Providing Pathways Guidance to Young Veterans for a Successful Transition to Civilian Workforce

FINAL REPORT

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1. Introduction

The Department of Veterans' Affairs (DVA) is the primary service delivery agency for developing and implementing programs that assist veteran and defence force communities, including vocational and psychosocial rehabilitation of Australian Defence Force (ADF) leavers. In the past decades, the client base of the DVA has changed drastically, with veterans becoming increasingly younger. Many young veterans enter civilian life with a long-term health condition or disability. It is well known that the labour market can be a very difficult place for such people; the reasons range from clearly identifiable ones (for example the lack of suitable training) to reasons that are very hard to underpin (for example discrimination against specific groups of people). People with a long-term health condition or a disability are sure to face these adverse circumstances when they try to enter employment. This project has been designed to provide valuable information to young veterans entering the civilian labour force. Its focus is on first identifying the employment hurdles that young veterans with long-term health conditions or a disability encounter, and second, providing them with concrete guidance about overcoming the hurdles.

This report generates new evidence about education, employment, and overall life quality outcomes. Its aim is to help young veterans to make informed choices upon their civilian workforce entry. The objective is to help them overcome (or at least reduce) the disadvantage that their long-term health condition or disability presents. The information generated in this report is targeted, in the sense that it is designed to allow the DVA to provide young veterans with guidance on the most suitable education pathways upon their transition into civilian employment. Such pathways depend on their individual health condition or disability, and on their individual identifiable characteristics.

This report seeks to provide information on a number of critical questions:

What type of civilian life can young veterans expect upon leaving the ADF?

What sort of labour market outcomes and life outcomes await them?

To what degree may these outcomes be affected by injuries and disabilities incurred during ADF service?

How lasting are the negative effects of such injuries in their civilian life?

Which injuries and (or) disabilities lead to the most lasting negative effects in their civilian life? Can rehabilitation programs, through the provision of further training, lead to positive outcomes? What benefits can be expected from such rehabilitation programs as are available through the Military Rehabilitation and Compensation Act 2004 (MRCA)?

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Can we improve our understanding on which pathways may lead to better outcomes, by utilising information on a young veteran's individual circumstances?

Can we identify the optimal types of training, in terms of level and field of study, for young veterans who transition into civilian life?

The main objective of this report is to inform rehabilitation programs that are carried out by the DVA. The aim is to improve the expected outcomes for young veterans transitioning into civilian life. This research provides the DVA with a comprehensive understanding of the life and labour market outcomes that such veterans can expect to achieve as civilian workers. Our analysis focuses on the impact and the lasting effects of disability and work-limiting injuries. It investigates the extent to which vocational rehabilitation, in the form of additional training, may improve the future civilian life and labour market outcomes that are reasonably expected by DVA clients. It will highlight the pathways that are associated with improved outcomes for specific demographic groups, and the health circumstances of DVA clients, and it will provide the DVA with insights as to the types of rehabilitation that are most suited to maximise the improvements in outcomes.

The report focuses on veterans who are DVA clients and who are transitioning or are about to transition into civilian life. The focus is on younger veterans who are eligible under the MRCA, the current legislation administered by DVA for veterans who served in the ADF on or after 1 July 2004. The report documents their expected general civilian life outcomes and specific labour market outcomes. To achieve this, the report utilises multivariate regression methods to estimate the extent to which the Australian labour market penalises the types of disabilities and work-limiting injuries (including mental health) from which DVA clients suffer, given their demographic characteristics and work experience with the ADF. In addition, the report identifies pathways—notably related to the acquisition of formal training through Vocational Education Training (VET) and university—that could be linked to improved outcomes, given the DVA clients' circumstances. Aiming to inform rehabilitation programs, we estimate and rank the expected benefits of additional training by level and field of education, according to different types of DVA clients, who are identified by the nature of their injuries and (or) disabilities, as well as their demographic and administrative characteristics (for example the type of support received, the type of service given and so on).

How does the report answer the core questions?

The report is based on the general labour market and education premise that disability often introduces additional hurdles in the employment context, and that training and education may alleviate the negative impact of some of these hurdles. The report begins by providing information on how the labour market may penalise health conditions. Indeed, we know that the labour market often penalises health conditions, but we also know that it does so in a non-uniform way, depending on many factors such as industry, occupation, and education level. In other words, there are industries and (or) occupations and levels and (or) fields of education (and combinations of these) which lead to a greater or lesser penalty experienced by people with health conditions or disability. This depends on the type of condition or disability—whether these conditions are chronic or not, physical or mental, and so on. Put simply, the report encompasses the idea that the workplace and occupation-specific impacts will be different for different types of disability; and that different types and fields of education and training will have different impacts on the resulting work limitation. This first stage of the research enables us to give a representation of the environment that DVA clients are likely to face when transitioning to the civilian labour market. We do this in a comprehensive way, distinguishing outcomes by type of health conditions, and levels and fields of education.

Having set up this first-stage information, we can provide some guidance as to what level and field of qualification would best suit different types of DVA clients. The way that we develop this is by using scenarios which reflect and encompass the diversity of the DVA clients in terms of their health condition or disability, their past or present type of service (for example active member versus reservists versus veterans; medically discharged versus not medically discharged), the type of DVA clients (people who claim incapacity payments, permanent impairment payments, both, or neither). We then look at the expected labour market and life satisfaction outcomes of these different types of people and investigate how these outcomes differ for various investments in education.

These scenarios can inform the DVA about:

- (i) whether it is worth using education as a rehabilitation tool;
- (ii) the types of people expected to receive the best returns from their rehabilitation;
- (iii) the level of education that yields the highest returns; and
- (iv) the fields of education that offer the best outcomes for given characteristics of the DVA clients.

The report relies principally on (i) carrying out statistical regressions that utilise broader populationbased information contained in large civilian datasets; and on (ii) the choice of relevant scenarios, customising the results to the more specific and targeted case of DVA clients.

The data sources used for the report

The report uses and combines information from three major national data sources; these are an administrative dataset, and two national surveys.

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- The administrative data are collected by the DVA, who record information on their DVA clients who made a claim under the MRCA.
- The Student Outcomes Survey (SOS) is a large-scale national survey administered by the National Centre for Vocational Education Research (NCVER).
- The Household Income and Labour Dynamics in Australia (HILDA) is the most comprehensive Australian household and employment longitudinal survey conducted by the Melbourne Institute on behalf of the Department of Social Services.

Both the SOS and the HILDA datasets are nationally representative, large-sample collections and mainly record information on civilians. The SOS contains information on students who graduated or who completed at least one module of their Vocational Education and Training (VET) course. It provides information on individuals before and after training, including perceived and actual outcomes of training, and satisfaction with the course and the field of study. It also records reported long-term health conditions or disability—with some information on the nature of these conditions—for all participating students. Our report uses all 10 waves of the SOS that are currently available. Each SOS data collection includes between 50,000 and 100,000 observations, and alternates between a smaller and a larger collection every other year. The HILDA survey provides continuous information on labour market and general life outcomes of respondents, including precise information on education, work-limiting injuries, disability, and mental illness. The HILDA data are much richer in information on individual and household characteristics. Unlike the SOS, which samples different individuals every year (a repeated cross-section data collection), the HILDA survey follows the same people over time (a longitudinal data collection). The HILDA survey presently provides annual observations for the same individuals over time (currently, up to 13 observations per individual), which enables us to examine the history of each individual and allows us to analyse the potentially longer-lasting impacts of injuries and disabilities and how such impacts may be influenced by education and training.

The method used in the report

We estimate various outcomes of interest on the civilian population, using the nationally representative datasets mentioned above. The outcomes investigated are, respectively:

- (i) labour market participation;
- (ii) employment;
- (iii) weekly wage;
- (iv) life and job satisfaction.

The estimations provide a quantifiable measure of the relationship between long-term health conditions and (or) disabilities and labour market outcomes. They also allow us to quantify the extent to which formal education (in terms of level and field of education) can be expected to alter labour market outcomes, and the extent to which we can expect that investing in education may alleviate the negative effects of long-term health conditions. This first stage of the research gives us a clear and current picture for the general civilian population of how the Australian labour market penalises health conditions and rewards education.

In the second stage of the analysis, we develop scenarios which represent subgroups of the DVA clients' population. We customise the estimates obtained for the civilian population to fit the characteristics of the DVA client population. Taking into account the fact that the DVA client population is largely heterogeneous, we define subgroups around a set of pertinent individual (DVA client) key characteristics. We then use the (general population-based) responsiveness to education in order to project how different educational pathways can be expected to change labour market and other life outcomes for DVA young veterans when they begin civilian life. The core objective is to determine what improvements could be expected from enhancing a young veteran's formal qualifications before they enter the civilian labour market. An alternative method to scenario-building would have been to implement a 'matching' methodology between the HILDA observation units and the DVA clients. However, the DVA administrative data do not provide sufficient detail for this method to be (statistically) useful.¹

The key findings of the report

The key findings of the report fall into three main categories. First, we discover by how much the Australian labour market penalises the presence of long-term health conditions and disabilities. Second, we find out the extent to which education and training help to alleviate the negative impact of long-term health conditions and disabilities. Third, we combine civilian and DVA clients by

¹ In more technical language, using the estimated parameters of the models on the civilian population, we compute expected labour market and life outcomes for DVA clients who share a number of individual characteristics of interest. This is to provide these outcomes for identifiable subgroups of the DVA client population, as an attempt to provide for the heterogeneity of DVA clients.

The scenarios consist of computing mean observed values for subgroups of the DVA clients, based on a number of observable characteristics such as type and number of health conditions, gender, age, state of residence, type of DVA payments received (incapacity payment, permanent impairment, both, none), and type of service (active ADF member, reservist, former member) at the time the health condition occurred. We use the mean values of the variables which are common across the HILDA and SOS estimation results to derive predicted outcomes for these subgroups.

scenario subgroups, and derive young-veteran predictions. The remainder of this introduction summarises our key findings and sets out the structure of the report.

How much are health conditions penalised in the Australian labour market?

We find that the penalties can be considerable and are not evenly distributed across all types of disabilities and all labour market outcomes. Distinguishing between mental and physical health conditions, we find that mental health conditions (whether they are combined with physical health conditions or not) incur larger penalties than physical health conditions do on their own.

• Mental health conditions are penalised in the labour market more than physical health conditions

The biggest hurdle faced by people with long-term health conditions or disability is that of labour market participation (that is being available and looking for work, as opposed to being 'Not in the Labour Force'). The second biggest hurdle is that of getting a job (that is, whether a person who is available and looking for a job actually gets one). As one would expect, we find that getting a job from the state of 'Not in the Labour Force' is less likely than it is for someone who reports being available and looking for work to get a job. We find that people who live with a combination of mental and physical health conditions are, on average, almost 10 percent less likely to participate in the labour force because of their health condition. Once they do participate, they experience a further 1.4 percent penalty in terms of their probability of getting a job. People who suffer from a mental health condition only experience a 4 percent lower probability of participating as a direct consequence of their health condition. Once they decide to participate, their probability of getting a job is 1.4 percent lower than for people without a health condition. In contrast, people who have a physical health condition are 1.2 percent less likely to participate in the labour force as a direct consequence of their health condition, and for those who have decided to participate, there is no further penalty from their health condition in terms of their probability of getting a job.

• Long-term health conditions create hurdles firstly in labour market participation and then in getting a job, with further penalty if the person has a combination of mental and physical health conditions

Weekly wages are an important indicator of labour market success, as they are a composite of total hours worked and the hourly wage rate. When compared to the weekly wages of people who do not report any health conditions, we find large weekly wage penalties (7.7 percent lower wages) associated with mental health conditions, and even larger penalties (11 percent lower wages) for combined mental and physical health conditions. People with only physical health conditions seem to suffer weekly wage penalties; indeed, counter intuitively, they appear to have slightly higher weekly wages than their comparators without a health condition. Intuition is affirmed when we consider that people with physical health conditions who participate and find employment are a self-selected group with motivation and productivity that are likely to be above those of the average person with a physical health condition.

• Largest weekly wage penalties are suffered if the person has a combination of mental and physical health conditions

Mental health and combinations of mental and physical health conditions lead to significantly lower life and job satisfaction. This is to a greater extent than for physical health conditions.

The analysis of the lasting effects of health conditions shows that people with chronic conditions, especially severe ones, experience worse labour market outcomes. The penalties are very long-lasting. For example more than 10 years after the onset of a chronic and severe condition, the probability of participation remains 35 percent lower than for a counterpart without a health condition. This serves to highlight the finding that those who reported one-off health conditions recover quickly after their initial shock, and they can expect that their initial poor labour market outcomes will have gone within a couple of years.

• The overall picture of labour market and health conditions is one of severe penalties, more so in the case of mental health, and especially for people faced with severe and chronic conditions.

To what extent can education help to reduce the negative impact of health conditions on individual labour market outcomes?

What is the role of education in alleviating the labour market penalties associated with long-term health conditions and disability? The most relevant avenue for influencing the labour market outcomes of young veterans as they enter civilian life is Vocational Education and Training (VET). VET is far more flexible and diversified than university education; participation in it presents fewer barriers; its delivery is much more flexible; its content is labour-market oriented; and finally, its cost

in terms of time and money is much lower than that of a university education. The report focuses on VET, but we also examine the impact of university education on labour market outcomes.

The effect of education on labour market outcomes is largely beneficial. Its impact is mostly felt at the participation stage and on the level of weekly wages, rather than on whether someone who is looking for work can get a job. This distinction is, in part, due to the fact that employment rates were quite high in Australia in the period covered by the data. In an economic environment with higher unemployment rates we would expect to find that education still produces a beneficial effect on the probability of getting a job.

A university degree leads to an improvement of 5.5 percent in the participation rate, compared to those with education to Year 12 or below. Being a university graduate has a minimal effect on the probability of getting a job, once we control for its effect on being available and looking for a job (that is, on being a labour market participant). Once in work, education has a big impact on weekly wages, with university-educated people bringing home almost 55 percent higher wages than their counterparts educated to Year 12 or below.

People with VET certificates and diplomas have a 3 percent higher probability of participating in the labour force than their counterparts educated to Year 12 or below. VET education is associated with significantly higher weekly wages, but not as high as for people with university degrees. A certificate is associated with a weekly wage that is almost 19 percent higher than for those who are educated to Year 12 or below; a diploma is associated with a 25 percent higher wage.

Once we have controlled for all individual characteristics, we find that post-school education does not have a statistically significant effect on life satisfaction or job satisfaction.

We find that some fields of education lead to significantly improved labour market outcomes. The improvement is not uniformly spread across all labour market outcomes. For example using Natural and Physical Science as the reference category, Medicine and Management, and Commerce are found to fare better in terms of all labour market outcomes investigated (participation, employment, and wages). Education and other Health-related fields (for example nursing) are found to have higher participation and employment, but not higher wages. Engineering has higher wages but not greater employment or participation probabilities; and, perhaps contrary to common sense, IT degrees have lower participation and employment probabilities, but significantly higher weekly wages than the reference group.

Combining civilian and DVA evidence to derive young veteran predictions

The report uses the estimates derived from the analysis of the civilian data on the expected impact of health conditions and of formal qualifications on labour market outcomes. These are wellinformed estimates that represent what happens, on average, to workers in Australia. A major contribution of this report is to utilise the diversity in our data to derive estimates that are relevant to the circumstances and characteristics of current DVA clients. Recall that the objective that underpins this report is to gain a deeper understanding of the expected outcomes from vocational rehabilitation policies that enable DVA clients either to update their present qualifications, or to acquire new ones. We define a number of relevant scenarios of DVA clients (defined by their individual characteristics as reported in the DVA administrative data relating to MRCA clients) to see how they are likely to fare in the civilian labour market, based on the various levels of education that they may attain before moving to a civilian life.

The report groups DVA clients in the following scenario groups and compares their predicted labour market outcomes:

Groups of DVA clients based on the type of DVA compensation payments received under the MRCA: Comparisons between DVA clients who only had (so far) a condition claimed with the DVA (accepted or not); DVA clients who have received or currently receive Incapacity payments; DVA clients who have received Permanent Impairment payments; and DVA clients who have received both Incapacity and Permanent Impairment payments.

Groups of DVA clients based on their long-term health condition(s): Comparisons between DVA clients with (only) a physical condition; DVA clients with (only) a mental condition; and DVA clients with both physical and mental conditions.

Groups of DVA clients based on whether or not they have been medically discharged.

Groups of DVA clients based on the type of service they were in at the 'date of effect' of their most recent condition: Comparisons between DVA clients who are (were) serving members, reservists, former members, or those in other services (including eligible civilians).

Findings based on the scenario groupings:

Comparing the average weekly military wage observed in the DVA administrative data for Incapacity payments with the estimates we have for recent VET graduates (surveyed six months after

graduating), we find evidence that DVA clients are likely to experience a significant drop in income upon their transition to the civilian labour market. This finding is robust to several alternative assumptions about the exact circumstances of the transition. For example if we assume that completing a certificate improves the level and relevance to the labour market of a young veteran's qualifications, and if we also account for the fact that previous labour market experience within the ADF is imperfectly and partially transferable to the civilian labour market, the resulting expected wage six months after graduating (irrespective of field of education) is lower than the average weekly military salary of \$1089 which is observed in the administrative data. When we extend the analysis to include people with more than six months after graduation work experience and include university degrees in the calculations, the expected wages are significantly higher. When we look at the general level of education (without information on field of study), our more robust estimates using the HILDA survey data suggest that the average of \$1089 would be achieved by those in the civilian labour market who find themselves in the higher end of the civilian wage distribution. This also holds for people with a university degree.

The general picture that emerges is that DVA clients transitioning to the civilian labour market can expect a significant wage loss. This finding is crucially dependent on two assumptions. The first is that the average military salary observed in the relevant administrative data is a reliable indicator of the actual ADF salary of the new DVA clients who enter the civilian labour market. This assumption can be verified internally by the ADF and the DVA working jointly. Second, we assume that the wages that the DVA new entrants to the civilian labour market will be free from discrimination associated with their previous employment status. This is a much harder assumption to test accurately².

Another part of the emerging general picture for all scenario groups, is that an improvement in qualifications improves labour market outcomes. This improvement is uniformly spread across all DVA clients. However, it is not uniformly spread across qualification levels. The exception is that a diploma, as opposed to a certificate, provides little additional labour market benefit, save for a very small improvement in the probability of getting a job.

We find no significant additional improvement in employability between qualifications at the certificate level and university degrees within the civilian data; we do find that a university degree leads to marginally higher employment probabilities when compared to certificates if we customise

² However, we note that our previous report to the DVA, <u>Younger veterans' transitions to civilian occupations: the role of</u> <u>further education</u>, based on the wages reported in the Student Outcomes Survey, found that those who transitioned from the ADF to the civilian labour market reported considerable wage losses. This result is in line with our findings here.

the estimates (using scenarios) to reflect the characteristics of the DVA client population. This finding holds for many of the scenario groups considered.

We find that DVA clients can expect their weekly wage prospects to improve by about 20 percent after obtaining a VET certificate, compared to having completed Year 12 or less (the 'no study' scenario). Also, DVA clients who complete a university degree can expect their weekly wages to improve by about 25 percent compared to the 'no study' scenario. Our findings do not support an expectation that DVA clients obtaining a VET diploma will experience a greater weekly wage improvement than they would by completing a certificate-level qualification.

When we group DVA clients by their health conditions, we find that those with mental health conditions achieve significantly poorer labour market outcomes than those with only physical conditions; those with both mental and physical achieve even poorer outcomes. This finding generalises across education scenarios. For instance, labour force participation is expected to be about 67 percent for DVA clients with both physical and mental health conditions in the 'no study' scenario, compared to 73 percent for DVA clients with a physical health condition. The figures rise, respectively, to 75 percent and 80 percent in the university degree scenario. The difference in outcomes between physical and mental conditions (and a combination of them) is larger for the probability of getting a job. Using the previous example, the probability of getting a job is around 78 percent for DVA clients with a mental and a physical condition in the 'no study scenario'. It is expected to be 85 percent for DVA clients with only a physical condition under the same scenario. Under the university degree scenario the figures rise, respectively, to 85 percent and 90 percent. If we combine the outcomes—namely participation and getting a job—the probability that a randomly selected DVA client (with a given type of health condition) participates in the labour force and is employed is obtained by multiplying the two estimated probabilities. With this in mind, even a 5 percentage points difference between the outcomes for the two groups leads to a rather large overall difference in terms of labour market success. Hence, if one randomly draws a DVA client with both mental and physical conditions (assuming a 'no study' scenario), the combined probability of participating and getting a job is 52.8 percent. The equivalent probability is 61.4 percent for a randomly selected DVA client with a physical health condition. In the university degree scenario these figures are, respectively, 64.2 percent and 71.9 percent.

Overall findings of the report

The groupings of DVA clients based on identifiable characteristics of their type of service, payment support, or disability type enable us to find interesting and operationally relevant differences in the

expected labour market outcomes of those who join the civilian labour market. The following patterns arise.

When we examine the groupings based on compensation payments, our results clearly show that DVA clients who received (or are currently receiving) Incapacity Payments or both Incapacity Payments and Permanent Impairment Payments are expected to experience poorer outcomes than DVA clients who only receive Permanent Impairment Payments, or the DVA clients with a health condition accepted by DVA under the MRCA.

DVA clients with a mental health condition are expected to fare a lot worse than DVA clients with only a physical condition. DVA clients with both mental and physical health conditions are expected to have even poorer outcomes.

Over time, chronic conditions tend to have an increasingly damaging effect on labour market outcomes.

The fact that mental health issues are more likely to be chronic suggests that combinations of mental and physical conditions and chronic mental health conditions are expected to have the worst possible outcomes—in severity and in duration.

DVA clients who have been medically discharged have individual characteristics which mean they will have poorer expected outcomes than those who have not been medically discharged.

The grouping based on types of service suggests that serving members can be expected to fare better in their labour force participation than the other groups of DVA clients. Serving members and reservists are expected to find new jobs more easily than 'Former Members' and those in 'other services'. Once the hurdles of participation and getting a job are overcome, we find small wage differences between the DVA client groups at all levels of education.

Serving members and reservists report greater life and job satisfaction than 'Former Members' and those in 'other services'. A general result emerges from all scenarios: life and job satisfaction do not vary by education level.

The remainder of the report is structured as follows. Section 2 presents the data and our methods. Section 3 examines the impact of health conditions on Australian labour market outcomes. Section 4 develops the scenarios of DVA clients and their expected labour market outcomes. Section 5 contains our conclusions. Appendices provide the detailed statistical analyses underlying the report.

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2. Data and methods

2.1. Data

The analysis of the effects of health conditions and education on labour market outcomes in the Australian labour market and the definitions of scenarios which apply to the DVA clients are based on three datasets. These are the Household, Income and Labour Dynamics in Australia (HILDA) survey, the Students Outcomes Survey (SOS), and DVA administrative data. The first two datasets are used to derive statistical estimates of the penalties imposed in the Australian labour market on those with long-term health conditions by type and, when possible, by severity (see Methods in Section 2.2). The datasets are also used to determine the extent to which the accrual of an individual's level of education after the onset of a health condition may contribute to offsetting part (or all) of such penalties. By their composition, each dataset contributes to answering our research question in a complementary way. HILDA is a representative sample of the Australian population. The information we gather from it with regard to the penalties and returns associated with, respectively, health conditions and education can be seen as more general and long-term than the results obtained with the SOS. Indeed, the SOS includes recent TAFE graduates surveyed six months after completing their course (or module), while HILDA refers to people with a wider variety of profiles, notably how recently they completed their highest levels of education. Hence, the analysis using the SOS gives us a shorter-term perspective on the penalties associated with health conditions and the returns to education which is limited to people engaging in VET. By contrast, HILDA gives us a longer-run perspective on these relationships and allows the estimation of returns to university degrees. Aside from their scope, these datasets complement one another. Due to its panel structure, HILDA enables us to come closer to a causal analysis of health conditions and education on labour market outcomes; SOS enables us to provide a more detailed examination of returns to TAFE study and the interaction between health condition and the levels of TAFE education undertaken by students; it has a shorter-run horizon.

We briefly review the three datasets and provide descriptive statistics relevant to this research.

2.1.1. HILDA data

HILDA is the first, and only, Australian large-scale nationally representative household panel survey. Started in 2001, HILDA annually collects rich information on demographics, education, labour market dynamics, and health status. We use the 13 available waves, and restrict the analysis to the workingage population—15 to 65 years old. HILDA surveys over 19,000 individuals per wave. Restricting the analysis to people aged 15 to 65, the number of observations per wave is between 11,000 and 15,000. This is set out in Table 1.

Wave	All ages	Aged 16-65			
2001	19,914	12,877			
2002	18,295	11,817			
2003	17,690	11,466			
2004	17,209	11,156			
2005	17,467	11,362			
2006	17,453	11,425			
2007	17,280	11,333			
2008	17,144	11,261			
2009	17,630	11,698			
2010	17,855	11,896			
2011	23,414	15,526			
2012	23,179	15,354			
2013	23,296	15,352			
Total 247,826 162,523					

Table 1: Number of observations in the HILDA dataset

Data source: HILDA 2001-2013.

Individuals aged 15 to 65 are present in the HILDA data, on average, for 6.2 waves.

The HILDA survey collects a wide range of information regarding individuals' health, both physical and mental. Thirty-six questions constitute the SF36 index collected at every wave, along with a number of other more general questions. For instance, respondents to the survey are asked whether they currently have a long-term health condition, impairment, or disability which restricts them in their daily activities and which has lasted, or is likely to last, for six months or more. We use their answers as indicative of whether, in a given wave, an individual has a long-term health condition. With this definition, we find 28,995 observations of long-term health conditions in the 13 waves of the HILDA data. Table 2 shows the distribution of a number of characteristics across individuals with and without a long-term health condition.

	No long-term health condition	Long-term health condition
Age	37.50	45.05
Male (%)	47.87	46.55
Married (%)	64.36	61.40
Year 12 and below (%)	46.01	51.94
Certificate (%)	8.92	7.98
Diploma (%)	20.17	22.89
University degree (%)	24.90	17.20
Family size	3.14	2.78
Living in a major city (%)	64.15	58.35
NSW (%)	29.78	29.94
VIC (%)	25.26	22.53
QLD (%)	21.15	20.62
SA (%)	8.58	11.72
WA (%)	9.48	8.56
TAS (%)	2.79	4.12
NT (%)	0.85	0.48
ACT (%)	2.11	2.30
Observations	118,972	28,995

 Table 2: Summary statistics of individual characteristics in the HILDA data according to whether individuals reported long-term health conditions

On average, people without a health condition are younger and very slightly more likely to be male. They are better educated than people reporting a long-term health condition. About 25 percent of people who do not report a health condition have a university degree, compared with 17 percent for those with a health condition. A smaller proportion of people reporting a long-term health condition are married. We observe smaller family size for these people. And we see that a smaller percentage of people with a long-term health condition live in a major city.

In the HILDA survey, people who report a long-term health condition are asked to report the type of their condition. This variable contains the 17 categories listed in Box 1. As discussed later, we estimate several models in the multivariate analysis. We look at the relationship between the type of health condition and labour market outcomes for the detailed categorisation of condition types, and for a definition limited to three categories: namely whether people suffer from a physical, a mental, or from both physical and mental health conditions.

Data source: HILDA 2001-2013.

Box 1: The classification of long-term health conditions in HILDA

In HILDA data, there are 17 disabilities and (or) health condition types reported.
(1) sight problems not corrected by glasses or contact lenses;
(2) hearing problems;
(3) speech problems;
(4) blackouts, fits, or loss of consciousness;
(5) difficulty learning or understanding;
(6) limited use of arms or fingers;
(7) difficulty gripping things;
(8) limited use of feet or legs;
(9) a nervous or emotional condition requiring treatment;
(10) any condition that restricts physical activity or physical work (e.g., back problems,
migraines);
(11) Any disfigurement or deformity;
(12) any mental illness which requires help or supervision;
(13) shortness of breath or difficulty breathing;
(14) chronic or recurring pain;
(15) long-term effects as a result of a head injury, stroke, or other brain damage;
(16) a long-term condition or ailment which is still restrictive, even though it is being treated
or medication is being taken for it;
(17) any other long-term condition, such as arthritis, asthma, heart disease, Alzheimer's
disease, dementia, and so on.

Table 3 provides descriptive statistics on the labour market outcomes of interest in this report for HILDA survey respondents with and without a long-term health condition. The statistics are (i) labour market participation³, (ii) employment, and (iii) wage. Table 3 shows that a substantially smaller proportion of people reporting a long-term health condition actually participate in the labour force. And a smaller proportion of those who do participate are employed. Looking at the hourly wage, we see a slight difference between people with and without a health condition.

	No long-term health condition	Long-term health condition
Labour force participation (%)	83.60	58.82
Employed, PT or FT (%)	95.33	91.66
Hourly wage (\$)	23.76	22.48

Table 3: Labour market outcomes in the HILDA data according to whether individuals reported long-term health conditions

Data source: HILDA 2001-2013

Table 4 goes beyond the previous one and cross-classifies the information on type of health condition and labour market outcomes. We clearly see that, taken together, having physical and

³ Labour market participation: an individual is considered to be participating in the labour force if they are currently employed or are unemployed but seeking a job.

mental conditions (column 4) is associated with much lower rates of participation (with only 35.33 percent participation rates), employment (82 percent of those who participate in the labour force), and pay compared with people who report one type of health condition. Of the people who report a single condition, we clearly see that a mental health condition is associated with much lower participation and employment rates compared to those who report a physical condition. For those reporting a physical condition, the main difference compared to those without a condition lies in the participation rate; they have similar employment rates to people without conditions.

	Physical No condition condition only		Mental condition only	Both physical and mental conditions	
Labour force participation (%)	83.60	63.06	58.91	35.33	
Being employed (%)	95.33	93.56	82.36	81.99	
Hourly wage (\$)	23.76	22.75	21.61	20.26	

Table 4: Labour market outcomes by type of long-term health condition in the HILDA data

Data source: HILDA 2001-2013.

We make a further distinction about long-term conditions and (or) disabilities. This follows the earlier work of Charles (2003) and Meyer and Mok (2013). We divide conditions according to whether they are a one-time or temporary condition, or whether it is chronic. The purpose of this categorisation of conditions is to distinguish between those whose health shocks recur over time, from people who experience a one-off health shock. More specifically, our further categorisation using the HILDA data is as follows:

(1) <u>One-time health condition</u>: a work-limiting health condition experienced once, which does not manifest itself again over the next 10 years of the HILDA data;

(2) <u>Temporarily health condition</u>: one or two work-limiting conditions reported by individuals within10 years of the onset of their first long-term health condition;

(3) <u>Chronic and non-severe health condition</u>: in the HILDA data, a health condition is considered as chronic non-severe if individuals report three or more work-limiting conditions within 10 years of the onset of their first long-term health condition. In addition, the health condition is considered non-severe if in the 10 years following its onset, the fraction of the time the individual reports as experiencing it is less than half;

(4) <u>Chronic and severe health condition</u>: this is the same as in (3), except that the individual reports experiencing the health condition for more than half of the time in the 10 years following its onset.

Using this decomposition of reported long-term health conditions in the HILDA dataset, Table 5 has descriptive statistics for individuals' labour market outcomes. From this decomposition, it appears that the labour market outcomes experienced, on average, by people reporting a temporary or a chronic non-severe condition are not significantly different. People suffering from a chronic and severe condition experience much lower labour force participation rates (46 percent). Their employment rate is also lower (87 percent) compared to people with all other conditions. People who experience a one-time condition have very similar outcomes compared to people who report no conditions at all. The differences observed between one-time and chronic severe conditions suggests that the former individuals recover fairly quickly from their condition, while the situation of people with chronic and severe conditions deteriorates over time.

	No condition	One-time	Temporary	Chronic not severe	Chronic severe
Labour force participation (%)	81.77	80.34	73.39	73.81	45.99
Being employed (%)	95.29	95.12	92.88	94.09	87.03
Hourly wage (\$)	24.21	22.62	21.55	20.27	18.98

Table 5: Labour market outcomes by type of long-term health conditions

Data source: HILDA 2001-2013

A highly relevant issue for this report is whether education can be used to improve the labour market prospects of people suffering from long-term health conditions. Table 6 shows, according to their level of highest education, the average labour market outcomes for people reporting a long-term health condition and for those who do not. Here, we look at the highest level of education completed after the onset of the health condition for people reporting a long-term health condition; we do not account for the level of education they attained previously⁴.

⁴ People who reported a long-term health condition and who had a university degree before the onset of the condition, but who did not engage in further studies, would appear in the table as being in the 'did not study' category.

Long-term health condition		Labour force	Freedowed	Employed		Hourly	
		participation	Employed	Part-time	Full-time	wage (\$)	
	University	92.68	94.74	27.63	67.11	29.55	
Yes*	TAFE	85.43	88.37	26.36	62.02	22.34	
	Did not study	57.09	91.6	33.61	57.99	21.76	
	University	92.98	95.72	24.24	71.48	28.41	
No	TAFE	91.47	91.02	27.63	63.39	21.97	
	Did not study	83.18	95.5	28.83	66.67	23.80	

Table 6: Labour market characteristics by health status and qualification upgrading (%)

*note: this is the level of education completed since the onset of a health condition Data source: HILDA 2001-2013.

We can see from this table that the labour force participation of people with a health condition who completed a university degree after the onset of their condition is comparable to that of the people who have not reported any health condition. The proportion of employed people (and hourly wages) in this group is also very similar to that of people without a long-term condition. People who have graduated from TAFE after the onset of their health condition also have improved labour market outcomes compared to those who did not study. However, we observe larger differences between this group of people and the TAFE graduates who did not report a health condition. This table is only descriptive and one should not over-interpret these figures, as we do not control for the severity of health conditions. Indeed, it is likely that people who undertook studies after the onset of their health condition than those who did not study.

The	descriptive	statistics	provided	in	Table	3	to
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Table 6—the HILDA data—suggest that people with a long-term health condition experience significantly poorer labour market outcomes than people who do not report health conditions. These statistics suggest that education may provide a partial correction of the penalties associated with a long-term health condition. Nevertheless, these are raw statistics and the multivariate analysis proposed in Section 3 allows us to explore more accurately whether education does improve the labour market prospects of people with a health condition, and, if it does, by how much.

2.1.2. SOS data

The Student Outcomes Survey (SOS) data have important and useful information on students whose usual address is in Australia and who were awarded a qualification (graduated), or who successfully completed part of a course and then left the VET system (module completed). The focus of this survey is students' outcomes and their satisfaction with vocational education and training. Information about the level and type of training that students undertake, further study patterns, and reasons for not continuing with training is collected.

The SOS data is available from 2001. We had all 14 waves at our disposal. We combined the data for each year from 2001 to 2014 to construct a repeated cross-sectional dataset. The number of observation in SOS for each year is given in Table 7.

Year	Number of observations	Number of observations (age 16 – 65)
2001	86,052	76,255
2002	65,347	64,930
2003	64,235	62,628
2004	22,066	21,704
2005	100,904	98,048
2006	36,663	35,644
2007	96,633	93,805
2008	39,300	38,322
2009	107,745	104,751
2010	45,645	44,524
2011	110,620	108,208
2012	42,908	41,977
2013	102,621	100,343
2014	52,098	51,138
All	972,837	942,277
	Data source: SOS 20	01-2014

Table 7: Number of observations by year in the SOS data

Data source: SOS 2001-2014.

The SOS data are structured so that a smaller sample is drawn in even-numbered years and a larger one in odd years. For our analysis, we omit waves 2001 and 2002, as information on fields of

education is not available in them. Our analysis starts with the 801,092 module and full VET course completers who responded to the survey between 2003 and 2014, and who were aged between 16 and 65. The use of all observations over the 12-year period gives us superior statistical properties; statistical significance may be weak in an analysis of a single year.

Given that the focus of this research is the labour market outcomes associated with long-term health conditions and education, we must omit those respondents who completed their VET information, but who did not report labour market outcomes—such as their employment status and weekly earnings—after completing a VET course. It should be noted that while employment status is available in each wave that we use, weekly income information is not available in waves 2013 and 2014 due to a change in questionnaire design. Moreover, we do not have information on labour force participation. We only know whether people are employed six months after graduating. Hence, the information provided in our analysis of the relationship between health conditions, education, and labour force participation comes from our analysis of the HILDA survey data.

Table 8 displays the distribution of levels of education among VET graduates in the SOS data (2003-2014). Around 15 percent obtained a qualification at diploma level and above; about half graduated with a Certificate III or Certificate IV. Another 20 percent of graduates completed Certificate I or Certificate II.

Level of education	Number of observations	Percentage (%)
Diplomas and above	117,465	14.66
Certificate IV	136,890	17.09
Certificate III	258,670	32.29
Certificate II	130,602	16.3
Certificate I	35,498	4.43
Other	74,595	9.31
Statement of Attainment	33,208	4.15
Subject only enrolment	13,973	1.74
Not stated or missing	191	0.02
All	801,092	100.00

Table 8: Level of education among VET graduates (2003-2014), SOS data

Data source: SOS 2001-2014.

Table 9 shows VET graduates' labour market outcomes shortly after they finished their course or module, depending on whether or not they report a long-term health condition. We see that the proportion of VET graduates who are employed and report a health condition is significantly smaller than VET graduates without a health condition. Compare the equivalent table drawn from the HILDA data (see Table 6) for people with a VET qualification. We see that these proportions are significantly higher, at 91 percent of people without a reported health condition against 88.4 percent for those with a reported condition. This suggests that the employability of VET graduates improves over time, since HILDA includes people with a wider horizon of experience than does the SOS. Nevertheless, whether we look at recent VET graduates or not, we see that important differences persist between people with a reported health condition and people without.

 Table 9: Labour market outcomes in the SOS data according to whether individuals reported long-term health conditions

Labour market outcomes	No long-term health condition	Long-term health condition	
Employed, PT or FT (%)	78.95	50.96	
Weekly wage (\$)	671.0	519.4	

Data source: SOS 2001-2014.

