

Labour Market Outcomes and Welfare Dependence of Persons with Disabilities in Australia

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Abstract

This paper examines the relationship between disability and labour market outcomes, and between disability and dependence on welfare in Australia in recent years. It contains three components. The first component (Section 4) uses the public-access unit record files from the ABS Survey of Disability, Ageing and Carers conducted in 1998 (SDAC98) to describe the incidence and composition of disability in 1998 and to present descriptive statistics on the relationship between disability and labour market and welfare outcomes in 1998. In the second component (Section 5), regression analysis is employed to examine the relationship between disability and labour market outcomes and welfare dependence in 1998, also using the SDAC98. The third component (Section 6) examines trends over time in these relationships using descriptive statistics drawn from the SDAC98, the unit record files of the 1993 ABS Survey of Disability, Ageing and Carers (SDAC93) and Commonwealth Department of Family and Community Services (FaCS) administrative data for the period 1980-2000.

1. Introduction

Depending on the definition of disability employed, persons with disabilities currently comprise up to 20 percent of the Australian population, and this proportion has been growing in recent decades. Understanding the relationship between disability, labour market outcomes and welfare dependence is therefore very important to policy makers and the community more generally, since the labour market activity of the disabled will have profound implications for both the operation of the labour market and demands placed on welfare programs.

This paper explores the relationship between disability and labour market outcomes, and between disability and welfare dependence. To some extent, the former relationship is of interest because of its implications for the latter: non-participation in the labour market is often associated with take up of welfare benefits. However, the relationship is not exact, and the two issues are of independent interest to policy-makers. Understanding these relationships is critical to the design of government policies with respect to promoting successful labour market participation, reducing welfare dependence and generally advancing the welfare of persons with disabilities. The paper is intended to be exploratory in nature, and is therefore likely to be particularly valuable for establishing the issues requiring further research.

The paper has three components, the first two of which examine disability, labour market outcomes and welfare dependence in 1998, which is the most recent year for which suitable unit record data is available. The first component presents descriptive statistics on the relationship between disability and labour market and welfare outcomes. In the second component, formal models of the relationship between disability and labour market outcomes and welfare dependence are estimated. The third component attempts to explore trends over time in these relationships by drawing on 1993 unit record data as well as administrative data on Disability Support Pension (DSP) recipients over the period 1980 to 2000. 1993 and 1998 are the only years for which comparable unit record data exist, and in fact, even for these data sets, it is difficult to obtain comparable estimates. Consequently, this section is less detailed than the cross-sectional analysis undertaken for 1998.

The implications of disability for labour market outcomes are likely to depend on interactions with other factors, including social circumstances, economic conditions and an individual's age, sex, intelligence and psychological disposition. For example, the onset of a physical impairment is likely to be more detrimental to a person employed in a manual occupation than an office worker. It is also true that the likelihood of onset of disability, and its nature and severity, are themselves likely to depend on the circumstances of the individual. Continuing the preceding

example, persons working in manual occupations are more likely to suffer onset of physical impairments than office workers. Consequently, based on this potential for the incidence, nature and severity of disability, and its effects on outcomes, to systematically depend on “contextual” factors, throughout this paper the attempt is made to explore these inter-relationships.

The plan of the paper is as follows. Section 2 briefly surveys previous research in the area, while Section 3 discusses the data and the approach taken in this paper to defining and classifying disability. Section 4 contains the results of the first component of the analysis undertaken, presenting descriptive statistics on the relationship between disability and labour market and welfare receipt outcomes in 1998. Section 5 presents the methods and results for the estimated models of labour market and welfare outcomes in 1998. The third component, examining trends over time, is presented in Section 6. Section 7 concludes.

Key findings include:

- Consistent with intuition, disability is found to be associated with both significant disadvantage in the labour market and higher rates of welfare dependence. For example, controlling for other personal characteristics, the presence of a disability decreases the probability of employment by 0.29 for males and by 0.23 for females. All performance dimensions are worse the more severe is the disability.
- As might be expected, persons with multiple impairments have the lowest employment rates, income and hours of work and the highest rates of welfare dependence. Multiple impairments primarily comprise the “mental” and “mobility” impairment types combination. With mental impairments also associated with the next-worst outcomes, it is clear that such impairments are particularly detrimental to performance. By contrast, persons with “sensory” impairments do not appear to be greatly disadvantaged.
- The adverse effects of disability are greater for older age groups. Given that the incidence of disability is also higher for older persons, the implication is that disability is an extremely important factor in the mature-age labour market.
- Mature-age disability onset (after 44 years of age) is also associated with relatively worse labour market outcomes and higher welfare dependence, even after controlling for severity, impairment type and other characteristics. The implication is that younger disabled persons are better able to adapt to disability than are persons who become disabled later in life. It is also found that those who completed their education after onset of the disability do better than those who completed before onset.

- Employed disabled persons differ significantly from non-employed disabled persons in both demographic characteristics and disability characteristics. Especially significant is that the employed are on average younger and less likely to have had disability onset after age 45. Together, these findings reinforce the view that there is important connection between ageing, mature-age onset of disability and barriers to employment.
- Among those who are employed, the presence of a disability is associated with a 2-hour reduction in weekly hours of work.
- Although there do not appear to have been large changes in labour market outcomes and welfare dependence of the disabled between 1993 and 1998, an important implication of the large increase in reported disability over the period is that there has been a large increase in non-participation in the labour force and in welfare dependence associated with disability.
- Relative to other severity levels and impairment types, the adverse consequences for obtaining employment of profound and severe disability and multiple impairment types became greater in 1998 than was the case in 1993.
- Rates of Disability Support Pension (DSP) receipt grew substantially between 1980 and 2000, particularly for females over the 1990s. However, a substantial component of the growth in female DSP receipt over the 1990s was due to switching from other payment types, rather than an increase in welfare dependency among disabled females.
- The male DSP-recipient population has been getting younger in recent years.

2. Previous literature

2.1. International research

The international literature on the labour market outcomes and welfare receipt of persons with disabilities has primarily focused on two main issues: the labour supply behaviour of persons with disabilities, and in particular how this is affected by transfer (welfare) programs; and the extent of labour market disadvantage or discrimination experienced by persons with disabilities.

