early school leaver and around \$48,041 per disengaged young person.

Table 5.2 Projected annual costs in personal income per early school leaver and disengaged young person (at 2014 prices) (\$)

Age group	Per early school leaver (\$)			Per disengaged youth (\$)		
	Male	Female	Person* (weighted)	Male	Female	Person* (weighted)
25-34	14,150	24,319	17,468	49,650	37,135	40,701
35-44	36,471	24,692	32,628	66,715	38,848	46,789
45-54	32,187	24,072	29,539	71,361	43,050	51,118
55-64	27,243	17,554	24,082	67,743	47,901	53,555
Mean annual cost	27,513	22,659	25,929	63,867	41,734	48,041

Source: Estimates based on *ABS Survey of Income and Housing 2013-2014* (CURF person file, accessed through ABS Remote Access Data Laboratory (RADL)), and the *Household Income and Labour Dynamics in Australia* (HILDA) survey.

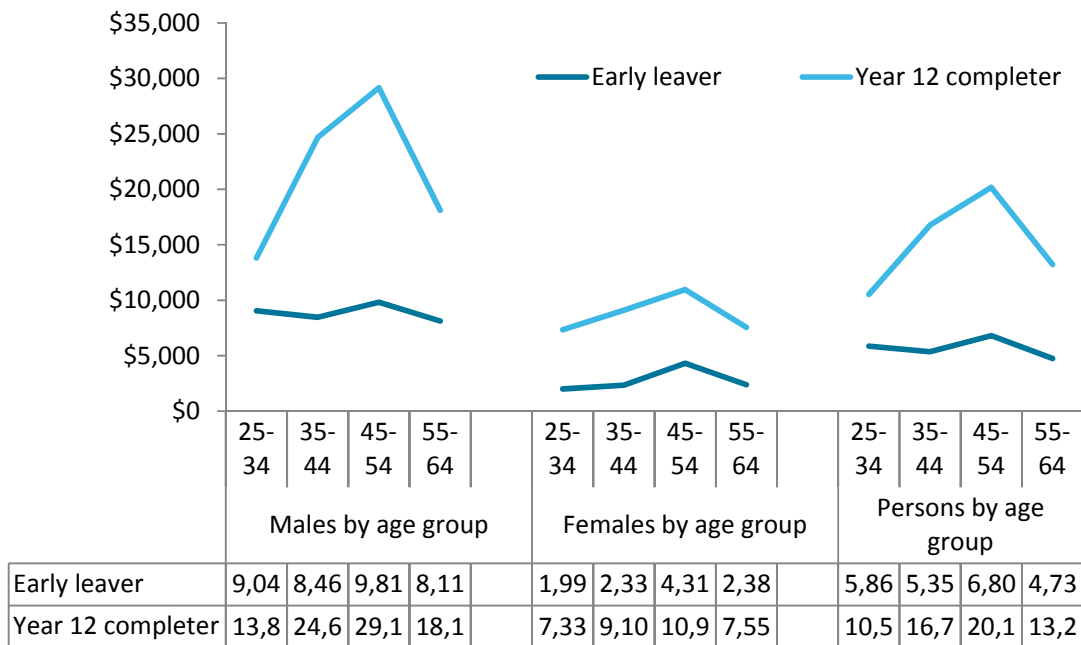
*Cost per person is weighted by the share of males and females in the relevant cohort.

Costs in government tax revenue

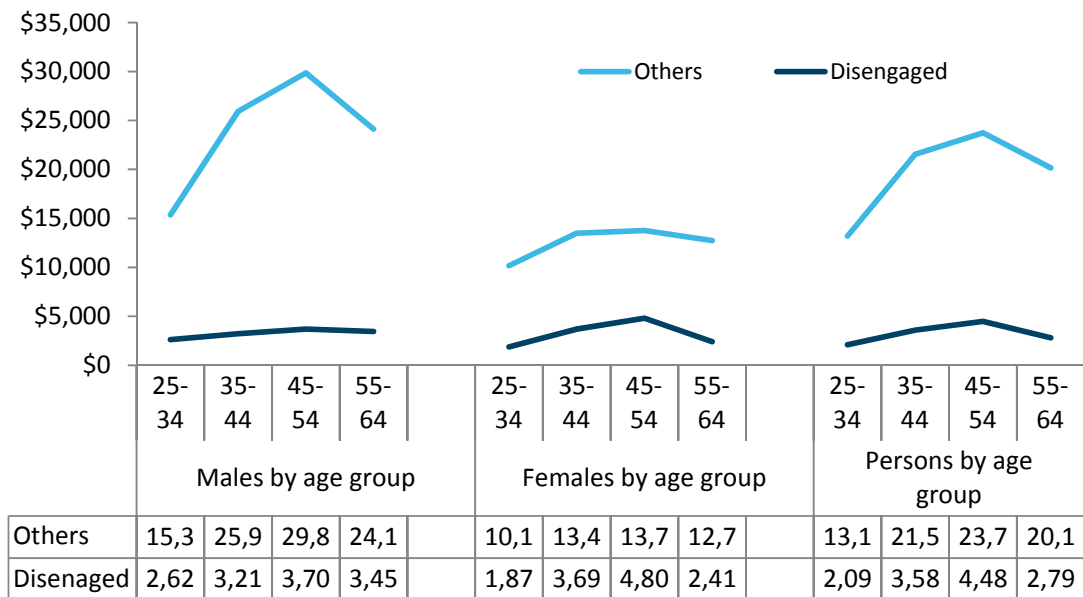
Figure 5.2 shows the gaps in annual tax payments by education and engagement status across the four cohorts. Table 5.3 reports annual costs on government tax revenue per early school leaver and per disengaged young person.

Figure 5.2 Estimated average annual tax payments, by early leaver and engagement status, 2013-2014

By early leaver status



By disengagement status



Source: Estimates based on ABS Survey of Income and Housing 2013-2014 (CURF person file, accessed through ABS Remote Access Data Laboratory (RADL)).

Table 5.3 Projected annual costs on government tax revenue per early school leaver and disengaged young person (at 2014 price) (\$)

Age group	Per early school leaver (\$)			Per disengaged youth (\$)		
	Male	Female	Person* (weighted)	Male	Female	Person* (weighted)
25-34	4,767	5,339	4,954	12,743	8,290	9,559
35-44	16,199	6,769	13,122	22,702	9,790	13,469
45-54	19,342	6,645	15,199	26,158	8,955	13,857
55-64	9,999	5,177	8,426	20,675	10,325	13,274
Mean annual cost	12,577	5,983	10,425	20,569	9,340	12,540

Source: Estimates based on *ABS Survey of Income and Housing 2013-2014* (CURF person file, accessed through ABS Remote Access Data Laboratory (RADL)), and the *Household Income and Labour Dynamics in Australia* (HILDA) survey.

*Cost per person is weighted by the share of males and females in the relevant cohort.

Like the gaps in earnings, the gaps in tax contributions are also large. Tax payments fall significantly with early leaver status. Annually, a male early leaver aged 35-44 will pay around \$8,463 and a Year 12 completer \$24,661 (Figure 5.2); the net effect is tax payments that are \$16,199 less than those of Year 12 completers on average. The annual average loss for a male early leaver compared to Year 12 completer is \$12,577 and for a female early leaver is \$5,883 (Table 5.3).

A parallel approach is applied for disengaged young people in Australia. To estimate the loss in tax payments, we first estimated the average annual tax payments among the working age population broken down by sex, age groups, and engagement status, and then extrapolated the annual loss to the total loss over 40 years. Few disengaged young people have jobs, and if they do, their work is part-time, often low-wage and temporary. Thus, there is a large annual loss in tax payments from disengaged young people, but there is also a large lifetime loss. Using SIH data, the estimate is that the average disengaged young person between ages 25-34 pays \$2,097 per year, while others at the same age pay an average of \$13,200 per year. At older ages, the gaps in average tax payments between the disengaged and others increases to over \$20,000 for males (Figure 5.2). Thus, annually, the costs in government tax revenue from the disengaged are substantial.

Impact on welfare payments

Over recent years, total government welfare expenditure has exceeded \$136 billion annually, with over a quarter (26 per cent) being spent on administration of welfare services and around 68 per cent (\$93 billion) on cash payments (including income support and non-income payment) (AIHW 2015a).

Australia's welfare system comprises a complex network of income support payments and welfare support services, along with some welfare-related tax concessions and deductions. The Australian Government currently provides support through around 75 different types of income support payments and supplementary payments to help improve the wellbeing of Australians in need, largely by enhancing capabilities and opportunities for people to participate economically and socially (AIHW 2015a). These payments can be provided long or short term, or for a transitional period, and the eligibility requirements and amounts received vary. Welfare support services can be provided and delivered by government and non-government organisations, either independently or collaboratively.