Looking at these labour market outcomes in more detail on the types of health conditions (see Table 10), we can make similar observations with the SOS data as we did with the HILDA data—people suffering from both mental and physical conditions experience significantly worse outcomes. The proportion of people employed who have both a mental and a physical condition is only 36 percent (roughly the same percentage as in HILDA), or less than half the rate for those without conditions.

Labour market outcomes	No condition	Physical condition only	Mental condition only	Both physical and mental conditions
Employed, PT or FT (%)	78.95	66.95	46.72	36.11
Weekly wage (\$)	671.0	435.2	359.1	372.2

Table 10: Labour market outcomes by type of long-term health conditions in the SOS data

Data source: SOS 2001-2014.

The SOS data contain detailed information on health conditions, as does the HILDA dataset. However, the SOS data differ somewhat from the 17 detailed conditions available from HILDA; the survey data are not directly comparable. Nevertheless, it is informative to look at VET graduates' labour market outcomes with respect to these detailed categories, as they show important variations (see Table 11). These figures corroborate our observations made on the basis of HILDA data that some conditions seem to be associated with much worse labour market outcomes than others. For instance, the proportion of VET graduates reporting either a mental illness or acquired brain impairments who are employed is significantly smaller than that for people with sensory and (or) speech conditions (or other physical conditions). We find that these differences translate to weekly wages too.

condition	5)		
	Detailed health condition	Employed, PT or FT (%)	Weekly wage (\$)

Table 11:	Labour market outcomes	by type of	long-term	health	conditions	in the SO	OS data	(detailed	health
	conditions)								

Detailed health condition	or FT (%)	(\$)
Hearing/deafness	61.61	639.5
Physical	46.87	580.3
Intellectual	40.60	234.2
Learning	47.65	405.2
Mental Illness	39.28	401.2
Acquired brain impairment	39.03	235.2
Vision	72.90	397.6
Medical condition	47.57	597.3
Other disability	47.85	570.6
Disability not defined	61.17	658.3

Data source: SOS 2001-2014.

2.1.3. DVA administrative data

For the purpose of this report, DVA administrative data on DVA clients with accepted conditions under the MRCA were made available to us. The data are for 11,081 DVA clients aged 16 to 65 who only have eligibility and condition/s accepted as related to service under the MRCA, i.e. service with the ADF only after 1 July 2004. The records were extracted on September 10 2014. These DVA clients together have 28,324 reported claims (long-term health conditions identified).

One issue with these administrative data is that the long-term health conditions are coded in detail according to the ICD-10 classification. For the purpose of multivariate analysis, we cannot use such a level of detail in the classification of long-term conditions. We have to make groupings which will each contain a number of individuals that is large enough for statistical analysis. Moreover, we need the DVA clients' long-term health conditions to be directly comparable with the other datasets used in our analysis, namely the HILDA and the SOS. Making the categories of long-term conditions comparable across datasets will enable us to construct policy-relevant scenarios. In these scenarios, DVA clients are identified by those characteristics, (notably their health conditions) on which we wish to compute their likely labour market outcomes. We used the ICD-10 classification available in the DVA clients' administrative records and recoded them in two sets of broader categories. The first set is used to match the information on long-term health conditions between the DVA data and HILDA and SOS. It includes a limited number of categories that distinguish between physical, mental, and physical plus mental health conditions. The second set extends these basic categories slightly for the purpose of describing the data in more detail. The second set distinguishes health conditions between Intellectual/Learning, Acquired Brain Impairment, Physical, Psychiatric, and Sensory/Speech.

Each DVA client has one or several health conditions recorded. In these data, several dates are usually recorded for these health conditions but, following DVA recommendation, we used for the 'date of effect' the reference date attached to each condition. Nonetheless, it is important to note that 'date of effect' may refer to several possible dates concerning a health condition, and we are unable to determine precisely which one. It could be the date on which the DVA client first received treatment, when the illness first manifested, or some other relevant date. It is important to remember this when looking at descriptions of the data involving dates.

Table 12 below shows the distribution of health conditions among DVA clients under the MRCA according to the two categorisations of health conditions proposed above. Looking at the first decomposition, almost three-quarters of the health conditions claimed by DVA clients are physical.

Importantly, mental conditions seem to manifest themselves in addition to physical conditions; the proportion of DVA clients suffering from both a mental and a physical condition is about a quarter. Only a very small percentage of DVA clients have any mental conditions. Looking at the second decomposition, in the lower part of Table 12 we see that most of the physical conditions suffered by the DVA clients are not related to sensory/speech conditions; these account for only 8.3 percent of the total, against 78.6 percent in the case of physical conditions. Psychiatric conditions account for 10 percent of the total number of conditions claimed by DVA clients.

Condition type	Number of observations (health conditions)	Percentage (%)
Physical condition	20,649	72.90
Mental Condition	695	2.45
Both physical and mental	6,980	24.64
Total	28,324	100
Intellectual/Learning	1	0.00
Acquired Brain Impairment/Neurological	873	3.08
Physical	22,270	78.63
Psychiatric	2,834	10.01
Sensory/Speech	2,346	8.28
Total	28,324	100.00

Table 12: Health condition types among DVA clients

Data source: DVA administrative data

Table 13 shows the distribution of the broad health-condition types by the Arm of Service that DVA clients are in at the 'date of effect' of the reported condition. The distributions are quite similar; the exception is eligible civilians who have a lower proportion of physical conditions and more psychiatric and acquired brain impairments. The number of conditions reported by eligible civilians is much smaller than for DVA clients in other Arms of Service. Hence, one should not make too much of these differences.

 Table 13: Health conditions types by Arm of service

Arm of Service	Intellectual Learning	Acquired Brain Impairment	Physical	Psychiatric	Sensory Speech	Total
	0	95	2,609	258	235	3,197
Air Force	0%	3%	82%	8%	7%	100%
A #1993.4	0	569	15,234	2,001	1,744	19,548
Army	0%	3%	78%	10%	9%	100%
Nour	0	121	2,999	405	252	3,777
Navy	0%	3%	79%	11%	7%	100%
Eligible	0	10	35	10	4	59
civilian	0%	17%	59%	17%	7%	100%
Unknown	1	78	1,393	160	111	1,743
Unknown	0%	4%	80%	9%	6%	100%
Total	1	873	22,270	2,834	2,346	28,324
Total	0%	3%	79%	10%	8%	100%

Data source: DVA administrative data

The DVA clients included in the data have, on average, 2.56 claimed conditions. These range from one for about 40 percent of the DVA clients, up to 24 conditions for one client. Table 14 shows the distribution of DVA clients according to the number of health conditions that are recorded for them. More than 75 percent of them claimed between one and three health conditions.

Number of conditions recorded	Number of observations (DVA clients)	Percentage (%)
1	4,420	39.89
2	2,706	24.42
3	1,519	13.71
4	972	8.77
5	567	5.12
6	306	2.76
7	212	1.91
8	122	1.10
9	85	0.77
10	54	0.49
11	30	0.27
12	27	0.24
13	13	0.12
14	14	0.13
15	7	0.06
16	7	0.06
17	5	0.05
18	7	0.06
19	2	0.02
20	2	0.02
21	1	0.01
22	0	0.00
23	2	0.02
24	1	0.01
Total	11,081	100.00

Table 14: Distribution of the number of health conditions per DVA client

Data source: DVA administrative data

Table 15 shows the type of service that DVA clients were in for each health condition claim that they have with the DVA. Almost 60 percent were serving members (based on the date of effect). Notably, about 14 percent of the conditions that are claimed relate to DVA clients who were former members at the date of effect.

Table 15: Distribution	of the number	of health conditions by	y DVA clients' t	ype of service
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Type of service	Number of observations (health conditions)	Percentage	
Serving member	16,668	58.9	
Reservist	4,810	17.0	
Former member	3,948	13.9	
Other	2,895	10.2	
Total	28,321	100.0	

Data source: DVA administrative data

Table 16 shows the distribution of DVA clients with respect to the type of payment they currently have or have had access to in relation to their reported health conditions. It is a snapshot of the DVA clients who made a claim under the MRCA at the time of the data extraction. This means that the situation may change over time for some of the DVA clients who appear as having no incapacity payments or permanent impairment payments. The majority of DVA clients under the MRCA that we have captured in the data have had their condition(s) recognised by the DVA without this leading to incapacity or permanent impairment payments. Twenty-five percent of the DVA clients are or have been receiving incapacity payments (half are currently on incapacity payments), and 11 percent have had both incapacity and permanent impairment payments. A smaller proportion receives or have received only permanent impairment payments. The administrative data include information about whether DVA clients have been medically discharged. We find that among the DVA clients under the MRCA who are present in the data, 1248 have been medically discharged; this represents 11.26 percent of these DVA MRCA clients. We looked at the distributions of broad categories of health conditions distinguishing between people who were medically discharged or not (the full results are not reported here). We observe that the proportion of DVA clients who suffer from psychiatric conditions is a lot higher among those who were medically discharged—over 18 percent compared with about 5 percent of those who were not medically discharged.

Type of payment received	Number of observations (DVA clients)	Percentage
No incapacity, no permanent impairment	6,060	54.7
Incapacity, no permanent impairment	2,776	25.1
No incapacity, permanent impairment	1,028	9.3
Incapacity, permanent impairment	1,217	11.0
Total	11,081	100.0

Table 16: Distribution of DVA clients by type of payment received

Data source: DVA administrative data

Figure 1 shows the number of conditions claimed by the DVA clients in our data, per year, using the 'date of effect' for the information on the year. The numbers have increased since 2004 and seem to have stabilised around the 3000 mark since 2010. The figures for 2013 and 2014 are likely to be incomplete, as the 'date of effect' encompasses, notably, the date when the condition manifested itself; this may be recorded *ex-post* several years later (when DVA clients lodge a claim).



Figure 1: Number of conditions claimed per year among the DVA clients

Data source: DVA administrative data

Table 17 goes further into looking at changes over the years and displays the proportion of health condition types (broad categories) observed per year since the MRCA was introduced. We see that the proportion of health conditions reported as sensory and (or) speech and psychiatric have increased over the years, while the proportion of physical conditions has slightly decreased.

Year	Intellectual/ learning	Acquired brain impairment	Physical	Psychiatric	Sensory/Speech
2004	0.00	4.5	86.9	3.5	5.1
2005	0.00	4.6	86.3	5.4	3.7
2006	0.00	4.2	84.6	6.5	4.7
2007	0.00	3.3	82.6	8.8	5.3
2008	0.00	2.7	83.0	8.8	5.6
2009	0.03	2.5	82.6	8.9	5.9
2010	0.00	3.2	78.1	11.0	7.7
2011	0.00	2.9	75.5	11.3	10.4
2012	0.00	2.5	70.4	15.3	11.7
2013	0.00	2.1	65.5	13.6	18.8
2014	0.00	2.1	45.1	15.9	36.9
Total	0.03	3.1	78.6	10.0	8.3

Table 17: Health conditions per type and year among the DVA clients (%)

Data source: DVA administrative data

It would have been good to distinguish DVA clients between officers and non-officers. Unfortunately, this information is only partially recorded in the data and is not useable for statistical purposes.

This section introduced the data that we use for the statistical analysis underlying this report in a basic descriptive way. We now set out the methodology that we implemented in order to (i) analyse

the expected outcomes of DVA clients, depending on their health conditions, and (ii) provide guidance with respect to extending clients' education before they enter the civilian labour market.

2.2. Methods

In order to determine whether there are significant gains to be had from rehabilitation strategies which provide DVA clients with additional qualifications through the education system, we need first to estimate the extent to which having a long-term health condition penalises such individuals in the labour market. Further, we need to be able to distinguish between the effects from different types of long-term conditions, as we expect penalties to vary with the severity, permanence, and nature of the long-term health conditions. We estimate the expected returns from investing in education. Ideally, we want to be able to determine such returns by the nature, severity, and permanence of a health condition, and also by the level and field of education.

The first difficulty we face when undertaking this task is that, currently, there are no longitudinal data available that follow DVA clients who have been discharged from the ADF, and which record their outcomes in the civilian labour market over time. Hence, we must rely on other datasets available in Australia which do record individuals' health status and labour market outcomes. The likely datasets are based on the civilian population. They may include former DVA clients (or ADF veterans who did not go through the DVA), but they are in such small numbers that these observations would not result in robust estimates of the 'penalties' and 'returns' that we seek to appraise. Indeed, since we want the estimates to be as detailed as possible with regard to the nature of a health condition and education (level and field), we need a comparatively large number of observations in our dataset, including many different combinations of individual experiences. We would not get that by restricting ourselves to identifying former ADF members in the current civilian datasets. Hence, the estimates must be based on the entire dataset, by including mostly civilians. Because of this, our implemented method involves two steps: (i) the estimation of models based on the Australian civilian population, and (ii) the definition of a 'matching' mechanism which allows us to customise the models' results to the particular case of DVA clients.

One may wonder how estimates obtained on civilians could be relevant to DVA clients who are, probably, a more homogenous group of people than those in the civilian datasets. By more homogenous, we mean that DVA clients constitute a group of individuals who share a number of common characteristics, which are significantly different from the representative Australian population in the national datasets. Fortunately, we can use a number of statistical techniques which

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allow us to make the leap between having estimates based on the wider Australian population and drawing inferences from the narrower population of DVA clients. First, our inferences rely on multivariate models. This means that our estimates of the penalties associated with health conditions and the returns to education control for a number of individual characteristics such as age, marital status, geographical location, and so on (see paragraph 2.2.2 for more detail). In other words, in using multivariate techniques, we make different people more comparable with respect to the outcomes in which we are interested, by controlling for *confounding factors*. Second, we can rely on DVA administrative data to gain better information on the characteristics of DVA clients and, somehow, map these characteristics onto the estimation results obtained from the civilian datasets. The aim is to draw inferences from the predictions of the *general* models about the *particular* case of the DVA clients.

We have access to DVA clients' administrative data. Thus, we can implement this exercise and infer the likely outcomes for DVA clients in the Australian labour market depending on their health conditions and education. Several techniques are available to obtain these estimates. One of them consists of using statistical matching techniques, whereby we find—among the civilian population in the datasets—'statistical twins' of DVA clients. We then attribute the observed outcomes of these (civilian) 'twins' to the corresponding DVA clients. However, for this technique to produce satisfactory estimates, we need to have quite detailed information about the individual characteristics of the DVA clients. This information must also be available in the civilian dataset. At the outset of this research, we expected that the administrative information on DVA clients would be complemented with their PMKeyS (Personnel Management Key Solution) records coming from the ADF administrative data. It appeared that the ADF data could not be made available at that stage. As a consequence, we were unable to implement this particular technique.

We used an alternative technique which consists of looking at subgroups of the DVA client population (rather than individuals *per se*) and applying their average characteristics to the parameters of the models estimated for the general population. This technique requires observations on some of the individual characteristics used in the models that are common to the DVA clients' data and the civilian dataset⁵. We discuss our methodology and our adopted techniques further in the remainder of this section.

⁵ As with the previous technique, the more of the common information that is available, the more robust and accurate are the estimates.

2.2.1. The role of further education on DVA clients' expected outcomes in the Australian labour market, a two-step analysis

The research strategy follows two steps. First, we analyse the extent to which the Australian labour market, in general, penalises health conditions and rewards the accumulation of qualifications through formal education. The comparison between the two, will provide information on the extent to which investing in further education might partly alleviate the negative effects of health conditions, and increase the benefits from education-based rehabilitation. It allows us to identify pathways that may provide greater benefits to DVA clients, depending on their circumstances.

We use multivariate analysis in order to isolate the individual effect of each component, all else held constant (see section 2.2.2). This analysis is conducted using two sets of data, each with its strengths, to tackle the research question at hand.

The panel structure of the HILDA data offers us the opportunity to analyse the causal effect of health conditions and education on individuals' labour market outcomes, while having greater control for unobserved heterogeneity in such outcomes. Moreover, since the same individuals are observed over time, we can analyse the long-term effects of health conditions on labour market and life outcomes. We can look at how long it takes for people to recover—or not—from health shocks. The analysis of the HILDA data gives us a longer-term perspective on the penalties associated with health conditions, and the expected returns from acquiring additional skills.

The SOS data allow us to concentrate on shorter-term outcomes, since individuals are surveyed six months after completing their studies. The data also allow us to focus on the more homogenous group—VET graduates. A drawback related to the SOS analysis is that we lose the causal dimension of the analysis. This is because it is a repeated cross-sectional dataset. The results obtained using SOS show statistical associations between health conditions and labour market outcomes, and how these change with respect to changes in the level and field of education. The SOS data also allow us to make finer distinctions between VET education levels (Certificate III, Certificate IV, and diploma) compared to the HILDA data. There, we look at differences between certificate, diploma, and university degrees. In the analysis of the relationship between field of study and labour market outcomes, the comparison between HILDA and SOS results is instructive as, in the former, university degrees are included, while only VET degrees are considered in the SOS.

In the second step, we adjust the results arising from the multivariate analysis of the relationships between health conditions, education, and labour market outcomes for the population of DVA
clients. This step aims to make the rather broad range of results from HILDA and SOS (obtained in step 1) directly useable for the DVA and thus enable them to provide pathway guidance to their clients. This second step aims to identify relevant groupings of DVA clients and to apply the general results of the first step in order to infer likely labour market outcomes for these client groups. The likely outcomes are expressed in terms of estimates of (i) the probability of participating in the labour force, (ii) the probability of being employed, (iii) weekly wage estimates, and (iv) life and job satisfaction. Further, this step aims to estimate the expected returns from rehabilitation through the acquisition of formal qualification in the Australian education system. Indeed, depending on their circumstances, DVA clients are expected to face different penalties in the civilian labour market and also different returns to any further education. The second step provides quantification of penalties and rewards for a broad range of DVA client types.

2.2.2. Statistical models used to estimate the relationship between health conditions and labour market outcomes in Australia

This subsection discusses in more detail the statistical models implemented in order to estimate the relationship between long-term health conditions and labour market and life outcomes, and the expected return to further education. This section includes technical information and the information provided in the previous two paragraphs give the relevant intuitive information about how we tackle the research question. In addition, we include a number of boxes in the results section, which contain further information on the interpretation of the figures.

- Step1: Estimation of the penalties and returns associated with, respectively, health conditions and education for the broader Australian working-age population

In this step, we undertake a multivariate analysis of the relationship between labour market outcomes (participation, employment, wage, and satisfaction) and health conditions and education. Box 2 provides a justification for using multivariate analysis as a superior technique compared to providing simple descriptive statistics. The analyses based on HILDA and SOS data enable us to isolate the effect of the two sets of variables of interest in this report.

We implement the analysis on each dataset independently. As stated, from the former we obtain longer-term estimates of the impact of health conditions and education on labour market outcomes; from the latter we obtain short-run expected outcomes six months after upgrading a qualification through TAFE. Because these datasets differ in their structure, we use different types of models for the analysis. The panel structure of the HILDA dataset requires us to use panel-data estimators for the analysis. This structure enables us to provide more robust estimates of the effect of health conditions and education on labour market outcomes; this is because we observe individuals several times and can control for unobserved heterogeneity (see Box 3). The estimates obtained using the HILDA datasets are as close as is statistically possible to undertaking a causal analysis. As we know, the SOS data do not have the panel characteristic. This means that the estimates from the SOS data cannot be controlled for individual unobserved heterogeneity; hence, we move away from causal statements to an analysis of the relationship between health conditions and education and labour market outcomes. Nevertheless, the estimates obtained using SOS do provide valuable information. They provide an indication of the penalties and rewards experienced by recent TAFE graduates.

The nature of the labour market outcomes investigated dictates our modelling strategy. For instance, labour force participation and employment are binary outcomes—they are either 1 if an individual participates in the labour force and (or) is employed, and 0 if they do not. For such dependent variables, we adopt a non-linear (Probit) specification (see Box 3), rather than linear models. We interpret the outcomes as the probability of participating in the labour force and the probability of being employed. The estimated parameters (called marginal effects in these models) indicate, for a given variable (say, having a mental health condition) the extent to which the probability of participation (or employment) changes due to a unit change in the value of the variable considered. The other labour market outcomes investigated—wages and satisfaction (life and job satisfaction)—are continuous outcomes (or can be considered as such). Hence, we use linear specifications for these models (using panel estimators when the data are suited to linear specifications).

As we discussed in Section 2.1, health conditions and education information are available in various degrees of detail. For instance, HILDA allows us to characterise a health condition either as physical, mental, or both; and we can obtain more detailed information using the 17 categories of health conditions (10 for the SOS). Likewise, for education we can restrict the analysis to the *level* of education, or expand it and include the *field* of education. We have detailed information for our variables of interest to estimate several specifications. We begin with more restrictive models which use broad information, and we then move to more precise models with the detailed information.

Our estimation strategy aims to exploit the strengths of each dataset to provide statistically robust and relevant estimates. For instance, the SOS includes a very large number of observations. This allows us to investigate detailed interaction effects. Using the SOS, we test the hypothesis that the returns to each level of education may differ significantly, depending on the type of health condition. We test the extent to which fields of education differ with regard to the returns associated with each level of TAFE education. These tests allow us to identify—for each field of education—the level at which most of the returns can be realised. Our general result is that significant gains are observed up to Certificate IV for TAFE graduates; diplomas lead to minor outcome improvements. When we focus on the interaction between level and field of education, we see that the highest gains are obtained at diploma level. Thus, this specification with interaction terms enables us to make specific inferences, which is most useful in the context of providing pathway guidance for DVA clients.

Altogether, we estimate the models set out below in the first step of our analysis. These model specifications are defined for the set of variables used on the right-hand side of the estimating equation. We estimate each specification for the outcome of interest.

Models using HILDA

- Model 1: includes broad categories of health conditions and education variables restricted to the level of education and a number of relevant control variables. The latter are the same across all models. The panel data estimates arising from this specification are probably the most robust, because the health conditions are expressed in broad terms (physical, mental or both); this guarantees that we have a fairly large number of people in each of the health conditions; inferences are based on large numbers. In this model, the estimated parameters associated with each variable, notably health conditions and education, are considered as quantifying a causal effect of these variables on the outcomes of interest.
- Model 2: this model examines the effect of health conditions on individuals' outcomes. We use the detailed definition of health conditions available in HILDA (see Box 1). The rest of the specification for the panel-data estimation is the same as in the previous model; we only look at the impact of the level of education on these outcomes.
- Model 3: this model reverts to a broad definition of health conditions but expands that of the education by including both levels and fields of education. Unfortunately, the information on field of education is available in HILDA only at wave 12, thus restricting us a single year; we revert to cross-section analytical techniques. This means that the estimated parameters of the model no longer account for unobserved individual heterogeneity and, hence, only indicate relationships and not causality between the variables of the model and

the outcomes. Nevertheless, we still have enough observations; our estimates remain statistically robust.

- **Model 4**: this is the same as Model 3 immediately above, except that we expand the health conditions to the more detailed definition. As with the previous model, these estimations are based on wave 12 of the HILDA dataset.
- Model 5: in this model, we take advantage of the panel aspect of HILDA data. Using a single specification for each labour market outcome, we focus on the length of time it takes for an individual to recover—in terms of labour market outcomes—from a given health condition. Now, we use the alternative categorisation of health conditions introduced in Section 2.1.1 and inspired by the earlier work of Charles (2003). We can distinguish between temporary, one-time, and chronic conditions and add the element of the severity of the conditions. The estimates from this model allow us to see the extent to which labour market outcomes improve or deteriorate according to the length of time since the reported onset of the health condition. We can determine whether an individual suffering from chronic and severe health conditions experience their labour market outcomes deteriorating significantly more than, say, an individual with a one-time health shock; we can quantify the penalties and how long they are expected to last.

Models using the SOS

The estimates based on SOS data enable us to look at shorter-run outcomes for VET graduates observed six months after graduation. Because the SOS data include a very large number of observations over more than 10 years' of data, we can look at interactions. The models' specifications reflect this strategy. It is worthwhile noting that the SOS data do not enable us to estimate models of labour force participation, since this information is unavailable in the data. Hence, all of the information on labour force participation comes from the HILDA survey.

- Model 1: this is our basic model including broad categories of health conditions and levels of education. SOS is a repeated cross-section of VET graduates. The estimates provided using these data allow us to examine the relationship between health conditions, education, and labour market outcomes. We cannot draw causal inferences, but we can isolate the effect of each of the variables of interest, controlling for the confounding effect of other factors.
- **Model 2**: this model corresponds to Model 1 immediately above, but it is augmented by interaction terms between health conditions and level of education. This allows us to

examine whether VET graduates with given health conditions obtain significantly better or worse outcomes through their VET degree than do people studying at the same level, but who have no long-term health conditions. We can quantify these effects.

- **Model 3**: this model reverts to the specification of Model 1 in this set with broad health conditions and levels of education; it augments that model by adding fields of education.
- Model 4: this model tests the interactions between level of education and fields of education in order to determine at which point most of the returns to a particular field can be obtained. Depending on the field of education chosen by VET students, it may be best for them to walk out with a Certificate IV in order to reap most of the return from that new qualification. It is possible, however, that for some fields they should continue to a diploma. This model allows us to implement those tests so that we can provide more detailed conclusions as to the expected returns from various fields of education.

In addition to these four models based on the SOS data, we implement another three which include more detailed health conditions. Because of the distribution of the detailed health conditions in the SOS data, it did not make sense (on statistical grounds) to interact the health conditions with levels of education. We found several cases where these combinations yielded very few observations. We implemented the following specifications with the detailed health conditions.

- Model 5: this model includes detailed health conditions and level of education;
- Model 6: this model adds fields of education to the Model 5 specification;
- **Model 7**: this model builds onto Model 6 by adding interactions between fields and levels of education.

Altogether we estimate each model specification described above for each outcome of interest, depending on the dataset used. Using HILDA, we estimate the first four specifications for all labour market outcomes discussed in the methodology; that is (i) labour force participation, (ii) employment, (iii) hourly wage, (iv) weekly wage, (v) life satisfaction, and (vi) job satisfaction. The fifth specification—which examines how well people recover from health shocks over time—is estimated for three of the outcomes above: (i), (ii), and (iv). Using SOS, we somewhat restrict the number of outcomes investigated and concentrate on employment and weekly wages. We estimate all seven specifications for these two outcomes. Our analysis of the penalties in the Australian labour market resulting from long-term health conditions, and the expected returns from improving qualifications relies on the estimation of 41 models. The information obtained gives a fairly accurate picture of the Australian labour market with regard to how people with health conditions fare, and the extent to which outcomes can be improved through formal education.

The second step of the analysis is to customise these results to the particular case of DVA clients. This enables us to acquire dedicated information on successful pathways that individuals might take through formal education to compensate them partially, if not fully, for the likely penalties due to their health conditions. This step allows us to reach conclusions on whether—and under which conditions—rehabilitation in the form of formal education can enhance the success of DVA clients in the civilian labour market.

- Step2: Customising the results obtained on the civilian population to the DVA client population

For each model estimated in the first step, we obtain estimated parameters for each variable included in the model (the regressors) which represent the extent to which the value of a labour market outcome considered is expected to change due to a unit change in each variable. When looking at labour force participation and employment, these are expressed as changes in the probability that the specific event occurs (participate in the labour force; be employed).

This second step consists of using the parameters and the characteristics of DVA clients to derive statistical predictions of likely outcomes for them in the Australian labour market.

Many thousands of predictions can be computed by combining the models' estimated parameters and DVA clients' characteristics. We focus on the groupings of DVA clients which are most relevant to determining what can be gained from rehabilitation through formal education. The aim is to compute the predictions for easily identifiable subgroups in the administrative data. This would allow the DVA to discover the individuals likely to receive the most benefit from formal education as a rehabilitation tool.

The method consists in first identifying relevant subgroups of DVA clients. For each subgroup, we compute the mean value (and the standard deviation) of individuals' characteristics. We may for example be interested to see how clients who were granted incapacity payments would fare in the Australian labour market, with and without additional formal education. The method consists in computing the mean characteristics of age, the proportion of individuals who are married, and so on, for the individuals composing this subgroup. We do this for the characteristics available in the DVA administrative data which are in common with the information we use in the models on civilians. Once we have these mean values, we use the parameters of the estimated models to obtain the predicted labour market outcome of interest. Since the models estimated on civilians include a number of independent variables that are not in common with the DVA clients' data, we must set these variables at the sample mean (the mean for all civilians included in the estimated models) to compute the predictions for DVA clients. This means we implicitly assume that for

variables we do not observe for DVA clients—but which are included in the models—the observed average value in the civilian data is applicable to DVA clients. This essential assumption illustrates the fact that the more information we can get from the DVA clients' administrative data, the more accurate and appropriate the predictions are to DVA clients⁶.

The DVA client subgroups (scenarios) used to carry out the predictions are defined in detail in Section 4.1. They consist of four sets of subgroups defined by a number of characteristics which are relevant to the DVA and its clients. A first set of scenarios distinguishes DVA clients by the type of payment they receive (or have received). A second set compares people according to the type of long-term health condition they have A third set compares people who have been medically discharged with those who have not (or not yet). Finally, a fourth set of scenarios compares the expected outcomes for DVA clients with multiple service types, according to their type of service at their last claim.

In the next section we undertake the first step of the analysis. We then define scenarios of DVA clients and display the results.

⁶ Had the PMKeys data from the ADF been available to complement the information we have on DVA clients, we may have been able to improve the predictions noticeably.

Box 2: Multivariate analysis

Multivariate analysis and multivariate analysis based on panel data

Multivariate analysis

If health conditions were randomly distributed among people, a simple comparison between those without health conditions and people with, say, physical health conditions, would tell us about the causal link between physical health problems and adverse labour market and life outcomes. We would be able to estimate the magnitude of the negative effects. However, this is an ideal case. Health conditions are actually not randomly distributed. Many previous studies have found that the characteristics of people with health issues are significantly different from the characteristics of people without them. For example younger people, generally, are in better health than older people. People having more years of schooling may be better informed on health issues, thus having significantly better health than less-educated people. In addition, although they are more likely to have health problems, due to their greater work experience older people are likely to have better labour market outcomes than younger people. Better-educated people, generally, have better labour market outcomes. We have already corroborated these statements with the descriptive statistics displayed in Section X, where we introduced the data used in this study. In reality, where health conditions are not randomly distributed, a comparison of labour market outcomes between people who have no health issues and people with some does not reveal the true effect of health problems. This is because of the roles played by factors such as age and education.

To estimate the effects of health problems on the labour market outcomes of interest, we need to eliminate the confounding effects of factors such as age, education, geographical location, and so on. To this purpose, we usually employ multivariate regression methods. Regression is a statistical tool that allows us to isolate the effects of age and education from the effect of health problems. This is what cannot be revealed by simple comparisons of outcomes between groups, or by simple correlation coefficients between labour market outcomes and health status. In regressions, we consider labour market outcomes as the dependent variables (the explained variables). They are put on the left-hand side of a regression equation. On the right-hand side of the regression equation, health conditions and education variables are our core variables of interest. Other observed factors such as age, marital status, geographical location, and so on are called control variables. Simply put, we use control variables in regressions in order to isolate the effects on the dependent variable of the confounding effects of core variables of interest. Using multivariate analysis, we can quantify the effects of health conditions and education on labour market outcomes, while everything else (the observable control variables) is constrained to remain the same for all.

Multivariate analysis based on panel data (HILDA):

One limitation of the multivariate approach is that it can only account for the effects of observable characteristics. Factors not observed by the researcher can also confound the estimation of the effects of core variables of interest on the dependent variable. For example individual ability (or degree of risk aversion, for instance) cannot be observed, and so it cannot be used as a control variable. However, it can affect labour market outcomes, as people with greater ability are more likely to find a job and have higher wages, no matter what their other characteristics are. In addition, unobserved ability is related to health. For example people with greater ability can take better care of their health. Ignoring unobserved factors such as ability may bias our estimates of the effects of health conditions and education on labour market outcomes. In econometrics, we call unobserved factors that do not change over time 'unobserved heterogeneity'.

There are a few approaches that can be used to deal with the bias introduced by unobserved factors. A widely used approach is available when the data used for the analysis are longitudinal (panel data), like HILDA data. In these kinds of data, the same person is surveyed several times over a time interval. This allows us, with the right method, to track the changes

in their observable characteristics, and thus to eliminate the confounding effect of timeinvariant unobserved factors.

One such method is 'fixed effects panel estimation'. This allows us to run a regression of changes in a dependent variable, over time, on the changes in observed characteristics. As unobserved heterogeneity does not change over time, fixed effects panel estimation can be used to show how the changes in explanatory variables affect the changes in a dependent variable (without the confounding effects from time-invariant unobservable factors). One limitation of this approach is that it does not produce coefficient estimates for the time-invariant observed characteristics. For instance, geographical location, occupation, industry or occupation, and so on have relationships with labour market outcomes that are of potential interest in our study. However, fixed effects estimation would not produce an estimate for such characteristics as these.

To remedy this, we implement the 'random effects panel estimation' technique (technical details are in Box 2). This approach usually produces similar results to those obtained from fixed effects panel estimation. The advantage of this approach is that it allows us to obtain estimates for individuals' time-invariant observed characteristics. However, for this technique to be robust and truly allow us to control for unobserved heterogeneity, we need to use a correction which consists of adding further controls to the regression equation, for example the individual means (over time) for each of the time-varying explanatory variables. This is called the 'Mundlak correction' (see Box 2).

The outcome variables we examine include (i) labour force participation; (ii) being employed or not (among labour force participants); (iii) hourly wages; (iv) weekly income; (v) job satisfaction; and (vi) life satisfaction. The first two outcome variables are binary: the answer to the question about the status is either yes or no. In our empirical estimation, the labour force participation variable takes the value of 1 if an individual is a participant, and the value 0 otherwise. Similarly, the employment variable takes the value of either 1 (employed) or 0 (not employed). The last four labour market and life outcomes are continuous variables (hourly wages, weekly income), or they can be considered as approximately continuous variables (job satisfaction and life satisfaction). Different types of dependent variables require different modelling strategies.

For the binary dependent variables in HILDA, we use a random effects Probit model with a Mundlak correction in order to account for the binary nature of the outcome we are trying to explain. We use the linear random effects panel estimation with Mundlak corrections when the outcome variables are continuous. The essence of each approach is the same. Both of them, to our knowledge, are the most suitable and advanced techniques we can use for our research questions.

Box 3: Random effects probit estimation with Mundlak corrections

Random effects probit estimation with Mundlak corrections

Due to the longitudinal nature of the HILDA data, we use panel data multivariate regression methods for the estimations. Among the dependent variables we care about, labour force participation and whether in employment or not are binary variables. Considering this feature of these two dependent variables, we employ the following random effects Probit estimation with Mundlak corrections. The model is specified as:

$$Y_{it}^{*} = H_{it}^{'}\beta_{H} + E_{it}^{'}\beta_{E} + X_{it}^{'}\alpha + \overline{X}_{i}\gamma + \varepsilon_{it}$$
⁽¹⁾

where Y_{it}^* are the latent labour market outcomes. H_{it} denotes the vector of long-term health conditions measures. E_{it} are variables recoding education (level and (or) field). X_{it} contains other observed explanatory variables such as age, gender, and marital status, and so on for person *i* at time *t*. The Mundlak correction terms, denoted by the vector \overline{X}_i , are the individual means(over time) for each of the time-varying explanatory variables. These terms as a whole can control for time-invariant unobserved individual heterogeneity. \mathcal{E}_{it} is the error term, which is assumed to be normally distributed and independent at the individual mean level. In some models, we test the possibility that education may be related in systematically different ways to the outcomes of interest, depending on the nature of the long-term health condition. In such models, we add to equation (1) a number of interaction

terms denoted by the vector $\left(H\cdot E
ight)_{it}$.

Since the latent variable Y_{it}^* is not observed in practice, we link the observed labour market outcomes to individual characteristics with the following specification:

$$Y_{it} = 1 \quad \text{if } Y_{it}^* \ge 0$$

$$Y_{it} = 0$$
 if $Y_{it}^* \le 0$

 Y_{it} denotes the observed labour market outcome such as labour force participation and being employed. We assume that Y_{it} is equal to 1 if individual *i* is a labour force participant at time *t*, and the variable is equal to 0 if individual *i* is not participating in the labour force. Similarly, Y_{it} is equal to 1 if the individual is employed and 0 if unemployed in the estimations where we consider the probability of being employed or not.

In our estimations, the health condition vector is represented by two sets of categorical dummies (see the Results section for details). The first one is the set of four dummies indicating whether an individual has a physical health problem, a mental health problem, or both (the absence of a health condition is the reference group). The second set uses the more detailed 17 categories of information on health conditions available in HILDA (hence 17 variables comprise the H_{ii} vector.

Equation (1) is estimated using Maximum Likelihood Estimation, which gives us estimates of the parameters of interest, namely β_H , β_E , α , γ . These parameters measure the effects of types of health condition, individual characteristics, and the Mundlak correction terms on the unobserved latent labour market outcomes Y_{ii}^* . In order to obtain the more useful measure of the effects of the variables of the model on the probability of participating in the labour force (or the probability of employment), we further compute the 'marginal effects' associated with each variable. This additional computation is required because of the non-linear nature of the model estimated. For the other outcomes, such as wages and satisfaction, the models estimated are linear; hence, the estimated parameters give us the information we seek directly.

The marginal effects can be interpreted as how the binary dependent variable changes in response to a unit increase in a continuous explanatory variable, or a change from 0 to 1 of a dummy explanatory variable. In the results section, we report coefficient estimates and their associated marginal effects.

This random effects probit approach with Mundlak corrections has an advantage over the simple cross-sectional probit model, as it can deal with the endogeneity bias attributable to unobserved individual heterogeneity. For example if people with greater unobserved abilities are more likely to be a labour force participant or to be employed, but are less likely to have a health condition, then using the basic cross-sectional models is likely to overstate the negative effects of disability on labour market outcomes.