In the first category are studies by Bound and Waidmann (1992, 2000), Harkness (1993), Stapleton et al (1995), Rupp and Stapleton (1995, 1998), Gruber and Kubik (1997), Bound and Burkhauser (1999), Gruber (2000), Buddelmeyer (2001) and Autor and Duggan (2001). Among the findings of these studies is the significant negative effect of disability benefits on labour supply behaviour (Bound and Waidmann (1992), Harkness (1993) and Autor and Duggan (2001) using US data, and Gruber (2000) using Canadian data) and that growth in disability benefit

receipt in the US in recent decades is a significant source of the decline in employment rates among the disabled (Bound and Waidmann (2000)). Autor and Duggan (2001) further find that a rising earnings replacement rate for low wage workers has been an important factor in the growth in the rate of disability insurance receipt in the US between 1984 and 2000. The studies by Stapleton et al (1995) and Rupp and Stapleton (1995, 1998) also focus on the determinants of receipt of disability benefits, identifying downturns in the business cycle as important for creating a “ratchet-like” effect on receipt: each downturn is associated with new inflows, but upturns do not result in corresponding outflows.

The second primary area of the international research, examining the effects of disability on outcomes, more closely aligns with the focus of this paper. This includes Stern (1989), Baldwin et al (1994), Baldwin and Johnson (1994) and Hum and Simpson (1996). Baldwin et al (1994) estimate a model of the relationship between functional impairments, work disability, employment participation and wage offers using 1984 US data and use the model to compare the wage penalty associated with each impairment for males and females. Baldwin and Johnson (1994) use a study by Tringo (1970) to classify disabilities into those likely to be subject to discrimination (“handicapped”) and those not likely to be (“disabled”). The authors then interpret differences in outcomes between the disabled and the handicapped (after controlling for differences in human capital and health) as being the result of discrimination.

Hum and Simpson (1996) investigate the effect of disability on labour market activity in Canada using 1989 data. They find lower average levels of labour force participation, hours worked and earnings for those reporting a disability. They also classify disabilities in two ways to further examine the relationship between disability type and labour market outcomes. First, disability is classified by the type of impairment (mobility, sensory, mental or multiple impairment types). Disability is then also classified into one of three severity levels: mild, moderate and severe. They find sensory disabilities are not associated with any labour market disadvantage compared to the non-disabled – indeed, average earnings, hours worked and wages exceed those of the non-disabled. The other three disability types are however associated with significantly lower average values of all three outcomes. As might be expected, outcomes are strongly ordered by severity.

Hum and Simpson also use a disability severity score as an explanatory variable in an (annual) earnings equation and in an (annual) hours worked equation. Their results imply there was no labour market discrimination against persons with disabilities, with all differences in earnings outcomes explained by characteristics differences. However, these characteristics included an

individual's disability severity score (which is always higher for persons with disabilities than other persons). Consequently, the estimated effects of this characteristic may include the effects of discrimination suffered by persons with disabilities.

Among the issues identified in the literature on labour market outcomes of persons with disabilities, perhaps most important is the potential for self-reported health status to be systematically related to labour market outcomes (Bound and Burkhauser (1999)). For example, an unemployed person may tend to report poorer health than an employed person of identical health. This suggests that surveys that use more objective measures of health, and rely less on subjective assessments of health, to determine whether a person is disabled, will have more accurate measures of disability that will more likely be exogenous with respect to labour market outcomes. However, it should also be noted that Stern (1989), Bound (1991), Dwyer and Mitchell (1999) and Benitez-Silva et al (2000) produce evidence, using US data, that bias in self-reported disability measures is not significant.

2.2. Australian research

Previous work in this area has, until recently, been somewhat limited in Australia. Possibly the earliest relevant contribution is a report by the Commission of Inquiry into Poverty (1977) which examined the relationship between disability and poverty. Although not expressly concerned with the relationship between disability and labour market outcomes, the report identifies diminished ability to work as an important source of poverty for persons with disabilities. More recent is the Australian Institute of Health and Welfare's annual publication, *Australia's Welfare* (1995-2001), which contains information on the prevalence and nature of disability, the services provided to and used by persons with disabilities, the costs of these services and, to a limited extent, the outcomes experienced by persons with disabilities in terms of life expectancy, education, employment, welfare receipt and income. Unfortunately, much of the information presented on outcomes is not benchmarked against the non-disabled population, making assessments of outcomes difficult. However, the publications do report lower labour market participation and lower levels of educational attainment among persons with disabilities.

Bradbury et al (2001) examine the extent of the relationship between disability and socio-economic disadvantage in Australia using the 1998 ABS Survey of Disability Ageing and Carers (SDAC). The paper focuses only on persons with severe disabilities – those with a severe or profound core activity restriction – presenting tables showing the proportion so disabled by age group, region of birth, age group and level of educational attainment, labour force status, personal income, household income, housing tenure and index of relative socio-economic

disadvantage decile. Labour force status of the severely disabled is also compared with the rest of the population. Logit models, using a disabled indicator variable as the dependent variable, are also estimated (i.e. explaining disability as a function of socio-economic factors), and detailed analysis of Victoria is also undertaken. The authors note that the sample examined is restricted by the fact that the SDAC only collects the appropriate socio-economic data for those persons living in private households, who comprise 94.2 percent of the (unweighted) sample.¹

Brazenor (2002) also uses the 1998 SDAC, attempting to explore the relationship between disability impairment type and labour market earnings (given that a person is employed). He estimates earnings equations for employed males and females (whose main source of income was from wages or salaries) as a function of human capital variables, other demographic characteristics and variables for ten disability impairment types. The SDAC does not, however, report labour market earnings, reporting only total income. Brazenor estimates labour market earnings using information on whether an individual is in receipt of a government pension or benefit, subtracting the basic pension from total income for benefit recipients.² The motivation for the ten disability type categories used is unclear, other than that the author argues that they minimise the incidence of individuals having more than one impairment type. Brazenor finds significant negative effects of disability on earnings, and that the effects are not uniform across disability types, or across males and females for the same disability type. The effects on earnings of other dimensions characterising disability, such as disability severity and age of disability onset, are not explored.

Cai (2002) focuses on DSP receipt, examining the rate of receipt in Australia since 1971 and its relationship to labour market conditions, as well as transitions from unemployment to the DSP program, the determinants of the destination of persons exiting from receipt of DSP payments and the determinants of the duration on DSP. Although DSP is an important component of welfare receipt by persons with disabilities, Cai's work has a significantly narrower focus than the current paper, which aims to examine the nature of the relationship between disability and

¹ The SDAC over-samples persons not living in private households. Persons in private households actually represent over 99 percent of the population.

² The number of individuals affected by this procedure is not disclosed by the author. Given that all persons in the sample reported their main source of income as wages and salaries, few individuals should have been pension recipients and therefore have had the basic pension rate subtracted from total income. This procedure also does not address the issue of income from non-income support payments (e.g. family payments), nor private non-labour income (e.g. investment income, child support payments).

welfare and labour market outcomes more generally.