For the working age population, some of the key Australian Government payments and numbers of recipients in 2014 included (AIHW 2015a):

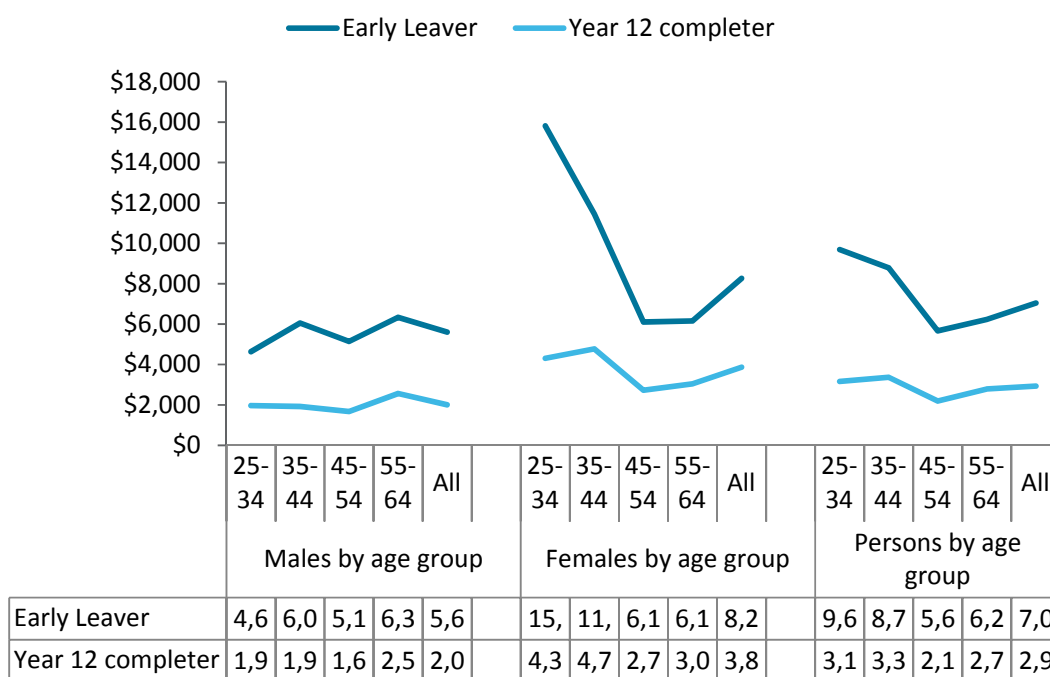
- Disability Support Pension—around 830,000 eligible people (aged between 16 and Age Pension age) who had a reduced capacity for work because of impairment
- Carer Payment—around 244,000 people who personally provided constant care in the home of someone with a severe disability or illness, or who was frail or aged

- Newstart Allowance—around 706,000 people aged 22 or older (but under Age Pension age) who were looking for work or taking part in activities that increased the chances of finding a job
- Youth Allowance (student and apprentice)— around 242,000 students aged 16–24 years, who were undertaking full-time study, received assistance
- Family Tax Benefit (FTB) — around 1.6 million families with assistance with the cost of raising and educating children (Part A), and extra assistance to around 1.4 million single-parent families and families where one parent had a low income or was not in paid employment (Part B) (AIHW 2015a).

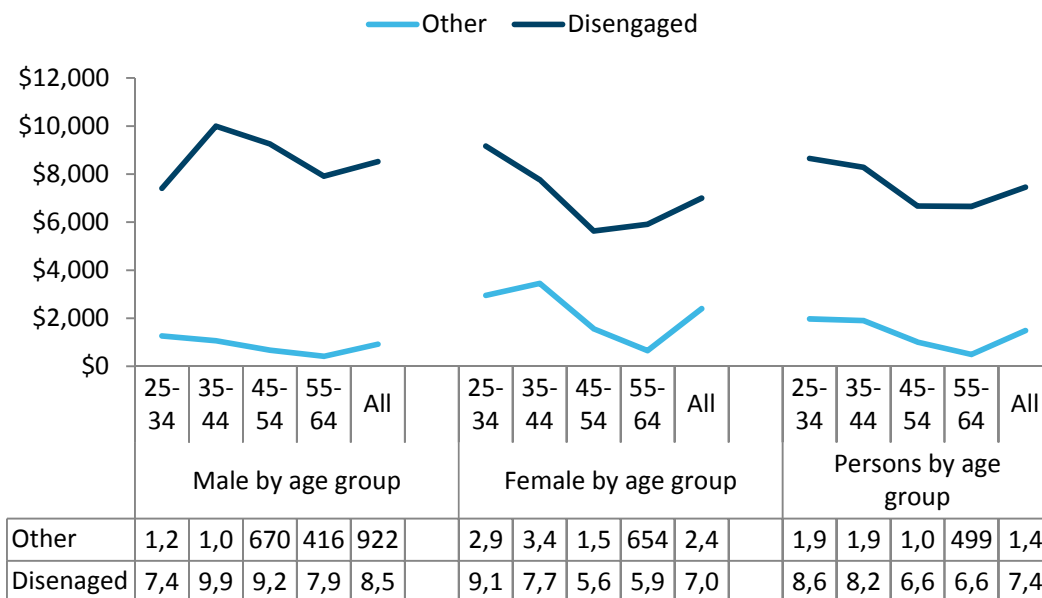
Reliance on government assistance and services varies between males and females and changes with age. Early school leavers or disengaged youth generally receive more income support or assistance than other members of the population, which results in an extra cost on government per early leaver and per disengaged youth. Differences by early leaver status and by disengagement are presented in Figure 5.3.

Figure 5.3 Differences in annual average income support from government payments and allowances, by early leaver and disengaged status: population aged 25-64 years, 2014

Income support payments, by early leaver status



Income support payments, by disengagement status



Source: Estimates based on ABS Survey of Income and Housing 2013-2014 (CURF person file, accessed through ABS Remote Access Data Laboratory (RADL)).

The average annual amount of government payments (including income and non-income support payment) to working age early leavers across all age groups is estimated at over \$5,600 for males and \$8,300 for females, which were more than double the amount received by Year 12 completers (around \$2,000 for males and \$3,900 for females) (Figure 5.3).

The average annual amount of government payments to disengaged adult males (aged 25-64) is estimated at around \$8,500 which is approximately nine times the average payment to males who are not disengaged (\$900). The amount paid from government allowances to women who were disengaged was approximately \$7,000 annually, roughly three times that paid to women actively engaged in work or study (\$2,400) (Figure 5.3).

As well as annual costs, it is important to estimate lifetime costs associated with welfare dependence. To calculate the effect of early leaving and disengagement, amounts of income welfare payments (including income and non-income support payments) provided by government were created for early leavers and the disengaged by age band—25-34, 35-44, 45-44 and 55-64. Government welfare payments were derived from the *ABS Survey of Income and Housing 2013-2014*.

For costs of government welfare payments for early school leavers over their working life, this study estimated the annual average gap in government pension and allowance between Year 12 completers and non-completers, and then between the disengaged and others, adjusting for sex and age groups, and then extrapolated the accumulated cost over 40 years from age 25-64. Table 5.4 provides the net annual average cost in government welfare payments for early leavers and the disengaged by age group and gender. These cost estimates only count for government cash payments on income and non-income support programs but do not count for cost on welfare administration.

Table 5.4 Projected annual costs on government welfare payments, per early school leaver and disengaged young person (\$ at 2014 prices)

Age group	Per early school leaver (\$)			Per disengaged youth (\$)		
	Male	Female	Person* (weighted)	Male	Female	Person* (weighted)
25-34	2,663	11,505	5,548	6,143	4,212	6,192
35-44	4,128	6,675	4,959	8,929	4,315	5,630
45-54	3,465	3,376	3,436	8,585	4,073	5,359
55-64	3,769	3,120	3,557	7,499	5,261	5,899
Mean annual cost	3,506	6,169	4,375	7,789	4,965	5,770

Source: ABS Survey of Income and Housing 2013-2014 (CURF person file, accessed through ABS Remote Access Data Laboratory (RADL))

*Cost per person is weighted by the share of males and females in the relevant cohort.

The Australian Government Department of Social Services (DSS 2016) recently released a Baseline Valuation Report into the future lifetime costs of Australia's welfare system. The report shows the differential average lifetime costs predicted for people in the Working Age

Class (age 20-40 years) with different levels of educational attainment. The model predicts that people with a Year 12 or post-school qualification have a much lower average lifetime cost than people who left school before Year 12, with significant variability within each of the educational attainment levels (between \$0.1 and \$0.2 million). The estimates in our report are generally consistent with the predictions by the DSS (2016) report.

Impact on costs of crime and law enforcement

Long established evidence shows a relationship between criminal activity and early school leaving (Chapman, 2002). Overseas research also finds that education reduces crime (Moretti, 2005). By raising earnings, education raises the opportunity cost of crime and the cost of time spent in prison. Education may also make individuals less impatient or more risk averse, further reducing the propensity to commit crimes. Data from a large-scale prisoner survey in 2015 showed that only around 15-16 per cent of prisoners had completed Year 12 or equivalent schooling, compared to 63 per cent in the adult population (AIHW, 2015b)³. The same survey showed that around 32 per cent of the prison population had Year 9 or a lower level of schooling as their highest attainment, compared to 8 per cent in the general population.

Although the overall number of young people who have contact with justice system at some point in their lives may be small, the costs of crime are high for both individual victims and the public, including:

- costs to the victim (productivity and wage loss, medical costs, property loss and reduced quality of life)
- incarceration costs to the offenders themselves
- law enforcement and judicial costs to the government; and
- private security measures to communities.