Random effects estimation with Mundlak corrections

When our dependent variables are continuous variables (hourly wages, weekly earnings) or can be considered as approximately continuous variables (job satisfaction, life satisfaction), we use the linear random effects panel estimation with a Mundlak correction. The model is specified as:

 $Y_{it}^* = H_{it}^{'}\beta_H + E_{it}^{'}\beta_E + X_{it}^{'}\alpha + \overline{X}_{i}\gamma + \varepsilon_{it}$ (4)

where the outcome variables include hourly wages, weekly wages, job satisfaction, and life satisfaction. Due to the linear nature of the specification, the coefficient estimated measures the marginal effects of independent variables on the outcomes.

We prefer this random effects panel estimation with Mundlak corrections to the fixed effects panel estimation, because the former approach can give us the coefficient estimates (marginal effects) of time-invariant independent variables (such as gender), with the unobserved heterogeneity problem being dealt with at the same time.

Box 4: Coefficients and marginal effects in probability models

Coefficients and marginal effects in probability models

In conventional linear estimation, it is customary to report a coefficient to represent the estimated association between each independent variable and the dependent variable. The sign of each coefficient has a ready intuitive interpretation. For a positive sign, the data suggest that there is a positive association between the dependent variable and the specific independent variable. A negative sign suggests a negative association. Simply put, a positive coefficient would suggest that subjects with high values of the independent variable are more likely to have high values of the dependent variable too. An example of a positive association is that between education and income. If we pick a person at random from our sample and they happen to have a university degree, we are more likely also to have picked someone with an above average income. (This is a probability statement. It is indeed possible that we may pick someone with a degree and a very low income, as there are people with degrees who have below-average incomes. However, we can be sure that if we repeatedly look at people with degrees, we will find people who have a higher than average income.)

The linear estimation model lends itself to further interpretation. If both dependent and independent variables are measured in clearly understood units and have a relationship that we believe to be constant across the range of values of these variables, then the coefficient has a clear quantitative interpretation: a unit increase in the independent variable is associated with an increase in the dependent variable that equals the value of the coefficient. Simply put, if the coefficient of experience in the workforce measured in years (that is, the number of years are entered as the independent variable in the right-hand side) in the estimation of hourly wage (measured in AUD) is estimated to be 1.5, the result means that if we pick a group of workers from our data with 10 years experience and another group with 11 years experience, the latter will be paid AUD1.50 more per hour. Where the variables have been measured in logs, which is often the case with earnings estimations, the coefficients can be interpreted as elasticities. That is, are the relationship between two percentage changes. Unfortunately, when we need to use a non-linear model, such as a probability model, coefficients lose their intuitive interpretation. The implication of non-linearity is that the estimated coefficients associated with each variable do not provide us with a number that can be readily interpreted in terms of the units in which the two variables are measured—as was the case in the linear regression models. The size of the coefficient and its association with the dependent variable actually change, depending on the value of the independent variable.

The estimates themselves have little interpretative value beyond their sign.

To overcome this problem we calculate the so called 'marginal effects' for each of the estimated coefficients. This is a calculation that does not contain new information, over and above what has been used to derive the original set of coefficients; it translates these coefficients into a metric that has an intuitive interpretation. In the context of the present analysis of labour market outcomes and health conditions, when we estimate the probability that someone is employed, the marginal effect of each independent variable states how the estimated probability of being employed changes per unit change in the independent variable. Similarly, for categorical variables, the marginal effect measures the difference in the

estimated probability due to the categorical variable changing from the value of 0 to the value of 1.

However, the values of marginal effects associated with a variable depend on the actual value of this variable. It is not constant as in linear models. In general, when we derive marginal effects, we set the value of all variables in the model to their sample means and only allow the value of the variable in question to vary. However, this is not necessary, as we may wish to target our prediction and focus on individuals with particular characteristics, as we do when we make particular scenarios of DVA clients' characteristics. For example if we assume that the sample mean of the age of DVA clients is, say, 35, then the marginal effect of age on the probability of being employed tells us the change in the probability associated with an increase in age by 1 unit, starting from 35 years (assuming that all other variables of the model are set at their sample means). We may be interested in knowing the effect of a unit change in age on the probability for younger populations, say, 25. The marginal effect obtained will be different, and it should be relevant to the analysis. Therefore, in addition to reporting the usual marginal effects from the estimations based on HILDA or SOS, we compute some to look at particular scenarios of interest which fit the particular situation of DVA clients.

3. Health conditions, education, and labour market outcomes in the Australian labour market

This section provides an analysis of how the Australian labour market penalises health conditions, depending on their type, and rewards additional qualifications obtained through formal education. The effects are analysed through a set of labour market and life outcomes: (i) the probability of participating in the labour force, (ii) the probability of being employed, (iii) wages (hourly and weekly wages), and (iv) life and job satisfactions.

In the next section, we look at the effect (or the relationship, depending on the dataset) of health conditions and education level (and field) on each labour market outcome taken individually.

3.1. Health conditions, education, and labour force participation in the Australian labour market

Table 18 is an extract of the estimation results based on the HILDA data. It shows the estimated effects of long-term health conditions on individuals' probability of participation in the labour force in Australia. It contains the results of two specifications. The first one includes broad categories of long-term conditions; the second focuses on the more detailed health conditions data available in HILDA.

Results from the first model suggest that mental conditions have a greater negative impact on labour force participation than physical conditions. Having a physical condition leads to a probability of participating, on average, that is 1.21 percentage points lower than for individuals without a health condition. It is almost 4 percentage points lower for individuals suffering from a mental health condition. Most importantly, it appears that much larger penalties are experienced by individuals who suffer mental and physical health conditions than those who do not. The effect of combining both types of health condition is that an individual experiences, on average, a 9.51 percentage points lower probability of participating in the labour force than an individual without a long-term health condition.

Focusing on more detailed health conditions (right-hand side column), we can corroborate what we observed with the broader categories. Individuals suffering from mental health conditions experience greater penalties, on average, than individuals with a physical condition. This analysis also highlights important variations among what we can consider as physical health conditions. Some such as sensory conditions (the first three) induce no significant effect on labour force

participation; others have quite a dramatic effect compared to the average of 1.21 percent estimated for physical conditions in the first model. For instance, acquired brain injuries (the third-last condition listed) leads to an 8.35 percent smaller labour force participation rate than for an individual without a health condition.

	Model 1	Model 2
Labour Force participation —	Marg. Effects	Marg. Effects
Physical condition only	-0.0121***	
	(0.00304)	
Mental condition only	-0.0397***	
	(0.00777)	
Both physical and mental conditions	-0.0951***	
	(0.01000)	
Detailed health conditions		
Sight problems not corrected by glasses or contact lenses		0.00269
		(0.00551)
Hearing problems		-0.00266
		(0.00527)
Speech problems		-0.0154
		(0.0153)
Blackouts, fits or loss of consciousness		-0.0295**
		(0.0125)
Difficulty learning or understanding things		-0.0223**
, 5 5 5		(0.00891)
Limited use of arms or fingers		-0.0180***
5		(0.00692)
Difficulty gripping things		0.00329
		(0.00549)
Limited use of feet or legs		-0.0392***
		(0.00696)
A nervous or emotional condition which requires treatment		-0.0418***
		(0.00613)
Any condition that restricts physical activity or physical work		-0.0109***
····/ ••·······························		(0.00347)
Any disfigurement or deformity		-0.000637
		(0.0105)
Any mental illness which requires help or supervision		-0.0517***
) and an address able as he are		(0.00949)
Shortness of breath or difficulty breathing		-0.00730
		(0.00540)
Chronic or recurring pain		-0.00915**
		(0.00398)
Long-term effects as a result of a head injury, stroke or other brain		(
damage		-0.0835***
ounder .		(0.0191)
A long-term condition or ailment which is still restrictive even though it		(0.0101)
is being treated or medication is being taken for it		-0.0339***
is being reared of medication is being taken for it		(0.00465)
Any other long-term condition such as arthritic asthma heart disease		(0.00403)
Alzheimer's disease, dementia, and so on		-0.00345
		(0.00296)

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Table 19 is an extract of the estimation results that focus on the average impact of education on individuals' probability of participating in the labour force. A university degree brings about the highest improvement in labour force participation, with an increase of over 5.5 percent compared to someone who did not upgrade their qualification; the certificate level is the next highest improvement. A diploma does not seem to improve an individual's labour force participation to a greater extent than a certificate does.

Labour Force participation	Model 1
Labour Force participation	Marg. Effects
Certificate	0.0311***
	(0.00316)
Diploma	0.0289***
	(0.00453)
University	0.0548***
	(0.00353)

Table 19: The impact of education on labour force participation in the Australian labour market

In Table 20, we see the results obtained through another specification among the models which include fields of education. For fields of education, we cannot make causal statements, as the results are based on one wave of HILDA data. The estimates provided in

Table **20** give the average relationship between labour force participation and the field of study from which the individual graduated⁷. The figures are given with reference to the field of Natural and Physical Sciences. They indicate whether or not a given field is associated with a statistically significant higher or lower probability of participating in the labour force and, if so, by how much. The results indicate that any fields related to medicine are associated with significantly higher probabilities of participating in the labour force compared to the reference category. We obtain the same type of results for the fields of agriculture, education, and management and commerce. The results show that fields such as IT and Engineering are not associated with significantly higher probabilities of labour force participation than Law, Creative arts and so on are.

⁷ For these computations, we consider all levels of qualification undertaken. For the HILDA data, we include both VET and University degrees. For the estimates obtained using the SOS, we include all VET qualifications.

Table 20: Relationship between field of education and labour force participation in the Australian labour market

Labour Force nerticipation	HILDA – wave12	
Labour Force participation	Marg. Effects	
Field of education (reference group: Natural and physical sciences)		
Information technology	-0.00224	
	(0.0278)	
Engineering and related technologies	0.0278	
	(0.0215)	
Architecture and building	0.0218	
	(0.0238)	
Agriculture, environment and related studies	0.0401*	
	(0.0235)	
Health (SOS only)		
Medicine (HILDA only)	0.0754***	
	(0.0243)	
Nursing (HILDA only)	0.0593***	
	(0.0172)	
Other health-related (HILDA only)	0.0543***	
	(0.0187)	
Education	0.0349*	
	(0.0197)	
Management and commerce	0.0351*	
	(0.0199)	
Law (HILDA only)	0.0313	
	(0.0279)	
Society and culture	0.00663	
	(0.0227)	
Creative arts	0.00453	
	(0.0262)	
Food, hospitality and personal services	-0.0145	
	(0.0260)	
Mixed-field programs (SOS only)		

3.2. Health conditions, education, and employment probabilities in the Australian labour market

In this section we report the estimation results obtained on employment. Table 21 shows that a physical condition does not lead to a significant decrease in employability, everything else constant. This result suggests that most of the penalty for physical conditions intervenes at the participation-decision level, with more-limiting conditions leading to non-participation. Those who participate in the labour force probably self-select into jobs for which their condition is less limiting and, as a consequence, they have similar employment probabilities to people without health conditions. With mental conditions and the combination of mental and physical conditions, the situation is slightly different. Previously, we identified significantly lower participation rates arising from these types of conditions, even more so for the combined mental and physical conditions. Now we see that further penalties manifest themselves in terms of employability with regard to these conditions. People who

have a mental health condition experience a 1.4 percent lower probability of being employed than people without a condition. This is not a low figure, when we consider that the unemployment rate in Australia for the period analysed is fairly low (averaging 5.3% in the past 10 years). The results further show that people with both mental and physical conditions experience a further 1.4 percent lower probability of employment. For these people, we have already observed that they are 9.5 percent less likely to participate in the labour force, on average (see Table 18). Our results show that having both conditions leads to very large penalties in the Australian labour market. These are important results, because we observe that about 25 percent of the DVA clients in our data have both physical and mental health conditions concurrently.

The lower part of the table shows wide variation among detailed health conditions with regard to their impact on the probability of employment. Some conditions seem to produce no significant differences compared to having no health conditions. Others lead to significant penalties in terms of employability. This is mostly for mental illness (nervous, emotional condition; mental illness).

We can put together the results on employment and those obtained on labour force participation for these detailed conditions, since both outcomes act to determine an individual's active participation in the labour market. Comparing results on employment and participation, we see that some health conditions have a greater negative impact on the probability of participation, others on employment, and yet others on both outcomes. Mental illnesses have a negative impact on both participation and employment. Mental illness leads to over 5 percent lower participation and a further 1.45 percent lower probability of employment. Combining these figures, means that someone with mental illness would have an over 6.5 percent lower probability of participation and employment in the Australian labour market than someone without a condition. We get similar results for people suffering from nervous emotional conditions with, respectively, a 4.18 percent lower probability of participation and a further 1.32 percent lower probability of employment; combined, these constitute a 5.4 percent lower probability of participation and employment. Comparatively, on average, physical conditions produce a much lower negative impact on both outcomes. The results enable us to identify conditions which have an impact on participation but do not seem to affect employment significantly. This suggests that the most obvious hurdle is at the participation stage. Once this hurdle is overcome, people with health conditions experience, on average, the same outcomes as people without a health condition. In the case of 'long-term effects from head injury' there is a more than 8 percent lower probability of participation; it has no significant impact on employment for those who participate. We obtain similar results for 'long-term condition or ailment ...' with, respectively, a 3.4 percent lower probability of participation, but no significant effect on employment for those who do participate.

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Free laws and an electricity of	Model 1	Model 2
Employment probabilities	Marg. Effects	Marg. Effects
Physical condition only	0.000904	
	(0.000622)	
Mental condition only	-0.0139***	
	(0.00332)	
Both physical and mental conditions	-0.0139***	
	(0.00349)	
Detailed health conditions		
Sight problems not corrected by glasses or contact lenses		-0.00117
		(0.00177)
Hearing problems		-0.00314*
		(0.00187)
Speech problems		0.00155
		(0.00259)
Blackouts, fits or loss of consciousness		-0.00452
		(0.00392)
Difficulty learning or understanding things		-0.00430
		(0.00266)
Limited use of arms or fingers		-0.00518*
		(0.00269)
Difficulty gripping things		0.000560
		(0.00167)
Limited use of feet or legs		0.00114
		(0.00113)
A nervous or emotional condition which requires treatment		-0.0132***
		(0.00282)
Any condition that restricts physical activity or physical work		0.00187***
		(0.000655)
Any disfigurement or deformity		0.00259
		(0.00200)
Any mental illness which requires help or supervision		-0.0145***
		(0.00416)
Shortness of breath or difficulty breathing		-0.00229
		(0.00179)
Chronic or recurring pain		0.000685
		(0.000929)
Long-term effects as a result of a head injury, stroke or other brain damage		0.000112
		(0.00269)
A long-term condition or ailment which is still restrictive even though it is being treated or medication is being taken for it		0.000533
		(0.000874)
Any other long-term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc.		0.00182***
		(0.000606)

Table 21: The impact of health conditions on employment probabilities in the Australian labour market

Figure 2 summarises the estimation results on the impact of detailed health conditions on participation and employment, and the combined effect on both outcomes. The light orange histograms show the impact of health conditions on participation, while the dark orange histograms represent the impact on employment. The blue histograms represent the effect (if significant) of

health conditions on the probability of both participating and being employed. It illustrates our previous observations regarding which condition affects an outcome more than the other, or both together.



Figure 2: Estimated effect of health conditions on participation, employment, and combined outcomes

Table 22 shows the estimated effect of education on the probability of being employed. Since we observe this outcome for VET graduates in the SOS, we display the estimated relationship between VET education levels and the probability of employment. In addition, given that the large number of observations in the SOS allows it, we test for whether the returns to different levels of VET significantly differ, depending on the type of health condition. We do so by introducing interaction terms in the model.

The results based on HILDA show that improving an individual's qualification through the formal education system has a positive effect on the probability of them finding employment. The effect is rather small, as suggested by the value of the marginal effects displayed in the table; it is not statistically significant for university degrees in the first model that does not control for field of

education. The results displayed in the second column are from a model restricted to wave 12 of the data, where we control for fields of education. It shows slightly higher returns to education but, as explained in the methodology section, these returns do not account for unobserved heterogeneity among individuals; hence, they only show an association between education and employment probabilities. Comparing these results with those obtained on labour force participation, we can see that education has a greater effect in improving participation than employment. This result may be partly due to the fact that unemployment is very low in Australia in the span covered by the data (5.3% on average). Should there be a downturn, we would expect education to have a more discriminant effect on employment.

The lower part of Table 22 looks at the estimated relationship between education level and employment probabilities for VET degrees. The results from the basic model are consistent with what we find using the HILDA data (Model 3, restricted to wave 12). More interestingly, we use the SOS data to test whether the relationship between the different education levels and employment probabilities significantly differ depending on the type of health condition. The results are in the second column. They show that for people with only a physical condition, Certificate III and Certificate IV are associated with an increased probability of employment. Diploma does not improve the probabilities. For people with mental or both mental and physical conditions, a VET qualification does not seem to be associated with improved employment probabilities, at least over and above the relationship observed for people without conditions.

Employment probabilities	Model 1	Model 3
	Marg. Effects	Marg. Effects
Results based on HILDA:		
Certificate	0.00215**	0.0103**
	(0.000839)	(0.00497)
Diploma	0.00379***	0.0191***
	(0.00102)	(0.00505)
University	0.00171	0.0247***
	(0.00117)	(0.00545)
Results based on SOS:	Model 1	Model 2
Certificate III	0.00265**	-0.000576
	(0.00123)	(0.00127)
Certificate IV	0.0152***	0.00860***
	(0.00132)	(0.00145)
Diploma	0.0157***	0.0130***
	(0.00137)	(0.00146)
Interaction between type of condition and level of education:		
Physical condition only*Certificate III		0.00635*
		(0.00351)
Physical condition only*Certificate IV		0.00890**
		(0.00388)
Physical condition only*Diploma		-0.00274
		(0.00459)
Mental condition only*Certificate III		-0.000119
		(0.00834)
Mental condition only*Certificate IV		-0.00795
		(0.0105)
Mental condition only*Diploma		-0.0105
		(0.0122)
Both physical and mental conditions*Certificate III		0.00700
		(0.0117)
Both physical and mental conditions*Certificate IV		0.0115
		(0.0130)
Both physical and mental conditions*Diploma		-0.0427*
		(0.0222)

Table 22: The impact of education on the probability of employment in the Australian labour market

We focus on fields of education to identify those that are associated with higher probabilities of employment. Table 23 reports the results obtained using the HILDA data (left-hand column) and the SOS (right-hand column). The HILDA data include a wider variety of people than the SOS data with regard to how long ago people completed their highest level of education. Moreover, the results related to fields of education include all levels of education in the HILDA, including VET and university graduates; as we know, SOS focuses on VET graduates. As a consequence, we expect the effects of education based on the HILDA data to be somewhat diluted. This is exactly what we see in the table. No field of education stands out as being associated with either a higher or a lower probability of employment. We obtain different results when the focus is on VET qualifications and recent graduates. IT and Creative Arts qualifications seem to be associated with a lower probability of employment compared to the reference field (Natural and Physical Sciences). However, the effect

is relatively small—about 1 percent lower probabilities. Other fields of study seem to be associated with significantly higher probabilities of employment. This is the case for health-related fields with an estimated 3 percent higher probability, education-related fields (about 3 percent), Management (1.8 percent) and Society and Culture (2.2 percent).

Employment probabilities	HILDA – wave12	SOS (VET education only)	
	Marg. Effects		
Field of education (reference group: Natural and physical sciences)			
Information technology	-0.0271	-0.0123*	
	(0.0261)	(0.00654)	
Engineering and related technologies	0.00334	0.0200***	
	(0.0151)	(0.00480)	
Architecture and building	-0.000492	0.0226***	
	(0.0172)	(0.00463)	
Agriculture, environment and related studies	-0.0185	-0.000267	
	(0.0243)	(0.00567)	
Health (SOS only)		0.0328***	
		(0.00407)	
Medicine (HILDA only)	0.00277		
	(0.0270)		
Nursing (HILDA only)	-0.00271		
	(0.0178)		
Other health-related (HILDA only)	0.00839		
	(0.0141)		
Education	0.00446	0.0336***	
	(0.0149)	(0.00408)	
Management and commerce	-0.00827	0.0179***	
	(0.0167)	(0.00493)	
Law (HILDA only)	0.0131		
	(0.0166)		
Society and culture	-0.0162	0.0220***	
	(0.0205)	(0.00462)	
Creative arts	-0.0171	-0.0132**	
	(0.0232)	(0.00639)	
Food, hospitality and personal services	-0.00704	0.00500	
	(0.0182)	(0.00532)	
Mixed-field programs (SOS only)		-0.00958	
		(0.00608)	

 Table 23: Relationship between field of education and probability of employment in the Australian labour

 market

So far, it appears that health conditions and education exert their greatest impact on labour force participation rather than employment. Once people are able and willing to participate in the labour force, their health conditions seem to lead to smaller penalties with regards to the probabilities of becoming employed. Part of this observation is related to the fact that people with a health condition who participate in the labour force would self-select themselves into jobs where their handicap would limit them the least. Moreover, the Australian economy in the last decade has been able to absorb most participating people into employment; hence, differences in education fields or levels did not play such an important role in determining employment outcomes then. In such a market, we would expect education to produce its largest effect on wages, as we go on to discuss in the next paragraph. We would expect these results to change somewhat if the country were to face a downturn and its ability to absorb participating people into employment were altered through the increased competition among labour market participants.

We turn to examine the effect of health conditions and education on wages.

3.3. Health conditions, education, and earnings in the Australian labour market

The estimates on wages further corroborate the results we have obtained so far. Mental health conditions, especially when combined with a physical condition, lead to large penalties in the labour market.

Table 24 shows that a physical condition actually has a positive effect on earnings, with a significant 1.3 percent higher expected weekly wage than for individuals without a condition. This result may seem counterintuitive, yet people with a physical condition who participate in the labour force, and are employed, are a self-selected group from the broader population of people with a physical condition. They probably suffer from less severe conditions. Moreover, as stated earlier, they are likely to seek jobs where their physical condition would be the least limiting. Finally, and we will see this confirmed in the dynamic analysis of health conditions (section 3.5), there is more variability among physical health conditions. There are more one-off physical conditions which exert a temporary impact on labour market outcomes. This affects the present results on the general impact of physical health conditions that are displayed in Table 24.

Opposite to the result on physical health conditions, we see that the wage penalty resulting from a mental health condition is, on average, 7.7 percent, and is 11 percent for those who have physical and mental conditions. When detailing the health conditions, we find, once again, some important variations with regard to the wage penalties for people with long-term health conditions. They range from being not statistically different from people without health conditions (sight problems; blackouts; limited use of arms or fingers, and so on) to almost 16 percent for people whose condition relates to difficulties in learning or understanding.

The results based on the SOS data are similar (see appendices Table A 10), in that having mental and physical health conditions combined is associated with much lower weekly wages compared to having none or one. Physical conditions are related the smallest wage loss. The magnitude of the estimates is very different. The SOS results do not give us *causal* effects from health conditions, but *associations* between health conditions and wages, without controlling for unobserved heterogeneity. The SOS data record outcomes six months after graduating from VET. The SOS results show that physical health conditions are associated with about 12 percent lower weekly wages; mental conditions with, on average, 45 percent lower wages; and having both conditions implies almost 57 percent lower wages (see Table A 10, Model 2, including interactions between education and health conditions).

In terms of the magnitude of the effects, HILDA is closer to enabling causal effects than is SOS; thus, the estimates displayed in Table 24 can be used to infer the general effect of health conditions on weekly wages in a long-term perspective. The magnitude of the estimates obtained on the SOS data is a combination of having a shorter-term perspective on labour market outcomes—participants are

interviewed six months after graduating from VET—and because we do not control for unobserved heterogeneity.

Employment probabilities	Model 1	Model 2
Physical condition only	0.0131**	model 2
	(0.00660)	
Mental condition only	-0 0772***	
Wental condition only	(0.0164)	
Both physical and mental conditions	-0.111***	
	(0.0174)	
Detailed health conditions	(0.017.1)	
Sight problems not corrected by glasses or contact lenses		0.00126
		(0.0181)
Hearing problems		-0.0293**
		(0.0149)
Speech problems		-0.117**
		(0.0460)
Blackouts, fits or loss of consciousness		0.0288
		(0.0367)
Difficulty learning or understanding things		-0.157***
, , , , , , , , , , , , , , , , , , , ,		(0.0273)
Limited use of arms or fingers		-0.00230
		(0.0195)
Difficulty gripping things		-0.0344
		(0.0210)
Limited use of feet or legs		-0.0122
5		(0.0157)
A nervous or emotional condition which requires treatment		-0.0728***
		(0.0145)
Any condition that restricts physical activity or physical work		0.0259***
		(0.00963)
Any disfigurement or deformity		-0.00588
		(0.0389)
Any mental illness which requires help or supervision		-0.0477**
		(0.0228)
Shortness of breath or difficulty breathing		-0.00430
		(0.0173)
Chronic or recurring pain		0.00784
		(0.0113)
Long-term effects as a result of a head injury, stroke or other brain		-0 08/12**
damage		0.0042
		(0.0357)
A long-term condition or ailment which is still restrictive even though it is being treated or medication is being taken for it		-0.0137
		(0.0106)
Any other long-term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc		-0.00248
		(0.00839)

Table 24: The impact of health conditions on weekly wages in the Australian labour market

Table 25 shows the extent to which wages are affected by an individual's investment in formal education. The results make it obvious that it is at the wage level where we see the largest impact from education.

On average, obtaining a VET certificate leads to a 18.8 percent higher wage than for an individual with a lower level of education. The wage difference increases to 25 percent for a diploma, and as high as 54.8 percent for a university degree. Focusing on the wage—and comparing the penalties associated with health conditions with the returns from education—the results suggest that investing in formal education for those able to study, would certainly help in alleviating the negative effects from their health condition(s).

The results based on the SOS data show the expected returns from the VET levels, six months after graduation (left-hand column). Using the SOS data, we test the hypothesis that the returns to VET differ depending on health conditions. The results are displayed in the right-hand column of Table 25. However, it is useful to recall the coefficients obtained for health conditions from the SOS data to have a better understanding of the estimates of education returns by health condition. Referring to the second model results displayed in Table A 10 in the appendices, we see that the coefficients associated with health conditions are as follows: -11.7 percent for physical conditions; -45.4 percent for mental conditions, and 57 percent for mental and physical combined. To determine the expected return to a Certificate III for an individual with a health condition, we add the estimates obtained for a physical condition, Certificate III, and the interaction between a physical condition and Certificate III. The estimate for the interaction term in this case is not statistically significant, which means that there is no additional benefit (or penalty) associated with physical conditions regarding the returns to a Certificate III. Hence, an individual with a physical health condition who graduates with a Certificate III would expect to have the same return as someone without a health condition—that is, 3.95 percent. But since this individual starts with a penalty of almost 12 percent due to their physical condition, the total expected wage difference between a Certificate III graduate with a physical health condition and someone without a health condition and no Certificate III is -11.7 + 3.95 = -7.75 percent. In other words, obtaining a Certificate III (or any other VET qualification) for an individual suffering from a physical condition would not contribute to reducing the wage gap, compared with individuals without a health condition. Indeed, the comparison between two Certificate III graduates—one with a physical condition and the other without—would remain 11.7 percent in favour of the person without a health condition. This expected difference remains at all levels of VET for people suffering from physical health conditions.

For individuals with mental health conditions, we see that any VET qualification would be associated with higher returns than for individuals without a health condition; this would somewhat reduce their original earnings disadvantage. The original disadvantage is estimated to be 45.4 percent. Obtaining a Certificate III by people with a mental health condition is associated with an additional 25 percent higher weekly wage on top of the estimated 3.95 percent obtained by people without a health condition. This result shows that the earnings disadvantage is more than halved for individuals with a mental health condition if they upgrade their qualification to Certificate III, compared to people without a condition. Individuals with a mental health condition who graduate with Certificate IV are expected to decrease their earning disadvantage, over their 'healthy' counterpart, by roughly the same amount—25 percent. Altogether, individuals with a mental health condition who graduate with either a Certificate III or a Certificate IV would, on average, have 20 percent lower weekly wages than their 'healthy counterpart'. The results for those who have both a mental and physical health condition show that graduating from Certificate III or a Certificate IV is related to a significant decrease in the wage gap when compared to people without a condition. It is not the case for a diploma.

Altogether, the results obtained using the SOS data show that VET qualifications are associated with significantly higher expected wages for everyone. They also show that at least for individuals suffering mental and combined mental and physical conditions, upgrading their qualifications through VET is associated with a reduction of the initial wage gap related to having a health condition. Nevertheless, there remains a significant wage gap between people with a health condition and those without, no matter what amount of VET qualification upgrading is undertaken; this is because the magnitude of the interaction effects is smaller than the coefficients obtained for each health condition. In effect, our estimates suggest that an individual with a health condition who graduates from the highest possible VET course would still not earn as much as one without a health condition who graduated from a VET course at below the Certificate III level.

Employment probabilities	Model 1	
Results based on HILDA:		
Certificate	0.188***	
	(0.0106)	
Diploma	0.252***	
	(0.0172)	
University	0.548***	
	(0.0131)	
Results based on SOS:	Model 1	Model 2
Certificate III	0.0441***	0.0395***
	(0.00357)	(0.00367)
Certificate IV	0.0950***	0.0929***
	(0.00391)	(0.00402)
Diploma	0.139***	0.138***
	(0.00431)	(0.00445)
Interaction between type of condition and level of education:		
Physical condition only*Certificate III		0.00978
		(0.0128)
Physical condition only*Certificate IV		-0.0176
		(0.0136)
Physical condition only*Diploma		-0.0219
		(0.0150)
Mental condition only*Certificate III		0.250***
		(0.0435)
Mental condition only*Certificate IV		0.254***
		(0.0494)
Mental condition only*Diploma		0.182***
		(0.0573)
Both physical and mental conditions*Certificate III		0.212***
		(0.0756)
Both physical and mental conditions*Certificate IV		0.262***
		(0.0833)
Both physical and mental conditions*Diploma		0.169
		(0.114)

Table 25: The impact of education on weekly wages in the Australian labour market

Table 26 examines the relationship between fields of education and weekly wage in order to highlight those fields that are associated with significantly higher or lower earnings. The reference remains 'Natural and physical science'. The left-hand column has the estimates obtained using HILDA; it shows these for all levels of education, including university. The right-hand column displays the results obtained for VET graduates six months after graduating. The results highlight a few differences between the two series of estimates; some fields seem to be associated with significantly higher weekly earnings when we look at outcomes after six months for VET graduates (SOS), but not when we look at the broader population, including university degree holders and individuals with a longer horizon since graduation (HILDA). This is the case with 'Architecture and building', 'Agriculture', 'Education', and 'Food, hospitality'. In each of these cases, we find significantly higher

expected weekly wages based on the SOS data, while we no longer find this positive relationship when looking at the HILDA-based results.

For other fields, we find consistent results between the two datasets. This is the case, for instance, with 'Engineering and related technologies' where the expected average weekly wage is almost 17 percent higher in the HILDA data, and 13 percent higher in the SOS data. We see that 'Creative arts' is associated with about a 10 percent lower expected weekly wage. HILDA data show that education in Medicine is associated with a significantly higher expected weekly wage, everything else held constant, while other areas of health (Nursing and other) are not. We find a positive relationship between obtaining a qualification in the field of health and weekly wages using the SOS.

Table 26: Relationship betwe	en field of education a	nd weekly wages in t	he Australian Jahow	market
Table 20. Relationship betwe	en neiu of euucation a	ind weekly wages in t	ne Australian labour	market

		SOS (VET
Employment probabilities	HILDA – Waveiz	education only)
	Marg. Effects	Marg. Effects
Field of education (reference group: Natural and physical sciences)		
Information technology	0.0409	0.0270
	(0.0537)	(0.0196)
Engineering and related technologies	0.169***	0.132***
	(0.0469)	(0.0178)
Architecture and building	0.0732	0.0718***
	(0.0517)	(0.0184)
Agriculture, environment and related studies	-0.0412	0.0556***
	(0.0617)	(0.0186)
Health (SOS only)		0.0692***
		(0.0181)
Medicine (HILDA only)	0.305***	
	(0.0804)	
Nursing (HILDA only)	0.0184	
	(0.0547)	
Other health-related (HILDA only)	0.0521	
	(0.0521)	
Education	0.0671	0.133***
	(0.0499)	(0.0182)
Management and commerce	0.114**	0.107***
	(0.0458)	(0.0178)
Law (HILDA only)	0.138*	
	(0.0793)	
Society and culture	-0.0179	0.0266
	(0.0496)	(0.0179)
Creative arts	-0.126**	-0.100***
	(0.0607)	(0.0199)
Food, hospitality and personal services	0.0270	0.0820***
	(0.0522)	(0.0184)
Mixed-field programs (SOS only)		0.0561***
		(0.0187)

3.4. Health conditions, education, and life and job satisfaction in the Australian labour market

Beyond the traditional labour market outcomes, we have looked at more subjective outcomes such as life and job satisfaction. We ran the same models as before using these outcomes as the dependent variables. Table 27 is an extract of the results relating to the impact of health conditions on life and job satisfaction. The results remain consistent with what we have observed so far with the other labour market outcomes—that is, mental health conditions and the combination of mental and physical health conditions have a very detrimental effect on the outcomes, more so than just suffering from a physical condition. The magnitude of the effects is quite large, since life and job satisfaction are recorded on a 10-point scale whose distribution in the HILDA data is skewed around 7. The combination of mental and physical health conditions leads to a decrease in life and job satisfaction of about 0.5 points. Having a mental health condition also implies a large decrease in life and job satisfaction of about 0.4 points. By contrast, physical conditions induce a very small (0.05 point) decrease in both life and job satisfaction. Table 27: The impact of health conditions on life and job satisfaction

Employment probabilities	Life	Life	Job	Job
Employment probabilities	satisfaction	satisfaction	satisfaction	satisfaction
Physical condition only	-0.0499***		-0.0499***	
	(0.0137)		(0.0140)	
Mental condition only	-0.393***		-0.394***	
	(0.0342)		(0.0349)	
Both physical and mental conditions	-0.493***		-0.509***	
	(0.0355)		(0.0362)	
Detailed health conditions				
Sight problems not corrected by glasses or		0.0407		0.0442
contact lenses		-0.0497		-0.0445
		(0.0365)		(0.0373)
Hearing problems		-0.0373		-0.0354
		(0.0298)		(0.0304)
Speech problems		0.0360		0.0397
		(0.0943)		(0.0963)
Blackouts, fits or loss of consciousness		-0.204***		-0.190**
		(0.0747)		(0.0762)
Difficulty learning or understanding things		-0.175***		-0.200***
		(0.0570)		(0.0580)
Limited use of arms or fingers		0.0109		0.00912
		(0.0389)		(0.0397)
Difficulty gripping things		-0.0859**		-0.0921**
		(0.0421)		(0.0429)
Limited use of feet or legs		-0.0461		-0.0452
		(0.0316)		(0.0322)
A nervous or emotional condition which requires treatment		-0.403***		-0.395***
		(0.0295)		(0.0301)
Any condition that restricts physical activity or physical work		-0.0459**		-0.0519***
		(0.0195)		(0.0199)
Any disfigurement or deformity		-0.0180		-0.0590
		(0.0785)		(0.0799)
Any mental illness which requires help or supervision		-0.346***		-0.371***
		(0.0470)		(0.0479)
Shortness of breath or difficulty breathing		-0.0879**		-0.0838**
		(0.0356)		(0.0364)
Chronic or recurring pain		-0.153***		-0.153***
		(0.0229)		(0.0234)
Long-term effects as a result of a head injury, stroke or other brain damage		-0.220***		-0.188**
		(0.0717)		(0.0731)
A long-term condition or ailment which is still restrictive even though it is being treated or medication is being taken for it		-0.0643***		-0.0653***
		(0.0215)		(0.0219)
Any other long-term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc.		-0.00987		-0.0102
		(0.0172)		(0.0176)

Table 28 illustrates the result that education is not expected to improve an individual's life or job satisfaction. It is a common finding in the literature on satisfaction that people with higher levels of education do not seem to enjoy higher levels of satisfaction, so our results are not surprising.

Employment probabilities	Life satisfaction	Job satisfaction
Certificate	-0.0355	-0.0196
	(0.0227)	(0.0380)
Diploma	-0.0274	-0.0321
	(0.0372)	(0.0232)
University	-0.0282	-0.0255
	(0.0284)	(0.0290)

Table 28: The impact of education on weekly wages in the Australian labour market

3.5. The dynamic impact of health conditions on labour market outcomes in Australia.

The following graphs illustrate the results of a series of multivariate models looking at the long-term effects of health conditions on labour market outcomes by type of condition, based on whether they are one-time, temporary, or chronic (severe versus not severe). The complete results are displayed in the appendices in Table A 7). The graphs show how the labour market outcomes are expected to change over time, after the onset of a health condition. The x-axis represents the number of years since the condition first manifested itself. The estimates are for up to 11 years after experiencing the health condition for the first time.

A clear result from these graphs is the fact that labour market outcomes deteriorate significantly after the onset of a chronic and severe health condition. For all outcomes, we see that individuals with a chronic and severe health condition never recover with regard to their labour market outcomes after the onset of their condition. It is quite the opposite for them. Their situation seems to deteriorate, as evidenced by the downward-sloping line denoting this type of condition. For instance, 11 years after the onset of a chronic and severe health condition, the probability of participating in the labour force has fallen to 35 percent lower than for individuals without a health condition (from a 20 percent lower probability in the year of the onset, and worsening over the years;

Figure 3). Figure 4 shows that even for those who participate in the labour force, the probability of employment is significantly lower than it is for people without a health condition; it too worsens with time, beyond the onset of the health condition. Eleven years after the onset, their probability of employment is more than 16 percent lower than for individuals without a health condition. By contrast, individuals with a one-time health condition (darker blue line in the graphs) seem to recover promptly, so that their participation and employment probabilities remain similar to those of people without a health condition (this is after they experience an initial negative shock of a small amplitude). Some deterioration in terms of the expected weekly wage is observed between nine and 11 years after the one-time health shock manifests itself; no large wage differences seem to appear in the earlier years.