3. Data and methods

The sample examined comprises persons aged 15-64 years, interpreted as the “workforce age” population and motivated by the focus on the relationship between disability and labour market outcomes. The data used for the first two components of the paper come from the confidentialised unit record file (CURF) of the 1998 ABS Survey of Disability, Ageing and Carers (SDAC98). The third component additionally draws on the CURF for the 1993 Survey of Disability, Ageing and Carers (SDAC93) as well as the Commonwealth Department of Family and Community Services (FaCS) Longitudinal Data Set (LDS) 1% sample, an administrative dataset on welfare recipients.

The SDAC98 is a stratified random sample of 15,316 private dwellings, 399 non-private dwellings and 626 “cared accommodation” establishments, providing information on 43,395 persons aged 15 years and over.³ It contains detailed information on health status, including, for those who have a disability, the type, extent, underlying condition, age of onset and cause of the disability. It also contains information on current labour force status, occupation, industry, hours worked per week, full-time/part-time employment status, main source of income, total weekly income, whether receive pension/benefit, highest educational qualification, age, sex, birthplace, family structure and several other aspects. The SDAC93 collected information on 46,876 persons aged 15 years and over, and has similar information to the SDAC98, although it is difficult to exactly match disability categories, a result of changes to the ABS interpretation of the definition of disability.⁴

Neither the SDAC93 nor SDAC98 collected labour force or income information for persons residing in cared accommodation.⁵ This therefore limits the scope of the analysis of labour market outcomes presented in this paper to persons not residing in cared accommodation. In both

³ Cared accommodation comprises nursing homes, hospitals and other similar institutions.

⁴ Changes between 1993 and 1998 in survey methodology, and indeed apparent changes in respondent preparedness to report health conditions, also create problems for inferences on changes in disability over time. These issues are explored in detail in Section 6. The ABS also conducted surveys in 1981 and 1988 – the Survey of Disabled and Aged Persons 1988 and the Survey of Handicapped Persons 1981 – but has not released unit record files for these surveys.

⁵ The presumption appears to be that all such individuals are not in the labour force, but this need not be true (although participation is likely to be low for this group).

surveys, this corresponds to the exclusion of less than 0.2 percent of the population aged 15-64 years, or less than 1 percent of the disabled population in this age range. For all other analysis (other than the analysis of labour market outcomes and income), persons in cared accommodation are included to provide as complete a picture of outcomes for the disabled population as possible.

A further issue, raised in Section 2, is the potential for bias in self reported disability. That is, reported disability may be systematically related to labour market and welfare receipt outcomes if the respondent's subjective assessment of whether he or she has a disability is the basis for determining whether a person has a disability. Fortunately, this is unlikely to be a significant problem for the ABS disability surveys because of the detailed objective criteria employed by the ABS to determine disability status. Evidence from the US (eg Benitez-Silva et al (2000)) also suggests this is not a significant problem. Issues do arise, however, over the appropriate definition of disability, as well as the appropriate disability characteristics by which to classify persons with disabilities.

3.1. Defining and classifying disability

Arriving at a satisfactory definition of disability is an important task, and one that is in fact not easily achieved.⁶ As a practical matter, the approach taken in this paper is necessarily dictated by the primary data sets to be used, the ABS Surveys of Disability, Ageing and Carers in 1993 and 1998. There are, however, a number of issues for defining and classifying disability to do with differences between the 1993 and 1998 surveys. The ABS applied different criteria to determine from the information provided the category or categories to which a person belongs. Indeed, the information obtained and how it was obtained differs between the surveys. To some extent, we can use individual data items to create consistent criteria, but it is not possible to eliminate all differences, and some ambiguities remain regarding the best approach to addressing inconsistencies. Furthermore, the process of achieving a consistent definition of disability across the two surveys may lead to a set of disability criteria that do not exactly correspond to the ABS criteria in either 1993 or 1998, nor with current notions of what constitutes a disability.

This provides the motivation for focusing on 1998 for the first two components of this paper and for the relatively limited scope of comparisons undertaken for the third component. The issue of matching definitions and classifications for the two surveys is taken up in detail in the discussion of the third component (Section 6), as is the sensitivity of results to alternative assumptions or

⁶ See Appendix A for a detailed discussion of the issue.

approaches. For now, we focus on the 1998 survey.

The 1998 survey identifies persons as having a disability based on 17 “screening” questions. Specifically, a person is defined to have a disability if that person has one or more of the following that had lasted, or was likely to last, for a period of six months or more:

1. Partial or total loss of sight that is not corrected by lenses
2. Partial or total loss of hearing which creates difficulty communicating or for which an aid is used
3. Anything wrong with speech (unable to speak, or difficulty speaking)
4. Difficulty learning or understanding
5. Has blackouts, fits or loses consciousness
6. Need to be helped or supervised in doing things because of any mental illness
7. Incomplete use of arms or fingers
8. Incomplete use of legs or feet
9. A nervous or emotional condition that restricts everyday activities
10. Restriction in doing everyday physical activity or physical work
11. A disfigurement or deformity
12. Treatment of a long-term condition other than those already mentioned, that restricts everyday activities
13. Difficulty gripping
14. Head injury, stroke or other brain damage with long-term effects that restrict everyday activities
15. Any other condition restricting everyday activities
16. Restricted in everyday activities by chronic or recurrent pain
17. Restricted in everyday activities by shortness of breath or breathing difficulties

Classifying disability

To obtain information on how outcomes depend on the characteristics (extent and nature) of the disability requires the *classification* of disabilities according to characteristics. There are a number of ways in which disabilities could potentially be classified. The guiding principles that are adopted in this paper are that a classification system should be: “relevant” (the lines along which disabilities are classified are likely to matter to outcomes); “succinct” (no two categories are too similar, and the nature of the differences between any two categories is understood); and “relatable” (where possible, the classification system should be consistent with other studies or

agencies).⁷ Based on these criteria, and given the available data items, the following three ways for classifying disability are used in this paper in order to examine how outcomes depend on the extent and nature of the disability:

- severity of core activity restriction;
- type of impairment; and
- age of disability onset.⁸

Severity of core activity restriction

The CURF for the SDAC98 contains a variable for severity of core activity restriction, with persons with disabilities classified into one of five categories:

1. Profound: unable to perform a core activity or always need assistance to perform a core activity.
2. Severe: sometimes need assistance to perform a core activity.
3. Moderate: don't need assistance, but have difficulty performing a core activity.
4. Mild: no difficulty performing a core activity, but use aids or equipment because of a disability.
5. None: no core activity restriction.

The core activities are:

- Self care: bathing or showering, dressing, eating, using the toilet and managing incontinence;
- Mobility: moving around at home and away from home, getting into or out of a bed or chair, and using public transport;
- Communication: understanding and being understood by others: strangers, family and friends.