From the public perspective, there are four main costs related to crimes: (1) criminal justice system costs for policing and court proceedings, (2) incarceration costs in correctional services, (3) crime prevention costs and (4) government funded victim costs (medical care and costs from lost tax revenue). It is acknowledged that not all of the above justice-related operations are included in this study. Rather, for the current work, the focus is on government expenditure on the jurisdictional justice system in policing, court proceedings and correction services, for which cost data are publicly available.

³ The health of Australia's prisoners 2015 developed by the AIHW includes data from over 20,000 prisoners in 2015.

According to data released by the ABS (ABS, 2015a and ABS, 2015b), both offender and imprisonment rates are less than two persons per 1000 population in Australia, with young people, males and Aboriginal and Torres Strait Islanders being over-represented among criminal offenders and prisoners. Male prisoners make up over 90 per cent of the prison population. Around 60 per cent of prisoners in all states and territories were recorded as serving their second or subsequent term of imprisonment.

There are no data on offenders and prisoners by education or engagement status publicly available in Australia for this analysis. For this report, we used several data sources to estimate the probability of offending and imprisonment by education and engagement status, and by age and sex, including:

- 2011 Census of Population and Housing (ABS Table builder)
- Prisoners in Australia 2015 (ABS ,2015a),
- Recorded Crime - Offenders, 2013-14 (ABS ,2015b)
- The health of Australia's prisoners 2015 (AIHW, 2015B)
- The Report on Government Services 2017 (SCRGSP, 2017).

Although this report focused on the costs of crime for the working age population, it should be noted that young people aged 15-19 years are over-represented in the offender population. Youth offenders comprised a fifth (21 per cent) of the total offender population in 2014-15, while representing only 14 per cent of the total Australian Estimated Resident Population (ERP) (ABS, 2016b).

Figure 5.4 presents projected offender and imprisonment rates by age, sex and education status.

Over the average working life (ages 25-64), we estimated that early school leavers are seven times more likely than Year 12 or equivalent completers to be an offender and eight times more likely to be in prison. The average offender rate across the working age life (25-64 years) for early school leavers is estimated at 79.7 per 1000 males and 23.3 per 1000 females, and the average imprisonment rate for early school leavers is estimated at 7.5 per 1000 males and 0.6 per 1000 females.

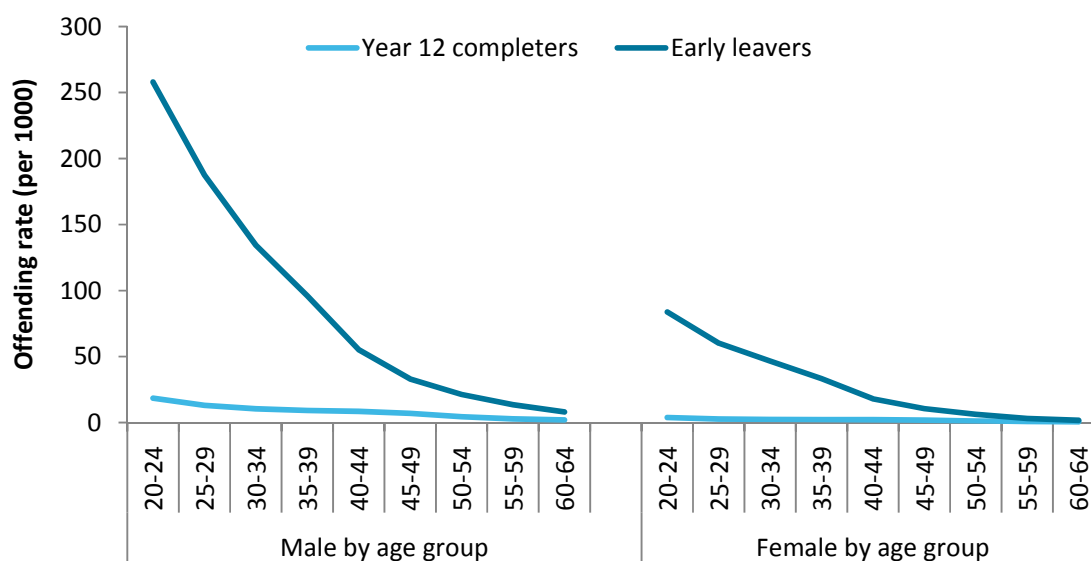
Applying the rates, we estimate that, among the 2014 cohort of early school leavers, there is an additional 1,976 offenders and 169 prisoners who would not be offenders or prisoners if they were Year 12 completers (see Table 5.5).

The total annual fiscal cost on crime for the current cohort of early school leavers is projected at around \$4 million, with around \$3.8 million for the male cohort and \$0.2 million for the female cohort (see Table 5.5). The estimates are based on the following assumptions:

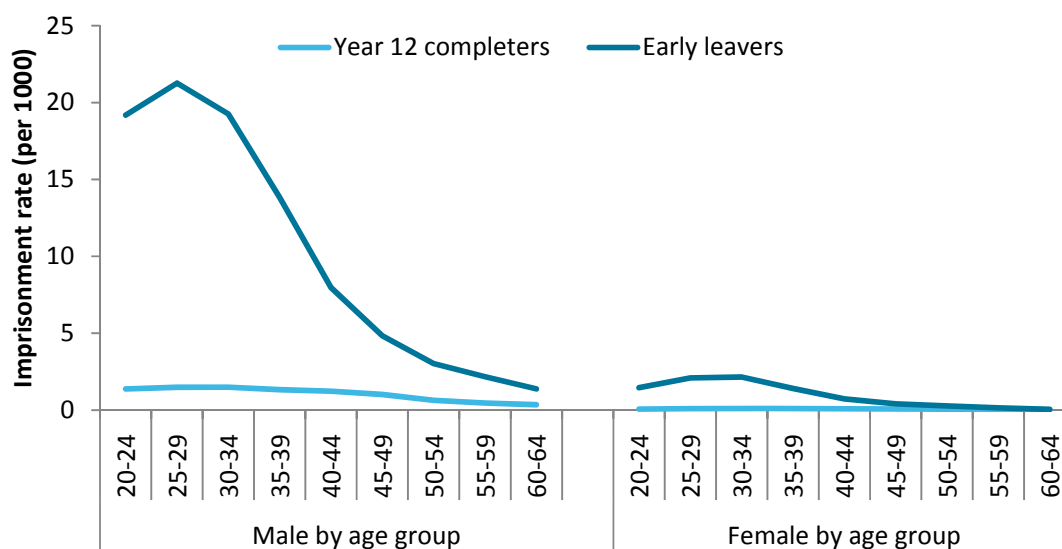
- The average annual cost of justice administration is as at 2014-2015 prices
- The average re-offending rate is 60 per cent of offenders (ABS, 2015b)
- The average length of prison sentence is around five years (ABS, 2015a)
- Projected reported victim of crime rate is 51.5 per cent (SCRGSP, 2017)
- Projected police proceeding rate of crime is 25.1 per cent (SCRGSP, 2017).

Figure 5.4 Projected offender and imprisonment rates, by age, sex and education status

Projected Offender rate by age, sex and education status



Projected imprisonment rate by age, sex and education status



Source: *Estimated based on multiple sources, including 2011 Census of Population and Housing (ABS Table builder), ABS (2015a), ABS (2015b).

Using the same method, the estimated total annual cost on crime for the current cohort of disengaged young people is projected at around \$2.4 million, with around \$1.9 million for the male cohort and \$500,000 for the female cohort (see Table 5.5).

The social losses associated with crime includes several other elements: the costs directly imposed on victims, transfers of assets from victims to criminals, avoidance costs by potential victims (including insurance claims), and productivity losses from participating in criminal activity rather than work. However, because of a lack of available data, these social costs are reduced to direct victim costs in the form of missed work, medical expenses, and lower quality of life, which is an underestimate of the total actual costs.

Table 5.5 **Projected crime costs for early leavers and the disengaged, by gender (at 2014 prices)**

	Early school leaving			Disengaged		
	Male	Female	Total	Male	Female	Total
Cohort population	25,394	12,299	37,692	13,030	32,694	45,724
Projected rates						
Offending rate (per 1000)	79.7	23.3	61.3	79.7	23.3	39.4
Imprisonment Rate (per 1000)	7.5	0.6	5.2	7.5	0.6	2.6
Projected additional offenders and prisoners (per cohort)						
Offenders	1,725	251	1976	885	667	1,552
Prisoners	162	6	169	83	17	100
Annual government expenditure (2013-2014 price \$)*						
Police and court administration (per offender)	3,392	3,392	3,392	3,392	3,392	3,392
Corrective services (per prisoner)	104,577	104,577	104,577	104,577	104,577	104,577
Average annual cost per cohort (\$ million)						
Fiscal cost	3.8	0.2	4.0	1.9	0.5	2.4
Social cost	29.2	1.4	30.6	15.0	3.6	18.6

Source: Estimated based on multiple sources; ABS (2015a), ABS (2015B), ABS (2016) and SCRGSP (2015).