For those with chronic health conditions which are not severe, in terms of participation and weekly wages there are no signs of recovery or of deterioration over the years. The participation rates are estimated to remain around 5 percent lower than for individuals without a health condition; this difference persists without improving or worsening as time passes. For those who do participate in the labour force, the probability of employment does not seem to be altered significantly compared to individuals without health conditions; this remains the case throughout the time horizon investigated, with a slight significant deterioration around the eighth year after the onset of the health condition. The wage profile shows an initial gap of around 10 percent compared to individuals without health conditions. It then reduces to around the 5 percent mark from the second year up to the fifth year, when the gap increases again for three to four years. After that, the gap reduces.

Looking at temporary conditions, we see that the dynamic effect on participation and employment is minimal after the initial gap observed straight after the onset of the health condition. Outcomes for individuals with this type of condition show signs of recovering within the first couple of years, to a point where their probabilities of participation and employment are no longer statistically different from individuals without a health shock. The wage profile, however, tells another story. We observe a constant deterioration starting from a relatively small wage gap, when compared with individuals without a health condition, to an ever-widening gap.



Figure 3: Dynamic impact of health conditions on labour force participation by nature of the health condition

Figure 4: Dynamic impact of health conditions on employment by nature of the health condition



Figure 5: Dynamic impact of health conditions on weekly wages by nature of the health condition


This concludes our analysis of the impact of long-term health conditions on labour market outcomes and the extent to which formal education may help to counter the negative effects by providing individuals with a return to the new qualifications which they can sell in the Australian labour market. The next section focuses on DVA clients, and aims to translate these results into expected labour market outcomes for that particular population.

4. Scenarios of DVA clients and expected labour market outcomes

In this section, we use the insights gained from the civilian data on the expected impact of health conditions and formal qualification on individuals' labour market outcomes in order to obtain our best estimate of what these outcomes might be for the current DVA clients covered by the MRCA. The emphasis of the report is on the expected outcomes from rehabilitation policies that enable DVA clients to update or acquire qualifications. We define a number of relevant scenarios of DVA clients (by individual characteristics) to see how they are likely to fare in the labour market, based on the various levels of education they may attain before moving to civilian life.

4.1. Definition of the scenarios

We define our scenarios of DVA clients by the individual characteristics we observe in the DVA administrative data. We use these characteristics for two purposes. First, we use a number of key attributes in order to form subgroups of DVA clients. These subgroups are chosen to represent clearly identifiable types of DVA clients. More information about the subgroups is given below. As an example, one subgroup is based on the type of DVA payments the clients receive (none, Permanent Impairment, Incapacity).

Once we have defined the subgroups, we compute the mean of each characteristic that is common between the DVA administrative data and the civilian data used for the previous analysis. This gives us an 'average' profile of a DVA client belonging to a given subgroup. We then use the coefficient estimates obtained from the analysis on civilians and apply them to these DVA client profiles in order to compute their expected labour market outcomes. The scenarios consist of looking at how these labour market outcomes vary if we attribute various levels of education to these average DVA clients. For a given subgroup, this technique enables us to determine the extent to which the average member of the subgroup would benefit from improving their qualification level in terms of their probability of participating in the labour force, their probability of being employed if they do participate, and their expected weekly wage. We extend this analysis to looking at how these expected outcomes would vary according to the chosen field of education. In all scenarios, we only vary the level (or field) of education. Thus, it is easy to compare the expected labour market outcomes arising from each assumption in terms of education with a situation where people do not improve their qualifications prior to entering the Australian civilian labour market. The observed difference between the outcomes with and without additional education gives us an estimate of the individual gains to be had from participating in an education-based rehabilitation program. Our results aim to illustrate the fact that these gains will vary depending not only with the level and field of education, but also with the type of long-term health condition.

Given the content of the DVA administrative data, the estimates provided in this section are the best statistically robust 'guesses' that we can formulate. Nevertheless, one must keep in mind that they may be significantly improved, should more information be made available. This could be through the PMKeyS data which contain information on individuals' present (and past) level of qualification and proficiency. Indeed, the technique we use to obtain these estimates for DVA clients relies on our previous estimations on civilians (step 1), which contained more variables than those that are common between the administrative data and the civilian data. Having more variables at the first stage is necessary in order to obtain statistically robust coefficients, we must assign a value to the variables that are present in the first-stage estimation, but which are not available in the administrative data. We set the value of these variables to the observed mean in the civilian data. These means may vary somewhat from the mean value that these variables would have among the DVA clients, if we had been able to observe and use them. The estimates for DVA clients could be improved if we had more information on DVA administrative data. This limitation must be kept in mind when looking at the estimates provided below.

We define four series of subgroups of DVA clients for which we estimate the expected labour market outcomes, according to various scenarios of education levels and fields. The groupings of DVA clients are set out in Section 4.1.1.

4.1.1. Groupings based on DVA clients' compensation payments received

The first set of scenarios relies on grouping DVA clients based on the type of compensation payment they currently receive or have received in the past for at least one of the conditions they have accepted under the MRCA. This group is composed of four subgroups whose estimated labour market outcomes we compare according to education levels and fields. The subgroups are:

- DVA clients with at least one health condition accepted under the MRCA, but who have not received (but may in the future) Incapacity payments or Permanent Impairment payments;
- DVA clients who have received Incapacity payments but not Permanent Impairment payments;
- DVA clients who have not received Incapacity payments, but who have received Permanent impairment payment for at least one health condition accepted under the MRCA;
- DVA clients who have received both Incapacity and Permanent Impairment payments.

Table 29 shows the average characteristics of the DVA clients belonging to these subgroups. We use this information to compute their expected labour market outcomes (the bold entries are the mean values of the characteristics for each subgroup; the entries below are the standard deviations).

Characteristics	no incap no pi	Incap, no pi	no incap but pi	incap and pi
Physical condition only	88.7%	63.1%	83.8%	41.2%
	0.32	0.48	0.37	0.49
Mental condition only	1.8%	3.7%	2.0%	2.7%
	0.13	0.19	0.14	0.16
Both physical and mental condition	9.5%	33.2%	14.2%	56.2%
	0.29	0.47	0.35	0.50
Mean age	33.77	32.81	36.64	34.62
	8.80	7.98	8.54	7.66
NSW	25.7%	26.8%	29.2%	25.7%
	0.44	0.44	0.45	0.44
VIC	11.6%	12.0%	11.1%	12.2%
	0.32	0.32	0.31	0.33
QLD	39.7%	37.6%	36.6%	45.8%
	0.49	0.48	0.48	0.50
SA	4.9%	6.7%	5.9%	3.7%
	0.22	0.25	0.24	0.19
WA	9.3%	9.7%	8.8%	8.1%
	0.29	0.30	0.28	0.27
TAS	1.5%	2.1%	1.1%	1.7%
	0.12	0.14	0.11	0.13
NT	4.6%	2.9%	4.1%	1.8%
	0.21	0.17	0.20	0.13
ACT	2.8%	2.1%	3.2%	1.1%
	0.16	0.14	0.18	0.10

Table 29: Average characteristics of DVA clients by compensation payment type

4.1.2. Groupings based on DVA clients' health condition type

The next series of subgroups of DVA clients relies on information on the type of the health condition(s) they claimed with the DVA—physical, mental, or both physical and mental. For people who claimed more than one condition under the MRCA, we look at whether they are all physical, or all mental, or whether they are a combination of the two.

The three subgroups are straightforward:

- DVA clients who have reported one or more physical conditions, but have not reported a mental condition;
- DVA clients who have reported one or more mental conditions, but have not reported a physical condition;

- DVA clients who have reported several conditions, where not all are physical or mental conditions.

For each of these subgroups we compute their estimated labour market outcomes based on their average characteristics, assuming different values for their education levels and fields. The average characteristics of each subgroup are given in Table 30.

Characteristics	Physical only	Mental only	Both
			physical and mental
Physical condition only	100%	0%	0%
	0.00	0.00	0.00
Mental condition only	0%	100%	0%
	0.00	0.00	0.00
Both physical and mental condition	0%	0%	100%
	0.00	0.00	0.00
Mean age	33.9	34.3	34.1
	8.73	7.94	7.57
NSW	26.8%	26.5%	25.0%
	0.44	0.44	0.43
VIC	11.8%	14.8%	11.4%
	0.32	0.36	0.32
QLD	37.4%	36.4%	47.9%
	0.48	0.48	0.50
SA	5.6%	6.6%	4.1%
	0.23	0.25	0.20
WA	9.8%	9.6%	7.1%
	0.30	0.30	0.26
TAS	1.5%	1.2%	2.1%
	0.12	0.11	0.14
NT	4.3%	2.6%	1.5%
	0.20	0.16	0.12
ACT	2.8%	2.3%	0.9%
	0.17	0.15	0.10

Table 30: Average characteristics of DVA clients by types of health condition reported under MRCA

4.1.3. Groupings based on whether DVA clients have been medically discharged

In this grouping of DVA clients, we compare people according to whether they have been medically discharged or not. We take each subgroup and compute their expected labour market outcomes assuming various scenarios in terms of education levels and fields. Table 31 shows the average characteristics of DVA clients depending on whether they were medically discharged or not.

Characteristics	not medically discharged	medically discharged
Physical condition only	81.8%	31.4%
	0.39	0.46
Mental condition only	2.0%	4.5%
	0.14	0.21
Both physical and mental condition	16.2%	64.1%
	0.37	0.48
Mean age	33.95	34.08
	8.56	7.84
NSW	26.7%	25.0%
	0.44	0.43
VIC	11.4%	13.3%
	0.32	0.34
QLD	38.4%	46.9%
	0.49	0.50
SA	5.2%	5.4%
	0.22	0.23
WA	9.8%	5.9%
	0.30	0.24
TAS	1.5%	2.2%
	0.12	0.15
NT	4.3%	0.3%
	0.20	0.06
ACT	2.6%	0.9%
	0.16	0.10

Table 31: Average characteristics of DVA clients according to whether they have been discharged

4.1.4. Groupings based on DVA clients' service type

This new grouping of DVA clients relies on the information given as to their service type when they reported their last health condition to the DVA. This does not automatically mean that the health condition reported is the most recent one for those people who reported several conditions; the information is based on the 'date of effect' in the administrative data. As we have pointed out in the methodology section of this report, the 'date of effect' can be several dates. These include the date when: the condition manifested itself; the condition was actually reported; the condition was accepted under the MRCA, and so on. Recalling the description of the DVA administrative data (section 2.1.2), about 40 percent of the DVA clients have claimed only one health condition. Hence, we take the information on the service type of the DVA clients at the 'date of effect' of this unique condition. For the 60 percent of DVA clients who reported several conditions, we use the 'date of

effect' and select their service type in the most recently recorded date. Using the information on type of service, we constitute four subgroups:

- Serving members: the DVA clients who were serving members of the ADF at the date of effect of their last reported condition;
- Reservists: the DVA clients who were reservists at the date of effect of their last reported condition;
- Former members: the DVA clients who were already veterans at the date of effect of their last reported condition;
- Other service: all other types of service recorded in the administrative data, including eligible civilians at the date of effect of the last reported condition.

We compare how these different subgroups are expected to fare according to various scenarios of education levels and fields. Table 32 shows the average characteristics of the DVA clients included in each subgroup.

Characteristics	Serving member	Reservist	Former member	Other
Physical condition only	89.1%	79.2%	52.5%	55.0%
	0.31	0.41	0.50	0.50
Mental condition only	3.9%	0.9%	4.2%	0.1%
	0.19	0.09	0.20	0.03
Both physical and mental condition	6.9%	19.9%	43.3%	45.0%
	0.25	0.40	0.50	0.50
Mean age	32.76	34.76	33.51	35.63
	8.09	8.91	7.55	8.84
NSW	27.0%	26.2%	25.6%	26.0%
	0.44	0.44	0.44	0.44
VIC	12.0%	11.4%	14.4%	9.7%
	0.32	0.32	0.35	0.30
QLD	36.5%	38.7%	42.4%	45.0%
	0.48	0.49	0.49	0.50
SA	6.3%	5.6%	4.5%	3.8%
	0.24	0.23	0.21	0.19
WA	8.8%	10.4%	7.6%	9.6%
	0.28	0.31	0.27	0.29
TAS	1.3%	2.0%	2.4%	1.3%
	0.11	0.14	0.15	0.11
NT	5.1%	3.4%	1.1%	3.2%
	0.22	0.18	0.10	0.18
ACT	3.0%	2.3%	2.0%	1.5%
	0.17	0.15	0.14	0.12

Table 32: Average characteristics of DVA clients by types of service

4.2. DVA clients and returns to further education, analysis by scenarios

Using the average characteristics of each subgroup, we now use the estimates obtained in the first step of the analysis in order to compute the expected labour market outcomes corresponding to different scenarios of education levels and fields. The wide variety of scenarios tested enables us to determine the extent to which DVA clients would benefit from rehabilitation programs aimed at improving their qualifications before entering the civilian labour market, and it highlights the fields of education where gains are expected to be highest depending on one's type of health condition and education level. These results can be used as a tool for a DVA client to find the education level and field that is most likely to fit their particular circumstances.

For each subgroup, we first test scenarios based on the estimation results obtained with the SOS data. The results give us the short-run expected labour market outcomes, six months after graduating, for people who study at TAFE. We then display the broader results which are drawn from the HILDA data for all levels of education, and in a longer-run perspective.

4.2.1. Scenarios based on DVA clients' compensation payment received

4.2.1.1. Short-term labour market outcomes after a VET qualification, results from the SOS data

Using the SOS data, we look at two labour market outcomes—the probability of finding employment six months after graduating from TAFE, and the expected weekly wage.

The results in Figure 6 and Figure 7 show that both the probability of being employed and the expected weekly wage increase with the level of TAFE qualification. They show some sizeable differences between the subgroups of DVA clients, depending on whether they have received incapacity payments, permanent impairment payments, or no payments. Those whose health condition was accepted by the DVA, but who did not access any payment support, have the highest expected probability of employment. We note that their estimated probabilities differ very little from the DVA clients who have received a permanent impairment payment (but no incapacity payment). The lowest probabilities are for people who claimed both permanent impairment and incapacity payments with, respectively, an 83.7 percent chance of having a job six months after graduating from TAFE with a Certificate III, and an 85.1 percent chance with a Certificate IV, and an 85.9 percent chance with a diploma. It is the characteristics of people who have received incapacity payments, more than those of individuals who have received permanent impairment payments, which drag the probability of employment down the most.





Looking at weekly wages we find a roughly similar ranking of the subgroups of DVA clients, with people who had their condition(s) accepted by the DVA without payments, and people who have only received permanent impairment payments expected to have higher wages than the two other categories of DVA clients grouped on the type of payment received. People who have received both types of payments have the lowest expected weekly wages six months after graduating from TAFE. For all categories of DVA clients, we find that the expected weekly wage increases with the level of qualification.



Figure 7: Scenarios based on compensationt payment types, weekly wage in the short run after VET

4.2.1.2. Longer-term labour market outcomes and causal effect of further education, results from HILDA

The following results show longer-term expected outcomes from all types of education for each category of DVA client, as defined by their access to different compensation payments. These results are based on the HILDA data and, hence, we were able to test the scenarios on a larger array of labour market outcomes. Furthermore, the HILDA data enable us to compare the return to education directly for people whose highest level of education is Certificate II or below (labelled as 'no study').

In Figure 8 we focus on labour force participation. The results clearly show that the 'no study' scenario leads to significantly lower probabilities of participation in the labour force compared to all other education scenarios. We also see that the probability of participation is not significantly improved for diploma compared to Certificate III for all categories of DVA clients, based on support-payment types. A university degree leads to higher participation probabilities, but these are only slightly higher than the probabilities obtained for the Certificate III level. Focusing on the differences across payment types, we see that DVA clients who did not receive incapacity payments or permanent impairments payment (henceforth, respectively Incap and PI), as well as those who received PI payments only, obtain the highest labour force participation probabilities. However, the differences observed among these groups are not statistically significant.



Figure 8: Scenarios based on compensation payment types, labour force participation in the long run

The results are qualitatively similar when focusing on employment probabilities. The probabilities increase with education levels, with the maximum being observed for people with a university

degree. The differences are statistically significant when compared to people who did not engage in any study beyond Year 12, or Certificate I, or Certificate II. The probability of employment between the Certificate III and university scenarios are significantly different; while Certificate III leads to higher employment probabilities compared to not studying at all, university degrees improve employability further. It is an interesting observation, which illustrates the difference between the general step 1 results which apply to the average civilian person, where we did not detect any significant employability improvement with a university degree beyond the gains obtained with a Certificate III. When we calibrate these results to the characteristics of the DVA clients, we do find an additional effect related to having a university degree. As with labour force participation, we find that DVA clients who received both Incap and PI have the lowest participation probabilities, followed by DVA clients who received Incap payments only.



Figure 9: Scenarios based on compensation payment types, probability of employment in the long run

Figure 10 shows that the ranking of DVA client subgroups that we found is also present when we focus on weekly wages. DVA clients who have claimed only PI have characteristics that make their estimated weekly wages significantly higher than for the other groups, for all scenarios of education levels. Contrary to what we observe for the participation and employment probabilities, however, DVA clients who only had their condition accepted by the DVA (no incap, no PI) have estimated wages that are not significantly different from the two other groups. Once again, we observe significant differences between the 'no study' scenarios and all other study scenarios, with Certificate III bringing about an additional \$150 a week, on average, compared to the 'no study' scenario; university degrees add almost \$50 on top of that. Going from Certificate III to diploma does not seem to produce any statistically significant improvement in the expected weekly wages compared to Certificate III. It is interesting to note that while participation and employment are

estimated to be lower for DVA clients who received both Incap and PI, those who participate and are employed do not have lower expected wages.





The results on life and job satisfaction show a lot less variation across scenarios, as was already suggested by the general results based on the civilian data. The level of education has little to do with life or job satisfaction. However, there is some variation across subgroups of DVA clients defined by the type of compensation payment they have received, even if the differences are relatively small. We know that life and job satisfaction is an index with values lying between 0 and 10, and the distribution is skewed around 7, so a small variation around that value is more important than the actual value suggests. What comes out of these estimations is that the ranking of expected satisfaction between the four subgroups is quite different from what we have so far observed. People who had their condition accepted by DVA, but without compensation payments, have the highest estimated satisfaction. The groups with only one compensation payment are next, and those with both payment obtain the lowest types scores (see Figure **11** and Figure **12**).









4.2.1.3. Labour market outcomes by broad field of education

We computed	the expected	employment	and	weekly	wage	probabilities	by t	field	of education.	The
figures	provide	d	in		-	Table		33		and

Table 34 are computed so that the level of education is given by the distribution at each level found for the civilian samples. The first column for each group of DVA clients gives the estimates obtained with the SOS. The SOS-based estimates show the short-term outcomes—six months after graduation and are restricted to TAFE qualifications. The second column for each group of DVA clients gives the estimates obtained using the HILDA data, that is, estimates of longer-term outcomes with all levels of education, including university. This explains why the figures for expected weekly wages are (sensibly) higher when based on the HILDA data.

The employment probabilities do not show great variability according to the field of education and by subgroups. The results further illustrate the higher penalty observed for DVA clients who have received (or are currently receiving) Incap and PI compensation payments. When compared with the mean results (first row), we observe that the employment probabilities are lower for IT, Creative arts, Food and Hospitality, and Mixed-field programs (available in the SOS) in both HILDA and SOS results, and across all subgroups of DVA clients. In general, we find that if the probability of employment in the short run for a given field is lower than the mean in the short run for TAFE (SOS), then it is also lower than the mean in the HILDA data.

Employment probabilities	No incap, no Pl		Incap, no Pl		No incap, Pl		Both incap and Pl	
	SOS	HILDA	SOS	HILDA	SOS	HILDA	SOS	HILDA
mean	86.0	87.7	85.3	87.1	86.1	88.4	84.4	87.3
Information technology	81.2	84.4	80.4	83.6	81.3	85.2	79.3	83.9
Engineering and related technologies	86.6	88.9	85.9	88.3	86.6	89.5	85.0	88.5
Architecture and building	87.1	88.3	86.5	87.6	87.1	88.9	85.6	87.8
Agriculture, environment and related studies	83.2	85.6	82.4	84.8	83.2	86.3	81.4	85.1
Health	88.9	88.8	88.3	88.2	88.9	89.5	87.5	88.4
Medicine (HILDA only)		88.8		88.2		89.4		88.4
Nursing (HILDA only)		87.9		87.3		88.6		87.5
Other health-related (HILDA only)		89.8		89.2		90.4		89.4
Education	89.0	89.1	88.4	88.5	89.0	89.7	87.6	88.7
Management and commerce	86.2	87.0	85.5	86.3	86.2	87.7	84.6	86.5
law (HILDA only)		90.7		90.2		91.3		90.3
Society and culture	86.9	85.8	86.3	85.1	87.0	86.6	85.4	85.3
Creative arts	81.1	85.7	80.3	85.0	81.1	86.5	79.1	85.3
Food, hospitality and personal services	84.1	87.2	83.3	86.6	84.1	87.9	82.3	86.8
Mixed-field programs (SOS only)	81.7		80.9		81.7		79.7	

Table 33: Scenarios based on compensation payment received, employment probabilities by field of education (%)

The results on the expected weekly wage show the differences that prevail between the expected wage six months after graduating from TAFE and the longer-term return to the field of education when we include returns from university degrees. The expected weekly wage estimates vary between \$445 a week for Creative arts (found in the Incap and PI group) and \$630 a week for the field of Education (in the no Incap, PI group) in the SOS data. They range from \$944 weekly for Creative Arts to \$1573 in the field of Medicine (in the no incap, PI group) in the HILDA data. Since the HILDA estimates for fields of education are based on one HILDA wave, the expected weekly wages are given without controlling for unobserved heterogeneity. This explains why the estimates are (sensibly) higher here than they are when we look at the returns to TAFE and university using the HILDA data (see

Figure 10). In the administrative data, we have some information on 'Military Weekly Salary' for some DVA clients—those who have claimed Incapacity payments. We find that the average military weekly wage for the recorded health conditions that led to Incapacity payments is \$1089. Given the results we obtain on the SOS data, we see that the expected wages after TAFE, six months after graduating, are below this amount. In some fields, it is well below this amount. Since the average age of TAFE graduates in the SOS data is very similar to the average age of DVA clients observed in the administrative data, we expect the figures obtained with the SOS to be a fairly accurate estimate of the expected weekly wages by field of education for DVA clients. The fact that the labour market experience in the ADF is only partially transferable to a civilian occupation is a further basis for this conclusion. Comparing the figures obtained with the average weekly military wage observed among DVA clients who claimed Incap, our results suggest that even for people who would improve their qualifications through TAFE, the transition to the civilian labour market would lead to a sizeable negative wage shock.

The results based on HILDA data indicate the wage amounts that could be expected, accounting for both a longer-term horizon beyond graduation and the returns from graduating from university. For the sake of comparison between the SOS and the HILDA estimates, it would have been helpful to distinguish (from the HILDA results) the wage differences that come from adding university degrees in the data from the differences related to years of experience in the labour market since graduating. To do so, we would need to introduce a number of interaction terms in the estimations based on HILDA data. It was not possible. We rely on one wave of observations in order to estimate the weekly wages by field of education. Interacting level of education with fields would lead to small-cells issues for some combinations of levels and fields. Hence, the wage differences emerging between SOS and HILDA arise from the fact that we have university graduates for whom we would expect an additional wage return, and the fact that we are not restricted to people who graduated six months prior to us observing their wage.

Looking at the HILDA results, we can see that a number of fields would be associated with expected average weekly wages that are below or in the vicinity of the mean weekly military wage observed in the administrative data. On average, fields such as Agriculture, Society and Culture, Creative Arts, and Nursing would lead to such outcomes, everything else held constant. If we had the information on field of education at every wave of the HILDA data, we would be able to control for unobserved heterogeneity. Thus, we would, in all probability, find an expected weekly wage per field, on average, lower than the figures given below. This suggests that even when we include university degrees in the computation, the prevailing civilian wages in the Australian labour market would be such that veterans would experience, on average, a sizeable negative wage shock upon transition.

Going to Table 34, we see that the patterns are the same across subgroups of DVA clients based on compsensation payments. That is, if we find the returns to be lower (higher) than the mean using the SOS for DVA clients who only had a condition accepted without compensation payment, it is also lower (higher) for the other subgroups of DVA clients. Likewise, if we observe a pattern in a subgroup for a given field of education—for instance, assume that the return to a field of education is lower than the mean in the SOS but higher than the mean in the HILDA—we observe the same pattern for the other subgroups.

The fields of IT, Society and Culture, Creative arts, and Agriculture and environment are associated with lower expected weekly wages than the respective mean from all datasets used. In other words, for these fields of study we expect lower wages, whether we look only at VET degrees in the short run or include university degrees and have a longer-term perspective on these returns.

For other fields, we observe expected wages that are lower than the mean in the SOS, but are higher in the HILDA data. It is the case with Architecture and Building, and Health.

Other fields show higher than average expected wages in the SOS data, but lower than average in the HILDA data. Since university degrees are, in general, associated with significantly higher earnings, we can conclude that this sort of pattern can be explained by the fact that these fields have a 'flatter' earnings/experience profile. It is the case for the fields of Education, and Food and hospitality.

Weekly wage	No inca	ap, no Pl	Incap	, no Pl	No incap, Pl		Both incap and PI	
	SOS	HILDA	SOS	HILDA	SOS	HILDA	SOS	HILDA
mean	584	1,186	555	1,147	598	1,241	533	1,149
Information technology	553	1,153	526	1,116	567	1,207	505	1,118
Engineering and related technologies	614	1,311	584	1,268	629	1,373	561	1,271
Architecture and building	578	1,191	550	1,152	593	1,247	528	1,155
Agriculture, environment and related studies	569	1,063	541	1,028	583	1,112	520	1,030
Health	577	1,266	549	1,224	591	1,325	527	1,227
Medicine (HILDA only)		1,502		1,453		1,573		1,456
Nursing (HILDA only)		1,128		1,091		1,181		1,093
Other health-related (HILDA only)		1,166		1,128		1,221		1,130
Education	615	1,184	585	1,145	630	1,240	562	1,148
Management and commerce	599	1,241	570	1,200	614	1,299	547	1,203
law (HILDA only)		1,272		1,230		1,331		1,232
Society and culture	553	1,088	526	1,052	567	1,138	505	1,054
Creative arts	487	976	463	944	499	1,022	445	946
Food, hospitality and personal services	584	1,138	556	1,100	599	1,191	534	1,102
Mixed-field programs (SOS only)	569		541		583		520	

Table 34: Scenarios based on compensation payment received, weekly wage by field of education (\$)

4.2.2. Scenarios based on DVA clients' health condition types

This series of scenarios looks at the labour market outcomes of DVA clients by their type of health condition. We form three subgroups of DVA clients, depending on whether the condition they have reported with the DVA under the MRCA is either physical, mental, or both mental and physical. We compute the average characteristics of each subgroup of DVA clients in the DVA administrative data, and we use these to compute the estimated labour market outcomes using the estimation coefficients obtained on the civilian datasets. As with the previous set of scenarios, we start with the results obtained with the SOS data, then we move on to using the coefficients from the HILDA data. We conclude with displaying the expected weekly wages by field of education and by type of health condition.

4.2.2.1. Short-term labour market outcomes after a VET qualification, results from the SOS data

The results based on the SOS data illustrate the extent to which DVA clients suffering from both mental and physical conditions are expected to be penalised, both in terms of their ability to find employment and their expected wages upon obtaining a VET qualification. While we observe an

upward-sloping profile for both outcomes, with respect to the level of VET qualification, the actual figures are significantly lower for DVA clients suffering from both types of conditions than for the others. The highest probability of employment for this group is obtained for a diploma and it leads to an 82.6 percent probability of employment. This is significantly below the probabilities obtained for the other subgroups. It is even significantly below the probabilities obtained for Certificate III in the other subgroups. This result illustrates how challenging the DVA clients suffering from both conditions are likely to find the civilian labour market.





The results on expected weekly wages further illustrate the gap that is expected to arise between DVA clients who suffer from both mental and physical health conditions and the other DVA clients. They also show that, while the probabilities of employment were not significantly different between the two other subgroups (DVA clients with a physical health condition and those with a mental health condition), significant gaps arise in terms of expected weekly wages between the two. DVA clients with a mental health condition are also expected to have significantly lower weekly wages than DVA clients with a physical disability. Furthermore, we can see that obtaining a diploma does not seem to produce any wage benefits compared to Certificate IV for DVA clients with mental health issues, contrary to the position of DVA clients with a physical condition who can expect a 6 percent additional return.



Figure 14: Scenarios based on DVA clients' health condition types, weekly wages in the short run after VET

4.2.2.2. Longer-term labour market outcomes and causal effect of further education, results from HILDA

We turn to the results obtained through the estimations on the broader civilian population, including university-degree holders and people with a wider range of experience in the labour market beyond just the six months after graduation and, importantly, after controlling for unobserved heterogeneity.

Figure 15 shows the estimated probabilities of labour force participation for each subgroup of DVA clients defined by the type of health condition they have, and by scenario of education level. It clearly appears that the 'no study' scenario produces significantly lower estimated probabilities for all subgroups of DVA clients, it being highest for those with physical health conditions. We see that labour force participation is not expected to improve through obtaining a diploma, as opposed to a certificate. The labour force participation probabilities are very similar between certificate and university qualifications. In terms of ranking between the different subgroups, we make the same observation as with the results based on SOS—DVA clients with physical conditions are expected to fare better than DVA client with a mental health condition; and they are better off than those with both types of condition.





Figure 16 shows similar results when one focuses on employment probabilities. For a given group of DVA clients, improving the individual's qualification improves their probability of finding employment. As with participation, acquiring a diploma does not seem to improve employment probabilities significantly beyond the increase obtained through a certificate. The most striking result that arises from the estimation on employment probabilities is the fact that the gap between DVA clients with a physical condition and DVA clients having a mental condition (or both physical and mental conditions) widens. The employment probabilities of DVA clients with a physical condition is quite close to those of civilians without a health condition; the probability ranges from 84.7 percent to 90.2 percent, depending on the education scenario. By contrast, DVA clients who report a mental health condition have probabilities that are more than 5 percentage points lower. This disadvantage incurred by DVA clients with a mental health condition makes it all the more important that we account for participation. The probabilities of employment are estimated on the subsample of people who actually participate in the labour force. If we combine both labour market outcomes, our estimates tell us, for instance, that if we randomly selected a DVA client who suffers from both mental and physical conditions, and who has a university degree, their probability of being employed would be 64.2 percent (participation probability of 75.3 percent times 85.2 percent probability of being employed if participating).



Figure 16: Scenarios based on health condition types, employment probabilities in the long run

The estimated wages for each subgroup of DVA clients defined by their health condition show the same patterns so far observed for participation and employment. DVA clients with physical health conditions have significantly higher expected wages than those with a mental condition or a combination of both conditions. In the 'no study' scenario, their expected wage is more than 10 percent higher than for the two other subgroups. Their expected wages improve by 20 percent by going from 'no study' to a certificate, and by almost 25 percent from moving to university degree. As previously noted for participation and employment, the effect of a diploma is not significant; it does not bring about, on average, higher expected wages. This absence of an effect noted for a diploma is probably explained by the fact that diplomas vary greatly in terms of the qualifications they delivermore so than certificates do. The estimates obtained with HILDA data are as statistically robust as they can be-given that the HILDA data allow us to control for unobserved heterogeneity. We observe that the average estimated weekly wages in the civilian labour market are significantly below the weekly military wages observed in the DVA administrative data (an average of \$1086 per week). Our results suggest that DVA clients, no matter the type of condition they have, including the type that brings about the smallest penalties (physical condition) will experience a negative wage shock upon transition to the civilian labour market, even if they upgrade their qualifications to a university degree.



Figure 17: Scenarios based on health condition types, weekly wages in the long run

As noted in the previous series of scenarios based on compensation payment types, the level of education does not seem to be significantly related to satisfaction with life and jobs. Figure 18 and Figure19 illustrate this result, but they show, once again, the differences between physical conditions and mental conditions.



Figure 18: Scenarios based on health condition types, life satisfaction in the long run



Figure 19: Scenarios based on health condition types, job satisfaction in the long run

4.2.2.3. Labour market outcomes by broad field of education

Table 35 and Table 36 give estimates of employment and weekly wage probabilities by field of education for each subgroup of DVA clients defined by their type of health condition. These tables are added to the report mainly to give some general guidance as to which fields are associated with higher expected returns. They may provide DVA clients with additional information as to the type of qualification they would like to acquire. Nevertheless, while these estimates give more details as they go down to field of education level, one must keep in mind that they are not as statistically robust as those obtained in the previous subsection—that is, those based on all waves of the HILDA data. Indeed, the following estimates come from econometric models that measure associations between fields of education and labour market outcomes. This is because they rely either on repeated cross-section data (SOS results) or on a single wave of HILDA data (see the second column of each subgroup). These estimates do not control for unobserved heterogeneity. Those that do are the estimates based on HILDA data which were given in the previous subsection. Their drawback is that they are more general, as they do not allow us to provide estimates by field of education. However, they do give a more accurate picture of what to expect from, respectively, a certificate, a diploma, or a university degree depending on the subgroup (here defined by health condition type). These limitations must be kept in mind when looking the values of the estimated labour market outcomes displayed for each field of education.

Employment probabilities	Phy	sical	Me	Mental		nd mental
	SOS	HILDA	SOS	HILDA	SOS	HILDA
mean	86.3	88.0	85.1	80.5	80.9	86.6
Information technology	81.6	84.7	80.1	76.2	75.2	83.1
Engineering and related technologies	86.9	89.1	85.7	82.2	81.6	87.9
Architecture and building	87.4	88.5	86.3	81.3	82.3	87.2
Agriculture, environment and related studies	83.6	85.9	82.2	77.7	77.5	84.3
Health	89.1	89.1	88.1	82.1	84.5	87.8
Medicine (HILDA only)		89.1		82.0		87.8
Nursing (HILDA only)		88.2		80.8		86.8
Other health-related (HILDA only)		90.0		83.4		88.8
Education	89.2	89.3	88.2	82.4	84.6	88.1
Management and commerce	86.5	87.3	85.3	79.6	81.1	85.9
law (HILDA only)		90.9		84.7		89.8
Society and culture	87.2	86.1	86.1	78.1	82.1	84.6
Creative arts	81.5	86.0	80.0	77.9	75.0	84.5
Food, hospitality and personal services	84.4	87.5	83.1	79.9	78.6	86.1
Mixed-field programs (SOS only)	82.0		80.6		75.7	

Table 35: Scenarios based on health condition types, employment probabilities by field of education (%)

Looking at the Table 36, the mean weekly wages estimated show that even without controlling for unobserved heterogeneity, the expected wage for DVA clients with a mental condition or both mental and physical conditions is smaller than the mean military wage of \$1086 observed in the DVA administrative data. Referring to the HILDA results, there are only a few fields of study whose associated expected weekly wage is equal to or above \$1086. Medicine, Law, and Engineering are among these fields. If we take the average military wage observed in the DVA administrative data as a benchmark, we see that DVA clients with a physical condition are expected to achieve this benchmark (and higher) for a lot more field of study than people suffering from other types of condition.

Weekly wage	Phy	vsical	Me	ntal	Physical and mental		
	SOS	HILDA	SOS	HILDA	SOS	HILDA	
mean	597	1,206	498	1,053	445	1,033	
Information technology	566	1,173	471	1,024	421	1,004	
Engineering and related technologies	628	1,333	524	1,164	468	1,142	
Architecture and building	592	1,211	493	1,057	441	1,037	
Agriculture, environment and related studies	582	1,080	485	943	434	925	
Health	590	1,287	492	1,123	439	1,102	
Medicine (HILDA only)		1,528		1,334		1,308	
Nursing (HILDA only)		1,147		1,001		982	
Other health-related (HILDA only)		1,186		1,035		1,016	
Education	629	1,204	524	1,051	468	1,031	
Management and commerce	613	1,262	511	1,101	456	1,080	
law (HILDA only)		1,293		1,129		1,107	
Society and culture	566	1,106	471	965	421	947	
Creative arts	498	992	415	866	371	850	
Food, hospitality and personal services	598	1,157	498	1,010	445	990	
Mixed-field programs (SOS only)	582		485		434		

Table 36: Scenarios based on health condition types, weekly wages by field of education

4.2.3. Scenarios based on whether DVA clients were medically discharged

Another interesting decomposition of the DVA clients' population consists in looking at the differences between those who have already been medically discharged and those who have not. As with the previous two series of scenarios, we start by looking at the short-run outcomes after VET, and then move to the results obtained with HILDA data.

4.2.3.1. Short-term labour market outcomes after a VET qualification, results from the SOS data

Looking at the probability of employment, we see a gap between the two groups of DVA clients, to the detriment of those clients who have been medically discharged. We see that a diploma seems to be associated with an improved probability of employment for those who have not been medically discharged, while this is not the case for those who have. In the second figure, we see that the effect is reversed for wages—a diploma brings about an increased expected wage for DVA clients who have been discharged, while it does not for those who have not been discharged.

Figure 20: Scenarios based on whether DVA clients were medically discharged, probability of employment in the short run after VET



Figure 21: Scenarios based on whether DVA clients were medically discharged, weekly wages in the short run after VET



4.2.3.2. Longer-term labour market outcomes and causal effect of further education, results from HILDA

Figure 22 and Figure 23 show the estimated probabilities of labour force participation and employment. They illustrate, as in the other two sets of scenarios, that the largest hurdle seems to be that of labour force participation. Once people participate in the labour force, their probability of employment is quite high, even if it is lower than that of the civilians, and in spite of some observed variations across subgroups of DVA clients. The figures show the extent of the gap which prevails

between DVA clients who have been discharged and those who have not. DVA clients who were medically discharged experience a significant penalty in terms of both participation and employment. With regard to participation, obtaining a certificate has a large positive effect for both subgroups of DVA clients—more so for people who have not been discharged. For both subgroups, a diploma does not improve participation but it does increase the probability of finding a job, slightly, but not in a statistically significant way. We find the highest probabilities of participation and employment among those who have a university degree. Yet, if we compare Certificate III the with a university degree, it does not bring about a significant increase in the probability of participation.