To reduce the level of detail reported, in this paper these groups are aggregated as follows:

1. Profoundly or severely restricted in core activities
2. Moderately or mildly restricted in core activities
3. Not restricted in core activities

Type of impairment

Different impairment types are likely to have different implications for an individual's ability to operate in the labour market. The CURF has a set of dummy variables for the 17

⁷ Similar to defining disability, issues arise over comparability of classifications of disability for the 1993 and 1998 surveys. These are discussed further in Section 6.

⁸ Potential ways of classifying disability that are not adopted in this paper are noted in Appendix B.

restrictions/impairments that qualify as disabilities. These have been combined to create four impairment type categories as follows:

- “Sensory”: 1, 2 & 3 (affecting sight, hearing or speech)
- “Mobility”: 5, 7, 8, 10, 11, 12, 13, 15, 16 & 17 (affecting mobility or physical activity)
- “Mental”: 4, 6, 9 & 14 (affecting mental function or emotional condition)
- “Multiple”: More than one of the above three.

Age of disability onset

Individuals can also be classified according to the age of onset of the disability. Timing of onset can be important to labour market outcomes in several ways. Those disabled at a young age may face more barriers to obtaining educational qualifications and work experience than those who become disabled later in life (after obtaining educational qualifications and work experience), implying earlier onset is associated with less favourable outcomes. On the other hand, those disabled earlier in life may be better able to adapt to the disability and therefore be less adversely affected by disability than those disabled later in life. The type and severity of disability may also tend to differ by age of onset – for example, back injuries are more likely later in life – which may cause outcomes to vary systematically by age of onset. Furthermore, it may be that those disabled later in life differ in other ways from those disabled earlier in life. For example, persons with less innate ability may tend to work in more physically demanding jobs, and therefore experience a higher incidence of disability in later life. This may therefore lead to a lower level of innate ability (on average) for those disabled in later life than those disabled at a young age.

To examine how outcomes depend on age at disability onset, persons with disabilities are classified into one of the following age of onset groups:

- 0-4 years (infant)
- 5-14 years (child)
- 15-29 years (young adult)
- 30-44 years (prime age adult)
- 45-64 years (older adult)

A related issue of interest concerns the timing of disability onset with respect to educational attainment, specifically, whether educational attainment was achieved before or after onset of disability. In the context of our current focus on labour market outcomes, the primary issue is whether outcomes depend on whether qualifications were obtained before or after disability

onset.⁹ Using information in the SDAC98 on whether post-school qualifications were obtained before or after disability onset, as well as the information on age of onset and educational attainment, this issue is considered in Section 5.

Alternative definitions of disability

Examination of particular disability groups can also be undertaken by using the above classification systems, or indeed other information contained in the SDAC, implicitly defining disability according to the criteria required for being in the group. One group of interest is those eligible for the Disability Support Pension (DSP). A person is eligible for the DSP if the person has a physical, intellectual or psychiatric impairment that meets legislative requirements. They must also be unable to do (for at least 30 hours per week) any work, or be unable to be re-skilled for any work, for at least the next two years because of that impairment, or be permanently blind. However, the SDAC CURF does not contain information on DSP eligibility, and approximating these criteria does not appear possible. Another group likely to be of interest, and one that *can* be studied using the SDAC, comprises those with a schooling or employment restriction. The ABS classifies disabilities according to whether they involve a restriction on the ability to attend school or engage in paid employment. Since such restrictions are likely to be relevant to labour market outcomes, specific examination of this group seems warranted.

3.2. Variables used

The variables employed to measure labour market outcomes and welfare dependence of persons with disabilities are to a significant extent dictated by the data items available in the SDAC98. The outcome variables used are as follows:

- Labour force status: employed full-time; employed part-time; unemployed; and not in the labour force. Information on whether an individual works at home is also used.
- Hours worked: A variable, “weekly hours worked in all jobs”, is used. It is a categorical variable: 0, 1-15, 16-24, 24-34, 35-39, 40, 41-48, 49-69, 70-97. A continuous hours variable is created by using interval midpoints for all except the 70-97 category, for which a value of

⁹ Perhaps more fundamental are questions such as “does disability reduce educational attainment?” and “does lower educational attainment lead to a greater probability of disability?” Attempts to answer the first question might involve comparison of the educational attainment of those disabled before 18 years of age with the educational attainment of the non-disabled and those who become disabled after 24 years of age. Similarly, the second question might be addressed by comparing the incidence of disability onset after age 24 by educational attainment. Study along these lines is, however, beyond the scope of this paper.

80 hours is assumed.

- Income: the SDAC98 contains a categorical variable for total income of the individual from all sources in the survey week: less than \$80, \$80-\$119, ..., \$1120-\$1159, \$1160 and over. A continuous income variable is created using midpoints of each interval and assuming income of \$1180 for those in the top income category. Income is treated as “missing” for those who refused to provide income information or did not know their income. All statistics on income reported in this paper are expressed at March quarter 2002 prices.
- Industry: Industry in main job is reported in the SDAC98 at the 1-digit level (17 industry groups). These are aggregated into 10 industry groups (see Appendix C).
- Occupation: Occupation in main job is reported in the SDAC98 at the 1-digit level. These 8 occupation groups are used in this paper.
- Welfare dependence: Although information is contained on whether a person received welfare payments at all, it was decided to use the variable “principal source of cash income”. This variable classifies the principal source of income for recipients of income into one of seven sources, one of which is “any government pension or allowance”. Thus, a reasonable interpretation of a dummy variable, equal to one if a government pension or allowance is the principal source of income, is that it indicates an individual is personally dependent on welfare.¹⁰

The following demographic information is also used:

- Educational attainment: Individuals are classified into one of four levels of attainment: bachelor’s degree or higher, other post-school qualification (including undergraduate diploma and trade qualification), completed highest level of secondary school and did not complete highest level of secondary school.

¹⁰ An alternative to this variable is to use the indicator variables available in the CURF for welfare receipt. For example, a dummy variable equal to one if any welfare payments are received can be created from these variables. The main problem with such an approach is that welfare payments in Australia comprise both income support and non-income support payments, and we cannot separately identify these two payment types in the CURF. Non-income support payments are income supplements, primarily consisting of a benefit paid to persons with dependent children, and recipients who do not also receive income support payments are not dependent on welfare payments as their primary source of income. Another possible approach is to examine welfare receipt of the *income unit* to which an individual belongs as an indicator of welfare dependence. However, for the purposes of focusing on the relationship between disability and welfare receipt, it is perhaps more appropriate to focus on *personal* receipt of payments, since the disability attaches to the person, not the income unit.