* The estimated cost excludes Federal police and high court services and the services of other law enforcement agencies that may investigate and prosecute particular offences directly, as in the case of social security fraud or tax evasion.

Social costs are a function of the amount of crime and severity of crimes. In Australia, on average, around half of criminal incidents (51 per cent) are reported to the police and only a small proportion of crime actually culminates in arrests or results in police court or non-court proceedings (25.1 per cent) (SCRGSP, 2017). To estimate victim costs, we therefore adjusted the fiscal cost by an appropriate crime reporting rate (51 per cent) and the rate of police proceedings (25 per cent). As a result, the total social cost of crime is estimated to be equivalent to eight times the total fiscal costs to government (Table 5.5).

Total annual social cost is estimated at around \$30.6 million for the current cohort of early school leavers, and around \$18.6 million for the current cohort of disengaged young people. For both cohorts, the costs for males made up the majority of the total costs, around \$29.2 million for male early leavers and \$15.0 million for disengaged males.

Impact on public health

Socio-economic factors are important determinants of health and wellbeing in Australia. The higher a person's income, education or occupation level, the healthier they tend to be—a phenomenon often termed the 'social gradient of health' (AIHW 2016c). In general, people from lower socio-economic groups are at greater risk of poor health, have higher rates of illness, disability and death, and live shorter lives than those from higher groups (Mackenbach, 2015). In 2001-2007, for example, men and women aged 20 in the lowest socio-economic group could expect to live 2.6 years less than those in the highest group (Clarke & Leigh 2011).

Low educational attainment and disengagement therefore are public health issues. In general, individuals who do not complete school or are not actively engaged in study and work as young adults are likely, as they age, to have less

knowledge about health, higher rates of illness and earlier deaths than those who had completed school or were engaged in work to study (Cutler & Lleras-Muney, 2010). They also have less personal income to spend on health care.

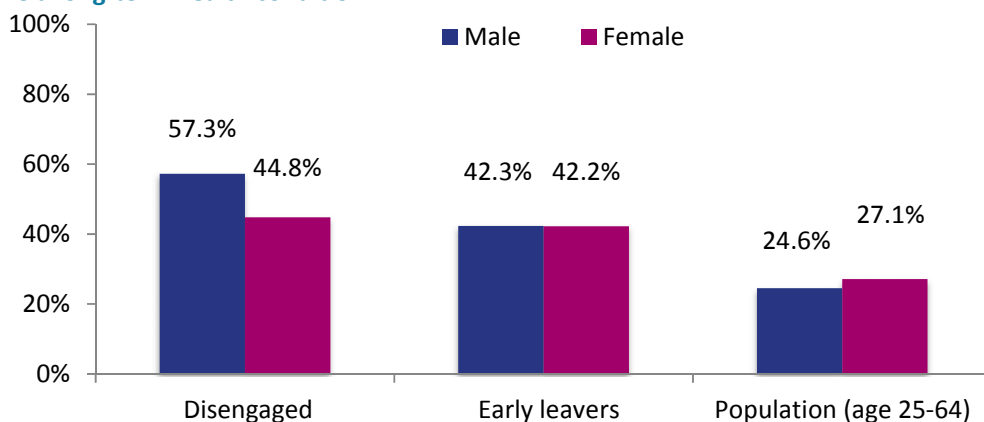
International evidence highlights the health benefits associated with education in the context of a socioecological model of health (Zimmerman & Woolf 2014). The health benefits of education accrue at the individual level (e.g., skill development and access to resources); the community level (e.g., the health-related characteristics of the environments in which people live); and the larger social/cultural context (e.g., social policies, residential segregation, and unequal access to educational resources). All of these factors may contribute to health outcomes, while factors such as ability to navigate the health care system, educational disparities in personal health behaviours, and exposure to chronic stress act as more proximate factors.

It should be noted that education and health are known to be highly correlated – that is, more education indicates better health and vice versa. Studies have shown that the detrimental effects of poor health and unhealthy behaviours on educational success, particularly for children and young people. For example, a study by World Health Organisation in 2011 (Suhrcke & de Paz Nieves, 2011) found that overall child health status positively affects educational performance and attainment. Very good or better health in childhood was linked to a third of a year more in school; the probability of sickness significantly affected academic success: sickness before age 21 decreased education on average by 1.4 years.

Compared to the overall population of working age, early leavers and disengaged population are more likely to have a long-term health condition and they are also less likely to have private health insurance.⁴ Figure 5.5 shows that, in 2013, 42 per cent of male and female early leavers in the working age population were identified as having a long-term health condition. The rates in the general working age population were 24.6 per cent for males and 27.1 per cent for females. The rates for the disengaged are even higher than for early leavers only—57.3 per cent for males and 44.8 per cent for females.

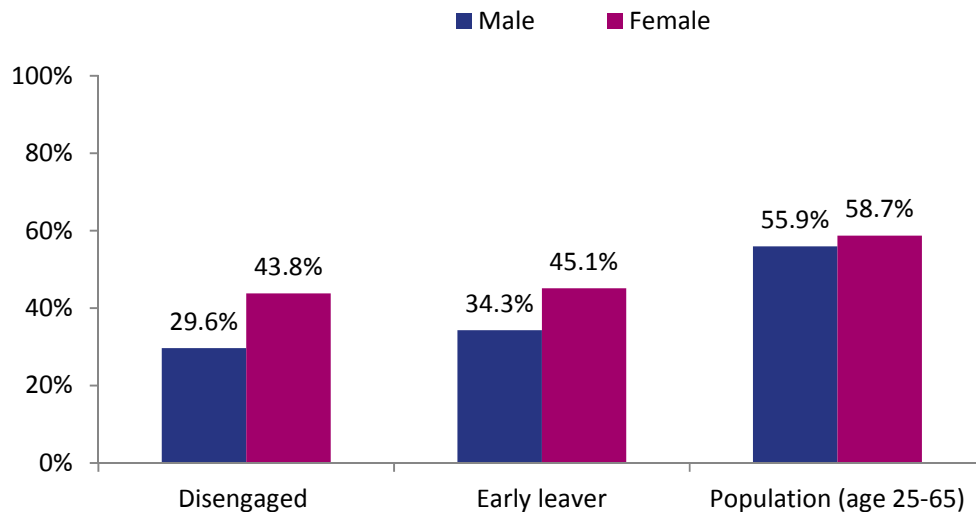
Figure 5.5 Proportion of the working age population with private health insurance and proportion of those with a long term health condition, by early leaver and disengagement status: 2013

Have a long-term health condition



⁴ This does not necessarily reflect a causal effect from education as having a health condition may make it difficult for young people to complete school or engage in the labour market.

Have private health insurance



Source: HILDA survey wave 13.

Private health insurance can defray some of the costs for government and the taxpayer associated with health conditions, reducing reliance on publicly provided health care services such as public hospitals. Figure 5.5 reveals that early leavers and the disengaged are less likely than the general population to hold private health insurance, 30 percentage points less for disengaged males, 20 points less for male early leavers and about 14 points less for female early leavers and disengaged females.

People who have poor health are generally likely to use health services and be admitted to hospitals more frequently (from HILDA analysis). Because of their circumstances the services that are used are more often publicly provided, meaning that early leavers and the disengaged are more likely than other population groups to use public hospitals and public health expenditure when admitted to hospital.

Total recurrent and capital expenditure on public and private hospitals in 2013-14 was estimated at \$45.7 billion and \$13.0 billion respectively (AIHW, 2016). The Australian and State/territory governments funded most of the public hospital expenditure (91 per cent) and one third of private hospital expenditure (34.1 per cent). The total government expenditure on both public and private hospitals was around \$46.1 billion. The cost per hospital admission or separation can vary significantly depending on complexity of the patient's clinical condition and of the hospital services provided. The average cost per admitted acute weighted separation in public hospitals in 2014-2015 was estimated at \$5,843, and the average cost per acute emergency department presentation was estimated at \$982 (SCRGSP, 2017).

According to ABS figures (ABS, 2016a), in 2015, 13 per cent of the Australian population was admitted to hospital and 14 per cent of people had visited an emergency department in the previous 12 months. Females were more likely than males to use health services (except for emergency visits). The use of health services generally increases with age.

Based on various assumptions, including the average cost per case-mix-adjusted separation in public hospitals, and gaps in average rates of hospital admissions and private health cover for early leavers and disengaged population, it was possible to estimate the annual cost to government for the use of public hospitals per early leaver and per disengaged young person. These are presented in Table 5-6 and represent the gaps between the costs in the use of public services for early leavers and the costs for Year 12 completers, and between the costs for the disengaged and the costs for others in the working age population. The cost is estimated on a cohort basis as not every early school leaver or disengaged young person will incur a cost to the public hospital on an annual basis. Annual losses per person are derived based on costs per cohort.