Figure 22: Scenarios based on whether DVA clients were medically discharged, labour force participation in the long run



Figure 23: Scenarios based on whether DVA clients were medically discharged, employment probabilities in the long run





Looking at expected wages, we observe about a 6 percent difference between the two groups, to the advantage of DVA clients who have not been medically discharged. A diploma does not lead to higher expected weekly wages compared to a certificate.



Figure 24: Scenarios based on whether DVA clients were medically discharged, weekly wages in the long run

The results on life and job satisfaction lead to the same conclusions that we have made with other sets of scenarios—the level of education does not produce significant differences in satisfaction. As expected, DVA clients who were not medically discharged have a slightly higher probability of satisfaction than those who were discharged. The figures are in the appendices (see Figure A 1 and Figure A 2).

4.2.3.3. Labour market outcomes by broad field of education

Table 37 and Table 38 show, respectively, the estimated probabilities of employment and weekly wages by field of education. The same caveat applies to these results as has been stressed for the other sets of scenarios. They are computed from models that only show associations between education fields and labour market outcomes; they do not control for unobserved heterogeneity. As a result, we can expect the estimates to be in the higher range of what we might reasonably expect.

Employment probabilities	Not discharged		Medically discharged	
	SOS	HILDA	SOS	HILDA
mean	85.9	87.7	83.9	86.4
Information technology	81.1	84.4	78.6	82.9
Engineering and related technologies	86.5	88.9	84.5	87.7
Architecture and building	87.0	88.3	85.1	87.0
Agriculture, environment and related studies	83.1	85.6	80.8	84.2
Health	88.8	88.8	87.0	87.7
Medicine (HILDA only)		88.8		87.6%
Nursing (HILDA only)		87.9		86.7
Other health-related (HILDA only)		89.8		88.7
Education	88.9	89.1	87.2	87.9
Management and commerce	86.1	87.0	84.0	85.7
law (HILDA only)		90.7		89.7
Society and culture	86.8	85.8	84.9	84.5
Creative arts	80.9	85.7	78.5	84.4
Food, hospitality and personal services	84.0	87.2	81.7	85.9
Mixed-field programs (SOS only)	81.5		79.1	

 Table 37: Scenarios based whether DVA clients were medically discharged, employment probabilities by field of education (%)

Looking at the mean expected weekly earnings based on SOS and on a single wave of HILDA data, we find that DVA clients who were medically discharged obtain, respectively, 12 percent and 8 percent lower weekly earnings.

Table 38: Scenarios based whether DVA clients were medically discharged, weekly wages by field of education

Weekly wage	Not di	scharged	Medical	y discharged
	SOS	HILDA	SOS	HILDA
mean	580	1,188	510	1,094
Information technology	550	1,155	484	1,064
Engineering and related technologies	611	1,314	537	1,210
Architecture and building	575	1,193	506	1,099
Agriculture, environment and related studies	566	1,064	498	980
Health	574	1,268	504	1,168
Medicine (HILDA only)		1,505		1,386
Nursing (HILDA only)		1,130		1,040
Other health-related (HILDA only)		1,168		1,076
Education	611	1,186	538	1,092
Management and commerce	596	1,243	524	1,145
law (HILDA only)		1,274		1,173
Society and culture	550	1,089	483	1,003
Creative arts	484	978	426	900
Food, hospitality and personal services	581	1,140	511	1,050
Mixed-field programs (SOS only)	566		498	

4.2.4. Scenarios based on DVA clients' service

This last series of scenarios is based on the type of service in which the DVA clients were at the 'date of effect' of the most recent condition they reported with the DVA (for those who have several conditions recorded).

We look at the returns to VET qualifications six months after graduating using the SOS data, and we then look at labour market outcomes covering a broader range of experiences and education levels using the HILDA data.

4.2.4.1. Short-term labour market outcomes after a VET qualification, results from the SOS data

The estimated probabilities of employment show some interesting variations across scenarios and subgroups. The range of probabilities is wider in the case of Certificate III, with the 'other service' DVA clients obtaining significantly lower employment probabilities. The highest probability associated with Certificate III is observed for reservists, followed by former ADF members, and then serving members. Interestingly, the ranking changes when we look at Certificate IV, where the serving members obtain the highest probability of employment with 86.6 percent. For Certificate IV, we find a much narrower distribution of probability outcomes among the different subgroups, with the lowest ('other service') being 85.3 percent. The distribution narrows even further with the diploma scenario.





The estimated weekly wages show significant improvements across all scenarios of education from the lowest to the highest levels. Two subgroups distinguish themselves. Serving members and reservists obtain very similar wage estimates for each level of education. The other two subgroups obtain significantly lower estimates, with the exception of DVA clients in 'other service'; they seem to experience a higher return to Certificate IV than every other subgroup.



Figure 26: Scenarios based on DVA clients' type of service, weekly wages in the short run after VET

4.2.4.2. Longer-term labour market outcomes and causal effect of further education, results from HILDA

When we look at the results obtained using the estimates from HILDA, which correct for individual heterogeneity, we somewhat lose the large variability that we found when using the SOS-based estimates. The rankings between subgroups are consistent across labour market outcomes and scenarios of education. With regard to participation in the labour market (Figure 27), reservists and former ADF members are pretty much alike—they have the same probabilities in value, and they experience the same increases with their rising level of education. Certificate is associated with a comparatively large increase of an individual's probability of participating in the labour force, while diploma does not provide further improvement. Participation rates are quite comparable for Certificate III and university degrees. Serving members are expected, in all scenarios, to fare slightly better than the other subgroups of DVA clients with regard to their participation in the labour force.



Figure 27: Scenarios based on DVA clients' type of service, labour force participation in the long run

With regard to employment probabilities, a gap appears between reservists and former ADF members. As they started with the same probability of participation, it seems that reservists have an advantage in terms of employability. Clearly, two subgroups emerge at the top of the distribution of employment probability—serving members and reservists. The two other subgroups seem to get lower returns from education, and those in the 'no study' scenario start with a slight disadvantage. While having a diploma did not seem to improve an individual's labour market participation, it does have a positive effect on employment outcomes.



Figure 28: Scenarios based on DVA clients' type of service, employment probabilities in the long run

Interestingly, it appears that once the two hurdles of participation and employment are overcome, the expected weekly wages vary very little across these four subgroups of DVA clients. We find the now-typical result that education exerts a positive influence on the expected weekly wage with the exception of a diploma, which does not seem to add much to the expected wage of an individual who already has a certificate.





The results for life and job satisfaction are typical of those we have observed so far, and they are what is generally reported in the literature on satisfaction and well-being. Education has little to do with job and life satisfaction, as is evidenced in Figure 30 and Figure 31. If anything, it looks as if DVA clients with a university degree would be expected to have slightly lower satisfaction. We see a small gap between subgroups; the two top subgroups correspond to the two top subgroups we have already identified for the employment probabilities—serving members and reservists. The other two subgroups have lower expected satisfaction on both measures, but the gaps are too narrow for us to be able to conclude that they are expected to experience lower life and job satisfaction.









4.2.4.3. Labour market outcomes by broad field of education

In Table 39 and Table 40 we look at the relationship between fields of education and employability and weekly wages. IT, Agriculture and environment, Creative arts, and Food and hospitality are associated with a lower probability of employment than the respective mean probabilities computed for each subgroup. It is the case when we focus on VET qualifications six months after graduation, and also on broader individual experiences seen through the HILDA data. There are a couple of fields where it appears that the short-run outcome at VET level (SOS data) is higher than the given subgroup mean, but they turn out to be lower than the mean when we incorporate university degrees and a broader range of years of experience beyond graduation (HILDA data). It is the same for Management and Commerce and Society and culture where the SOS-based estimates give us, for all subgroups, an estimated probability of employment that is higher than the mean across all fields; but the HILDA-based estimates give us lower probabilities than the corresponding mean. Overall, the estimates on employment probabilities illustrate, again, the apparent fact that the biggest hurdle to overcome is that of being able to participate in the labour force. Once people participate, we observe quite high probabilities of employment, even if these are somewhat lower than what they would be for civilians who do not have a health condition.

Employment probabilities	Serving	member	Rese	ervist	Former	member	Other	service
	SOS	HILDA	SOS	HILDA	SOS	HILDA	SOS	HILDA
mean	86.1	87.5	85.6	88.1	85.0	87.1	84.7	87.8
Information technology	81.3	84.1	80.7	84.9	79.9	83.6	79.6	84.5
Engineering and related technologies	86.6%	88.7	86.2	89.3	85.5	88.3	85.3	89.0
Architecture and building	87.1	88.0	86.7	88.7	86.1	87.6	85.8	88.3
Agriculture, environment and related studies	83.2	85.3	82.7	86.0	82.0	84.8	81.7	85.6
Health	88.9	88.6	88.5	89.2	88.0	88.2	87.7	88.9
Medicine (HILDA only)		88.6		89.2		88.2		88.9
Nursing (HILDA only)		87.7		88.3		87.3		88.0
Other health-related (HILDA only)		89.6		90.1		89.2		89.8
Education	89.0	88.9	88.6	89.5	88.1	88.5	87.8	89.1
Management and commerce	86.2	86.7	85.8	87.4	85.1	86.3	84.8	87.1
law (HILDA only)		90.5		91.0		90.2		90.8
Society and culture	87.0	85.6	86.5	86.3	85.9	85.1	85.6	85.9
Creative arts	81.1	85.5	80.6	86.2	79.8	85.0	79.4	85.8
Food, hospitality and personal services	84.1	87.0	83.6	87.6	82.9	86.6	82.6	87.3
Mixed-field programs (SOS only)	81.7		81.2		80.4		80.1	

Table 39: Scenarios based whether DVA clients' type of service, employment probabilities by field of education (%)

The distributions of expected weekly wages by field of education illustrate the differences that one should expect between the two subgroups of serving members and reservists and the other two subgroups. The latter two subgroups face expected lower wages. The effect is more pronounced when looking at the SOS-based estimates. IT, Agriculture and environment, Society and Culture, Creative arts, and Food and hospitality are associated with lower expected wages (both with SOS and HILDA-based estimates) than their respective subgroup mean. For some fields, we see that the
return is higher in the SOS-based estimates compared to the corresponding mean, while it is lower in the HILDA-based estimates. This reflects the fact that some education fields are associated a with flatter wage profile. Since HILDA data include people with a wider range of experience after graduation, these differences in expected earnings between the two sets of estimates provided for each subgroup reflect this effect. It is the case for the field of Education for instance, where the SOSbased estimates indicate earnings that are higher than the mean for each group, but they show up to be lower than the mean when using the HILDA-based estimates.

Weekly wage	Serving	member	Rese	ervist	Former	member	Other	service
	SOS	HILDA	SOS	HILDA	SOS	HILDA	SOS	HILDA
mean	582	1,183	578	1,195	545	1,141	546	1,158
Information technology	551	1,151	548	1,162	516	1,110	517	1,127
Engineering and related technologies	612	1,309	608	1,321	573	1,262	575	1,281
Architecture and building	576	1,189	573	1,200	540	1,146	541	1,164
Agriculture, environment and related studies	567	1,060	563	1,070	531	1,022	532	1,038
Health	575	1,263	571	1,275	538	1,218	540	1,236
Medicine (HILDA only)		1,499		1,514		1,446		1,467
Nursing (HILDA only)		1,125		1,136		1,085		1,101
Other health-related (HILDA only)		1,164		1,175		1,122		1,139
Education	613	1,182	609	1,193	574	1,139	575	1,157
Management and commerce	597	1,238	593	1,250	559	1,194	560	1,212
law (HILDA only)		1,269		1,281		1,223		1,242
Society and culture	551	1,085	547	1,096	516	1,046	517	1,062
Creative arts	485	974	482	983	454	939	456	953
Food, hospitality and personal services	582	1,135	579	1,146	545	1,094	547	1,111
Mixed-field programs (SOS only)	567		564		531		533	

Table 40: Scenarios based whether DVA clients' type of service, weekly wage by field of education (\$)

5. Conclusion

The main objective of this report was to inform rehabilitation programs carried out by the DVA, aiming to improve the expected outcomes for young veterans transitioning into civilian life. This report focuses on veteran (post-ADF) life and labour market outcomes. It provides the DVA with a comprehensive understanding of the life and labour market outcomes that young veterans can expect to achieve as they transition into civilian employment. Our analysis focused on the impact and the lasting effects of long term health conditions, disability and work-limiting injuries. It investigated the extent to which rehabilitation, in the form of additional training, may improve the future civilian life and labour market outcomes of DVA clients. It highlighted the pathways that are associated with improved outcomes for specific demographic groups, and specific health circumstances of DVA clients. The analysis conducted in this report has analysed the most up-to-date available Australian data sets to provide the DVA with insights about the types of rehabilitation that are most likely to lead to the best labour market outcomes.

The report has been underpinned by substantial multivariate statistical analyses. The statistical analyses conducted in this report allowed us to derive a number of key findings addressing three major issues affecting the transition of DVA clients into civilian life, namely (i) the type of labour market they are likely to face upon transition, (ii) the extent to which education and training may help alleviate the negative impact of long term health conditions and (iii) the extent to which what is observed in the Australian labour market can be translated into the particular context of the current DVA client base.

We find that the penalties imposed by the Australian labour market on DVA clients upon their transition from ADF employment to civilian employment can be considerable and that they are not evenly distributed across all types of disabilities and all potential labour market outcomes. Penalties for shifting sectors in the labour market are a common economic phenomenon, usually explained by the loss of much of the sector-specific human capital upon transition. The shift into civilian employment could be viewed in this light too.

We distinguish between mental and physical health conditions and find that mental health conditions (whether combined with physical health conditions or not) incur larger penalties than physical health conditions do on their own. We find that the biggest hurdle faced by people with long-term health conditions or disability is that of labour market participation. When compared to the weekly wages of people who do not report any health conditions, we find large weekly wage penalties (7.7 percent lower wages) associated with mental health conditions, and even larger

penalties (11 percent lower wages) for combined mental and physical health conditions. The analysis of the lasting effects of health conditions shows that people with chronic conditions, especially severe ones, experience worse labour market outcomes and their penalties are very long-lasting. The overall picture of labour market and health conditions is one of severe penalties, more so in the case of mental health, and especially for people faced with severe and chronic conditions.

We find that the effect of education on labour market outcomes is largely beneficial. Its impact is mostly felt at the participation stage (that is, whether one is looking for a job or not) and on the level of weekly wages (that is, the pay they get once they find employment), rather than on whether someone who is looking for work can get a job (that is, whether their job search is successful). This distinction may be due to the fact that employment rates were quite high in Australia in the period covered by the data, at least in part. In an economic environment with higher unemployment rates we would expect to find that education would also produce a beneficial effect on the probability of getting a job.

We find that some fields of education for the university degree holders lead to significantly improved labour market outcomes. The improvement is not uniformly spread across all labour market outcomes. For example using Natural and Physical Science as the reference category, Medicine and Management, and Commerce are found to fare better in terms of all labour market outcomes investigated (participation, employment, and wages). Education and other Health-related fields (for example nursing) are found to have higher participation and employment, but not higher wages. Engineering has higher wages but not greater employment or participation probabilities; and, perhaps a bit surprisingly, IT degrees have lower participation and employment probabilities, but significantly higher weekly wages than the reference group.

A major contribution of this report was to combine the excellent granularity in the data sets we used with advanced econometric methodologies in order to derive estimates that are relevant to the circumstances and characteristics of current DVA clients. We defined a number of relevant scenarios of DVA clients to see how they are likely to fare in the civilian labour market, based on the various levels of education that they may attain before moving to a civilian life.

Comparing the average weekly military wage observed in the DVA administrative data with the estimates we have for recent VET graduates (surveyed six months after graduating), we find evidence that DVA clients educated at that level are likely to experience a significant drop in income upon their transition into the civilian labour market.

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For all scenario groups we find that an improvement in qualifications improves labour market outcomes. This improvement is uniformly spread across all DVA clients. However, it is not uniformly spread across all qualification levels. The exception is that a diploma, as opposed to a certificate, provides little additional labour market benefit, save a very small improvement in the probability of getting a job.

We find that DVA clients can expect their weekly wage prospects to improve by about 20 percent after obtaining a VET certificate, compared to having completed Year 12 or less (the 'no study' scenario). DVA clients who complete a university degree can expect their weekly wages to improve by about 25 percent compared to the 'no study' scenario. Our findings do not support an expectation that DVA clients obtaining a VET diploma will experience a greater weekly wage improvement than they would by completing a certificate-level qualification.

When we group DVA clients by their health conditions, we find that those with mental health conditions achieve significantly poorer labour market outcomes than those with only physical conditions; those with both mental and physical achieve the poorest outcomes. This finding generalises across all education scenarios.

The groupings of DVA clients based on identifiable characteristics of their type of service, payment support or disability type, enable us to find interesting and operationally relevant differences in the expected labour market outcomes of those who join the civilian labour market.

We should note that the scenarios are based on the number of variables that were common between the civilian data and the DVA administrative data. Scenario results could be greatly improved through access to additional data from PMKeyS. Notably, the ADF data include individual information related to the level of education, proficiency in some skills, and some aspects of the type of job that was performed within the ADF. The scenarios presented in this report are not exhaustive; one could add alternative scenarios and make further decompositions based on other characteristics of the DVA clients.

6. Appendices

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Table A 1: The impact of long term health condition and education on labour force participation

	Model (1)		Model (2)		Model (3)		Model (4)	
	Coef.	M.E.	Coef.	M.E.	Coef.	M.E.	Coef.	M.E.
Type of condition (base group: no cond	ition)							
Physical condition only	-0.111***	-0.0121***			-0.207***	-0.0472***		
	(0.0261)	(0.00304)			(0.0608)	(0.0149)		
Mental condition only	-0.306***	-0.0397***			-0.561***	-0.154***		
	(0.0483)	(0.00777)			(0.123)	(0.0413)		
Both physical and mental conditions	-0.599***	-0.0951***			-0.933***	-0.288***		
	(0.0440)	(0.01000)			(0.100)	(0.0385)		
Detailed health conditions (17)								
Sight problems not corrected by glasses or contact lenses			0.0266	0.00269			-0.0481	-0.0104
			(0.0558)	(0.00551)			(0.137)	(0.0302)
Hearing problems			-0.0253	-0.00266			0.00856	0.00179
			(0.0491)	(0.00527)			(0.107)	(0.0222)
Speech problems			-0.134	-0.0154			-0.214	-0.0502
			(0.120)	(0.0153)			(0.348)	(0.0907)
Blackouts, fits or loss of consciousness			-0.237***	-0.0295**			-0.462**	-0.122*
			(0.0845)	(0.0125)			(0.223)	(0.0708)
Difficulty learning or understanding things			-0.187***	-0.0223**			-0.630***	-0.178**
			(0.0649)	(0.00891)			(0.218)	(0.0762)
Limited use of arms or fingers			-0.154***	-0.0180***			-0.260*	-0.0624
			(0.0530)	(0.00692)			(0.143)	(0.0386)
Difficulty gripping things			0.0327	0.00329			-0.118	-0.0264
			(0.0561)	(0.00549)			(0.153)	(0.0363)
Limited use of feet or legs			-0.302***	-0.0392***			-0.288***	-0.0698**
			(0.0435)	(0.00696)			(0.103)	(0.0282)
A nervous or emotional condition which requires treatment			-0.319***	-0.0418***			-0.466***	-0.122***
			(0.0373)	(0.00613)			(0.0898)	(0.0280)
Any condition that restricts physical activity or physical work			-0.0982***	-0.0109***			-0.121	-0.0270

			(0.0293)	(0.00347)			(0.0775)	(0.0182)
Any disfigurement or deformity			-0.00615	-0.000637			-0.204	-0.0477
			(0.101)	(0.0105)			(0.292)	(0.0754)
Any mental illness which requires help or supervision			-0.375***	-0.0517***			-0.480***	-0.127***
·			(0.0535)	(0.00949)			(0.134)	(0.0429)
Shortness of breath or difficulty breathing			-0.0672	-0.00730			-0.175	-0.0402
			(0.0471)	(0.00540)			(0.119)	(0.0298)
Chronic or recurring pain			-0.0834**	-0.00915**			-0.0978	-0.0215
			(0.0341)	(0.00398)			(0.0813)	(0.0187)
Long term effects as a result of a head injury, stroke or other brain damage			-0.537***	-0.0835***			-0.311	-0.0766
			(0.0886)	(0.0191)			(0.195)	(0.0551)
A long term condition or ailment which is still restrictive even though it is being treated or medication is being taken for it			-0.270***	-0.0339***			-0.272***	-0.0649***
			(0.0305)	(0.00465)			(0.0720)	(0.0193)
Any other long term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc			-0.0327	-0.00345			-0.00624	-0.00131
			(0.0274)	(0.00296)			(0.0672)	(0.0142)
Control variables:								
Аде	0 243***	0 0248***	0 242***	0 0250***	0 114***	0 0241***	0 116***	0 0243***
	(0.00650)	(0.000916)	(0.00651)	(0.000918)	(0.00921)	(0.00194)	(0.00931)	(0.00195)
Age squared	-0.00328***	-0.000335***	-0.00324***	-0.000335***	-0.00155***	-0.000326***	-0.00156***	-0.000327***
5	(7.64e-05)	(1.15e-05)	(7.66e-05)	(1.15e-05)	(0.000109)	(2.31e-05)	(0.000111)	(2.32e-05)
Male	0.978***	0.103***	0.979***	0.104***	0.632***	0.131***	0.649***	0.134***
	(0.0279)	(0.00371)	(0.0278)	(0.00373)	(0.0418)	(0.00850)	(0.0423)	(0.00853)
Married	-0.192***	-0.0189***	-0.195***	-0.0193***	-0.0182	-0.00382	-0.0252	-0.00525
	(0.0257)	(0.00247)	(0.0258)	(0.00250)	(0.0406)	(0.00848)	(0.0409)	(0.00848)
Education variables (reference group: Y	ear 12 and belov	v)	. ,		- •		- •	
Certificate	0.361***	0.0311***	0.358***	0.0312***	0.150***	0.0305***	0.151***	0.0306***
	(0.0421)	(0.00316)	(0.0421)	(0.00320)	(0.0494)	(0.00971)	(0.0499)	(0.00976)

Diploma	0.361***	0.0289***	0.365***	0.0294***	0.106*	0.0214*	0.103*	0.0206*
	(0.0734)	(0.00453)	(0.0733)	(0.00455)	(0.0610)	(0.0117)	(0.0614)	(0.0118)
University	0.710***	0.0548***	0.707***	0.0551***	0.187***	0.0386***	0.178***	0.0365***
	(0.0544)	(0.00353)	(0.0544)	(0.00357)	(0.0515)	(0.0103)	(0.0519)	(0.0104)
Work-limiting condition	-0.258***	-0.0310***	-0.188***	-0.0217***	-0.538***	-0.140***	-0.431***	-0.107***
	(0.0293)	(0.00413)	(0.0263)	(0.00343)	(0.0684)	(0.0210)	(0.0642)	(0.0185)
Family size	-0.147***	-0.0150***	-0.147***	-0.0152***	-0.0861***	-0.0181***	-0.0877***	-0.0184***
	(0.00728)	(0.000832)	(0.00729)	(0.000840)	(0.0124)	(0.00259)	(0.0124)	(0.00258)
Living in a major city	0.153***	0.0162***	0.154***	0.0164***	0.0317	0.00672	0.0251	0.00528
	(0.0327)	(0.00361)	(0.0328)	(0.00365)	(0.0385)	(0.00819)	(0.0387)	(0.00819)
State of residence dummies (reference	: group: NSW)							
VIC	0.0481	0.00482	0.0483	0.00488	0.0569	0.0118	0.0479	0.00991
	(0.0751)	(0.00738)	(0.0752)	(0.00745)	(0.0461)	(0.00938)	(0.0462)	(0.00942)
QLD	-0.107*	-0.0115	-0.102*	-0.0111	0.00378	0.000794	0.00486	0.00102
	(0.0620)	(0.00702)	(0.0622)	(0.00707)	(0.0488)	(0.0102)	(0.0492)	(0.0103)
SA	-0.00958	-0.000986	0.000937	9.66e-05	0.0672	0.0137	0.0847	0.0171
	(0.118)	(0.0122)	(0.118)	(0.0121)	(0.0660)	(0.0130)	(0.0668)	(0.0129)
WA	-0.203**	-0.0237*	-0.207**	-0.0245*	0.0117	0.00244	0.0198	0.00411
	(0.103)	(0.0137)	(0.103)	(0.0139)	(0.0643)	(0.0134)	(0.0652)	(0.0134)
TAS	-0.307**	-0.0396*	-0.309**	-0.0403*	0.164	0.0316*	0.159	0.0305*
	(0.142)	(0.0224)	(0.142)	(0.0227)	(0.104)	(0.0181)	(0.105)	(0.0184)
NT	0.532***	0.0352***	0.528***	0.0354***	0.335	0.0579*	0.322	0.0559*
	(0.136)	(0.00524)	(0.136)	(0.00536)	(0.223)	(0.0306)	(0.221)	(0.0308)
ACT	0.368***	0.0280***	0.372***	0.0286***	-0.0327	-0.00699	-0.0505	-0.0109
	(0.117)	(0.00637)	(0.117)	(0.00638)	(0.107)	(0.0234)	(0.107)	(0.0237)
Field of education (reference group: Na	atural and physica	al sciences)						
Information technology					-0.0106	-0.00224	-0.00479	-0.00101
0,					(0.131)	(0.0278)	(0.130)	(0)
Engineering and related technologies					0.140	0.0278	0.154	0.0302
					(0.115)	(0.0215)	(0.115)	(0.0211)
Architecture and building					0.109	0.0218	0.126	0.0248
					(0.127)	(0.0238)	(0.127)	(0.0233)
Agriculture, environment and related studies					0.214	0.0401*	0.207	0.0388*
					(0.143)	(0.0235)	(0.142)	(0.0235)

Medicine					0.475**	0.0754***	0.542**	0.0822***
					(0.217)	(0.0243)	(0.221)	(0.0222)
Nursing					0.335***	0.0593***	0.359***	0.0626***
					(0.118)	(0.0172)	(0.118)	(0.0166)
Other health-related					0.302**	0.0543***	0.336***	0.0591***
					(0.125)	(0.0187)	(0.125)	(0.0179)
Education					0.180	0.0349*	0.185*	0.0357*
					(0.111)	(0.0197)	(0.110)	(0.0193)
Management and commerce					0.177*	0.0351*	0.198*	0.0391**
					(0.106)	(0.0199)	(0.105)	(0.0194)
Law					0.163	0.0313	0.166	0.0318
					(0.160)	(0.0279)	(0.160)	(0.0277)
Society and culture					0.0320	0.00663	0.0502	0.0103
					(0.111)	(0.0227)	(0.110)	(0.0221)
Creative arts					0.0218	0.00453	0.0436	0.00893
					(0.127)	(0.0262)	(0.127)	(0.0253)
Food, hospitality and personal services					-0.0668	-0.0145	-0.0488	-0.0105
					(0.116)	(0.0260)	(0.115)	(0.0253)
Constant	-2.064***		-2.084***		-0.921***		-0.970***	
	(0.117)		(0.117)		(0.204)		(0.205)	
Mundlak correction terms	yes	yes	yes	yes				
Observations	147,799	147,799	147,799	147,799	9,188	9,188	9,188	9,188
Log likelihood	-46995	-46995	-46850	-46850	-3443	-3443	-3402	-3402
Rho	0.708		0.705					
Data Source: HILDA	Waves 1-13		Waves1-13		Wave 12		Wave 12	

Table A 2 : The impact of long term health condition and education on employment probabilities

	Model (1)		Model (2)		Model (3)		Model (4)	
	Coef.	M.E.	Coef.	M.E.	Coef.	M.E.	Coef.	M.E.
Type of condition (base group: no cond	lition)							
Physical condition only	0.0554	0.000904			-0.0534	-0.00435		
	(0.0401)	(0.000622)			(0.101)	(0.00848)		
Mental condition only	-0.456***	-0.0139***			-0.556***	-0.0699**		
	(0.0676)	(0.00332)			(0.171)	(0.0309)		
Both physical and mental conditions	-0.458***	-0.0139***			-0.167	-0.0151		
	(0.0712)	(0.00349)			(0.185)	(0.0192)		
Detailed health conditions (17)								
Sight problems not corrected by glasses or contact lenses			-0.0629	-0.00117			-0.120	-0.0105
			(0.0882)	(0.00177)			(0.247)	(0.0238)
Hearing problems			-0.151**	-0.00314*			0.0906	0.00656
			(0.0756)	(0.00187)			(0.220)	(0.0147)
Speech problems			0.103	0.00155				
			(0.195)	(0.00259)				
Blackouts, fits or loss of consciousness			-0.203	-0.00452			-1.292***	-0.268**
			(0.140)	(0.00392)			(0.349)	(0.122)
Difficulty learning or understanding things			-0.195**	-0.00430			-0.206	-0.0193
			(0.0963)	(0.00266)			(0.367)	(0.0408)
Limited use of arms or fingers			-0.227**	-0.00518*			0.0372	0.00282
			(0.0910)	(0.00269)			(0.291)	(0.0214)
Difficulty gripping things			0.0339	0.000560			0.205	0.0134
			(0.105)	(0.00167)			(0.333)	(0.0178)
Limited use of feet or legs			0.0723	0.00114			-0.281	-0.0280
			(0.0785)	(0.00113)			(0.189)	(0.0233)
A nervous or emotional condition which requires treatment			-0.443***	-0.0132***			-0.236	-0.0226
			(0.0592)	(0.00282)			(0.156)	(0.0180)
Any condition that restricts physical activity or physical work			0.125**	0.00187***			-0.0278	-0.00223

			(0.0499)	(0.000655)			(0.130)	(0.0106)
Any disfigurement or deformity			0.190	0.00259			0.0167	0.00128
			(0.190)	(0.00200)			(0.583)	(0.0443)
Any mental illness which requires help or supervision			-0.467***	-0.0145***			-0.385*	-0.0421
·			(0.0830)	(0.00416)			(0.214)	(0.0310)
Shortness of breath or difficulty breathing			-0.115	-0.00229			-0.0381	-0.00308
			(0.0784)	(0.00179)			(0.225)	(0.0188)
Chronic or recurring pain			0.0418	0.000685			0.0607	0.00452
			(0.0595)	(0.000929)			(0.147)	(0.0104)
Long term effects as a result of a head injury, stroke or other brain damage			0.00656	0.000112			0.0938	0.00675
			(0.159)	(0.00269)			(0.503)	(0.0331)
A long term condition or ailment which is still restrictive even though it is being treated or medication is being taken for it			0.0322	0.000533			-0.117	-0.0101
			(0.0548)	(0.000874)			(0.121)	(0.0115)
Any other long term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc			0.121***	0.00182***			0.0184	0.00142
			(0.0458)	(0.000606)			(0.114)	(0.00868)
Control variables:								
Age	0.131***	0.00225***	0.131***	0.00226***	0.0775***	0.00608***	0.0764***	0.00598***
	(0.0102)	(0.000220)	(0.0102)	(0.000221)	(0.0145)	(0.00114)	(0.0146)	(0.00114)
Age squared	-0.00137***	-2.37e-05***	-0.00138***	-2.38e-05***	- 0.000826***	-6.49e-05***	- 0.000814***	-6.38e-05***
	(0.000129)	(2.61e-06)	(0.000129)	(2.62e-06)	(0.000180)	(1.41e-05)	(0.000180)	(1.41e-05)
Male	-0.000388	-6.69e-06	0.000476	8.20e-06	0.0203	0.00159	0.0146	0.00115
	(0.0275)	(0.000474)	(0.0276)	(0.000475)	(0.0635)	(0.00499)	(0.0631)	(0.00494)
Married	0.0697**	0.00123*	0.0673*	0.00119*	0.373***	0.0341***	0.365***	0.0332***
	(0.0356)	(0.000650)	(0.0356)	(0.000649)	(0.0595)	(0.00628)	(0.0595)	(0.00623)
Education variables (reference group: Y	ear 12 and below	<i>u</i>)						
Certificate	0.137**	0.00215**	0.138**	0.00217***	0.138**	0.0103**	0.149**	0.0111**
	(0.0579)	(0.000839)	(0.0580)	(0.000840)	(0.0693)	(0.00497)	(0.0697)	(0.00494)

Diploma	0.293***	0.00379***	0.291***	0.00377***	0.295***	0.0191***	0.292***	0.0189***
	(0.105)	(0.00102)	(0.105)	(0.00102)	(0.0957)	(0.00505)	(0.0954)	(0.00504)
University	0.106	0.00171	0.104	0.00169	0.330***	0.0247***	0.334***	0.0250***
	(0.0763)	(0.00117)	(0.0763)	(0.00117)	(0.0756)	(0.00545)	(0.0757)	(0.00543)
Work-limiting condition	-0.226***	-0.00497***	-0.239***	-0.00532***	-0.296**	-0.0290**	-0.246**	-0.0232**
	(0.0484)	(0.00135)	(0.0444)	(0.00128)	(0.115)	(0.0137)	(0.105)	(0.0117)
Family size	-0.0442***	-0.000760***	-0.0451***	-0.000777***	-0.0625***	-0.00491***	-0.0626***	-0.00490***
	(0.0102)	(0.000181)	(0.0102)	(0.000181)	(0.0171)	(0.00135)	(0.0171)	(0.00134)
Living in a major city	0.0844*	0.00150*	0.0797*	0.00141	0.0351	0.00279	0.0370	0.00293
	(0.0483)	(0.000890)	(0.0483)	(0.000888)	(0.0597)	(0.00479)	(0.0598)	(0.00479)
State of residence dummies (reference	: group: NSW)							
VIC	-0.00527	-9.10e-05	0.00242	4.16e-05	0.0474	0.00365	0.0416	0.00320
	(0.108)	(0.00187)	(0.108)	(0.00185)	(0.0714)	(0.00538)	(0.0714)	(0.00539)
QLD	0.164*	0.00252**	0.166*	0.00255**	-0.0498	-0.00402	-0.0547	-0.00441
	(0.0878)	(0.00121)	(0.0879)	(0.00121)	(0.0734)	(0.00608)	(0.0735)	(0.00610)
SA	-0.0163	-0.000285	-0.00464	-8.02e-05	-0.143	-0.0125	-0.138	-0.0119
	(0.177)	(0.00315)	(0.177)	(0.00308)	(0.0943)	(0.00913)	(0.0941)	(0.00901)
WA	0.342**	0.00423***	0.348**	0.00428***	0.106	0.00772	0.135	0.00956
	(0.168)	(0.00146)	(0.168)	(0.00145)	(0.109)	(0.00728)	(0.110)	(0.00698)
TAS	0.244	0.00318*	0.235	0.00308	-0.122	-0.0106	-0.140	-0.0124
	(0.196)	(0.00187)	(0.197)	(0.00192)	(0.141)	(0.0136)	(0.141)	(0.0139)
NT	0.580***	0.00514***	0.584***	0.00516***	-0.0460	-0.00376	-0.0462	-0.00377
	(0.210)	(0.000832)	(0.210)	(0.000825)	(0.282)	(0.0240)	(0.282)	(0.0239)
ACT	0.183	0.00254	0.185	0.00257	0.130	0.00916	0.123	0.00866
	(0.185)	(0.00204)	(0.185)	(0.00203)	(0.202)	(0.0126)	(0.201)	(0.0127)
Field of education (reference group: Na	atural and physica	al sciences)						
Information technology					-0.276	-0.0271	-0.259	-0.0251
					(0.217)	(0.0261)	(0.217)	(0.0254)
Engineering and related technologies					0.0437	0.00334	0.0410	0.00313
					(0.203)	(0.0151)	(0.203)	(0.0151)
Architecture and building					-0.00624	-0.000492	-0.0280	-0.00224
					(0.216)	(0.0172)	(0.216)	(0.0177)
Agriculture, environment and related					0.200	0.0105	0.100	0.01.02
studies					-0.200	-0.0185	-0.198	-0.0183
					(0.225)	(0.0243)	(0.224)	(0.0241)

					0.0005	0.00077	0.0005	0.00005
Medicine					0.0365	0.00277	0.0295	0.00225
					(0.367)	(0.0270)	(0.366)	(0.0272)
Nursing					-0.0336	-0.00271	-0.0290	-0.00232
					(0.216)	(0.0178)	(0.216)	(0.0177)
Other health-related					0.117	0.00839	0.118	0.00839
					(0.218)	(0.0141)	(0.218)	(0.0141)
Education					0.0592	0.00446	0.0518	0.00391
					(0.207)	(0.0149)	(0.206)	(0.0150)
Management and commerce					-0.100	-0.00827	-0.101	-0.00834
					(0.192)	(0.0167)	(0.192)	(0.0166)
Law					0.198	0.0131	0.185	0.0124
					(0.303)	(0.0166)	(0.300)	(0.0168)
Society and culture					-0.181	-0.0162	-0.188	-0.0169
					(0.202)	(0.0205)	(0.202)	(0.0206)
Creative arts					-0.187	-0.0171	-0.204	-0.0189
					(0.220)	(0.0232)	(0.218)	(0.0236)
Food, hospitality and personal services					-0.0840	-0.00704	-0.0872	-0.00730
					(0.204)	(0.0182)	(0.204)	(0.0182)
Constant	0.624***		0.618***		-0.0823		-0.0571	
	(0.127)		(0.127)		(0.328)		(0.328)	
Mundlak correction terms	yes	yes	yes	yes				
Observations	116,407	116,407	116,407	116,407	7,692	7,692	7,683	7,683
Log likelihood	-19318	-19318	-19294	-19294	-1317	-1317	-1309	-1309
Rho	0.565		0.565					
Data Source: HILDA	Waves 1-13		Waves1-13		Wave 12		Wave 12	