- Age: The SDAC98 contains a categorical variable with categories comprising 5-year intervals: 15-19,..., 60-64. This variable is used to create the following age groups 15-24, 25-34, 35-44, 45-54 and 55-64.
- Family status: Using information on whether single or partnered (married) and on the number of dependent children, four family-type groups are derived: single with no dependents; couple with no dependents; single with dependents; and couple with dependents.
- Region of birth. Using the 'place of birth' data item, the following groups are derived: born in Australia; born in one of the main English-speaking countries (UK, USA, Canada or New Zealand); and born in another country.

The person weights provided with the unit record files are used for all of the analysis.

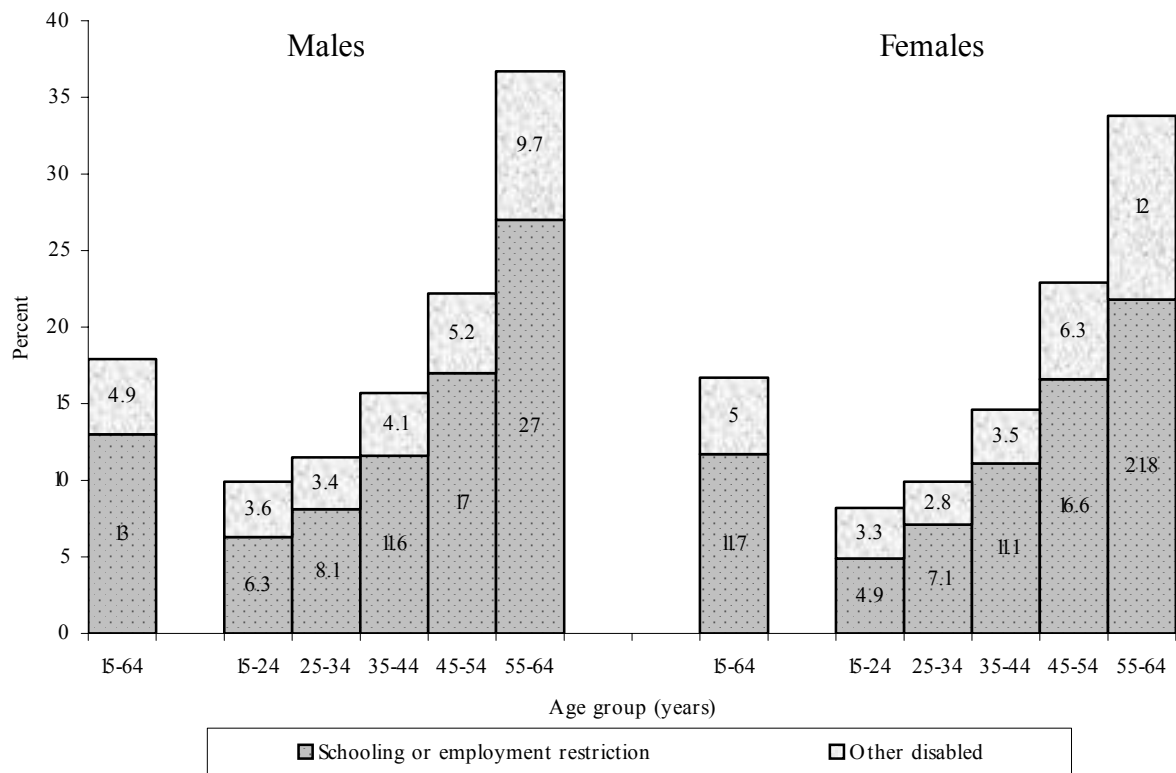
4. Descriptive statistics in 1998

In this section, the incidence and composition (in terms of severity, type and age of onset) of disability in Australia and how they vary by gender and age are described. Demographic characteristics of the disabled are then compared with those of the non-disabled before moving on to examination of labour force and welfare receipt outcomes and how these depend on the severity, type and age of onset of the disability, as well as the age and gender of the individual.

4.1. Incidence and composition of disability

Figure 4.1 shows that, in 1998, 17.9 percent of males and 16.7 percent of females aged 15-64 years reported a disability as defined by the ABS. Figure 4.1 also presents the proportion with a disability for each of five age groups and indicates the rate of disability is monotonically increasing in age for both males and females: less than 10 percent of those aged 15-24 years have a disability, compared with over one third of those aged 55-64 years. Nonetheless, it is not accurate to characterise disability as an old-age phenomenon. All age groups have significant numbers of persons with disabilities. Figure 4.1 also breaks down the disabled population into those with a schooling or employment restriction and other persons with disabilities. The incidence of such disabilities is approximately 5 percent points lower than for all disabilities – that is, 5 percent of both males and females have disabilities that do not restrict them in schooling or employment.