Table 5.6 Projected annual costs on the use of public hospitals, by early leaver and disengaged young person

	Early school leavers			Disengaged		
	Male	Female	Total	Male	Female	Total
Numbers in cohort	25,394	12,299	37,692	13,030	32,694	45,724
Health status rate (cohort)						
Without private health insurance cover (%)	65.7	54.9	62.2	70.4	56.2	60.2
Projected over-night hospital admission rate (%)	13.9	13.6	13.8	17.8	18.5	18.3
Projected Emergency Department admission rate (%)	19.9	17.2	19.0	24.9	21.4	22.4
Estimated annual cost per cohort (\$ million)						
Extra costs for extended admissions to public hospitals	5.4	1.7	7.2	4.3	5.9	10.2
Extra costs for Emergency Department admissions	1.3	0.4	1.7	1.0	0.9	1.9
Total	6.7	2.1	8.9	5.3	6.9	12.2
Estimated annual cost per person (\$)						
Extra costs for extended admissions to public hospitals	214.1	141.9	190.6	329.0	181.6	223.6
Extra costs for Emergency Department admissions	51.4	30.1	44.4	77.5	28.6	42.5
Total fiscal cost	265.5	172.0	235.0	406.4	210.2	266.1

Source: Estimates based on data from Household Income and Labour Dynamics in Australia (HILDA) survey (wave 13) and Report on Government Services 2017 (SCRGSP, 2017).

The total annual extra cost on public hospitals is estimated at around \$8.9 million per cohort of early school leavers and \$12.2 million per cohort of disengaged young people. The extra costs are due to lower rates of private health cover and higher rates of public hospital admissions. This is averaged at an annual cost of around \$235 per early school leaver and \$266 per disengaged person. For both long-term early leavers and the long term disengaged, the annual unit cost is higher for males than females as the males are less likely to have private health cover and are more likely to be admitted to hospital or emergency departments.

The marginal excess tax burden

The marginal excess tax burden is the distortion imposed by raising taxes to pay for government health, crime, and welfare services (net of education spending). Each of the fiscal burdens discussed in this section is therefore magnified.

The Australian Government Treasury estimated the marginal excess burden of four major taxes, including stamp duty on land conveyances, company income tax, personal income tax, and the Goods and Services Tax (GST) (Cao et al, 2015). Based on the Treasury estimates, we applied a weighted average rate of 24.2 per cent to derive the additional cost to the society due to the total extra government expenditure on health, crime and welfare service on early school leavers or disengaged youth. That is, the full cost of getting \$1 of Tax revenue to spend on public expenditure, is actually \$1.24.

Table 5.7 Projected annual marginal excess tax burden, by early school leaving and disengaged cohorts

	Early school leavers			Disengaged youth		
	Male	Female	Person* (weighted)	Male	Female	Person* (weighted)
Estimated annual public expenditure per person (\$)						
Welfare payment	3,506	6,169	4,375	7,789	4,965	5,770
Crime (public expenditure)	149	14	105	149	14	53
Health (public hospital)	265	172	235	406	210	266
Total	3,921	6,355	4,715	8,344	5,189	6,088
Annual marginal excess tax						
Annual cost per person	949	1,538	1,141	2,019	1,256	1,473

Source: Estimates based on The Australian Government Treasury estimated the marginal excess burden of five major taxes (Cao et al, 2015).

*Cost per person is weighted by the share of males and females in the relevant cohort.

We therefore apply this value to each of the items of government spending. The distortion imposed by collecting taxes for public programs that serve early school leavers and the disengaged is averaged at around \$1,141 per early leaver per year and \$1,473 per disengaged young person per year.

6. Accumulated costs of lost opportunity

This section provides an assessment of the aggregated or total costs of the elements that were separately itemised in the previous section. They include mean annual unit costs associated with health, crime, earnings, taxes, income support payments and allowances, and the marginal excess burden associated with the collection of government taxes. Some of these costs are losses to the taxpayer (fiscal costs) while others relate to losses to the broader community (social costs).

In estimating the amounts which rely on projections over the long-term (working age lifetime) all amounts are expressed in present values at age 19 for early leavers and age 24 for the disengaged using a discount rate of 3.5 per cent. This means that lifetime cost profiles were extrapolated to age 64, using the total of all mean annual cost items, and then discounted back to a present value at age 19 or age 24 using a 3.5 per cent discount rate. This means all estimates are net present value (2014 prices) and represent lump sum values when an early leaver was aged 19 or a disengaged young person was aged 24. The costs are provided separately for early leavers and disengaged young people.

Fiscal and social costs of early school leavers

Table 6.1 summarises the baseline estimates of the annual and lifetime costs of early school leaving per person and per cohort. Fiscal and social costs are presented. Separate estimates are provided for each of the key areas of costs including income, health, crime, taxes, and welfare. The final estimates have been adjusted for the long-term costs discounted to present value. Figure 6.1 presents a summary of the totals.

Figure 6.1 Fiscal and social costs of early school leaving at net present value

	Early Leaver Annual (\$ Thousand)	Early Leaver Lifetime (\$ Thousand)	Per Cohort Annual (\$ Million)	Per Cohort Lifetime (\$ Billion)
Fiscal	8.4	334.6	315.3	12.6
Social	15.4	616.2	580.7	23.2

Table 6.1 Estimated baseline costs per person and per cohort for early school leavers at net present value

	Fiscal Cost			Social Cost		
	Male	Female	Person	Male	Female	Person
Annual cost per person (\$ Thousand)						
Gross income				15.2	12.5	14.3
TAX	6.9	3.3	5.8			
Welfare	1.9	3.4	2.4			
Crime (a)	0.1	0.0	0.1	0.6	0.1	0.4
Health (a)	0.1	0.1	0.1			
Marginal Excess Tax Burden				0.6	0.8	0.6
Total	9.1	6.8	8.4	16.4	13.4	15.4
Lifetime cost per person (\$ Thousand)						
Gross income				608.1	500.8	573.1
TAX	278.0	132.2	230.4			
Welfare	77.5	136.4	96.7			
Crime	3.3	0.3	2.3	25.4	2.4	17.9
Health	5.9	3.8	5.2			
Marginal Excess Tax Burden				21.0	34.0	25.2
Total	364.6	272.7	334.6	654.5	537.3	616.2
Annual cost per cohort (\$ Million)						
Gross income				386.0	154.0	540.0
TAX	176.5	40.7	217.1			
Welfare	49.2	41.9	91.1			
Crime	2.1	0.1	2.2	16.1	0.8	16.9
Health	3.7	1.2	4.9			
Marginal Excess Tax Burden				13.3	10.5	23.8
Total	231.5	83.8	315.3	415.5	165.2	580.7
Lifetime cost per cohort (\$ Billion)						
Gross income				15.4	6.2	21.6
TAX	7.1	1.6	8.7			
Welfare	2.0	1.7	3.6			
Crime	0.1	0.0	0.1	0.6	0.0	0.7
Health	0.1	0.0	0.2			
Marginal Excess Tax Burden				0.5	0.4	1.0
Total	9.3	3.4	12.6	16.6	6.6	23.2

(a) Not every single early school leaver will incur a cost on crime or public health, and the unit costs (the costs per person) are derived by dividing the total cohort cost by the number of early school leavers in the cohort.

The social losses from early leaving are very large. For each student who does not complete Year 12 or equivalent, compared to a student who does, the social impact is \$616,200 over the adult years (25-64), translating into an annual cost per early leaver of \$15,400. Most of this impact is attributable to lower earnings of early leavers across their working life, but there are also substantial economic effects in terms of crime and marginal tax burden. The social costs vary for males and females. The losses are higher for males (\$654,500) than for females (\$537,300) reflecting higher crime rates and higher earnings shortfalls compared to Year 12 completers.

Aggregated across a cohort of students aged 19 in any given year, the 37,692 early leavers in Australia contributed to a social loss of \$23.2 billion. This loss is a present value over the lifetime of the early leaver.

As shown in Table 6.1, the fiscal loss from early school leaving is also large. For each student who does not complete Year 12, compared to a student who does, the fiscal impact for the Australian taxpayer annually is \$8,400. This

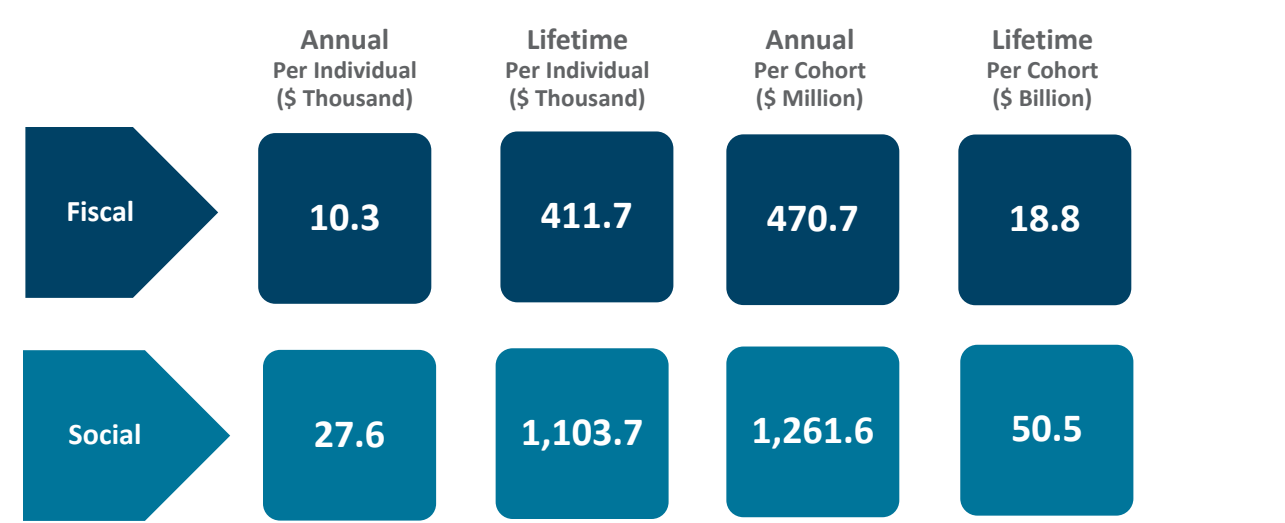
amounts to \$334,600 over a lifetime per early leaver. Again, the losses are greater for males (\$364,600) than for females (\$272,700). A large proportion of this loss is attributable to lost state tax payments in welfare and health, but there are also costs associated with the criminal justice system.