Table A 3: The impact of long term health condition and education on log hourly wages

	Model (1)	Model (2)	Model (3)	Model (4)
Type of condition (base group: no con	dition)			
Physical condition only	-0.00252		-0.0525**	
, , ,	(0.00528)		(0.0209)	
Mental condition only	-0.0322**		-0.0143	
,	(0.0131)		(0.0476)	
Both physical and mental conditions	-0.0519***		-0.0720*	
	(0.0139)		(0.0393)	
Detailed health conditions (17)	()		()	
Detailed health conditions (17)				
Sight problems not corrected by		-0.00662		-0.0577
		(0.0144)		(0.0770)
Hearing problems		-0.00682		0.0118
		(0.0119)		(0.0480)
Speech problems		0.0305		-0.106
		(0.0367)		(0.105)
Blackouts, fits or loss of consciousness		-0.0119		-0.0159
		(0.0292)		(0.0744)
Difficulty learning or understanding things		-0.0844***		-0.229*
		(0.0217)		(0.127)
Limited use of arms or fingers		-0.00987		-0.126**
		(0.0157)		(0.0640)
Difficulty gripping things		0.0131		0.0594
		(0.0169)		(0.0790)
Limited use of feet or legs		0.00617		0.0401
		(0.0126)		(0.0425)
A nervous or emotional condition		-0 0271**		0 0222
which requires treatment		-0.0271		0.0225
		(0.0115)		(0.0353)
Any condition that restricts physical activity or physical work		0.0149*		-0.0346
		(0.00772)		(0.0345)
Any disfigurement or deformity		-0.0486		-0.0123
		(0.0311)		(0.210)
Any mental illness which requires help or supervision		0.00753		-0.0127
· ·		(0.0182)		(0.0550)
Shortness of breath or difficulty breathing		-0.0369***		-0.0257
		(0.0139)		(0.0659)
Chronic or recurring pain		0.0269***		0.00343
		(0.00905)		(0.0348)
Long term effects as a result of a head injury, stroke or other brain damage		-0.0502*		-0.209*
		(0.0284)		(0.120)
A long term condition or ailment which is still restrictive even though it is being treated or medication is being taken for it		0.00633		-0.0258

		(0.00851)		(0.0308)
Any other long term condition such				
as arthritis, asthma, heart disease,		-0.00269		-0.0126
Alzheimer's disease, dementia etc				
,		(0.00671)		(0.0256)
Control variables:				()
<u>control variables.</u>				
Age	0.108***	0.108***	0.0341***	0.0339***
	(0.00144)	(0.00144)	(0.00324)	(0.00323)
Age squared	-0.000660***	-0.000661***	-0.000344***	-0.000343***
	(1.70e-05)	(1.70e-05)	(4.01e-05)	(3.99e-05)
Male	0.0801***	0.0804***	0.0950***	0.0953***
	(0.00719)	(0.00718)	(0.0131)	(0.0131)
Married	0.0405***	0.0406***	0.0644***	0.0645***
	(0.00488)	(0.00488)	(0.0117)	(0.0118)
Education variables (reference group	: Year 12 and belo	ow)		
Certificate	0.0825***	0.0821***	-0.00283	-0.00311
	(0.00854)	(0.00854)	(0.0157)	(0.0157)
Diploma	0.0655***	0.0647***	0.0311	0.0313
	(0.0138)	(0.0138)	(0.0195)	(0.0196)
University	0.0482***	0.0478***	0.166***	0.166***
·	(0.0106)	(0.0106)	(0.0171)	(0.0172)
Work-limiting condition	0.00701	-0.00423	0.0140	-0.00138
U U	(0.00716)	(0.00709)	(0.0283)	(0.0309)
Family size	-0.0131***	-0.0131***	-0.00646*	-0.00630
	(0.00146)	(0.00146)	(0.00391)	(0.00391)
Living in a major city	0.0374***	0.0374***	0.0365***	0.0360***
	(0.00698)	(0.00698)	(0.0122)	(0.0122)
Occupation (reference groups Manag	orch	()	(/	()
Occupation (reference group: Manage	ers)	1 - 1 - 1		
Professionals	0.0287***	0.0286***	-0.00308	-0.00327
	(0.00610)	(0.00610)	(0.0192)	(0.0193)
Technicians and Trades Workers	-0.0143*	-0.0144*	-0.169***	-0.167***
	(0.00752)	(0.00752)	(0.0237)	(0.0237)
Community and Personal Service	-0.0135*	-0.0133*	-0.223***	-0.222***
Workers	0.0100	0.0200	0.220	
	(0.00775)	(0.00775)	(0.0232)	(0.0233)
Clerical and Administrative	0.00734	0.00738	-0.184***	-0.184***
Workers	0.00701	0.007.00	0.101	01101
	(0.00654)	(0.00654)	(0.0202)	(0.0202)
Sales Workers	-0.0180**	-0.0182**	-0.152***	-0.153***
	(0.00761)	(0.00761)	(0.0292)	(0.0292)
Machinery Operators and Drivers	0.00761	0.00765	-0.310***	-0.309***
	(0.00936)	(0.00936)	(0.0299)	(0.0300)
Labourers	-0.0132*	-0.0132*	-0.256***	-0.255***
	(0.00777)	(0.00777)	(0.0298)	(0.0298)
Industry (reference group: Agriculture	e. Forestry and Fi	shing)		
Mining	0.245***	0.245***	0 C20***	0 0 0 ***
winning	(0.0199)	(0.0199)	(0.039***	(0,038
Manufacturing	(0.0108)	(U.UI00)	(0.0724)	(0.0/2/)
wanulacturing	(0.0144)	(0.0945	(0.0650)	(0.275^{+++})
Flootnicity Con Mater and Marte	(U.U144)	(U.U144)	(0.0650)	(U.U053)
Electricity, Gas, water and Waste	0.15/	0.158***	0.555***	0.556****
Construction	(0.0214)	(0.0214)	(0.0751)	(0.0/53)
Construction	0.131***	0.132^{+++}	0.386***	0.385***
W/holocolo Trodo	(0.0151)	(0.0151)	(U.Ubbb)	(U.U669)
wholesale trade	0.0/13***	0.0713***	0.186***	0.184***
	(0.0155)	(0.0155)	(0.0684)	(0.0685)

Retail Trade	0.0288*	0.0291**	0.0599	0.0578
	(0.0148)	(0.0148)	(0.0672)	(0.0674)
Accommodation and Food Services	0.00616	0.00629	0.0749	0.0756
	(0.0153)	(0.0153)	(0.0679)	(0.0682)
Transport, Postal and Warehousing	0.0721***	0.0722***	0.336***	0.334***
. ,	(0.0159)	(0.0159)	(0.0689)	(0.0692)
Information Media and Telecommunication	0.104***	0.104***	0.360***	0.360***
	(0.0179)	(0.0179)	(0.0776)	(0.0778)
Financial and Insurance Services	0.125***	0.125***	0.436***	0.435***
	(0.0175)	(0.0175)	(0.0686)	(0.0689)
Rental, Hiring and Real Estate Services	0.0384*	0.0388*	0.215***	0.213***
	(0.0200)	(0.0200)	(0.0778)	(0.0781)
Professional, Scientific and Technical	0.0938***	0.0940***	0.311***	0.310***
	(0.0150)	(0.0150)	(0.0659)	(0.0661)
Administrative and Support Service	0.0457***	0.0454***	0.251***	0.246***
	(0.0161)	(0.0161)	(0.0678)	(0.0681)
Public Administration and Safety	0.129***	0.129***	0.390***	0.387***
	(0.0153)	(0.0154)	(0.0641)	(0.0644)
Education and Training	0.114***	0.114***	0.297***	0.296***
	(0.0158)	(0.0158)	(0.0665)	(0.0667)
Health Care and Social Assistance	0.0828***	0.0826***	0.275***	0.273***
	(0.0152)	(0.0153)	(0.0647)	(0.0650)
Arts and Recreation Services	0.0714***	0.0719***	0.244***	0.240***
	(0.0181)	(0.0181)	(0.0800)	(0.0803)
Other Services	0.0126	0.0128	0.117*	0.115*
	(0.0162)	(0.0162)	(0.0687)	(0.0691)
State of residence dummies (reference	e: group: NSW)			
VIC	-0.0203	-0.0202	-0.0306**	-0.0311**
	(0.0148)	(0.0148)	(0.0139)	(0.0139)
QLD	-0.0514***	-0.0513***	-0.0342**	-0.0354**
	(0.0130)	(0.0130)	(0.0149)	(0.0149)
SA	0.0156	0.0155	-0.0527***	-0.0535***
	(0.0226)	(0.0226)	(0.0203)	(0.0203)
WA	-0.0151	-0.0152	0.0610***	0.0616***
	(0.0205)	(0.0205)	(0.0195)	(0.0195)
TAS	-0.0815***	-0.0829***	-0.0608**	-0.0663**
	(0.0304)	(0.0304)	(0.0278)	(0.0277)
NT	0.0265	0.0268	0.0296	0.0274
	(0.0248)	(0.0248)	(0.0571)	(0.0571)
ACT	0.00427	0.00397	0.0766**	0.0788**
	(0.0208)	(0.0208)	(0.0306)	(0.0306)
Field of education (reference group: N	latural and physi	ical sciences)		
Information technology			0.0592	0.0594
			(0.0417)	(0.0418)
Engineering and related technologies			0.121***	0.119***
			(0.0366)	(0.0367)
Architecture and building			0.0331	0.0312
			(0.0416)	(0.0418)
Agriculture, environment and related studies			-0.0285	-0.0270
			(0.0458)	(0.0457)
Medicine			0.228***	0.231***

			(0.0638)	(0.0634)
Nursing			0.0185	0.0178
			(0.0394)	(0.0394)
Other health-related			0.0573	0.0571
			(0.0394)	(0.0395)
Education			-0.0308	-0.0319
			(0.0381)	(0.0381)
Management and commerce			0.0633*	0.0629*
			(0.0352)	(0.0353)
Law			0.0734	0.0714
			(0.0459)	(0.0458)
Society and culture			-0.0137	-0.0157
			(0.0377)	(0.0377)
Creative arts			-0.0606	-0.0595
			(0.0447)	(0.0446)
Food, hospitality and personal services			-0.0386	-0.0383
			(0.0394)	(0.0395)
Constant	1.997***	2.000***	2.273***	2.276***
	(0.0383)	(0.0382)	(0.0962)	(0.0965)
Mundlak correction terms	yes	yes		
Observations	99,266	99,266	6,624	6,624
R-squared			0.306	0.307
R-squared overall model	0.362	0.363		
R-squared between model	0.341	0.342		
R-squared within model	0.280	0.280		

Table A 4: The impact of long term health condition and education on log weekly income

	Model (1)	Model (2)	Model (3)	Model (4)
Type of condition (base group: no con	dition)			
Physical condition only	0.0131**		0.0231	
	(0.00660)		(0.0266)	
Mental condition only	-0.0772***		-0.106	
	(0.0164)		(0.0732)	
Both physical and mental conditions	-0.111***		-0.150**	
	(0.0174)		(0.0688)	
Detailed health conditions (17)				
Sight problems not corrected by				
glasses or contact lenses		0.00126		-0.0919
0		(0.0181)		(0.0907)
Hearing problems		-0.0293**		0.00815
		(0.0149)		(0.0597)
Speech problems		-0.117**		-0.105
		(0.0460)		(0.0686)
Blackouts, fits or loss of consciousness		0.0288		0.0454
		(0.0367)		(0.106)
Difficulty learning or understanding things		-0.157***		-0.199
-		(0.0273)		(0.147)
Limited use of arms or fingers		-0.00230		-0.124
		(0.0195)		(0.109)
Difficulty gripping things		-0.0344		-0.0919
		(0.0210)		(0.0936)
Limited use of feet or legs		-0.0122		0.00729
		(0.0157)		(0.0709)
A nervous or emotional condition which requires treatment		-0.0728***		-0.127**
		(0.0145)		(0.0606)
Any condition that restricts physical activity or physical work		0.0259***		0.0261
		(0.00963)		(0.0489)
Any disfigurement or deformity		-0.00588		-0.00928
		(0.0389)		(0.186)
Any mental illness which requires help or supervision		-0.0477**		-0.0602
		(0.0228)		(0.0913)
Shortness of breath or difficulty breathing		-0.00430		0.0157
-		(0.0173)		(0.0812)
Chronic or recurring pain		0.00784		0.0813*
		(0.0113)		(0.0425)
Long term effects as a result of a head injury, stroke or other brain damage		-0.0842**		-0.127
0-		(0.0357)		(0.198)
A long term condition or ailment which is still restrictive even though it is being treated or medication is		-0.0137		0.000201

being taken for it				
		(0.0106)		(0.0444)
Any other long term condition such				
as arthritis, asthma, heart disease,		-0.00248		0.0387
Alzheimer's disease, dementia etc				
		(0.00839)		(0.0334)
Control variables:				
Age	0.168***	0.168***	0.0569***	0.0568***
	(0.00179)	(0.00179)	(0.00446)	(0.00447)
Age squared	-0.00138***	-0.00137***	-0.000639***	-0.000637***
5	(2.11e-05)	(2.11e-05)	(5.44e-05)	(5.45e-05)
Male	0.296***	0.297***	0.330***	0.330***
	(0.0101)	(0.0101)	(0.0181)	(0.0181)
Married	0.0883***	0.0882***	0.0892***	0.0893***
	(0.00605)	(0.00605)	(0.0167)	(0.0168)
Education variables (reference group	: Year 12 and belo	ow)		
Certificate	0.188***	0.188***	0.0141	0.0135
	(0.0106)	(0.0106)	(0.0222)	(0.0222)
Diploma	0.252***	0.252***	0.0609**	0.0602**
	(0.0172)	(0.0172)	(0.0262)	(0.0262)
University	0.548***	0.548***	0.157***	0.157***
,	(0.0131)	(0.0131)	(0.0251)	(0.0252)
Work-limiting condition	-0.0672***	-0.0625***	-0.193***	-0.204***
	(0.00889)	(0.00881)	(0.0395)	(0.0426)
Family size	-0.0705***	-0.0706***	-0.0472***	-0.0469***
	(0.00181)	(0.00181)	(0.00540)	(0.00540)
Living in a major city	0.0715***	0.0716***	0.0349**	0.0339**
	(0.00865)	(0.00865)	(0.0165)	(0.0165)
	(0.00000)	(0.00000)	(0.0105)	(0.0100)
Occupation (reference group: Manag	ers)	(0.00003)	(0.0103)	(010100)
Occupation (reference group: Manag	ers)	-0.0161**	-0 137***	-0.136***
Occupation (reference group: Manager Professionals	ers) -0.0164** (0.00755)	-0.0161** (0.00755)	-0.137***	-0.136***
Occupation (reference group: Manag Professionals Technicians and Trades Workers	ers) -0.0164** (0.00755) -0.0772***	-0.0161** (0.00755) -0.0768***	-0.137*** (0.0236) -0.302***	-0.136*** (0.0236) -0.302***
Occupation (reference group: Manage Professionals Technicians and Trades Workers	-0.0164** (0.00755) -0.0772*** (0.00931)	-0.0161** (0.00755) -0.0768*** (0.00931)	-0.137*** (0.0236) -0.302*** (0.0289)	-0.136*** (0.0236) -0.302*** (0.0288)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service	-0.0164** (0.00755) -0.0772*** (0.00931)	-0.0161** (0.00755) -0.0768*** (0.00931)	-0.137*** (0.0236) -0.302*** (0.0289)	-0.136*** (0.0236) -0.302*** (0.0288)
Occupation (reference group: Manag Professionals Technicians and Trades Workers Community and Personal Service Workers	(0.000000) ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213***	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213***	-0.137*** (0.0236) -0.302*** (0.0289) -0.554***	-0.136*** (0.0236) -0.302*** (0.0288) -0.554***
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers	(0.00000) ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959)	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314)
Occupation (reference group: Manag Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative	-0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959)	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers	-0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103***	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103***	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405***	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403***
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers	(0.00000) ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810)	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258)
Occupation (reference group: Manag Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers	(0.000000) ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250***	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250***	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460***	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460***
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers	-0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942)	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers	-0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110***	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110***	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493***	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.492***
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers	(0.00000) ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116)	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0424)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.492*** (0.0422)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers	-0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281***	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281***	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0424) -0.660***	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.492*** (0.0422) -0.659***
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers	-0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962)	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0407)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers	-0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) e. Forestry and Fi	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) shing)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0407)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture Mining	<pre>-0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) e, Forestry and Fi 0.290***</pre>	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) shing) 0.290***	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0407)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture Mining	<pre>(0.00000) ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00959) -0.103*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00962) e, Forestry and Fi 0.290*** (0.0232)</pre>	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) shing) 0.290*** (0.0232)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0407) 0.753*** (0.0873)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.492*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409) 0.757*** (0.0872)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture Mining	<pre>(0.00000) ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.00116) -0.281*** (0.00962) e, Forestry and Fi 0.290*** (0.0233) 0.0504***</pre>	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) shing) 0.290*** (0.0233) 0.0504***	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0407) 0.753*** (0.0873) 0.200**	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0458) -0.460*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409) 0.757*** (0.0872) 0.204**
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture Mining Manufacturing	ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) e, Forestry and Fi 0.290*** (0.0233) 0.0504*** (0.0179)	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00962) shing) 0.290*** (0.0233) 0.0504*** (0.0179)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0424) -0.660*** (0.0407) 0.753*** (0.0873) 0.200** (0.0814)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.460*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409) 0.757*** (0.0872) 0.204** (0.0813)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture Mining Manufacturing Electricity Gas Water and Waste	<pre>(0.00000) ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00962) e, Forestry and Fi 0.290*** (0.0233) 0.0504*** (0.0179) 0.130***</pre>	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) shing) 0.290*** (0.0233) 0.0504*** (0.0179) 0.131***	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0407) 0.753*** (0.0873) 0.200** (0.0814) 0.446***	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409) 0.757*** (0.0872) 0.204** (0.0813) 0.453***
Occupation (reference group: Manage ProfessionalsTechnicians and Trades WorkersCommunity and Personal Service WorkersClerical and Administrative WorkersSales WorkersMachinery Operators and DriversLabourersIndustry (reference group: Agriculture MiningManufacturingElectricity, Gas, Water and Waste	<pre>(0.00000) ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00962) e, Forestry and Fi 0.290*** (0.0233) 0.0504*** (0.0179) 0.130*** (0.0265)</pre>	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00962) shing) 0.290*** (0.0233) 0.0504*** (0.0179) 0.131*** (0.0265)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.493*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0407) 0.753*** (0.0873) 0.200** (0.0814) 0.446*** (0.0947)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0258) -0.460*** (0.0458) -0.492*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409) 0.757*** (0.0872) 0.204** (0.0813) 0.453*** (0.0947)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture Mining Manufacturing Electricity, Gas, Water and Waste Construction	ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00962) e, Forestry and Fi 0.290*** (0.0233) 0.0504*** (0.0233) 0.0504*** (0.0179) 0.130*** (0.0265) 0.0992***	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) shing) 0.290*** (0.0233) 0.0504*** (0.0179) 0.131*** (0.0265) 0.0994***	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0258) -0.460*** (0.0458) -0.460*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0407) 0.753*** (0.0873) 0.200** (0.0814) 0.446*** (0.0947) 0.333***	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0458) -0.460*** (0.0458) -0.492*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409) 0.757*** (0.0872) 0.204** (0.0813) 0.453*** (0.0947) 0.337***
Occupation (reference group: Manage ProfessionalsTechnicians and Trades WorkersCommunity and Personal Service WorkersClerical and Administrative WorkersSales WorkersSales WorkersMachinery Operators and DriversLabourersIndustry (reference group: Agriculture MiningManufacturingElectricity, Gas, Water and WasteConstruction	ers) -0.0164** (0.00755) -0.0772*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.00942) -0.110*** (0.00962) e, Forestry and Fi 0.290*** (0.0233) 0.0504*** (0.0179) 0.130*** (0.0265) 0.0992*** (0.0187)	-0.0161** (0.00755) -0.0768*** (0.00931) -0.213*** (0.00959) -0.103*** (0.00810) -0.250*** (0.00942) -0.110*** (0.0116) -0.281*** (0.00962) shing) 0.290*** (0.0233) 0.0504*** (0.0179) 0.131*** (0.0265) 0.0994*** (0.0187)	-0.137*** (0.0236) -0.302*** (0.0289) -0.554*** (0.0314) -0.405*** (0.0458) -0.460*** (0.0458) -0.493*** (0.0458) -0.493*** (0.0424) -0.660*** (0.0424) -0.660*** (0.0407) 0.753*** (0.0873) 0.200** (0.0814) 0.446*** (0.0947) 0.333*** (0.0825)	-0.136*** (0.0236) -0.302*** (0.0288) -0.554*** (0.0314) -0.403*** (0.0458) -0.460*** (0.0458) -0.460*** (0.0458) -0.492*** (0.0422) -0.659*** (0.0409) 0.757*** (0.0872) 0.204** (0.0813) 0.453*** (0.0947) 0.337*** (0.0825)

	(0.0191)	(0.0191)	(0.0880)	(0.0879)
Retail Trade	-0.176***	-0.176***	-0.178**	-0.174**
	(0.0183)	(0.0183)	(0.0866)	(0.0865)
Accommodation and Food Services	-0.296***	-0.295***	-0.152*	-0.144
	(0.0190)	(0.0190)	(0.0877)	(0.0877)
Transport, Postal and Warehousing	0.00328	0.00317	0.256***	0.259***
	(0.0197)	(0.0197)	(0.0891)	(0.0893)
Information Media and Telecommunication	0.00304	0.00341	0.288***	0.293***
	(0.0222)	(0.0222)	(0.102)	(0.102)
Financial and Insurance Services	0.0969***	0.0970***	0.398***	0.403***
	(0.0217)	(0.0217)	(0.0856)	(0.0855)
Rental, Hiring and Real Estate Services	-0.0875***	-0.0874***	0.148	0.157
	(0.0248)	(0.0248)	(0.102)	(0.102)
Professional, Scientific and Technical	0.0127	0.0130	0.193**	0.198**
	(0.0186)	(0.0186)	(0.0835)	(0.0834)
Administrative and Support Service	-0.0888***	-0.0893***	0.0484	0.0487
	(0.0199)	(0.0199)	(0.0866)	(0.0867)
Public Administration and Safety	0.0812***	0.0815***	0.307***	0.312***
	(0.0190)	(0.0190)	(0.0823)	(0.0823)
Education and Training	-0.105***	-0.105***	0.0766	0.0789
	(0.0195)	(0.0195)	(0.0850)	(0.0849)
Health Care and Social Assistance	-0.00923	-0.00883	0.138*	0.141*
	(0.0189)	(0.0189)	(0.0828)	(0.0827)
Arts and Recreation Services	-0.221***	-0.221***	-0.00956	-0.00615
	(0.0224)	(0.0224)	(0.0995)	(0.0995)
Other Services	-0.0881***	-0.0878***	-0.0846	-0.0785
	(0.0201)	(0.0201)	(0.0881)	(0.0880)
State of residence dummies (referenc	e: group: NSW)			
VIC	-0.0546***	-0.0549***	-0.0268	-0.0272
	(0.0183)	(0.0183)	(0.0190)	(0.0190)
QLD	-0.00161	-0.00113	0.00555	0.00487
	(0.0161)	(0.0161)	(0.0205)	(0.0205)
SA	-0.0376	-0.0374	-0.0676**	-0.0670**
	(0.0280)	(0.0280)	(0.0273)	(0.0273)
WA	0.000655	0.000942	0.0740***	0.0743***
	(0.0253)	(0.0253)	(0.0268)	(0.0267)
TAS	-0.160***	-0.160***	-0.0669*	-0.0686*
	(0.0377)	(0.0377)	(0.0395)	(0.0395)
NT	0.170***	0.170***	0.106*	0.101*
	(0.0307)	(0.0307)	(0.0598)	(0.0602)
ACT	0.0318	0.0324	0.117***	0.117***
	(0.0257)	(0.0257)	(0.0378)	(0.0381)
Field of education (reference group: N	latural and phys	ical sciences)		
Information technology			0.0409	0.0388
			(0.0537)	(0.0539)
Engineering and related technologies			0.169***	0.168***
			(0.0469)	(0.0471)
Architecture and building			0.0732	0.0744
			(0.0517)	(0.0519)
Agriculture, environment and related studies			-0.0412	-0.0413
			(0.0617)	(0.0618)

Medicine			0.305***	0.304***
			(0.0804)	(0.0802)
Nursing			0.0184	0.0163
			(0.0547)	(0.0548)
Other health-related			0.0521	0.0520
			(0.0521)	(0.0524)
Education			0.0671	0.0675
			(0.0499)	(0.0501)
Management and commerce			0.114**	0.112**
			(0.0458)	(0.0460)
Law			0.138*	0.137*
			(0.0793)	(0.0795)
Society and culture			-0.0179	-0.0201
			(0.0496)	(0.0497)
Creative arts			-0.126**	-0.125**
			(0.0607)	(0.0608)
Food, hospitality and personal services			0.0270	0.0259
			(0.0522)	(0.0525)
Mundlak correction terms	yes	yes		
Constant	4.829***	4.830***	5.653***	5.650***
	(0.0536)	(0.0536)	(0.128)	(0.128)
Observations	99,467	99,467	6,642	6,642
R-squared			0.391	0.391
R-squared overall model	0.492	0.492		
R-squared between model	0.506	0.507		
R-squared within model	0.374	0.374		

Table A 5: The impact of long term health condition and education on life satisfaction

	Model (1)	Model (2)	Model (3)	Model (4)
Type of condition (base group: no con	dition)			
Physical condition only	-0.0499***		-0.147**	
	(0.0137)		(0.0598)	
Mental condition only	-0.393***		-0.370*	
	(0.0342)		(0.192)	
Both physical and mental conditions	-0.493***		-0.756***	
	(0.0355)		(0.165)	
Detailed health conditions (17)				
Sight problems not corrected by		0.0407		0.204*
glasses or contact lenses		-0.0497		-0.304*
		(0.0365)		(0.170)
Hearing problems		-0.0373		-0.0179
		(0.0298)		(0.126)
Speech problems		0.0360		-0.0525
		(0.0943)		(0.481)
Blackouts, fits or loss of consciousness		-0.204***		-0.466
		(0.0747)		(0.696)
Difficulty learning or understanding things		-0.175***		0.0199
		(0.0570)		(0.391)
Limited use of arms or fingers		0.0109		0.0822
		(0.0389)		(0.211)
Difficulty gripping things		-0.0859**		-0.383
Limited use of fact or loss		(0.0421)		(0.2/1)
Limited use of feet or legs		-0.0461		0.0423
A nervous or emotional condition		(0.0310)		(0.149)
which requires treatment		-0.403***		-0.444***
Any condition that rectricts why signal		(0.0295)		(0.140)
activity or physical work		-0.0459**		-0.200**
		(0.0195)		(0.0959)
Any distigurement or deformity		-0.0180		-0.0279
Any montal illnoss which requires		(0.0785)		(0.352)
help or supervision		-0.346***		-0.756***
		(0.0470)		(0.220)
Shortness of breath or difficulty breathing		-0.0879**		-0.0494
		(0.0356)		(0.164)
Chronic or recurring pain		-0.153***		-0.0787
		(0.0229)		(0.104)
Long term effects as a result of a head injury, stroke or other brain damage		-0.220***		-0.190
0		(0.0717)		(0.295)
A long term condition or ailment which is still restrictive even though it is being treated or medication is		-0.0643***		-0.0968

being taken for it				
		(0.0215)		(0.0921)
Any other long term condition such				
as arthritis, asthma, heart disease,		-0.00987		0.0504
Alzheimer's disease, dementia etc				
		(0.0172)		(0.0748)
Control variables:				
Age	-0.0770***	-0.0771***	-0.0899***	-0.0891***
	(0.00375)	(0.00375)	(0.00879)	(0.00879)
Age squared	0.000849***	0.000857***	0.00105***	0.00103***
<u> </u>	(4.38e-05)	(4.38e-05)	(0.000106)	(0.000106)
Male	-0.0590***	-0.0592***	-0.0594*	-0.0577*
	(0.0192)	(0.0192)	(0.0351)	(0.0350)
Married	0.314***	0.314***	0.423***	0.419***
	(0.0128)	(0.0128)	(0.0375)	(0.0375)
Education variables (reference group	: Year 12 and bel	ow)		
Certificate	-0.0355	-0.0345	-0.0356	-0.0355
	(0.0227)	(0.0227)	(0.0472)	(0.0474)
Diploma	-0.0274	-0.0240	-0.0838	-0.0816
Dipionia	(0.0372)	(0.0371)	(0.0552)	(0.0554)
University	-0.0282	-0.0269	-0.0593	-0.0549
	(0.0284)	(0.0284)	(0.0484)	(0.0484)
Work-limiting condition	-0.143***	-0.109***	-0.372***	-0.331***
5	(0.0182)	(0.0179)	(0.0839)	(0.0829)
Family size	0.0167***	0.0164***	0.00531	0.00577
· ·	(0.00384)	(0.00383)	(0.0119)	(0.0119)
Living in a major city	-0.0516***	-0.0525***	-0.0946***	-0.0970***
	(0.0183)	(0.0183)	(0.0335)	(0.0336)
Occupation (reference group: Manag	(0.0183) ers)	(0.0183)	(0.0335)	(0.0336)
Occupation (reference group: Manag	(0.0183) ers)	(0.0183)	(0.0335)	(0.0336)
Occupation (reference group: Manag Professionals	(0.0183) ers) 0.00986 (0.0157)	(0.0183) 0.00977 (0.0157)	(0.0335) -0.0528 (0.0486)	(0.0336) -0.0531 (0.0487)
Occupation (reference group: Manag Professionals	(0.0183) ers) 0.00986 (0.0157) -0.0278	(0.0183) 0.00977 (0.0157)	(0.0335) -0.0528 (0.0486) -0.101*	(0.0336) -0.0531 (0.0487) -0.0990*
Occupation (reference group: Manager Professionals Technicians and Trades Workers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597)
Occupation (reference group: Manag Professionals Technicians and Trades Workers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597)
Occupation (reference group: Manag Professionals Technicians and Trades Workers Community and Personal Service Workers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282
Occupation (reference group: Manag Professionals Technicians and Trades Workers Community and Personal Service Workers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651)
Occupation (reference group: Manag Professionals Technicians and Trades Workers Community and Personal Service Workers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651)
Occupation (reference group: Manag Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906*	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526***	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521***	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0420*	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405*	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262**	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254**
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0420* (0.0241)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0420* (0.0241) -0.0517***	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510***	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227***	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215***
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0420* (0.0241) -0.0517*** (0.0196)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture)	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.0517*** (0.0196) e. Forestry and Fi	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) (0.0195)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0420* (0.0241) -0.0517*** (0.0196) e, Forestry and Fi	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture Mining	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.05217*** (0.0196) e, Forestry and Fi 0.0613 (0.0472)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing) 0.0578 (0.0472)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823) -0.149 (0.145)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821) -0.151 (0.145)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.05420* (0.0241) -0.0517*** (0.0196) e, Forestry and Fi 0.0613 (0.0472) -0.0740**	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing) 0.0578 (0.0472) -0.0751**	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823) -0.149 (0.146) -0.265***	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821) -0.151 (0.146) 0.270***
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Manufacturing	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.0517*** (0.0241) -0.0517*** (0.0196) e, Forestry and Fi 0.0613 (0.0472) -0.0740** (0.0244)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing) 0.0578 (0.0472) -0.0751** (0.0244)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823) -0.149 (0.146) -0.365*** (0.124)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821) -0.151 (0.146) -0.370*** (0.123)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Manufacturing Electricity, Gas, Water and Waste	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.0527** (0.0241) -0.0517*** (0.0196) e, Forestry and Fi 0.0613 (0.0472) -0.0740** (0.0344) -0.0278	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing) 0.0578 (0.0472) -0.0751** (0.0344) -0.0220	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823) -0.149 (0.146) -0.365*** (0.124) -0.107	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821) -0.151 (0.146) -0.370*** (0.123) -0.0991
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Manufacturing Electricity, Gas, Water and Waste	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.0420* (0.0241) -0.0517*** (0.0196) e, Forestry and Fi 0.0613 (0.0472) -0.0740** (0.0344) -0.0278 (0.0546)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing) 0.0578 (0.0472) -0.0751** (0.0344) -0.0339 (0.0546)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823) -0.149 (0.146) -0.365*** (0.124) -0.107 (0.170)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821) -0.151 (0.146) -0.370*** (0.123) -0.0991 (0.171)
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture Mining Manufacturing Electricity, Gas, Water and Waste	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.0540* (0.0241) -0.0517*** (0.0196) e, Forestry and Fi 0.0613 (0.0472) -0.0740** (0.0344) -0.0278 (0.0546) 0.00923	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing) 0.0578 (0.0472) -0.0751** (0.0344) -0.0339 (0.0546) 0.00792	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823) -0.149 (0.146) -0.365*** (0.124) -0.107 (0.170) -0.196	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821) -0.151 (0.146) -0.370*** (0.123) -0.0991 (0.171) -0.194
Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Manufacturing Electricity, Gas, Water and Waste Construction	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.0527*** (0.0241) -0.0517*** (0.0196) e, Forestry and Fi 0.0613 (0.0472) -0.0740** (0.0344) -0.0278 (0.0546) 0.00923 (0.0358)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing) 0.0578 (0.0472) -0.0751** (0.0344) -0.0339 (0.0546) 0.00792 (0.0358)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.104) -0.227*** (0.0823) -0.149 (0.146) -0.365*** (0.124) -0.107 (0.170) -0.196 (0.123)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.104) -0.215*** (0.0821) -0.151 (0.146) -0.370*** (0.123) -0.0991 (0.171) -0.194 (0.123)
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Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agriculture Mining Manufacturing	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.0527*** (0.0241) -0.0517*** (0.0196) e, Forestry and Fi 0.0613 (0.0472) -0.0740**	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0169) -0.0521*** (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing) 0.0578 (0.0472) -0.0751**	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823) -0.149 (0.146) -0.365***	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.0821) -0.151 (0.146) -0.370***
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Occupation (reference group: Manage Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Electricity, Gas, Water and Waste Construction	(0.0183) ers) 0.00986 (0.0157) -0.0278 (0.0189) -0.0106 (0.0202) -0.0189 (0.0169) -0.0526*** (0.0197) -0.0526*** (0.0197) -0.0420* (0.0241) -0.0517*** (0.0196) e, Forestry and Fi 0.0613 (0.0472) -0.0740** (0.0344) -0.0278 (0.0546) 0.00923 (0.0358)	(0.0183) 0.00977 (0.0157) -0.0259 (0.0189) -0.0105 (0.0202) -0.0181 (0.0197) -0.0405* (0.0197) -0.0405* (0.0197) -0.0405* (0.0241) -0.0510*** (0.0195) shing) 0.0578 (0.0472) -0.0751** (0.0344) -0.0339 (0.0546) 0.00792 (0.0358)	(0.0335) -0.0528 (0.0486) -0.101* (0.0597) -0.0268 (0.0650) -0.0906* (0.0547) -0.139 (0.0875) -0.262** (0.104) -0.227*** (0.0823) -0.149 (0.146) -0.365*** (0.124) -0.196 (0.123)	(0.0336) -0.0531 (0.0487) -0.0990* (0.0597) -0.0282 (0.0651) -0.0856 (0.0547) -0.139 (0.0873) -0.254** (0.104) -0.215*** (0.104) -0.215*** (0.123) -0.0991 (0.171) -0.194 (0.123)

	(0.0374)	(0.0374)	(0.135)	(0.135)
Retail Trade	-0.0953***	-0.0959***	-0.407***	-0.406***
	(0.0353)	(0.0353)	(0.129)	(0.128)
Accommodation and Food Services	-0.0910**	-0.0906**	-0.599***	-0.595***
	(0.0368)	(0.0368)	(0.139)	(0.138)
Transport, Postal and Warehousing	0.00511	0.00405	-0.125	-0.123
	(0.0385)	(0.0385)	(0.143)	(0.143)
Information Media and Telecommunication	-0.0489	-0.0470	-0.422***	-0.416***
	(0.0441)	(0.0441)	(0.149)	(0.150)
Financial and Insurance Services	-0.0572	-0.0589	-0.247*	-0.252*
	(0.0432)	(0.0432)	(0.132)	(0.131)
Rental, Hiring and Real Estate Services	-0.0955*	-0.0947*	-0.302*	-0.303*
	(0.0492)	(0.0492)	(0.179)	(0.179)
Professional, Scientific and Technical	-0.0314	-0.0324	-0.320***	-0.316***
	(0.0359)	(0.0359)	(0.120)	(0.120)
Administrative and Support Service	-0.0320	-0.0323	-0.315**	-0.310**
	(0.0387)	(0.0387)	(0.140)	(0.139)
Public Administration and Safety	0.00919	0.00868	-0.328***	-0.330***
	(0.0372)	(0.0372)	(0.122)	(0.121)
Education and Training	0.000508	0.000406	-0.306**	-0.303**
	(0.0379)	(0.0378)	(0.125)	(0.125)
Health Care and Social Assistance	-0.0152	-0.0153	-0.296**	-0.293**
	(0.0367)	(0.0367)	(0.122)	(0.122)
Arts and Recreation Services	0.0174	0.0165	-0.189	-0.183
	(0.0443)	(0.0442)	(0.156)	(0.156)
Other Services	-0.00548	-0.00722	-0.262*	-0.263*
	(0.0390)	(0.0390)	(0.135)	(0.135)
State of residence dummies (reference	e: group: NSW)			
VIC	-0.0311	-0.0313	0.0480	0.0453
	(0.0388)	(0.0388)	(0.0371)	(0.0372)
QLD	-0.000758	0.000576	-0.123***	-0.128***
	(0.0338)	(0.0338)	(0.0412)	(0.0413)
SA	0.100*	0.103*	-0.00308	-0.00579
	(0.0599)	(0.0599)	(0.0552)	(0.0551)
WA	-0.0460	-0.0440	-0.111**	-0.112**
	(0.0543)	(0.0542)	(0.0550)	(0.0549)
TAS	-0.109	-0.106	-0.107	-0.118
	(0.0796)	(0.0795)	(0.0948)	(0.0941)
NT	-0.170**	-0.171***	-0.112	-0.113
	(0.0662)	(0.0662)	(0.111)	(0.110)
ACT	0.00667	0.00968	0.155*	0.151*
	(0.0559)	(0.0558)	(0.0893)	(0.0896)
Field of education (reference group: N	latural and phys	ical sciences)		
Information technology			0.0992	0.0992
			(0.108)	(0.108)
Engineering and related technologies			0.139	0.139
			(0.0934)	(0.0938)
Architecture and building			0.147	0.149
			(0.109)	(0.109)
Agriculture, environment and related studies			0.257**	0.246**
			(0.112)	(0.113)