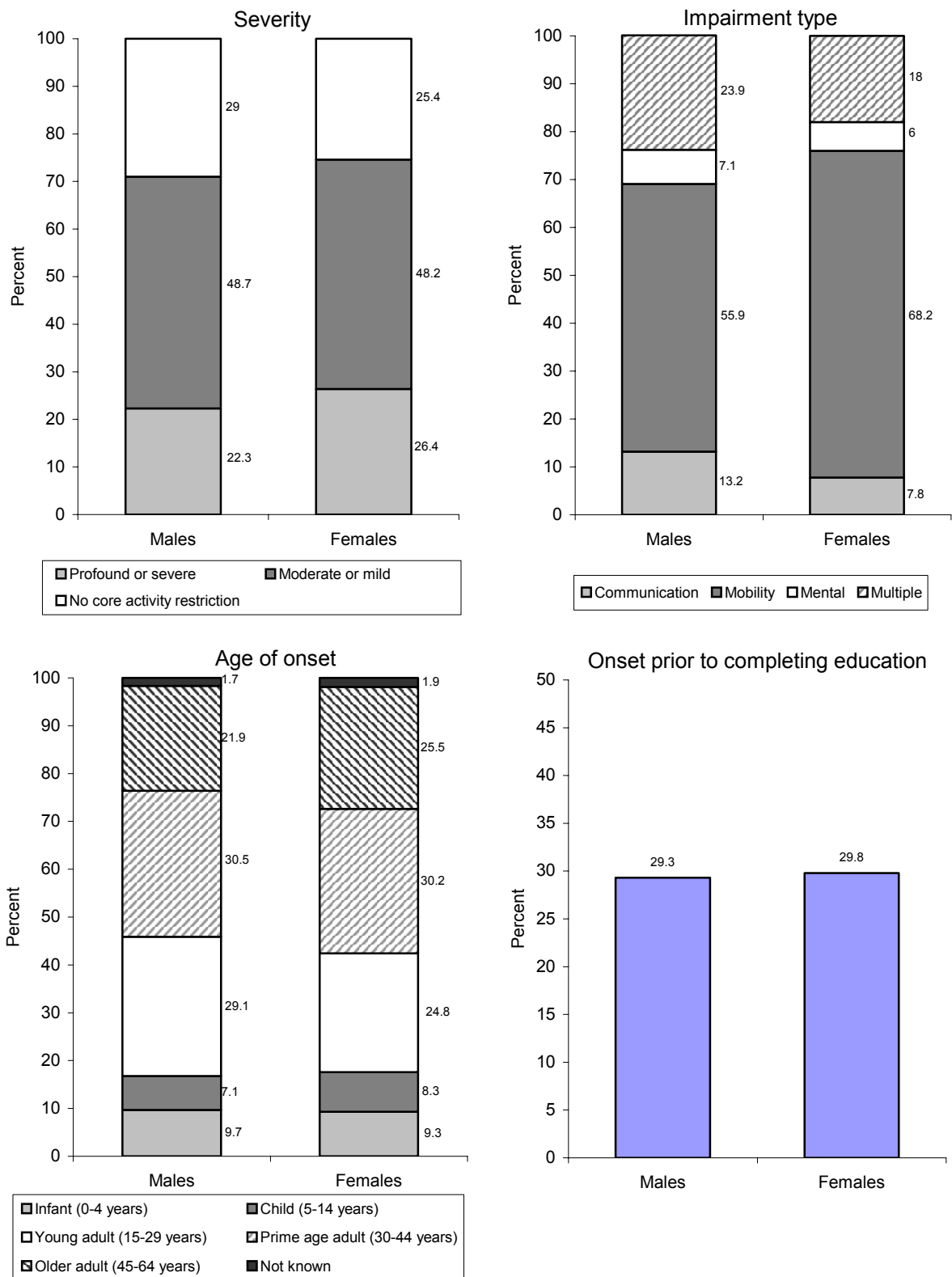
Figure 4.1: Incidence of disability - 1998



The composition of disability in terms of severity of core activity restrictions, type of impairment, age of onset and age of onset with respect to educational attainment is examined in Figure 4.2. In terms of disability severity, 22 percent of disabled males have a profound or severe core activity restriction, 49 percent have a moderate or mild restriction and 29 percent have no restriction. Interestingly, although the proportion of disabled females who have a moderate or mild core activity restriction is the same as for males, the proportion who have a profound or severe restriction is 4 percentage points higher (and the proportion with no restriction correspondingly lower). This implies the proportion of all males and females who suffer profound or severe disabilities are in fact similar (with the difference of 0.4 percentage points not statistically significant).

Impairments affecting mobility or physical activity are the most common type of impairment characterising the disability – 56 percent of disabled males and 68 percent of disabled females have only this kind of impairment. The next most common impairment type is to have more than one of the three impairment types (sensory, mobility, mental), with 24 percent of males and 18 percent of females in this group. This mostly comprises individuals with both mobility and mental impairments.

Figure 4.2: Composition of disability - 1998 - Persons aged 15-64 years



In terms of age of disability onset, Figure 4.2 indicates that over half of all disabled persons

report disability onset as occurring after age 30.¹¹ A significantly higher proportion of disabled males experience disability onset between the ages of 15 and 29 years than do disabled females, among whom a correspondingly higher proportion report onset between the ages of 45 and 64 years. Despite the higher incidence of onset between the ages of 15 and 29 years, the proportion of disabled males completing their education after onset of the disability is not higher than is the case for females. Almost 30 percent of both male and female disabled persons report disability onset occurred prior to completing their education.

Figure 4.3: Composition of disability by age group - 1998
Severity of core activity restriction