Across a cohort of early leavers, the fiscal loss to government amounts to \$315.3 million. Across the adult years, from 25-64 years of age, this amounts to \$12.6 billion.

Fiscal and social costs of disengaged young people

Table 6.2 lists the various estimates of losses for those who are long term disengaged both per person and per cohort. The costs are presented as annual losses and lifetime or long term losses. The final estimates have been discounted to net present value. Figure 6-2 presents a summary of the totals.

Figure 6.2 Fiscal and social costs of lifetime disengagement at net present value, excluding those mainly in care and child-rearing roles



To the taxpayer, each disengaged young person imposes a burden which is equivalent to \$411,700 as a current lump sum across their adult years. The full lifetime fiscal burden amounts to \$18.8 billion across the cohort of 45,724 disengaged youth in 2014.

From the social perspective, each disengaged young person imposes a lifetime burden which is equivalent to \$1,103,700 as a current lump sum. The full lifetime burden amounts to \$50.5 billion across the cohort of 45,724 disengaged young people nationally who remain disengaged across their lifetime.

Table 6.2 Estimated baseline costs per person and per cohort for disengaged young people at net present value (\$)

	Fiscal Cost			Social Cost		
	Male	Female	Total	Male	Female	Total
Annual cost per person (\$ Thousand)						
Gross income				35.3	23.1	26.5
TAX	11.4	5.2	6.9			
Welfare	4.3	2.7	3.2			
Crime (a)	0.1	0.0	0.0	0.6	0.1	0.2
Health (a)	0.2	0.1	0.1			
Marginal Excess Tax Burden				1.1	0.7	0.8
Total	16.0	8.0	10.3	37.0	23.8	27.6
Lifetime cost per person (\$ Thousand)						
Gross income				1,411.6	922.4	1,061.8
TAX	454.6	206.4	277.2			
Welfare	172.2	109.7	127.5			
Crime	3.3	0.3	1.2	25.4	2.4	9.0
Health	9.0	4.6	5.9			
Marginal Excess Tax Burden				44.6	27.8	32.6
Total	639.1	321.1	411.7	1,481.7	952.6	1,103.4
Annual cost per cohort (\$ Million)						
Gross income				459.8	753.9	1,213.8
TAX	148.1	168.7	316.8			
Welfare	56.1	89.7	145.8			
Crime	1.1	0.3	1.3	8.3	2.0	10.3
Health	2.9	3.8	6.7			
Marginal Excess Tax Burden				14.5	22.7	37.2
Total	208.2	262.5	470.7	482.6	778.6	1,261.3
Lifetime cost per cohort (\$ Billion)						
Gross income				18.4	30.2	48.6
TAX	5.9	6.7	12.7			
Welfare	2.2	3.6	5.8			
Crime	0.0	0.0	0.1	0.3	0.1	0.4
Health	0.1	0.2	0.3			
Marginal Excess Tax Burden				0.6	0.9	1.5
Total	8.3	10.5	18.8	19.3	31.2	50.5

(a) Not every single early school leaver will incur a cost on crime or public health, and the unit costs (the costs per person) are derived by dividing the total cohort cost by the number of disengaged persons in the cohort.

Annually, a disengaged young person is costing the community about \$27,600 from a social cost perspective. Much of this loss is driven by lost earnings which involve \$26,500. The annual loss does not capture the full loss.

All cohorts

It is important to remember that the numbers of lifetime early leavers and the disengaged that have been presented here are based on single-age cohorts from a single year. In aggregate looking at the adult population between 25 and 64 years of age, the numbers translate to approximately 1.8 million Australians in the working age population who across their lifetimes will largely not be engaged in full-time work and study. For early leaving, the numbers equate to about 1.5 million Australians of working age who will not attain Year 12 or equivalent qualifications across their lifetime.

Extrapolating the costs using the cost estimates for the 2014 cohorts, the numbers point to large losses in fiscal and social terms. For early leaving, the losses amount to just over \$900 billion in social costs and over \$500 billion in losses to the Australian government. Losses associated with disengagement are greater: over \$700 billion dollars in costs to the government and \$2.0 trillion dollars in social costs.

Sensitivity analysis

The aggregate costs in this chapter provide a full assessment of accumulated costs. In this step, lifetime profiles extrapolated to age 64 are discounted back to present value at age 19 for early leavers and at age 24 for the disengaged. Discounting is used to adjust projected future payments and costs to be in present values. The discount rate to do this was 3.5 per cent per annum which is the gap between the long term CPI and Beneficiary Living Cost Index set by the 2015-2016 Commonwealth Budget Paper (Commonwealth, 2016) at 2.5 per cent per annum and the discount rate of 6.0 per cent per annum used by the Department of Social Services Valuation Report (DSS, 2016) which was set to the value of the Commonwealth's defined benefit superannuation liabilities, and representing a longer term average of the 10 year government bond yield. However, there is no professional consensus on what discount rate should be used in the Australian Context and the appropriate adjustments for taxes and risk cannot be precisely estimated. Harrison (2010) proposed a base rate of 8 per cent, and testing over a range of 3 to 10 per cent in cost-benefit studies.

Table 6.3 present the results of sensitivity analyses using low and high discount scenarios proposed by Harrison (2010). The results indicate the possible range of the NPV fiscal and social cost estimates presented in this study. For example, the total lifetime social cost for a disengaged young person could be ranged between \$700,000 and \$1.8million depending on whether the low or the high level of discount rate is used to estimate what may occur in the projected future 40 years.

Table 6.3 Sensitivity analysis of lifetime cost estimates

		NPV Baseline	Scenario A Low discount rate	Scenario B High discount rate
Assumptions	Long term indexation (%)	2.5	2.5	2.5
	Long term discount rate (%)	6.0	3.0	10.0
Early school leavers	Fiscal cost per person (\$ thousand)	334.6	550.4	205.0
	Fiscal cost per cohort (\$ billion)	12.6	20.7	7.7
	Social cost per person (\$ thousand)	616.2	1,013.6	377.5
	Social cost per cohort (\$ billion)	23.2	38.2	14.2
Disengaged young people	Fiscal cost per person (\$ thousand)	412.9	679.2	252.9
	Fiscal cost per cohort (\$ billion)	18.9	31.1	11.6
	Social cost per person (\$ thousand)	1,112.9	1,830.4	681.7
	Social cost per cohort (\$ billion)	50.9	83.7	31.2

The approach taken in the current work applied a constant average across all years in the extrapolation of lifetime costs. It would be preferable to calculate lifetime costs recognising that costs may vary at different stages of life for both early leavers and the disengaged. However, this was not possible to do because of the absence of age specific data for many of the costs. Although some cost items could be estimated by age band and gender, such as personal income, tax revenue and welfare payments, other cost items could only be estimated as an average across a lifetime, such as costs on crime and law enforcement and public health.

Table 6.4 presents a simulation of the differences between using age-varying estimates and age constant estimates for those domains for which it is possible to derive estimates using both methods. The comparison shows that generally differences are fairly small and the estimates using the age constant average are slightly higher, though not in all cases.

Table 6.4 Simulating the differences between using age-varying estimates and constant annual mean estimates

Domain	Estimation method	Early school leaver			Disengaged		
		Male	Female	Person	Male	Female	Person
	Per person (\$ thousand)						
Personal income	Age varying	580	511	558	1,369	901	1,034
	Age constant	608	501	573	1,412	922	1,062
Tax revenue	Age varying	259	132	218	433	204	269
	Age constant	278	132	230	455	206	277
Welfare payments	Age varying	76	156	102	169	113	129
	Age constant	77	136	97	172	110	128
	Per cohort (\$ billion)						
Personal income	Age varying	14.7	6.3	21.0	17.8	29.4	47.3
	Age constant	15.4	6.2	21.6	18.4	30.2	48.6
Tax revenue	Age varying	6.6	1.6	8.2	5.6	6.7	12.3
	Age constant	7.1	1.6	8.7	5.9	6.7	12.7
Welfare payments	Age varying	1.9	1.9	3.8	2.2	3.7	5.9
	Age constant	2.0	1.7	3.6	2.2	3.6	5.8

7. Conclusion

A recent estimate indicated that up to one quarter of young Australians aged 24 were disconnected from education and training and at risk of long term marginalisation from the workforce (Lamb et al., 2015). The current study has found that over 13 per cent of young people will experience this long term, for more than half of their adult life, struggling to find work and unable to find their way back into education.