Medicine			0.219	0.241
			(0.155)	(0.153)
Nursing			0.173	0.176*
			(0.106)	(0.106)
Other health-related			0.235**	0.238**
			(0.100)	(0.101)
Education			0.246***	0.244**
			(0.0954)	(0.0957)
Management and commerce			0.0714	0.0734
			(0.0872)	(0.0874)
Law			0.287**	0.284**
			(0.120)	(0.120)
Society and culture			0.164*	0.161*
			(0.0947)	(0.0948)
Creative arts			0.0646	0.0704
			(0.106)	(0.106)
Food, hospitality and personal services			0.216**	0.222**
			(0.102)	(0.102)
Constant	9.792***	9.786***	9.768***	9.750***
	(0.0952)	(0.0951)	(0.215)	(0.215)
Mundlak correction terms	yes	yes		
Observations	109,738	109,738	7,296	7,296
R-squared			0.071	0.074
R-squared overall model	0.0634	0.0650		
R-squared between model	0.0907	0.0921		
R-squared within model	0.0158	0.0170		

Table A 6: The impact of long term health condition and education on job satisfaction

	Model (1)	Model (2)	Model (3)	Model (4)
Type of condition (base group: no con	dition)			
Physical condition only	-0.0499***		-0.133**	
	(0.0140)		(0.0608)	
Mental condition only	-0.394***		-0.485**	
	(0.0349)		(0.224)	
Both physical and mental conditions	-0.509***		-0.740***	
	(0.0362)		(0.166)	
Detailed health conditions (17)				
Sight problems not corrected by		0.0442		0.206*
glasses or contact lenses		-0.0443		-0.290
		(0.0373)		(0.171)
Hearing problems		-0.0354		0.0139
		(0.0304)		(0.129)
Speech problems		0.0397		0.0144
		(0.0963)		(0.478)
Blackouts, fits or loss of consciousness		-0.190**		-0.447
		(0.0762)		(0.697)
Difficulty learning or understanding things		-0.200***		-0.653
		(0.0580)		(0.743)
Limited use of arms or fingers		0.00912		0.0873
		(0.0397)		(0.211)
Difficulty gripping things		-0.0921**		-0.378
		(0.0429)		(0.271)
Limited use of feet or legs		-0.0452		0.0497
		(0.0322)		(0.150)
which requires treatment		-0.395***		-0.425***
		(0.0301)		(0.141)
Any condition that restricts physical activity or physical work		-0.0519***		-0.180*
		(0.0199)		(0.0974)
Any disfigurement or deformity		-0.0590		0.0681
		(0.0799)		(0.338)
Any mental illness which requires help or supervision		-0.371***		-0.711***
		(0.0479)		(0.224)
Shortness of breath or difficulty breathing		-0.0838**		-0.0377
		(0.0364)		(0.163)
Chronic or recurring pain		-0.153***		-0.0656
		(0.0234)		(0.105)
Long term effects as a result of a head injury, stroke or other brain damage		-0.188**		-0.163
		(0.0731)		(0.297)
A long term condition or ailment which is still restrictive even though it is being treated or medication is		-0.0653***		-0.0891

0				
		(0.0219)		(0.0923)
Any other long term condition such				
as arthritis, asthma, heart disease,		-0.0102		0.0604
Alzheimer's disease, dementia etc				
		(0.0176)		(0.0753)
Control variables:				
	0.0700***	0 0707***	0 0012***	0 0000***
Age	-0.0766****	-0.0767***	-0.0913	-0.0908***
A management	(0.00383)	(0.00383)	(0.00886)	(0.00886)
Age squared	0.000843***	0.000851	0.00106***	0.00105***
D.4-L-	(4.476-05)	(4.486-05)	(0.000107)	(0.000107)
IVIAIE	-0.0552	-0.0552	-0.0696	-0.0073
Mouried	(0.0194)	(0.0194)	(0.0358)	(0.0356)
Married	0.314	0.313***	0.436***	0.432***
	(0.0131)	(0.0131)	(0.0384)	(0.0384)
Education variables (reference group	: Year 12 and belo	ow)		
Certificate	-0.0196	-0.0160	-0.0873	-0.0862
	(0.0380)	(0.0379)	(0.0568)	(0.0569)
Diploma	-0.0321	-0.0312	-0.0318	-0.0323
	(0.0232)	(0.0232)	(0.0479)	(0.0481)
University	-0.0255	-0.0242	-0.0548	-0.0510
	(0.0290)	(0.0290)	(0.0488)	(0.0488)
Work-limiting condition	-0.141***	-0.105***	-0.394***	-0.368***
	(0.0186)	(0.0183)	(0.0866)	(0.0896)
Family size	0.0157***	0.0154***	0.00176	0.00239
	(0.00392)	(0.00392)	(0.0123)	(0.0123)
Living in a major city	-0.0469**	-0.0478**	-0.0918***	-0.0950***
	(0.0186)	(0.0186)	(0.0340)	(0.0341)
Occupation (reference group: Manag	ers)			
Professionals	0 0115	0 0114	-0.0610	-0.0614
Professionals	0.0115 (0.0161)	0.0114 (0.0161)	-0.0610 (0.0489)	-0.0614 (0.0491)
Professionals	0.0115 (0.0161) -0.0191	0.0114 (0.0161) -0.0172	-0.0610 (0.0489) -0.102*	-0.0614 (0.0491) -0.0990*
Professionals Technicians and Trades Workers	0.0115 (0.0161) -0.0191 (0.0193)	0.0114 (0.0161) -0.0172 (0.0193)	-0.0610 (0.0489) -0.102* (0.0601)	-0.0614 (0.0491) -0.0990* (0.0602)
Professionals Technicians and Trades Workers Community and Personal Service	0.0115 (0.0161) -0.0191 (0.0193)	0.0114 (0.0161) -0.0172 (0.0193)	-0.0610 (0.0489) -0.102* (0.0601)	-0.0614 (0.0491) -0.0990* (0.0602)
Professionals Technicians and Trades Workers Community and Personal Service Workers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879	0.0114 (0.0161) -0.0172 (0.0193) 0.000961	-0.0610 (0.0489) -0.102* (0.0601) -0.0603	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598
Professionals Technicians and Trades Workers Community and Personal Service Workers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944*	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907*
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562***	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557***	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145*	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144*
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426*	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411*	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310***	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303***
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443**	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436**	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226***	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214***
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Labourers	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200) e, Forestry and Fi	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200) e, Forestry and Fi 0.0672	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing) 0.0637	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826) -0.136	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825) -0.141
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Sales Workers Labourers Labourer	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200) e, Forestry and Fi 0.0672 (0.0483)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing) 0.0637 (0.0482)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826) -0.136 (0.147)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825) -0.141 (0.146)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Manufacturing	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200) e, Forestry and Fi 0.0672 (0.0483) -0.0726**	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing) 0.0637 (0.0482) -0.0736**	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826) -0.136 (0.147) -0.357***	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825) -0.141 (0.146) -0.363***
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Manufacturing	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200) e, Forestry and Fi 0.0672 (0.0483) -0.0726** (0.0351)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing) 0.0637 (0.0482) -0.0736** (0.0351)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826) -0.136 (0.147) -0.357*** (0.124)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825) -0.141 (0.0825) -0.141 (0.146) -0.363*** (0.124)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Manufacturing Electricity, Gas, Water and Waste	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200) e, Forestry and Fi 0.0672 (0.0483) -0.0726** (0.0351) -0.0295	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing) 0.0637 (0.0482) -0.0736** (0.0351) -0.0356	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826) -0.136 (0.147) -0.357*** (0.124) -0.249	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825) -0.141 (0.0825) -0.141 (0.146) -0.363*** (0.124) -0.246
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Manufacturing Electricity, Gas, Water and Waste	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200) e, Forestry and Fi 0.0672 (0.0483) -0.0726** (0.0351) -0.0295 (0.0558)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing) 0.0637 (0.0482) -0.0736** (0.0351) -0.0356 (0.0558)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826) -0.136 (0.147) -0.357*** (0.124) -0.249 (0.223)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825) -0.141 (0.146) -0.363*** (0.124) -0.246 (0.224)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Industry (reference group: Agricultur Mining Manufacturing Electricity, Gas, Water and Waste Construction	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200) e, Forestry and Fi 0.0672 (0.0483) -0.0726** (0.0351) -0.0295 (0.0558) 0.0139	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing) 0.0637 (0.0482) -0.0736** (0.0351) -0.0356 (0.0558) 0.0126	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826) -0.136 (0.147) -0.357*** (0.124) -0.249 (0.223) -0.192	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825) -0.141 (0.146) -0.363*** (0.124) -0.246 (0.224) -0.193 (0.224)
Professionals Technicians and Trades Workers Community and Personal Service Workers Clerical and Administrative Workers Sales Workers Machinery Operators and Drivers Labourers Labourers Industry (reference group: Agricultur Mining Manufacturing Electricity, Gas, Water and Waste Construction	0.0115 (0.0161) -0.0191 (0.0193) 0.000879 (0.0206) -0.0150 (0.0173) -0.0562*** (0.0201) -0.0426* (0.0247) -0.0443** (0.0200) e, Forestry and Fi 0.0672 (0.0483) -0.0726** (0.0351) -0.0295 (0.0558) 0.0139 (0.0366)	0.0114 (0.0161) -0.0172 (0.0193) 0.000961 (0.0206) -0.0142 (0.0173) -0.0557*** (0.0201) -0.0411* (0.0246) -0.0436** (0.0200) shing) 0.0637 (0.0482) -0.0736** (0.0351) -0.0356 (0.0558) 0.0126 (0.0366) (0.0366)	-0.0610 (0.0489) -0.102* (0.0601) -0.0603 (0.0692) -0.0944* (0.0547) -0.145* (0.0876) -0.310*** (0.112) -0.226*** (0.0826) -0.136 (0.147) -0.357*** (0.124) -0.249 (0.223) -0.192 (0.124)	-0.0614 (0.0491) -0.0990* (0.0602) -0.0598 (0.0689) -0.0907* (0.0548) -0.144* (0.0874) -0.303*** (0.113) -0.214*** (0.0825) -0.141 (0.146) -0.363*** (0.124) -0.246 (0.224) -0.193 (0.124)

	(0.0383)	(0.0382)	(0.135)	(0.135)
Retail Trade	-0.0927**	-0.0932***	-0.403***	-0.402***
	(0.0361)	(0.0360)	(0.129)	(0.129)
Accommodation and Food Services	-0.0898**	-0.0893**	-0.625***	-0.618***
	(0.0376)	(0.0376)	(0.142)	(0.141)
Transport, Postal and Warehousing	0.00408	0.00309	-0.0999	-0.0989
	(0.0394)	(0.0393)	(0.144)	(0.144)
Information Media and Telecommunication	-0.0459	-0.0439	-0.420***	-0.414***
	(0.0451)	(0.0451)	(0.149)	(0.150)
Financial and Insurance Services	-0.0581	-0.0597	-0.240*	-0.244*
	(0.0441)	(0.0441)	(0.132)	(0.132)
Rental, Hiring and Real Estate Services	-0.0929*	-0.0922*	-0.296*	-0.296*
	(0.0503)	(0.0503)	(0.179)	(0.179)
Professional, Scientific and Technical	-0.0342	-0.0352	-0.315***	-0.313***
	(0.0367)	(0.0367)	(0.120)	(0.121)
Administrative and Support Service	-0.0347	-0.0350	-0.309**	-0.309**
	(0.0396)	(0.0396)	(0.140)	(0.140)
Public Administration and Safety	0.00342	0.00283	-0.334***	-0.339***
	(0.0380)	(0.0380)	(0.123)	(0.123)
Education and Training	0.00224	0.00212	-0.301**	-0.300**
	(0.0387)	(0.0387)	(0.125)	(0.125)
Health Care and Social Assistance	-0.0184	-0.0184	-0.284**	-0.284**
	(0.0375)	(0.0375)	(0.123)	(0.123)
Arts and Recreation Services	0.0183	0.0172	-0.180	-0.180
	(0.0453)	(0.0452)	(0.157)	(0.157)
Other Services	-0.00716	-0.00882	-0.256*	-0.255*
	(0.0399)	(0.0399)	(0.135)	(0.135)
State of residence dummies (reference	e: group: NSW)			
VIC	-0.0247	-0.0249	0.0463	0.0439
	(0.0397)	(0.0396)	(0.0380)	(0.0381)
QLD	0.000286	0.00192	-0.117***	-0.121***
	(0.0345)	(0.0345)	(0.0416)	(0.0417)
SA	0.111*	0.114*	0.00159	-0.00115
	(0.0612)	(0.0611)	(0.0555)	(0.0555)
WA	-0.0430	-0.0407	-0.107*	-0.107*
	(0.0554)	(0.0554)	(0.0553)	(0.0552)
TAS	-0.100	-0.0969	-0.103	-0.115
	(0.0815)	(0.0815)	(0.0949)	(0.0943)
NT	-0.164**	-0.165**	-0.110	-0.111
	(0.0676)	(0.0676)	(0.111)	(0.110)
ACT	0.0117	0.0149	0.106	0.106
	(0.0571)	(0.0571)	(0.105)	(0.102)
Field of education (reference group: N	atural and phys	sical sciences)		
Information technology			0.105	0.106
			(0.108)	(0.109)
Engineering and related technologies			0.134	0.134
			(0.0939)	(0.0943)
Architecture and building			0.151	0.151
			(0.109)	(0.109)
Agriculture, environment and related studies			0.264**	0.260**
			(0.113)	(0.113)

Medicine			0.214	0.233
			(0.155)	(0.153)
Nursing			0.170	0.175*
			(0.106)	(0.106)
Other health-related			0.233**	0.236**
			(0.101)	(0.101)
Education			0.247***	0.243**
			(0.0956)	(0.0959)
Management and commerce			0.0582	0.0595
			(0.0880)	(0.0883)
Law			0.291**	0.288**
			(0.120)	(0.121)
Society and culture			0.167*	0.163*
			(0.0949)	(0.0950)
Creative arts			0.0674	0.0693
			(0.106)	(0.106)
Food, hospitality and personal services			0.223**	0.228**
			(0.103)	(0.102)
Constant	9.789***	9.783***	9.801***	9.792***
	(0.0960)	(0.0959)	(0.217)	(0.217)
Mundlak correction terms	yes	yes		
Observations	109,731	109,731	7,298	7,298
R-squared			0.072	0.075
R-squared overall model	0.0621	0.0635		
R-squared between model	0.0891	0.0904		
R-squared within model	0.0151	0.0161		

	Labour force	e participation	Emplo	Employment	
	Coef.	M.E.	Coef.	M.E.	Coef.
Years from the onset of one-time co	ndition				
0	-0.235***	-0.0306***	-0.304***	-0.0198***	-0.00456
	(0.0649)	(0.00891)	(0.0927)	(0.00660)	(0.0142)
1	-0.0458	-0.00524	-0.0958	-0.00187	-0.0232*
	(0.0689)	(0.00897)	(0.0995)	(0.00653)	(0.0137)
2	-0.153*	-0.0173*	0.0288	0.00862	-0.0142
	(0.0783)	(0.0101)	(0.122)	(0.00734)	(0.0154)
3	-0.0162	-0.00156	0.229	0.0151*	0.000183
	(0.0898)	(0.0111)	(0.151)	(0.00798)	(0.0166)
4	0.161	0.0192	-0.193	-0.00612	-0.0114
	(0.104)	(0.0121)	(0.133)	(0.00855)	(0.0180)
5	-0.00142	0.00320	0.356*	0.0169*	-0.00679
	(0.114)	(0.0137)	(0.209)	(0.00964)	(0.0201)
6	0.0373	0.00757	-0.158	-0.00470	-0.0280
	(0.127)	(0.0150)	(0.172)	(0.0105)	(0.0219)
7	0.0153	0.00553	0.128	0.00662	-0.0302
	(0.143)	(0.0171)	(0.239)	(0.0120)	(0.0244)
8	-0.123	-0.00492	-0.331	-0.0126	-0.0219
	(0.157)	(0.0194)	(0.218)	(0.0136)	(0.0287)
9	0.182	0.0258	-0.517**	-0.0222	0.0158
	(0.221)	(0.0241)	(0.236)	(0.0166)	(0.0350)
10	0.890**	0.0686**	0.0952	0.0187	-0.103**
	(0.381)	(0.0316)	(0.382)	(0.0213)	(0.0452)
11	0.479	0.0487	-0.491	-0.0218	-0.122
	(0.596)	(0.0604)	(0.610)	(0.0420)	(0.0882)
Years from the onset of temporary of	ondition				
0	-0.485***	-0.0742***	-0.384***	-0.0211***	-0.0126
	(0.0618)	(0.00918)	(0.0968)	(0.00729)	(0.0159)
1	-0.500***	-0.0765***	-0.531***	-0.0325***	-0.0378**
	(0.0626)	(0.00916)	(0.0930)	(0.00727)	(0.0158)
2	-0.347***	-0.0479***	-0.523***	-0.0310***	-0.0268
	(0.0707)	(0.0101)	(0.100)	(0.00776)	(0.0167)
3	-0.165**	-0.0204*	-0.196	-0.00196	-0.0195
	(0.0839)	(0.0113)	(0.124)	(0.00838)	(0.0177)
4	-0.305***	-0.0375***	-0.194	0.00148	-0.0423**
	(0.0887)	(0.0123)	(0.136)	(0.00916)	(0.0194)
5	-0.243**	-0.0283**	0.0348	0.0142	-0.0100
	(0.0989)	(0.0135)	(0.167)	(0.0100)	(0.0210)
6	-0.329***	-0.0404***	-0.163	0.00644	-0.0611***
	(0.106)	(0.0146)	(0.164)	(0.0108)	(0.0230)
7	-0.227*	-0.0277*	-0.135	0.00684	-0.0343
	(0.120)	(0.0162)	(0.195)	(0.0119)	(0.0249)
8	-0.172	-0.0260	0.227	0.0284**	-0.0740***
	(0.132)	(0.0179)	(0.245)	(0.0132)	(0.0272)
9	-0.113	-0.0148	0.273	0.0320**	-0.0867***
	(0.161)	(0.0209)	(0.308)	(0.0151)	(0.0313)
10	-0.476***	-0.0621**	-0.368	-0.00155	-0.0802**
	(0.176)	(0.0256)	(0.280)	(0.0189)	(0.0406)

Table A 7: Dynamic effects of health conditions involving work-limiting conditions

11	-0.574*	-0.0767*	5.030	0.0307	-0.159**
	(0.320)	(0.0434)	(1,721)	(0.0321)	(0.0647)
Years from the onset of chronic not	severe conditi	on			
0	-0.400***	-0.0551***	-0.145	-0.00789	-0.0427*
	(0.102)	(0.0140)	(0.161)	(0.0106)	(0.0230)
1	-0.248***	-0.0311**	-0.343**	-0.0196**	-0.0730***
	(0.0952)	(0.0131)	(0.135)	(0.00987)	(0.0213)
2	-0.213**	-0.0281**	-0.161	-0.00713	-0.0405*
	(0.0977)	(0.0132)	(0.149)	(0.00992)	(0.0213)
3	-0.207**	-0.0268**	-0.230	-0.00884	-0.0526**
	(0.0990)	(0.0133)	(0.144)	(0.00995)	(0.0214)
4	-0.210**	-0.0275**	-0.194	-0.00615	-0.0461**
	(0.103)	(0.0137)	(0.154)	(0.0102)	(0.0218)
5	-0.313***	-0.0423***	0.221	0.0146	-0.0559**
	(0.106)	(0.0143)	(0.203)	(0.0107)	(0.0228)
6	-0.307***	-0.0428***	-0.260	-0.00848	-0.0822***
	(0.110)	(0.0150)	(0.170)	(0.0112)	(0.0244)
7	-0.446***	-0.0645***	-0.141	-0.00280	-0.0805***
	(0.114)	(0.0159)	(0.200)	(0.0120)	(0.0261)
8	-0.465***	-0.0683***	-0.194	-0.00359	-0.0712**
	(0.121)	(0.0170)	(0.209)	(0.0129)	(0.0278)
9	-0.387***	-0.0599***	-0.594***	-0.0314**	-0.0954***
	(0.139)	(0.0193)	(0.205)	(0.0147)	(0.0314)
10	-0.360**	-0.0493**	-0.639***	-0.0334**	-0.0495
	(0.161)	(0.0224)	(0.232)	(0.0169)	(0.0356)
11	-0.642***	-0.0915***	-0.446	-0.0205	-0.0314
	(0.239)	(0.0350)	(0.438)	(0.0281)	(0.0600)
Years from the onset of chronic seve	re condition				
0	-1.074***	-0.198***	-0.813***	-0.0625***	-0.0952***
	(0.0764)	(0.0119)	(0.132)	(0.0117)	(0.0267)
1	-1.082***	-0.202***	-0.719***	-0.0515***	-0.0505*
	(0.0742)	(0.0115)	(0.130)	(0.0114)	(0.0261)
2	-1.246***	-0.237***	-0.603***	-0.0363***	-0.0499*
	(0.0765)	(0.0117)	(0.143)	(0.0119)	(0.0270)
3	-1.198***	-0.229***	-0.947***	-0.0771***	-0.0602**
	(0.0773)	(0.0119)	(0.131)	(0.0120)	(0.0275)
4	-1.095***	-0.210***	-0.751***	-0.0495***	-0.0330
	(0.0805)	(0.0123)	(0.138)	(0.0121)	(0.0282)
5	-1.188***	-0.227***	-0.831***	-0.0608***	-0.0357
	(0.0855)	(0.0131)	(0.145)	(0.0130)	(0.0305)
6	-1.323***	-0.256***	-0.897***	-0.0647***	-0.0433
	(0.0915)	(0.0139)	(0.155)	(0.0142)	(0.0334)
7	-1.378***	-0.273***	-0.750***	-0.0414***	-0.0474
	(0.0983)	(0.0150)	(0.179)	(0.0158)	(0.0369)
8	-1.397***	-0.272***	-1.077***	-0.0813***	-0.0129
	(0.108)	(0.0162)	(0.184)	(0.0171)	(0.0406)
9	-1.563***	-0.300***	-0.942***	-0.0630***	-0.0572
	(0.125)	(0.0185)	(0.241)	(0.0206)	(0.0476)
10	-1.526***	-0.291***	-1.165***	-0.0902***	-0.0502
	(0.147)	(0.0222)	(0.268)	(0.0240)	(0.0534)
11	-1.829***	-0.344***	-1.560***	-0.163***	-0.221**
	(0.215)	(0.0321)	(0.415)	(0.0384)	(0.0879)
Control variables:					
Male	0.999***	0.124***	0.0141	-0.00229	0.0808***

	(0.0291)	(0.00414)	(0.0278)	(0.00313)	(0.00718)				
Age	0.238***	0.0358***	0.125***	0.0109***	0.108***				
C	(0.00653)	(0.000881)	(0.0102)	(0.000670)	(0.00144)				
Age squared	-0.0031***	-0.00046***	-0.0012***	-0.00012***	-0.00065***				
0	(7.70e-05)	(1.02e-05)	(0.000129)	(7.93e-06)	(1.71e-05)				
Married	-0.194***	-0.0259***	0.0707**	0.00554**	0.0408***				
	(0.0258)	(0.00328)	(0.0356)	(0.00235)	(0.00488)				
Education variables (reference group: Year 12 and below)									
Certificate	0.378***	0.0631***	0.304***	0.0290***	0.0654***				
	(0.0735)	(0.00954)	(0.105)	(0.00678)	(0.0139)				
Diploma	0.374***	0.0559***	0.145**	0.0177***	0.0826***				
	(0.0422)	(0.00572)	(0.0579)	(0.00410)	(0.00854)				
University	0.707***	0.102***	0.103	0.00905*	0.0482***				
••	(0.0547)	(0.00708)	(0.0764)	(0.00508)	(0.0106)				
Family size	-0.150***	-0.0202***	-0.0446***	-0.00525***	-0.0132***				
	(0.00731)	(0.000951)	(0.0102)	(0.000696)	(0.00146)				
Living in a major city	0 146***	0.0295***	0.0829*	0.00818**	0.0370***				
	(0.0327)	(0.00446)	(0.0482)	(0.00331)	(0.00698)				
Occupation (reference group:	(0.0027)	(0.00110)	(010102)	(0.00001)	(0.00000)				
Managers)									
Professionals					0.0288***				
					(0.00610)				
Technicians and Trades Workers					-0.0143*				
					(0.00752)				
Community and Personal Service									
Workers					-0.0134*				
					(0.00775)				
Clerical and Administrative									
Workers					0.00768				
					(0.00654)				
Sales Workers					-0.0179**				
					(0.00761)				
Machinery Operators and Drivers					0.00812				
					(0.00937)				
Labourers					-0.0133*				
					(0.00778)				
Industry (reference group: Agricultu	re, Forestry ar	nd Fishing)							
Mining					0.245***				
					(0.0188)				
Manufacturing					0.0949***				
					(0.0144)				
Electricity, Gas, Water and Waste					0.157***				
					(0.0215)				
Construction					0.132***				
					(0.0151)				
Wholesale Trade					0.0721***				
					(0.0155)				
Retail Trade					0.0300**				
					(0.0148)				
Accommodation and Food Services					0.00711				
-					(0.0153)				
Transport, Postal and Warehousing					0.0726***				
					(0.0159)				
Information Media and					0.104***				

Telecommunication					
					(0.0179)
Financial and Insurance Services					0.125***
					(0.0176)
Rental, Hiring and Real Estate					
Services					0.0386*
					(0.0200)
Professional, Scientific and					
Technical					0.0949***
					(0.0150)
Administrative and Support Service					0.0470***
					(0.0161)
Public Administration and Safety					0.129***
					(0.0154)
Education and Training					0.116***
					(0.0158)
Health Care and Social Assistance					0.0838***
					(0.0153)
Arts and Recreation Services					0.0725***
					(0.0181)
Other Services					0.0129
					(0.0162)
State of residence dummies (referer	nce: group: NS	W)			
VIC	0.0366	0.00149	-0.0133	0.00239	-0.0201
	(0.0752)	(0.00982)	(0.108)	(0.00708)	(0.0148)
QLD	-0.102	-0.0150*	0.162*	0.0175***	-0.0516***
	(0.0621)	(0.00830)	(0.0880)	(0.00613)	(0.0130)
SA	-0.0141	-0.00901	0.00106	0.000569	0.0167
	(0.118)	(0.0152)	(0.177)	(0.0110)	(0.0226)
WA	-0.225**	-0.0356***	0.310*	0.0237**	-0.0148
	(0.103)	(0.0137)	(0.167)	(0.0100)	(0.0205)
TAS	-0.263*	-0.0289	0.231	0.0152	-0.0828***
	(0.142)	(0.0192)	(0.197)	(0.0143)	(0.0304)
NT	0.534***	0.0757***	0.576***	0.0416***	0.0257
	(0.136)	(0.0171)	(0.211)	(0.0122)	(0.0248)
ACT	0.390***	0.0407***	0.185	0.0114	0.00383
	(0.118)	(0.0145)	(0.185)	(0.0105)	(0.0208)
Constant	-2.128***		0.588***		1.996***
	(0.123)		(0.128)		(0.0382)
Mundlak correction terms	ves	ves	ves	ves	ves
Observations	147.825	,	116.426	,	99,271
Log likelihood	-48272		-19539		,
R-squared overall model					0.360
R-squared between model					0.339
R-squared within model					0.280

Table A 8: Relationship between long term health conditions and the probability of being employed (SOS data)

	(1)	()	2)	(3	3)	(4)		
-		Marginal		Marginal		Marginal		Marginal	
VARIABLES	Coefficient	effect	Coefficient	effect	Coefficient	effect	Coefficient	effect	
Type of health condition (reference: no condition)									
Physical condition only	-0.399***	-0.0753***	-0.422***	-0.0805***	-0.399***	-0.0747***	-0.399***	-0.0745***	
	(0.0125)	(0.00285)	(0.0184)	(0.00427)	(0.0126)	(0.00284)	(0.0126)	(0.00284)	
Mental condition only	-0.463***	-0.0938***	-0.445***	-0.0893***	-0.451***	-0.0901***	-0.453***	-0.0905***	
	(0.0228)	(0.00585)	(0.0364)	(0.00919)	(0.0229)	(0.00576)	(0.0229)	(0.00577)	
Both physical and mental conditions	-0.636***	-0.142***	-0.633***	-0.141***	-0.626***	-0.139***	-0.626***	-0.138***	
	(0.0339)	(0.0101)	(0.0540)	(0.0161)	(0.0340)	(0.0100)	(0.0341)	(0.0100)	
Level of education (reference: Certificate 2 and below)								
Certificate 3	0.0176**	0.00265**	-0.00383	-0.000576	0.0693	0.0102	0.0163**	0.00246**	
	(0.00819)	(0.00123)	(0.00843)	(0.00127)	(0.129)	(0.0186)	(0.00818)	(0.00123)	
Certificate 4	0.104***	0.0152***	0.0586***	0.00860***	0.0277	0.00410	0.102***	0.0148***	
	(0.00948)	(0.00132)	(0.0101)	(0.00145)	(0.130)	(0.0189)	(0.00947)	(0.00132)	
Diploma	0.109***	0.0157***	0.0905***	0.0130***	0.0465	0.00680	0.107***	0.0154***	
	(0.0100)	(0.00137)	(0.0106)	(0.00146)	(0.128)	(0.0184)	(0.0100)	(0.00137)	
Interaction between type of condition and level of edu	ucation								
Physical condition only*Certificate 3			0.0432*	0.00635*					
			(0.0246)	(0.00351)					
Physical condition only*Certificate 4			0.0613**	0.00890**					
			(0.0279)	(0.00388)					
Physical condition only*Diploma			-0.0179	-0.00274					
			(0.0296)	(0.00459)					
Mental condition only*Certificate 3			-0.000789	-0.000119					
			(0.0551)	(0.00834)					
Mental condition only*Certificate 4			-0.0507	-0.00795					
			(0.0648)	(0.0105)					
Mental condition only*Diploma			-0.0663	-0.0105					
			(0.0736)	(0.0122)					
Both physical and mental conditions*Certificate 3			0.0479	0.00700					
			(0.0824)	(0.0117)					
Both physical and mental conditions*Certificate 4			0.0805	0.0115					

	(0.0967)	(0.0130)				
Both physical and mental conditions*Diploma	-0.240**	-0.0427*				
	(0.108)	(0.0222)				
Field of education (reference: Natural and Physical Sciences)						
Information Technology			-0.0779**	-0.0123*	0.0718	0.0102
			(0.0394)	(0.00654)	(0.116)	(0.0157)
Engineering and Related Technologies			0.142***	0.0200***	0.114	0.0162
			(0.0366)	(0.00480)	(0.113)	(0.0151)
Architecture and Building			0.168***	0.0226***	0.0996	0.0140
			(0.0384)	(0.00463)	(0.114)	(0.0150)
Agriculture, Environmental and Related			-0.00178	-0.000267	-0.00826	-0.00124
			(0.0377)	(0.00567)	(0.114)	(0.0172)
Health			0.255***	0.0328***	0.279**	0.0351***
			(0.0377)	(0.00407)	(0.115)	(0.0118)
Education			0.262***	0.0336***	0.108	0.0151
			(0.0379)	(0.00408)	(0.116)	(0.0151)
Management and Commerce			0.125***	0.0179***	0.0633	0.00925
			(0.0359)	(0.00493)	(0.113)	(0.0161)
Society and Culture			0.159***	0.0220***	0.128	0.0179
			(0.0364)	(0.00462)	(0.115)	(0.0150)
Creative Arts			-0.0833**	-0.0132**	0.0128	0.00190
			(0.0383)	(0.00639)	(0.117)	(0.0173)
Food, Hospitality and Personal Services			0.0340	0.00500	0.0175	0.00259
			(0.0369)	(0.00532)	(0.113)	(0.0165)
Mixed Field Programs			-0.0614	-0.00958	0.00402	0.000599
			(0.0376)	(0.00608)	(0.113)	(0.0168)
Interaction between field of education and level of education						
Information Technology*Certificate 3					-0.239*	-0.0420
					(0.137)	(0.0277)
Engineering and Related Technologies*Certificate 3					-0.00210	-0.000315
					(0.131)	(0.0196)
Architecture and Building*Certificate 3					0.101	0.0141
					(0.133)	(0.0174)
Agriculture, Environmental and Related*Certificate 3					-0.0265	-0.00404
					(0.132)	(0.0205)

Health*Certificate 3	-0.0855	-0.0135						
	(0.135)	(0.0225)						
Education*Certificate 3	0.00404	0.000602						
	(0.137)	(0.0204)						
Management and Commerce*Certificate 3	-0.0649	-0.0101						
	(0.130)	(0.0210)						
Society and Culture*Certificate 3	-0.0460	-0.00707						
	(0.132)	(0.0209)						
Creative Arts*Certificate 3	-0.110	-0.0177						
	(0.139)	(0.0240)						
Food, Hospitality and Personal Services*Certificate 3	-0.0548	-0.00848						
	(0.131)	(0.0210)						
Mixed Field Programs*Certificate 3	-0.314**	-0.0577**						
	(0.134)	(0.0294)						
Information Technology*Certificate 4	-0.214	-0.0370						
	(0.138)	(0.0271)						
Engineering and Related Technologies*Certificate 4	0.0783	0.0111						
	(0.133)	(0.0178)						
Architecture and Building*Certificate 4	0.103	0.0143						
	(0.137)	(0.0178)						
Agriculture, Environmental and Related*Certificate 4	-0.0558	-0.00866						
	(0.137)	(0.0221)						
Health*Certificate 4	-0.0328	-0.00501						
	(0.134)	(0.0209)						
Education*Certificate 4	0.239*	0.0307**						
	(0.134)	(0.0146)						
Management and Commerce*Certificate 4	0.145	0.0198						
	(0.131)	(0.0163)						
Society and Culture*Certificate 4	0.114	0.0158						
	(0.133)	(0.0171)						
Creative Arts*Certificate 4	-0.104	-0.0166						
	(0.137)	(0.0235)						
Food, Hospitality and Personal Services*Certificate 4	0.0423	0.00613						
	(0.135)	(0.0190)						
Mixed Field Programs*Certificate 4	-0.476***	-0.0967***						
							(0.135)	(0.0348)
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Information Technology*Diploma							-0.240*	-0.0420
							(0.137)	(0.0276)
Engineering and Related Technologies*Diploma							-0.0277	-0.00423
							(0.132)	(0.0205)
Architecture and Building*Diploma							0.00208	0.000311
							(0.136)	(0.0203)
Agriculture, Environmental and Related*Diploma							0.00572	0.000852
							(0.135)	(0.0200)
Health*Diploma							0.0322	0.00470
							(0.134)	(0.0192)
Education*Diploma							0.528***	0.0539***
							(0.154)	(0.00980)
Management and Commerce*Diploma							0.188	0.0250
							(0.130)	(0.0154)
Society and Culture*Diploma							0.0377	0.00549
							(0.132)	(0.0188)
Creative Arts*Diploma							-0.105	-0.0169
							(0.135)	(0.0232)
Food, Hospitality and Personal Services*Diploma							0.0705	0.0100
							(0.145)	(0.0197)
Mixed Field Programs*Diploma							0.162	0.0216
							(0.169)	(0.0199)
Other controls								
Age	0.0208***	0.00315***	0.0208***	0.00314***	0.0195***	0.00292***	0.0194***	0.00291***
	(0.00157)	(0.000239)	(0.00157)	(0.000238)	(0.00159)	(0.000239)	(0.00160)	(0.000239)
	-	-4.04e-	-		-		-	
Age squared	0.000267***	05***	0.000267***	-4.04e-05***	0.000256***	-3.85e-05***	0.000260***	-3.88e-05***
	(2.08e-05)	(3.15e-06)	(2.08e-05)	(3.15e-06)	(2.10e-05)	(3.15e-06)	(2.11e-05)	(3.15e-06)
Male	0.0818***	0.0123***	0.0818***	0.0123***	0.0851***	0.0127***	0.0829***	0.0123***
	(0.00657)	(0.000986)	(0.00657)	(0.000986)	(0.00736)	(0.00110)	(0.00744)	(0.00110)
Module graduate	-0.0489***	-0.00750***	-0.0493***	-0.00756***	-0.0292***	-0.00442***	-0.0273***	-0.00412***
	(0.00779)	(0.00121)	(0.00781)	(0.00122)	(0.00794)	(0.00121)	(0.00810)	(0.00123)
Study for non-employment reason	-0.259***	-0.0441***	-0.259***	-0.0441***	-0.232***	-0.0387***	-0.224***	-0.0372***
	(0.00753)	(0.00143)	(0.00753)	(0.00143)	(0.00765)	(0.00141)	(0.00771)	(0.00141)