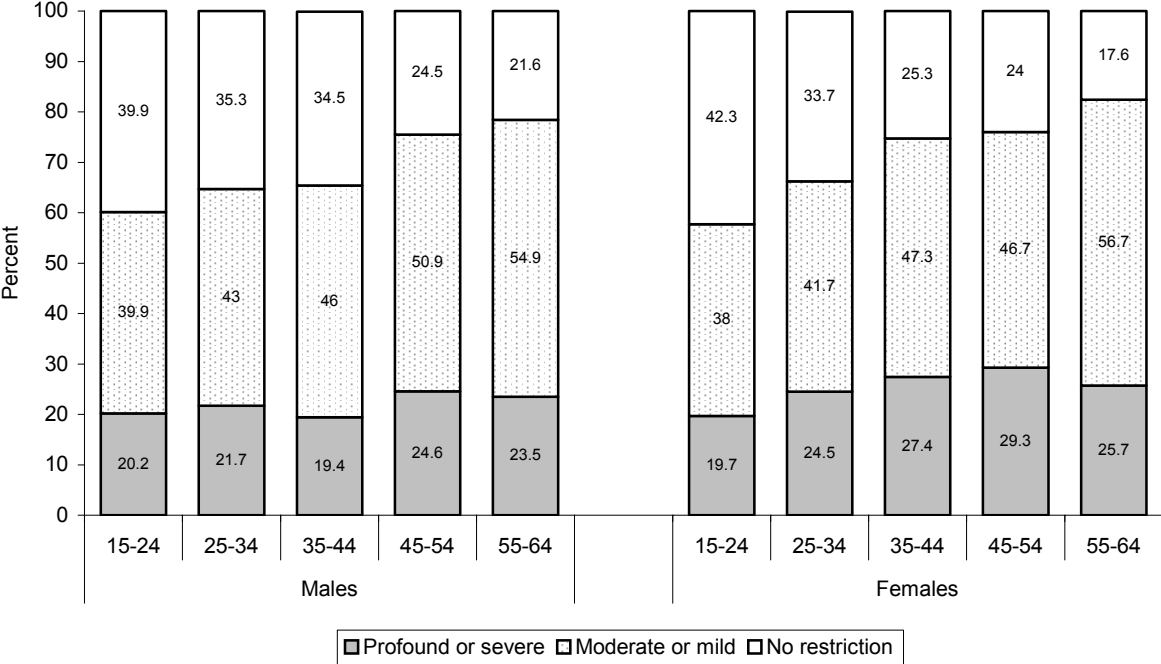


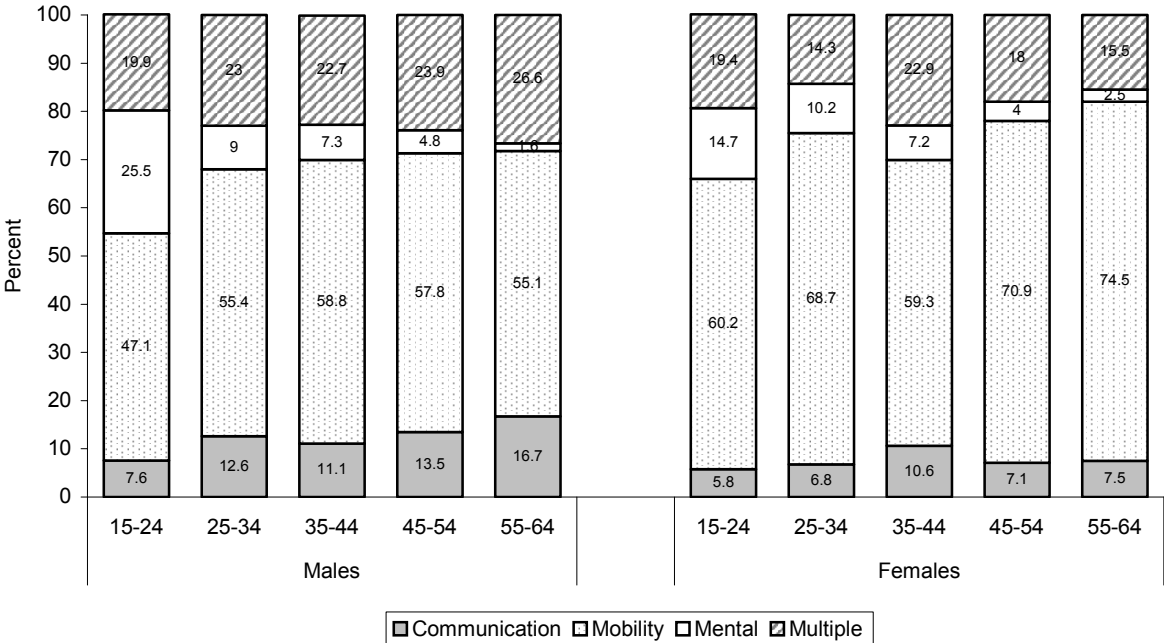
Figure 4.3 examines how disability severity varies with age. Severity tends to be lower for the younger disabled. Among the disabled population, the proportion who have moderate or mild restrictions is monotonically increasing in age for males (from 40 percent for 15-24 year olds to 55 percent of 55-64 year olds), and almost so for females (increasing from 38 to 57 percent). Correspondingly, the proportion with no core activity restriction is monotonically decreasing in age for both males and females. Thus, not only is the incidence of disability increasing in age, but so is the severity of disability among those disabled. Interestingly, the proportion with a

¹¹ Note that the figures for age of onset tell us the age of onset distribution among the disabled population at a point in time. Importantly, they do not tell us the distribution of age of onset for all persons who at some stage become disabled. The implication from Figure 4.2 is, therefore, that most people who become disabled at some stage in life do so in the older adult stages.

profound or severe restriction appears to reach a peak in the 45-54 years age group. Given the incidence of disability is higher among persons aged 55-64 years than persons aged 45-54, this suggests a substantial “surge” in the onset of moderate and mild severity disabilities occurs in the 55-64 years age group.

Figure 4.4 shows that the impairment type composition also varies substantially by age. Perhaps most notable is the inverse relationship between the proportion with mental impairment types (slowness at learning or understanding, treatment for nerves or an emotional condition, needing help or supervision due to a mental illness, effects of head injury, stroke or other brain damage) and age. Over one quarter of disabled males aged 15-24 years are classified as having this impairment type, compared with only 1.6 percent of disabled males aged 55-64 years. A similar, although less pronounced, pattern is evident for females: 15 percent of 15-24 year olds with disabilities have this impairment type, compared with 2.5 percent of 55-64 year olds with disabilities. This translates to a lower proportion of all 55-64 year olds having this type of impairment than all 15-24 year olds (0.6 percent versus 2.5 percent for males, and 0.8 percent versus 1.2 percent for females). A higher incidence of multiple impairment types (that include mental impairments) for older males accounts for part of this, but not all of it, and older females do not have a higher incidence of multiple impairment types. Thus, it must be explained by either high mortality at young ages for persons with such impairments, or cohort differences – that is, a higher incidence of these impairments among more recent birth cohorts.

Figure 4.4: Composition of disability by age group - 1998
Type of impairment



In summary, the evidence from the SDAC98 is:

- Just over 17 percent of working-age adults have a disability.
- Males have a (statistically significant) higher rate of disability than females. (The difference in the percentage of the population with a disability is 1.3, with a standard error of 0.48.)
- All age groups have a significant proportion who have a disability, but the rate of disability is increasing in age: the 55-64 years age group has approximately four times the rate of disability of the 15-24 years group.
- Approximately one quarter of persons with disabilities have a profound or severe core activity restriction. This proportion is higher for females than males. Severity tends to be increasing in age, so that the proportion of older persons who are “very” disabled is greater relative to younger persons than is the case for all disability.
- Mobility type impairments are the predominant type of impairment for both males and females and all age groups.
- For over half the disabled population, disability onset occurred after the age of 30.

4.2. Demographic characteristics of persons with disabilities

Table 4.1 presents descriptive statistics for the age, educational attainment, country of birth and family type of disabled persons alongside the same statistics for the non-disabled. This is useful as a preliminary exercise to examination of labour market and welfare receipt outcomes for understanding how persons with disabilities differ from those without disabilities in ways other than disability.¹²

¹² A characterisation of the distinctions between these characteristics in terms of their relationship to disability, useful for the subsequent analysis, is as follows:

- age is likely to impact on disability, but disability does not affect age;
- family type is likely to be impacted upon by disability, but is not likely to impact on disability;
- educational attainment is likely to impact on disability, and disability is likely to impact on educational attainment;
- country of birth is unlikely to impact on or be impacted by disability.