Many never get to hold a full-time job or find their way into education and training programs that can help bridge them into employment. Many of those who become marginalised are early school leavers who never take up and complete training or study of an equivalent standing. They make up almost 45 per cent of the long-term disengaged, despite being only 26 per cent of school leavers. Early school leaving is a major predictor of marginalisation.

Both early school leaving and disengagement from education and work carry with them long term costs to our nation. We estimated the costs from both fiscal and social perspectives based on the average gaps in outcomes with the current cohorts of Year 12 completers and those in full-time work or study. To the taxpayer, each long term early school leaver imposes a burden which is equivalent to \$334,600 as a current lump sum. The annual fiscal burden amounts to \$315.3 million across the cohort of 37,692 early leavers in 2014 who will remain without Year 12 or equivalent qualifications across their adult lives. The full lifetime cost to the taxpayer of this cohort will be \$12.6 billion. For each cohort of disengaged young persons, which includes all those aged 24 who were not in full-time work and study and will remain in this state for much of their working lives, the annual cost to the Australian taxpayer is \$-471 million for the whole cohort on an annual basis or \$412,900 per disengaged young person. The lifetime cost per cohort accumulates to \$18.8 billion.

From the social perspective, each early leaver imposes a lump sum burden on the Australian community of \$616,200. This equates to \$580.7 million annually for the cohort of long term early leavers. The full lifetime burden amounts to \$23.2 billion across the cohort of early leavers in 2014 who remain lifetime early leavers. The figures are larger again for the disengaged. Each disengaged young person at age 24 who remains disengaged for much of their adult life costs the Australian community in social terms about \$27,600 annually, and \$1,103,700 over their lifetime. This amounts to \$1.26 billion for the whole cohort annually and \$50.5 billion for the full lifetime cost for the cohort. These numbers show how large the lost opportunity is by failing to improve outcomes by failing to invest in future generations.

The costs of the lost opportunity are enormous. But, having said this, it is important to note that the estimates provided in this study are very conservative, that is, the actual losses to the nation from early leaving and disengagement are likely to be much larger than outlined here. Our estimates rely on many associations between youth behaviours and their economic consequences. These associations are derived from the best available data and research evidence. However, it is likely that the full economic cost is significantly above the amount reported here for a number of reasons:

- First, the analysis considered only the most direct costs associated with early leaving and disengagement. The failure to adequately prepare Australia's children for lifelong learning and work has a destabilising effect on society, and results in numerous second-order and indirect cost effects which we have omitted such as family repercussions, charitable efforts, and intergenerational impacts, for example.

- Second, it does not include the immediate fiscal and social costs of early school leavers before they turn 25 years. In US studies looking at the same cohorts, amounts are usually estimated for the immediate costs of early leavers and disconnected young people during youth—16-24 years of age—as well as the future costs during the adult working age years—25-64 years of age. We have not included the immediate costs in this study preferring to focus on the future costs only. Students dropping out of school early can impose immediate cost to the government and the community. Although the immediate costs to the government and community are relatively small compared to future long term cost in their adulthood, they are still significant. Belfield et al (2012) estimated that on average, costs incurred up to age 24 can be as much as one-third of the costs incurred after that age.
- Third, the calculations for each of the components were deliberately based on conservative numbers of early leavers and disengaged. For example, to be included as disengaged individuals needed to be identified as not likely to be in full-time work or study for more than half of their adult life. Many may be inactive for a large number of years and yet still not be treated as disengaged. Similarly, early leavers who later complete may be without equivalent qualifications for long periods of time and yet are treated here as Year 12 completers.
- Fourth, data were not available to calculate some important parameters, such as losses due to productivity spillovers. Economists have long argued that human capital may generate significant spillovers pointing to the role that education and qualifications play in enhancing labour productivity through aggregate peer effects. US adjustments for spillovers are sometimes in the order of 10-36 per cent of earnings (Belfield, Levin and Rosen, 2012).
- Finally, our calculations are based on data for current cohorts of Year 12 completers, early school leavers, disengaged young people and those actively engaged in work and study. Future cohorts of young people may face even greater economic pressures, demographic and economic evidence suggests growing adversity for those least prepared for adulthood. From the taxpayer perspective, both health costs and incarceration costs are likely to escalate in the future.

The costs outlined in this report, of having many young Australians grow up without the skills needed to thrive in the twenty-first century, emphasises the need for educational reform and the extent to which it will burden the nation if we do nothing. Every student who fails to complete Year 12 or every young person who is not able to actively engage in work or study after they leave school produces a direct cost on Australian taxpayers through lower tax revenues coupled with greater social costs, such as higher dependence on public health and hospitals and criminal incarceration.

A reduction in the numbers of disengaged by just 25 per cent would see savings to the taxpayer of \$4.7 billion for each cohort and savings to society of \$12.7 billion. So, a modest target of improvement would lead to quite large returns to the community.

While pursuing greater opportunity for those who are missing out is an important goal, it is also important to recognise that it is not realistic to expect 100 per cent success. There are some young people who for good reasons will likely remain marginally attached to the work force and to study, particularly those with significant health conditions or disabilities. However, an understanding of the groups of young people who leave school early or are disengaged from work and study shows that for a number of young people it is the combination of poor schooling, family disadvantage, and location that has weakened their access to opportunities. They remain part of Australia's lost opportunity and they remain so at huge cost to the country.

In the determination of how much economic potential is being lost it is equally vital to identify the policies that might harness the lost potential. It remains an important task to look at what strategies are needed to transform our schools and make our education system work well for all.

References

- Audas R. & Willms J. (2001) *Engagement and dropping out of school: A life-course perspective*. Hull, Quebec: Applied Research Branch, Strategic Policy, Human Resources Development Canada.
- Australian Bureau of Statistics (ABS) (2011) *State and Territory Statistical Indicators, 2011. Cat. No. 1367.0*. ABS: Canberra.
- ABS (2012) *Australian Health Survey: First Results, 2011-2012. Cat. No. 4364.0.55.001*. ABS: Canberra.
- ABS (2013) *Population Projections, Australia, 2012 (base) to 2101, Cat No. 3222.0*, ABS: Canberra.
- ABS (2015a) *Prisoners in Australia, 2015. Cat. No. 4517.0*, ABS: Canberra.
- ABS (2015b) *Recorded Crime - Offenders, 2013-14. Cat. No. 4519.0*, ABS: Canberra.
- ABS (2015c) *National Health Survey, First-Results, 2014-15, Cat. No. 4364.0.55.001*, ABS: Canberra.
- ABS (2016a) *Patient Experiences in Australia: Summary of Findings, 2014-15. Cat. No. 48390DO007_201415*. ABS: Canberra.
- ABS (2016b) *Recorded Crime - Offenders, 2014-15. Cat. No. 4519.0*, ABS: Canberra.
- ABS (2016c) *Education and Work, Australia, May 2016. Cat. No. 6227.0*, ABS: Canberra.
- Australian Institute of Health and Welfare (AIHW) (2009) *The health of Australia's prisoners 2009. Cat. No. PHE 123*. AIHW: Canberra
- AIHW (2015a) *Australia's welfare 2015. Australia's welfare series no. 12. Cat. No. AUS 189*. AIHW: Canberra.
- AIHW (2015b) *The health of Australia's prisoners 2015. Cat. No. PHE 207*. AIHW: Canberra.
- AIHW (2015c) *Health expenditure Australia 2013-14. Cat. No. HWE 63*. AIHW: Canberra.
- AIHW (2016a) *Admitted patient care 2014-15: Australian hospital statistics. Health services series no. 68. Cat. No. HSE 172*. AIHW: Canberra.
- AIHW (2016b) *Australia's hospitals 2014-15 at a glance. Health services series no. 70. Cat. No. HSE 175*. AIHW: Canberra.
- AIHW (2016c) *Australia's health 2016. Australia's health no. 15. Cat. No. AUS 199*. AIHW: Canberra.
- Australian Institute of Criminology (AIC) (2003) *Drugs and Crime: a Study of Incarcerated Male Offenders, DUCO Male Survey, 2001 [Computer File]*, Australian Institute of Criminology, Research and Public Policy Series No. 52.
- AIC (2013) *Homicide in Australia: 2010-11 to 2011-12: National Homicide Monitoring Program Report*, AIC Reports Monitoring Reports 23, Australian Institute of Criminology.
- AIC (2015) *Drug Use Monitoring in Australia: 2013-14 Report on Drug Use Among Police Detainees*. AIC Reports Monitoring Reports 27.
- Belfield C. (2008) *The Cost of Early School-leaving and School Failure*. Economics Department. Queens College, City University of New York, June 2008
- Belfield C. (2009) *High School Dropouts and the Economic Losses from Juvenile Crime in California*. California Dropout Research Project Report #16, September 2009.
- Belfield C. R. & Levin, H. (2007) *The Price We Pay: The Economic and Social Costs of Inadequate Education*. Brookings Institution: Washington, DC.