Reason for study not achieved	-0.410***	-0.0709***	-0.410***	-0.0709***	-0.397***	-0.0679***	-0.395***	-0.0672***
	(0.00660)	(0.00128)	(0.00660)	(0.00128)	(0.00668)	(0.00128)	(0.00670)	(0.00129)
Not satisfied with training	0.0365***	0.00542***	0.0367***	0.00545***	0.0343***	0.00506***	0.0331***	0.00487***
	(0.00898)	(0.00131)	(0.00899)	(0.00131)	(0.00903)	(0.00131)	(0.00904)	(0.00131)
Enrolled in further training	-0.178***	-0.0286***	-0.178***	-0.0286***	-0.175***	-0.0277***	-0.170***	-0.0268***
	(0.00675)	(0.00114)	(0.00675)	(0.00114)	(0.00678)	(0.00113)	(0.00681)	(0.00113)
Having a skilled job before training	0.0715***	0.0107***	0.0716***	0.0107***	0.0745***	0.0110***	0.0663***	0.00978***
	(0.00722)	(0.00106)	(0.00722)	(0.00106)	(0.00731)	(0.00107)	(0.00737)	(0.00107)
Having a casual job before training	-0.462***	-0.0752***	-0.462***	-0.0752***	-0.449***	-0.0723***	-0.444***	-0.0711***
	(0.00734)	(0.00126)	(0.00734)	(0.00126)	(0.00739)	(0.00126)	(0.00739)	(0.00127)
Having a part-time job before training	-0.00695	-0.00105	-0.00718	-0.00109	-0.00685	-0.00103	-0.000904	-0.000135
	(0.00777)	(0.00118)	(0.00778)	(0.00118)	(0.00786)	(0.00118)	(0.00790)	(0.00118)
Wave dummies (reference: Wave 2003)								
Wave 2004	-0.346***	-0.0647***	-0.346***	-0.0648***	-0.349***	-0.0650***	-0.352***	-0.0653***
	(0.0237)	(0.00533)	(0.0238)	(0.00535)	(0.0238)	(0.00532)	(0.0238)	(0.00533)
Wave 2005	-0.242***	-0.0416***	-0.242***	-0.0416***	-0.250***	-0.0429***	-0.254***	-0.0435***
	(0.0204)	(0.00394)	(0.0205)	(0.00396)	(0.0204)	(0.00395)	(0.0205)	(0.00396)
Wave 2006	-0.268***	-0.0478***	-0.268***	-0.0478***	-0.270***	-0.0479***	-0.274***	-0.0485***
	(0.0232)	(0.00478)	(0.0233)	(0.00481)	(0.0232)	(0.00478)	(0.0233)	(0.00479)
Wave 2007	-0.238***	-0.0408***	-0.238***	-0.0408***	-0.245***	-0.0419***	-0.247***	-0.0421***
	(0.0204)	(0.00393)	(0.0206)	(0.00395)	(0.0205)	(0.00394)	(0.0205)	(0.00394)
Wave 2008	-0.277***	-0.0496***	-0.277***	-0.0496***	-0.285***	-0.0508***	-0.286***	-0.0508***
	(0.0228)	(0.00474)	(0.0229)	(0.00476)	(0.0229)	(0.00476)	(0.0229)	(0.00475)
Wave 2009	-0.416***	-0.0772***	-0.416***	-0.0772***	-0.425***	-0.0786***	-0.426***	-0.0785***
	(0.0199)	(0.00440)	(0.0200)	(0.00442)	(0.0199)	(0.00441)	(0.0200)	(0.00441)
Wave 2010	-0.423***	-0.0818***	-0.423***	-0.0818***	-0.428***	-0.0826***	-0.430***	-0.0828***
	(0.0218)	(0.00518)	(0.0219)	(0.00521)	(0.0219)	(0.00519)	(0.0219)	(0.00520)
Wave 2011	-0.370***	-0.0671***	-0.370***	-0.0670***	-0.384***	-0.0696***	-0.389***	-0.0705***
	(0.0201)	(0.00427)	(0.0202)	(0.00430)	(0.0202)	(0.00431)	(0.0202)	(0.00432)
Wave 2012	-0.400***	-0.0766***	-0.400***	-0.0766***	-0.413***	-0.0792***	-0.418***	-0.0799***
	(0.0224)	(0.00522)	(0.0225)	(0.00525)	(0.0224)	(0.00527)	(0.0225)	(0.00529)
Wave 2013	-0.362***	-0.0653***	-0.361***	-0.0653***	-0.377***	-0.0681***	-0.384***	-0.0695***
	(0.0202)	(0.00427)	(0.0203)	(0.00429)	(0.0202)	(0.00430)	(0.0203)	(0.00433)
Wave 2014	-0.423***	-0.0813***	-0.423***	-0.0812***	-0.431***	-0.0825***	-0.438***	-0.0840***
	(0.0213)	(0.00501)	(0.0214)	(0.00503)	(0.0214)	(0.00502)	(0.0214)	(0.00505)

Constant term	1.696***		1.698***		1.623***		1.635***	
	(0.0343)		(0.0343)		(0.0498)		(0.117)	
Observations	354,514	354,514	354,514	354,514	354,514	354,514	354,514	354,514
Pseudo R2	0.0829	0.0829	0.0830	0.0830	0.0870	0.0870	0.0892	0.0892
Log pseudolikelihood	-104,623	-104,623	-104,614	-104,614	-104,162	-104,162	-103,902	-103,902
Data Source: SOS	Waves 3-14		Waves 3-14		Waves 3-14		Waves 3-14	

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table A 9: Relationship between detailed long term health conditions and the probability of being employed (SOS data)

VADIADIES	(1)		(2)		(3)		
VARIABLES	Coefficient	Marginal effect	Coefficient	Marginal effect	Coefficient	Marginal effect	
Detailed Health conditions (10):							
Hearing/deaf	-0.0353	-0.00547	-0.0371	-0.00572	-0.0354	-0.00542	
	(0.0317)	(0.00502)	(0.0317)	(0.00501)	(0.0317)	(0.00498)	
Physical	-0.413***	-0.0812***	-0.413***	-0.0805***	-0.413***	-0.0804***	
	(0.0204)	(0.00497)	(0.0204)	(0.00495)	(0.0204)	(0.00494)	
Intellectual	-0.119**	-0.0195**	-0.103**	-0.0166*	-0.108**	-0.0174**	
	(0.0505)	(0.00894)	(0.0505)	(0.00869)	(0.0504)	(0.00871)	
Learning	-0.0534	-0.00837	-0.0440	-0.00680	-0.0507	-0.00785	
	(0.0342)	(0.00556)	(0.0342)	(0.00545)	(0.0342)	(0.00548)	
Mental illness	-0.505***	-0.105***	-0.498***	-0.103***	-0.495***	-0.101***	
	(0.0264)	(0.00705)	(0.0264)	(0.00698)	(0.0265)	(0.00696)	
Acquired brain impairment	-0.313***	-0.0583***	-0.312***	-0.0577***	-0.311***	-0.0572***	
	(0.0606)	(0.0135)	(0.0604)	(0.0133)	(0.0605)	(0.0133)	
Vision	0.00256	0.000386	0.00663	0.000991	0.00560	0.000834	
	(0.0297)	(0.00447)	(0.0297)	(0.00442)	(0.0297)	(0.00441)	
Medical condition	-0.315***	-0.0583***	-0.317***	-0.0583***	-0.316***	-0.0579***	
	(0.0193)	(0.00424)	(0.0193)	(0.00424)	(0.0193)	(0.00423)	
Other disability	-0.370***	-0.0712***	-0.367***	-0.0700***	-0.368***	-0.0701***	
	(0.0332)	(0.00782)	(0.0332)	(0.00775)	(0.0332)	(0.00774)	
Disability not defined	-0.304***	-0.0562**	-0.305***	-0.0562**	-0.309***	-0.0569**	
	(0.102)	(0.0224)	(0.101)	(0.0222)	(0.101)	(0.0222)	
Level of education (reference: Certificate 2 and below)							
Certificate 3	0.0176**	0.00265**	-0.00383	-0.000576	0.0693	0.0102	
	(0.00819)	(0.00123)	(0.00843)	(0.00127)	(0.129)	(0.0186)	
Certificate 4	0.104***	0.0152***	0.0586***	0.00860***	0.0277	0.00410	
	(0.00948)	(0.00132)	(0.0101)	(0.00145)	(0.130)	(0.0189)	
Diploma	0.109***	0.0157***	0.0905***	0.0130***	0.0465	0.00680	
	(0.0100)	(0.00137)	(0.0106)	(0.00146)	(0.128)	(0.0184)	

Field of education (reference: Natural and Physical Sciences)

Information Technology	-0.0792**	-0.0125*	0.0838	0.0118
	(0.0394)	(0.00656)	(0.116)	(0.0154)
Engineering and Related Technologies	0.140***	0.0196***	0.123	0.0173
	(0.0367)	(0.00482)	(0.113)	(0.0149)
Architecture and Building	0.165***	0.0223***	0.108	0.0150
	(0.0384)	(0.00465)	(0.114)	(0.0148)
Agriculture, Environmental and Related	-0.00610	-0.000919	-0.00354	-0.000530
	(0.0377)	(0.00570)	(0.113)	(0.0170)
Health	0.252***	0.0324***	0.286**	0.0358***
	(0.0377)	(0.00409)	(0.114)	(0.0117)
Education	0.260***	0.0333***	0.116	0.0161
	(0.0379)	(0.00410)	(0.116)	(0.0149)
Management and Commerce	0.123***	0.0177***	0.0721	0.0105
	(0.0359)	(0.00493)	(0.112)	(0.0159)
Society and Culture	0.156***	0.0217***	0.136	0.0189
	(0.0364)	(0.00464)	(0.115)	(0.0148)
Creative Arts	-0.0859**	-0.0136**	0.0168	0.00248
	(0.0383)	(0.00642)	(0.117)	(0.0171)
Food, Hospitality and Personal Services	0.0310	0.00457	0.0247	0.00364
	(0.0369)	(0.00535)	(0.113)	(0.0164)
Mixed Field Programs	-0.0658*	-0.0103*	0.00830	0.00123
	(0.0376)	(0.00612)	(0.113)	(0.0166)
Interaction between field of education and level of education				
Information Technology*Certificate 3			-0.253*	-0.0448
			(0.137)	(0.0282)
Engineering and Related Technologies*Certificate 3			-0.0140	-0.00210
			(0.130)	(0.0198)
Architecture and Building*Certificate 3			0.0906	0.0127
			(0.133)	(0.0176)
Agriculture, Environmental and Related*Certificate 3			-0.0344	-0.00527
			(0.132)	(0.0206)
Health*Certificate 3			-0.0947	-0.0151
			(0.135)	(0.0228)
Education*Certificate 3			-0.00526	-0.000789

	(0.137)	(0.0206)
Management and Commerce*Certificate 3	-0.0736	-0.0115
	(0.130)	(0.0212)
Society and Culture*Certificate 3	-0.0565	-0.00874
	(0.132)	(0.0211)
Creative Arts*Certificate 3	-0.115	-0.0185
	(0.139)	(0.0241)
Food, Hospitality and Personal Services*Certificate 3	-0.0646	-0.0101
	(0.131)	(0.0212)
Mixed Field Programs*Certificate 3	-0.316**	-0.0583**
	(0.134)	(0.0295)
Information Technology*Certificate 4	-0.228*	-0.0398
	(0.138)	(0.0275)
Engineering and Related Technologies*Certificate 4	0.0650	0.00929
	(0.133)	(0.0181)
Architecture and Building*Certificate 4	0.0894	0.0126
	(0.137)	(0.0181)
Agriculture, Environmental and Related*Certificate 4	-0.0648	-0.0101
	(0.137)	(0.0223)
Health*Certificate 4	-0.0452	-0.00696
	(0.134)	(0.0212)
Education*Certificate 4	0.228*	0.0295**
	(0.134)	(0.0148)
Management and Commerce*Certificate 4	0.133	0.0182
	(0.131)	(0.0165)
Society and Culture*Certificate 4	0.102	0.0143
	(0.133)	(0.0173)
Creative Arts*Certificate 4	-0.111	-0.0179
	(0.137)	(0.0237)
Food, Hospitality and Personal Services*Certificate 4	0.0294	0.00430
	(0.135)	(0.0194)
Mixed Field Programs*Certificate 4	-0.481***	-0.0980***
	(0.135)	(0.0350)
Information Technology*Diploma	-0.259*	-0.0460

					(0.137)	(0.0282)
Engineering and Related Technologies*Diploma					-0.0405	-0.00622
					(0.132)	(0.0208)
Architecture and Building*Diploma					-0.0111	-0.00168
					(0.136)	(0.0206)
Agriculture, Environmental and Related*Diploma					-0.00580	-0.000871
					(0.135)	(0.0203)
Health*Diploma					0.0213	0.00313
					(0.134)	(0.0194)
Education*Diploma					0.515***	0.0531***
					(0.154)	(0.00995)
Management and Commerce*Diploma					0.175	0.0235
					(0.130)	(0.0156)
Society and Culture*Diploma					0.0244	0.00359
					(0.132)	(0.0191)
Creative Arts*Diploma					-0.114	-0.0184
					(0.135)	(0.0234)
Food, Hospitality and Personal Services*Diploma					0.0616	0.00882
					(0.145)	(0.0199)
Mixed Field Programs*Diploma					0.153	0.0205
					(0.169)	(0.0202)
Other controls						
Age	0.0217***	0.00329***	0.0204***	0.00307***	0.0204***	0.00305***
	(0.00158)	(0.000239)	(0.00160)	(0.000240)	(0.00160)	(0.000240)
	-		-		-	
Age squared	(2.00- 05)	-4.20e-05***	(2.4005)	-4.01e-05***	(2.11 - 05)	-4.04e-05***
N 4-1-	(2.09e-05)	(3.166-06)	(2.10e-05)	(3.166-06)	(2.11e-05)	(3.16e-06)
Male	0.0800***	0.0120***	0.0834***	0.0125***	0.0813***	0.0121***
Mandala and databa	(0.00657)	(0.000987)	(0.00/3/)	(0.00110)	(0.00745)	(0.00111)
Module graduate	-0.0480***	-0.00737***	-0.0281***	-0.00425***	-0.0262***	-0.00394
Study for non-omployment recer	(0.00780)	(0.00121)	(0.00795)	(U.UU121)	(0.00811)	(0.00123)
Study for non-employment reason	-0.258***	-0.0439***	-0.231***	-0.0385***	-0.224****	-0.0370
Descen for study not achieved	(0.00753)	(0.00143)	(0.00766)	(0.00141)	(0.00772)	(0.00141)
Reason for study not achieved	-0.409****	-0.0708****	-0.397****	-0.06/8****	-0.394***	-0.06/1****

	(0.00661)	(0.00128)	(0.00669)	(0.00128)	(0.00671)	(0.00129)
Not satisfied with training	0.0362***	0.00537***	0.0340***	0.00501***	0.0328***	0.00483***
	(0.00899)	(0.00131)	(0.00904)	(0.00131)	(0.00905)	(0.00131)
Enrolled in further training	-0.178***	-0.0286***	-0.174***	-0.0277***	-0.170***	-0.0268***
	(0.00675)	(0.00114)	(0.00678)	(0.00113)	(0.00682)	(0.00114)
Having a skilled job before training	0.0721***	0.0108***	0.0751***	0.0111***	0.0669***	0.00987***
	(0.00722)	(0.00106)	(0.00731)	(0.00107)	(0.00737)	(0.00107)
Having a casual job before training	-0.461***	-0.0750***	-0.448***	-0.0721***	-0.442***	-0.0709***
	(0.00735)	(0.00126)	(0.00739)	(0.00126)	(0.00740)	(0.00127)
Having a part-time job before training	-0.00559	-0.000845	-0.00550	-0.000826	0.000375	5.60e-05
	(0.00778)	(0.00118)	(0.00787)	(0.00118)	(0.00791)	(0.00118)
Wave dummies (reference: Wave 2003)						
Wave 2004	0.0297	0.00440	0.0299	0.00441	0.0271	0.00398
	(0.0348)	(0.00506)	(0.0348)	(0.00503)	(0.0349)	(0.00503)
Wave 2005	0.136***	0.0191***	0.132***	0.0184***	0.127***	0.0178***
	(0.0327)	(0.00425)	(0.0327)	(0.00424)	(0.0328)	(0.00425)
Wave 2006	0.109***	0.0154***	0.110***	0.0154***	0.106***	0.0148***
	(0.0345)	(0.00453)	(0.0345)	(0.00448)	(0.0346)	(0.00450)
Wave 2007	0.139***	0.0196***	0.136***	0.0190***	0.133***	0.0186***
	(0.0327)	(0.00424)	(0.0327)	(0.00422)	(0.0327)	(0.00422)
Wave 2008	0.101***	0.0143***	0.0966***	0.0136***	0.0952***	0.0134***
	(0.0342)	(0.00455)	(0.0343)	(0.00454)	(0.0343)	(0.00453)
Wave 2009	-0.0378	-0.00582	-0.0430	-0.00659	-0.0442	-0.00675
	(0.0323)	(0.00508)	(0.0324)	(0.00507)	(0.0324)	(0.00507)
Wave 2010	-0.0444	-0.00691	-0.0465	-0.00719	-0.0491	-0.00757
	(0.0336)	(0.00537)	(0.0337)	(0.00535)	(0.0337)	(0.00535)
Wave 2011	0.00892	0.00134	-0.00175	-0.000263	-0.00745	-0.00112
	(0.0325)	(0.00488)	(0.0326)	(0.00490)	(0.0326)	(0.00491)
Wave 2012	-0.0220	-0.00337	-0.0316	-0.00484	-0.0365	-0.00558
	(0.0339)	(0.00527)	(0.0340)	(0.00530)	(0.0341)	(0.00532)
Wave 2013	0.0169	0.00254	0.00541	0.000810	-0.00281	-0.000420
	(0.0325)	(0.00484)	(0.0326)	(0.00486)	(0.0326)	(0.00489)
Wave 2014	-0.0437	-0.00679	-0.0479	-0.00739	-0.0559*	-0.00863
	(0.0333)	(0.00530)	(0.0333)	(0.00529)	(0.0334)	(0.00533)
		152				

Constant term	1.292***		1.217***		1.220***	
	(0.0431)		(0.0563)		(0.120)	
Observations	354,514	354,514	354,514	354,514	354,514	354,514
Pseudo R2	0.0838	0.0838	0.0879	0.0879	0.0901	0.0901
Log pseudolikelihood	-104522	-104522	-104058	-104058	-103802	-103802
Data Source: SOS	Waves 3-14		Waves 3-14		Waves 3-14	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A 10: Health conditions and weekly earnings

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Type of health condition (reference: no condition)							
Physical condition only	-0.122***	-0.117***	-0.121***	-0.120***			
	(0.00718)	(0.0104)	(0.00716)	(0.00715)			
Mental condition only	-0.309***	-0.454***	-0.304***	-0.304***			
	(0.0180)	(0.0325)	(0.0180)	(0.0179)			
Both physical and mental conditions	-0.436***	-0.570***	-0.433***	-0.433***			
	(0.0316)	(0.0534)	(0.0315)	(0.0315)			
Detailed Health conditions (10):							
Hearing/deaf					-0.0374**	-0.0363**	-0.0372**
					(0.0154)	(0.0154)	(0.0154)
Physical					-0.126***	-0.127***	-0.127***
					(0.0132)	(0.0131)	(0.0131)
Intellectual					-0.433***	-0.433***	-0.436***
					(0.0440)	(0.0440)	(0.0440)
Learning					-0.156***	-0.155***	-0.156***
					(0.0223)	(0.0223)	(0.0222)
Mental illness					-0.246***	-0.239***	-0.238***
					(0.0229)	(0.0228)	(0.0228)
Acquired brain impairment					-0.155***	-0.155***	-0.152***
					(0.0520)	(0.0520)	(0.0518)
Vision					-0.00733	-0.00771	-0.00608
					(0.0156)	(0.0155)	(0.0155)
Medical condition					-0.121***	-0.120***	-0.119***
					(0.0119)	(0.0118)	(0.0118)
Other disability					-0.157***	-0.155***	-0.156***
					(0.0237)	(0.0236)	(0.0236)
Disability not defined					-0.0520	-0.0481	-0.0521
					(0.0495)	(0.0501)	(0.0501)
Level of education (reference: Certificate 2 and below)							
Certificate 3	0.0441***	0.0395***	0.0499***	0.0442	0.0436***	0.0494***	0.0462

	(0.00357)	(0.00367)	(0.00363)	(0.0598)	(0.00356)	(0.00363)	(0.0599)
Certificate 4	0.0950***	0.0929***	0.0962***	0.0857	0.0947***	0.0958***	0.0878
	(0.00391)	(0.00402)	(0.00416)	(0.0608)	(0.00391)	(0.00416)	(0.0609)
Diploma	0.139***	0.138***	0.155***	0.176***	0.139***	0.154***	0.175***
	(0.00431)	(0.00445)	(0.00445)	(0.0603)	(0.00431)	(0.00445)	(0.0603)
Interaction between type of condition and level of education	tion						
Physical condition only*Certificate 3		0.00978					
		(0.0128)					
Physical condition only*Certificate 4		-0.0176					
		(0.0136)					
Physical condition only*Diploma		-0.0219					
		(0.0150)					
Mental condition only*Certificate 3		0.250***					
		(0.0435)					
Mental condition only*Certificate 4		0.254***					
		(0.0494)					
Mental condition only*Diploma		0.182***					
		(0.0573)					
Both physical and mental conditions*Certificate 3		0.212***					
		(0.0756)					
Both physical and mental conditions*Certificate 4		0.262***					
		(0.0833)					
Both physical and mental conditions*Diploma		0.169					
		(0.114)					
Field of education (reference: Natural and Physical Scien	ces)						
Information Technology			0.0270	0.120**		0.0273	0.121**
			(0.0196)	(0.0529)		(0.0197)	(0.0529)
Engineering and Related Technologies			0.132***	0.128**		0.132***	0.129**
			(0.0178)	(0.0514)		(0.0178)	(0.0515)
Architecture and Building			0.0718***	0.0775		0.0719***	0.0788
			(0.0184)	(0.0519)		(0.0184)	(0.0519)
Agriculture, Environmental and Related			0.0556***	0.0814		0.0553***	0.0825
			(0.0186)	(0.0521)		(0.0186)	(0.0521)
Health			0.0692***	0.103**		0.0689***	0.104**

	(0.0181)	(0.0517)	(0.0181)	(0.0517)
Education	0.133***	0.144***	0.133***	0.146***
	(0.0182)	(0.0524)	(0.0182)	(0.0525)
Management and Commerce	0.107***	0.0590	0.107***	0.0604
	(0.0178)	(0.0515)	(0.0178)	(0.0516)
Society and Culture	0.0266	0.167***	0.0268	0.169***
	(0.0179)	(0.0522)	(0.0179)	(0.0523)
Creative Arts	-0.100***	0.00402	-0.101***	0.00457
	(0.0199)	(0.0551)	(0.0200)	(0.0552)
Food, Hospitality and Personal Services	0.0820***	0.0430	0.0820***	0.0442
	(0.0184)	(0.0517)	(0.0184)	(0.0518)
Mixed Field Programs	0.0561***	0.0888*	0.0569***	0.0910*
	(0.0187)	(0.0516)	(0.0187)	(0.0516)
Interaction between field of education and level of education				
Information Technology*Certificate 3		-0.139**		-0.141**
		(0.0644)		(0.0645)
Engineering and Related Technologies*Certificate 3		0.0424		0.0397
		(0.0601)		(0.0602)
Architecture and Building*Certificate 3		0.0133		0.0113
		(0.0608)		(0.0609)
Agriculture, Environmental and Related*Certificate 3		-0.00554		-0.00807
		(0.0611)		(0.0612)
Health*Certificate 3		-0.00125		-0.00328
		(0.0611)		(0.0612)
Education*Certificate 3		-0.300***		-0.304***
		(0.0632)		(0.0632)
Management and Commerce*Certificate 3		0.0458		0.0437
		(0.0603)		(0.0604)
Society and Culture*Certificate 3		-0.156**		-0.158***
		(0.0610)		(0.0610)
Creative Arts*Certificate 3		-0.0395		-0.0423
		(0.0673)		(0.0674)
Food, Hospitality and Personal Services*Certificate 3		0.0940		0.0918
		(0.0607)		(0.0608)

Mixed Field Programs*Certificate 3	-0.166***	-0.169***
	(0.0638)	(0.0639)
Information Technology*Certificate 4	-0.149**	-0.150**
	(0.0654)	(0.0655)
Engineering and Related Technologies*Certificate 4	0.0279	0.0256
	(0.0614)	(0.0615)
Architecture and Building*Certificate 4	0.0595	0.0563
	(0.0629)	(0.0629)
Agriculture, Environmental and Related*Certificate 4	-0.0581	-0.0605
	(0.0648)	(0.0648)
Health*Certificate 4	-0.0620	-0.0645
	(0.0618)	(0.0618)
Education*Certificate 4	0.0388	0.0354
	(0.0621)	(0.0621)
Management and Commerce*Certificate 4	0.0651	0.0628
	(0.0613)	(0.0613)
Society and Culture*Certificate 4	-0.122**	-0.125**
	(0.0621)	(0.0621)
Creative Arts*Certificate 4	-0.159**	-0.162**
	(0.0666)	(0.0666)
Food, Hospitality and Personal Services*Certificate 4	0.0619	0.0597
	(0.0639)	(0.0640)
Mixed Field Programs*Certificate 4	-0.184***	-0.188***
	(0.0667)	(0.0667)
Information Technology*Diploma	-0.161**	-0.162**
	(0.0647)	(0.0647)
Engineering and Related Technologies*Diploma	-0.0811	-0.0805
	(0.0611)	(0.0612)
Architecture and Building*Diploma	-0.0582	-0.0575
	(0.0629)	(0.0630)
Agriculture, Environmental and Related*Diploma	-0.102	-0.102
	(0.0636)	(0.0637)
Health*Diploma	-0.0711	-0.0709
	(0.0616)	(0.0617)

Education*Diploma				0.0230			0.0225
				(0.0634)			(0.0634)
Management and Commerce*Diploma				0.0820			0.0822
				(0.0607)			(0.0608)
Society and Culture*Diploma				-0.209***			-0.210***
				(0.0616)			(0.0616)
Creative Arts*Diploma				-0.162**			-0.161**
				(0.0655)			(0.0655)
Food, Hospitality and Personal Services*Diploma				0.0986			0.0982
				(0.0694)			(0.0695)
Mixed Field Programs*Diploma				-0.00611			-0.00654
				(0.0714)			(0.0716)
Other controls							
Age	0.0467***	0.0467***	0.0465***	0.0470***	0.0468***	0.0466***	0.0471***
	(0.000713)	(0.000713)	(0.000713)	(0.000715)	(0.000713)	(0.000713)	(0.000715)
Age squared	-0.00054***	-0.00054***	-0.00054***	-0.00054***	-0.00054***	-0.00054***	-0.00054***
	(9.20e-06)	(9.20e-06)	(9.20e-06)	(9.21e-06)	(9.20e-06)	(9.20e-06)	(9.21e-06)
Male	0.188***	0.188***	0.180***	0.175***	0.188***	0.180***	0.175***
	(0.00308)	(0.00308)	(0.00321)	(0.00322)	(0.00308)	(0.00321)	(0.00322)
Module graduate	0.0357***	0.0351***	0.0460***	0.0417***	0.0356***	0.0459***	0.0415***
	(0.00331)	(0.00331)	(0.00337)	(0.00346)	(0.00331)	(0.00337)	(0.00346)
Study for non-employment reason	-0.0995***	-0.0991***	-0.0867***	-0.0879***	-0.0993***	-0.0865***	-0.0877***
	(0.00377)	(0.00377)	(0.00381)	(0.00381)	(0.00377)	(0.00380)	(0.00381)
Reason for study not achieved	-0.0963***	-0.0962***	-0.0927***	-0.0921***	-0.0961***	-0.0925***	-0.0919***
	(0.00319)	(0.00319)	(0.00319)	(0.00319)	(0.00319)	(0.00319)	(0.00319)
Not satisfied with training	0.0230***	0.0229***	0.0213***	0.0216***	0.0229***	0.0213***	0.0215***
	(0.00383)	(0.00383)	(0.00382)	(0.00381)	(0.00383)	(0.00382)	(0.00381)
Enrolled in further training	-0.114***	-0.114***	-0.111***	-0.109***	-0.114***	-0.111***	-0.109***
	(0.00305)	(0.00305)	(0.00304)	(0.00304)	(0.00305)	(0.00304)	(0.00303)
Having a skilled job before training	-0.0257***	-0.0258***	-0.0276***	-0.0298***	-0.0256***	-0.0275***	-0.0297***
	(0.00433)	(0.00434)	(0.00431)	(0.00430)	(0.00433)	(0.00431)	(0.00430)
Having a casual job before training	-0.199***	-0.199***	-0.193***	-0.190***	-0.199***	-0.193***	-0.189***
	(0.00330)	(0.00329)	(0.00329)	(0.00329)	(0.00329)	(0.00329)	(0.00328)
Having a part-time job before training	-0.448***	-0.447***	-0.442***	-0.434***	-0.447***	-0.442***	-0.434***

	(0.00335)	(0.00335)	(0.00334)	(0.00335)	(0.00335)	(0.00334)	(0.00335)
Occupation (reference: Managers)							
Professionals	0.0218***	0.0217***	0.0236***	0.0189***	0.0216***	0.0235***	0.0187***
	(0.00540)	(0.00540)	(0.00542)	(0.00541)	(0.00540)	(0.00542)	(0.00541)
Technicians and Trades Workers	-0.109***	-0.109***	-0.109***	-0.107***	-0.110***	-0.110***	-0.107***
	(0.00534)	(0.00534)	(0.00540)	(0.00541)	(0.00534)	(0.00540)	(0.00541)
Community and Personal Service Workers	-0.262***	-0.263***	-0.257***	-0.246***	-0.263***	-0.257***	-0.246***
	(0.00656)	(0.00656)	(0.00659)	(0.00660)	(0.00656)	(0.00659)	(0.00660)
Clerical and Administrative Workers	-0.133***	-0.133***	-0.140***	-0.139***	-0.133***	-0.140***	-0.139***
	(0.00664)	(0.00664)	(0.00665)	(0.00665)	(0.00664)	(0.00665)	(0.00664)
Sales Workers	-0.360***	-0.361***	-0.356***	-0.346***	-0.360***	-0.356***	-0.346***
	(0.00696)	(0.00696)	(0.00694)	(0.00695)	(0.00696)	(0.00694)	(0.00695)
Machinery Operators and Drivers	-0.253***	-0.252***	-0.256***	-0.254***	-0.253***	-0.256***	-0.254***
	(0.00785)	(0.00785)	(0.00785)	(0.00784)	(0.00785)	(0.00785)	(0.00784)
Labourers	-0.410***	-0.409***	-0.407***	-0.400***	-0.409***	-0.407***	-0.399***
	(0.00732)	(0.00732)	(0.00733)	(0.00733)	(0.00732)	(0.00733)	(0.00733)
Industry (reference: Agriculture, Forestry & Fishing)							
Mining	0.567***	0.567***	0.537***	0.532***	0.568***	0.537***	0.532***
	(0.0102)	(0.0102)	(0.0107)	(0.0107)	(0.0102)	(0.0107)	(0.0106)
Manufacturing	0.191***	0.191***	0.165***	0.161***	0.191***	0.165***	0.161***
	(0.00958)	(0.00957)	(0.0101)	(0.0101)	(0.00957)	(0.0101)	(0.0101)
Electricity, Gas, Water and Waste Service	0.336***	0.336***	0.314***	0.310***	0.336***	0.313***	0.310***
	(0.0110)	(0.0110)	(0.0113)	(0.0113)	(0.0110)	(0.0113)	(0.0113)
Construction	0.260***	0.260***	0.244***	0.236***	0.260***	0.243***	0.236***
	(0.00958)	(0.00958)	(0.0102)	(0.0102)	(0.00958)	(0.0102)	(0.0102)
Wholesale Trade	0.158***	0.158***	0.139***	0.137***	0.158***	0.139***	0.136***
	(0.0124)	(0.0124)	(0.0127)	(0.0127)	(0.0124)	(0.0127)	(0.0127)
Retail Trade	-0.0979***	-0.0986***	-0.111***	-0.113***	-0.0983***	-0.112***	-0.113***
	(0.00998)	(0.00998)	(0.0104)	(0.0104)	(0.00998)	(0.0104)	(0.0104)
Accommodation and Food Services	-0.130***	-0.130***	-0.145***	-0.155***	-0.130***	-0.145***	-0.155***
	(0.0104)	(0.0104)	(0.0110)	(0.0110)	(0.0104)	(0.0110)	(0.0110)
Transport, Postal and Warehousing	0.247***	0.246***	0.221***	0.215***	0.246***	0.220***	0.215***
	(0.0108)	(0.0108)	(0.0112)	(0.0112)	(0.0108)	(0.0112)	(0.0112)
Information Media and Telecommunication	0.169***	0.168***	0.170***	0.170***	0.169***	0.170***	0.170***

	(0.0135)	(0.0135)	(0.0138)	(0.0138)	(0.0135)	(0.0138)	(0.0137)
Financial and Insurance Services	0.272***	0.272***	0.253***	0.248***	0.272***	0.253***	0.248***
	(0.0119)	(0.0119)	(0.0123)	(0.0123)	(0.0119)	(0.0123)	(0.0122)
Rental, Hiring and Real Estate Services	0.173***	0.173***	0.155***	0.153***	0.173***	0.156***	0.153***
	(0.0114)	(0.0114)	(0.0118)	(0.0117)	(0.0114)	(0.0118)	(0.0117)
Professional, Scientific and Technical	0.174***	0.174***	0.167***	0.168***	0.174***	0.167***	0.167***
	(0.0104)	(0.0104)	(0.0108)	(0.0107)	(0.0104)	(0.0107)	(0.0107)
Administrative and Support Services	0.0971***	0.0973***	0.0803***	0.0791***	0.0976***	0.0805***	0.0794***
	(0.0105)	(0.0105)	(0.0109)	(0.0108)	(0.0105)	(0.0108)	(0.0108)
Public Administration and Safety	0.209***	0.208***	0.207***	0.205***	0.209***	0.207***	0.205***
	(0.00963)	(0.00963)	(0.0100)	(0.01000)	(0.00963)	(0.0100)	(0.00999)
Education and Training	0.112***	0.112***	0.0991***	0.102***	0.112***	0.0987***	0.102***
	(0.0101)	(0.0101)	(0.0106)	(0.0106)	(0.0101)	(0.0106)	(0.0106)
Health Care and Social Assistance	0.122***	0.122***	0.127***	0.123***	0.122***	0.127***	0.123***
	(0.00987)	(0.00987)	(0.0104)	(0.0104)	(0.00987)	(0.0104)	(0.0104)
Arts and Recreation Services	-0.0541***	-0.0544***	-0.0477***	-0.0526***	-0.0544***	-0.0481***	-0.0530***
	(0.0153)	(0.0153)	(0.0153)	(0.0153)	(0.0153)	(0.0153)	(0.0153)
Other Services	0.0191*	0.0188*	-0.00703	-0.0224*	0.0195*	-0.00674	-0.0221*
	(0.0114)	(0.0114)	(0.0118)	(0.0119)	(0.0114)	(0.0118)	(0.0119)
Wave dummies (reference: Wave 2003)							
Wave 2004	-0.104***	-0.105***	-0.104***	-0.107***	0.00205	0.00118	0.00371
	(0.0112)	(0.0113)	(0.0112)	(0.0112)	(0.0177)	(0.0176)	(0.0176)
Wave 2005	-0.0573***	-0.0580***	-0.0594***	-0.0608***	0.0496***	0.0460***	0.0465***
	(0.00984)	(0.00995)	(0.00979)	(0.00983)	(0.0169)	(0.0168)	(0.0168)
Wave 2006	0.00985	0.00899	0.00973	0.00761	0.116***	0.115***	0.114***
	(0.0106)	(0.0107)	(0.0105)	(0.0106)	(0.0173)	(0.0173)	(0.0172)
Wave 2007	-0.0153	-0.0159	-0.0176*	-0.0191*	0.0916***	0.0877***	0.0908***
	(0.00987)	(0.00998)	(0.00983)	(0.00986)	(0.0169)	(0.0168)	(0.0168)
Wave 2008	0.0526***	0.0519***	0.0501***	0.0494***	0.160***	0.156***	0.157***
	(0.0104)	(0.0105)	(0.0104)	(0.0104)	(0.0172)	(0.0172)	(0.0171)
Wave 2009	0.0499***	0.0492***	0.0477***	0.0459***	0.157***	0.153***	0.155***
	(0.00982)	(0.00994)	(0.00978)	(0.00981)	(0.0168)	(0.0168)	(0.0168)
Wave 2010	0.0719***	0.0710***	0.0717***	0.0686***	0.179***	0.177***	0.178***
	(0.0103)	(0.0105)	(0.0103)	(0.0103)	(0.0172)	(0.0171)	(0.0171)

Wave 2011	0.145***	0.144***	0.142***	0.142***	0.252***	0.247***	0.249***
	(0.00979)	(0.00992)	(0.00975)	(0.00978)	(0.0169)	(0.0168)	(0.0168)
Wave 2012	0.188***	0.187***	0.184***	0.184***	0.295***	0.289***	0.291***
	(0.0104)	(0.0105)	(0.0103)	(0.0104)	(0.0172)	(0.0171)	(0.0171)
Constant term	5.725***	5.728***	5.650***	5.636***	5.615***	5.542***	5.525***
	(0.0193)	(0.0193)	(0.0263)	(0.0545)	(0.0236)	(0.0294)	(0.0563)
Observations	231,884	231,884	231,884	231,884	231,884	231,884	231,884
R-squared	0.475	0.475	0.478	0.481	0.475	0.479	0.482
Data Source: SOS	Waves 3-12						

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Figure A 1: scenarios based on whether DVA clients were medically discharged, life satisfaction



Figure A 2: scenarios based on whether DVA clients were medically discharged, job satisfaction