- Belfield C., Levin H., Rosen R. (2012) *The Economic Value of Opportunity Youth*, Published by Corporation for National Community Service, White House Council for Community Solutions, January 2012.
- Blandy R. J. & Goldsworthy A. J. (1975) 'Private Returns to Education in South Australia', in J. R. Niland and J. E. Isaacs, *Australian Labour Economics Readings*, Sun Books, Melbourne, 1975.
- Borland J., Dawkins P., Johnson D. & Williams R. (2000) *Returns to Investment in Higher Education. Report No. 1*, Melbourne Institute, University of Melbourne. (<https://www.melbourneinstitute.com/downloads/reports/rihe.pdf>.)
- Bowlby G. & McMullen K. (2005) "Provincial Dropout rates - Trends and Consequences". *Education Matters*, 2(4) Statistics Canada Catalogue no. 81-004-XIE.
- Bushnik T., Barr-Telford L., & Bussière P. (2004) *In and out of high school: First results from the second cycle of the Youth in Transition Survey, 2002* (Education, Skills & Learning Research Paper) Ottawa, ON: Statistics Canada.
- Cadence Economics (2016) *The Graduate Effect: Higher Education Spillovers to the Australian Workforce*. Report For Universities Australia, May 2016.
- Carroll S. and Erkut E. (2009) *The Benefits to Taxpayers from Students' Educational Attainment*. Santa Monica, CA: RAND Education.
- Cao L., Hosking A., Kouparitsas M., Mullaly D., Rimmer X., Shi., Stark, W & Wende, S (2015) *Understanding the Economy-Wide Efficiency and Incidence of Major Australian Taxes*. Treasury Working Paper. Commonwealth of Australia 2015, April 2015.
- Chapman B. (2002) "Unemployment Duration, Schooling And Property Crime", Paper presented at the *Role of Schools in Crime Prevention Conference*, convened by the Australian Institute of Criminology in conjunction with the Department of Education, Employment and Training, Victoria, and Crime Prevention Victoria and held in Melbourne, 30 September – 1 October 2002.
- Chesters J. & Watson L. (2014) "Returns to education for those returning to education: evidence from Australia", *Studies in Higher Education*, 2014, Vol.39, No.9, 1634-1648.
- Clarke P. & Leigh A. (2011) "Death, dollars and degrees: socioeconomic status and longevity in Australia". *Economic Papers*, 30(3):348–55.
- Commonwealth Budget Paper (2016) *2015-2016 Commonwealth Budget Paper*, Budget one, Budget Statement 1.
- Cutler D. & Lleras-Muney A. (2007) *Education and Health*, Policy Brief no. 9, National Poverty Centre, University of Michigan.
- Cutler D. & Lleras-Muney A. (2010) "Understanding Differences in Health Behaviours by Education". *Journal of Health Economics*, 29(1), 1–28.
- Daly, A., Lewis, P., Corliss, M. and Heaslip, T. (2015) The Private Rate of Return to a University Degree in Australia. *Australian Journal of Education* 2015, Vol. 59(1) 97–112
- Deloitte Access Economics (2012) *The Socio-Economic Benefits of Investing in the Prevention of Early School Leaving*. Barton, Act: Deloitte Access Economics.
- The Australian Government Department of Social Services (DSS) (2016) *Valuation Report 30 June 2015 Baseline Valuation*. The Australian Government Department of Social Services (<https://www.dss.gov.au/review-of-australias-welfare-system/australian-priority-investment-approach-to-welfare/baseline-valuation-report>), accessed Dec 2016
- Dupéré V., Leventhal T., Dion E., Crosnoe R., Archambault I., & Janosz M. (2015) "Stressors and turning points in high school and dropout: A stress process, life course framework". *Review of Educational Research*, 85, 591-629.

- Forbes M., Barker A. & Turner S. (2010) *The Effects of Education and Health on Wages and Productivity*, Productivity Commission Staff Working Paper, Melbourne, March 2010.
- Harrison M. (2010) *Valuing the Future: the social discount rate in cost-benefit analysis*, Visiting Researcher Paper, Productivity Commission, Canberra.
- Kaplan R., Spittel M. & David D. (Eds) (2015) *Population Health: Behavioural and Social Science Insights*. AHRQ Publication No. 15-0002. Rockville, MD: Agency for Healthcare Research and Quality and Office of Behavioural and Social Sciences Research, National Institutes of Health; July 2015.
- King A. (1999) *The Cost to Australia of Early School-Leaving*. A report prepared by the National Centre for Social and Economic Modelling for the Dusseldorp Skills Forum. Accessible at <http://www.dsf.org.au/papers/50.htm>
- Lamb S. & Mason K. (2008) *How young people are faring 2008*. South Melbourne: Foundation for Young Australians and Education Foundation, 2008.
- Lamb S., Walstab A., Teese R., Vickers M., & Rumberger R. W. (2004) *Staying on at School: Improving Student Retention in Australia*. Brisbane: Queensland Department of Education and the Arts.
- Lamb S., Jackson J., Walstab A. & Huo S. (2015) *Educational opportunity in Australia 2015: Who succeeds and who misses out*, Centre for International Research on Education Systems, Victoria University, for the Mitchell Institute, Melbourne: Mitchell Institute.
- Leigh A. (2008) "Returns to Education in Australia", *Economic Papers* Vol. 27 No. 3 September 2008 pp. 233-249.
- Mackenbach J. P. (2015) *Socioeconomic inequalities in health in high-income countries: the facts and the options*. In: Oxford textbook of global public health. Vol. 1. 6th edition. Oxford: Oxford University Press.
- Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) (2008) *Melbourne Declaration on Educational Goals for Young Australians*. Melbourne: Ministerial Council on Education, Employment, Training and Youth Affairs, December 2008.
- Miller P. W. (1982) "The Rate of Return to Education: Evidence from the 1976 Census". *The Australian Economic Review*. Volume 15, Issue 3, Pages 23–32.
- Moretti E. (2005) *Does Education Reduce Participation in Criminal Activities?* Department of Economics, UC Berkeley, September, 2005.
- Norton, A. 2012, *Graduate Winners: Assessing the public and private benefits of higher education*, Grattan Institute.
- OECD (2006) *Measuring the Effects of Education on Health and Civic Engagement: Proceedings of the Copenhagen Symposium* <http://www.oecd.org/edu/innovation-education/measuringtheeffectsofeducationonhealthandcivicengagement.htm>
- OECD (2016) *Education at a Glance 2016: OECD Indicators*, OECD Publishing, Paris. <http://dx.doi.org/10.187/eag-2016-en>
- Pech J., McNevin A. and Nelms L. (2009) *Young people with poor labour force attachment: a survey of concepts, data and previous research*. Research report no. 11/09. Canberra: Australian Fair Pay Commission.
- Psacharopoulos G. (2007) *The Costs of School Failure – A Feasibility Study*. Analytical Report for the European Commission, prepared by the European Expert Network on Economics of Education, June 2007.
- Rorris A. (2016) *The Price of Failure and Reward for Success*. Downloaded from <http://www.aeufederal.org.au/application/files/3814/6172/5096/Rorris2016.pdf>

- SCRGSP (Steering Committee for the Review of Government Service Provision) 2017, *Report on Government Services 2017*, Productivity Commission, Canberra.
- Sinning M. (2014) *How much is it worth? New estimates of private returns to university education in Australia*. University of Queensland. file:///C:/Users/e5105432/Downloads/SQ15-000059AttachmentB%20(3).pdf
- Suhrcke M. & de Paz Nieves C. (2011) *The impact of health and health behaviours on educational outcomes in high income countries: a review of the evidence*. Copenhagen, WHO Regional Office for Europe.
- Trostel P. (2010) "The fiscal impacts of college attainment. *Research in Higher Education*, 51, 220-247.
- Tseng Y., & Wilkins R. (2003) "Reliance on Income Support in Australia: Prevalence and Persistence", *The Economic Record*, vol. 79, issue 245, pages 196-217.
- Wei H. (2014) *Measuring Economic Returns to Post-school Education in Australia: Evidence from the 1981-2011 Australian Censuses* (Accessed via <https://www.cese.nsw.gov.au/publications-filter/report-measuring-economic-returns-to-post-school-education-in-australia-evidence-from-the-1981-2011-australian-censuses>)
- Weidmann, B. and Norton, A. (2012) *Detailed Financial Analysis for Graduate Winners*, Grattan Institute.
- WestEd (2014) *How Arizona's Dropout Crisis Affects Communities, Creates Economic Losses for the State of Arizona: A Project of WestEd*. https://www.wested.org/wp-content/files_mf/1403888261AZMRT_FullReport.pdf.
- Wilkin R. (2015) *Measuring Income Inequality in Australia*. *Australian Economic Review*, 48: 93–102. doi:10.1111/1467-8462.12098.
- Zimmerman E. & Woolf S. H. (2014) *Understanding the relationship between education and health. Discussion Paper*. Washington, DC: Institute of Medicine; 2014.



Mitchell Institute
300 Queen Street, Melbourne, Victoria 3000
+61 3 9919 1820
info@mitchellinstitute.org.au
mitchellinstitute.org.au