Table 4.1 Demographic characteristics of disabled persons aged 15-64 years – 1998

	Disabled	Non-disabled	Difference
Males			
Mean age (years)	44.5 (0.27)	37.2 (0.13)	7.3 (0.30)
Educational attainment (%):			
Bachelor's degree or higher	8.4 (0.56)	16.7 (0.39)	-8.3 (0.68)
Other post-school	39.2 (0.99)	37.7 (0.50)	1.5 (1.11)
Comp. High school	8.8 (0.57)	17.9 (0.40)	-9.0 (0.70)
Not completed high school	43.5 (1.00)	27.8 (0.46)	15.8 (1.11)
Foreign-born – ESB (%)	10.7 (0.63)	10.8 (0.32)	-0.2 (0.70)
Foreign-born – NESB (%)	16.0 (0.74)	15.9 (0.38)	0.1 (0.83)
Family type (%):			
Single person, no dependents	30.1 (0.93)	25.5 (0.45)	4.5 (1.03)
Couple, no dependents	39.5 (0.99)	33.0 (0.49)	6.5 (1.10)
Single person with dependents	1.9 (0.28)	1.9 (0.14)	0.0 (0.31)
Couple with dependents	27.4 (0.90)	39.6 (0.51)	-12.1 (1.04)
Cared accommodation	1.1 (0.21)	0.0 (0.01)	1.1 (0.21)
Females			
Mean age (years)	44.9 (0.26)	37.3 (0.13)	7.6 (0.29)
Educational attainment (%):			
Bachelor's degree or higher	9.9 (0.62)	16.5 (0.37)	-6.6 (0.73)
Other post-school	30.2 (0.96)	28.8 (0.46)	1.5 (1.06)
Comp. High school	10.7 (0.64)	18.8 (0.40)	-8.2 (0.76)
Not completed high school	49.2 (1.04)	36.0 (0.49)	13.3 (1.15)
Foreign-born – ESB (%)	11.5 (0.67)	9.8 (0.30)	1.7 (0.73)
Foreign-born – NESB (%)	16.2 (0.77)	16.7 (0.38)	-0.5 (0.86)
Family type (%):			
Single person, no dependents	28.3 (0.94)	20.8 (0.41)	7.5 (1.03)
Couple, no dependents	40.4 (1.03)	31.8 (0.47)	8.7 (1.13)
Single person with dependents	8.9 (0.59)	8.2 (0.28)	0.6 (0.66)
Couple with dependents	21.4 (0.86)	39.2 (0.49)	-17.8 (0.99)
Cared accommodation	1.0 (0.20)	0.0 (0.01)	1.0 (0.20)

Note: Standard errors in parentheses.

A consequence of the higher rate of disability among older age groups is that, for both males and females, the average age of the disabled population is over 7 years greater than the average age of the non-disabled population. Educational attainment is likewise significantly different. The rate of degree attainment for disabled persons is 50 percent of that of the non-disabled for males, and 60 percent for females, while the proportion not completing high school is 16 percentage points higher for the disabled than the non-disabled for males, and 13 percentage points higher for females. This may to some extent reflect the older age distribution of the disabled, but may also reflect the impact of factors such as lower educational opportunities for the disabled and a higher rate of onset of disability among the less educated because of the more physical work they tend to undertake.

As might be expected, the disabled do not significantly differ in their region of birth composition. Family type differs, with the disabled much less likely to be in a couple with dependent children and more likely to be a single person with no dependents or part of a couple with no dependents. As with educational attainment, this may to some extent reflect differences in the age composition of the disabled. However, if so, it is interesting that the proportion who are sole parents is the same for the disabled as for the non-disabled. We might have expected this to be lower for the disabled if age differences were driving the other differences in the family type composition. This may therefore suggest that, at a given age, a person with dependent children is more likely to not have a partner present if he or she has a disability.

4.3. Labour market outcomes and welfare dependence of persons with disabilities

Based on the information available in the CURF for the SDAC98, the labour market outcomes and welfare dependence of persons with disabilities are examined in this section by presenting descriptive statistics on labour force status (proportion employed, employed full-time, unemployed and not in the labour force), hours worked (mean weekly hours of those employed full-time, mean weekly hours of those employed part-time), the proportion whose primary income source is welfare payments, and mean personal weekly income. As well as comparing (for males and females separately) all disabled with the non-disabled, descriptive statistics are also presented for different disability groups, based on the characteristics of the disability, to provide information about how outcomes depend on the nature of the disability.

Table 4.2 Labour market outcomes, welfare dependence and income of disabled persons aged 15-64 years – 1998

	Disabled	Non-disabled	Difference
Males			
Employed (%)	52.8 (1.09)	85.7 (0.36)	-32.9 (1.15)
- employed full-time (%)	43.0 (1.08)	75.8 (0.44)	-32.8 (1.17)
Unemployed (%)	8.2 (0.60)	6.8 (0.26)	1.4 (0.65)
Not in labour force (%)	39.0 (1.07)	7.5 (0.27)	31.5 (1.10)
Mean hours – full-time workers	49.7 (0.44)	48.7 (0.15)	0.9 (0.47)
Mean hours – part-time workers	17.5 (0.64)	18.7 (0.31)	-1.3 (0.71)
Employment restriction (%)	73.0 (0.90)	0.0 (0.00)	73.0 (0.90)
Welfare dependent (%)	43.0 (1.00)	10.1 (0.31)	32.9 (1.05)
Mean weekly income (\$)	456.89 (8.38)	667.42 (4.33)	-210.5 (9.43)
Females			
Employed (%)	42.0 (1.10)	67.2 (0.47)	-25.2 (1.20)
- employed full-time (%)	19.4 (0.89)	36.4 (0.49)	-17.0 (1.01)
Unemployed (%)	3.8 (0.43)	5.5 (0.23)	-1.7 (0.49)
Not in labour force (%)	54.2 (1.11)	27.3 (0.45)	26.9 (1.20)
Mean hours – full-time workers	44.6 (0.53)	43.5 (0.16)	1.1 (0.56)
Mean hours – part-time workers	17.9 (0.42)	18.0 (0.16)	-0.1 (0.45)
Employment restriction (%)	69.8 (0.96)	0.0 (0.00)	69.8 (0.96)
Welfare dependent (%)	49.5 (1.04)	25.6 (0.44)	23.9 (1.13)
Mean weekly income (\$)	323.91 (6.22)	416.25 (3.48)	-92.3 (7.12)

Note: Standard errors in parentheses.

Table 4.2 compares outcomes for all persons with disabilities with outcomes for non-disabled persons.¹³ It reveals significantly worse labour market performance, a much higher rate of welfare dependence, and much lower mean income for those classified as disabled. Just over half of disabled males are employed, compared with 86 percent of non-disabled males, while 42 percent of disabled females are employed, compared with 67 percent of non-disabled females. These differences are largely attributable to differences in labour force participation, although disabled males do also have a statistically significant greater proportion unemployed. In fact, the

¹³ Recall that labour force and income statistics do not apply to those residing in “cared accommodation”.

unemployment *rate* for disabled males, at 13.4 percent, is nearly twice that of non-disabled males, for whom it is 7.4 percent.¹⁴ In contrast, disabled females, with an unemployment rate of 8.3 percent, are in this respect similar to the non-disabled, who have an unemployment rate of 7.6 percent.

Interestingly, 10 percent of both disabled and non-disabled males work part-time, with the difference in the employment rate therefore driven by a lower rate of full-time employment among persons with disabilities. For females, the difference in employment rates is driven by lower rates of both full-time and part-time employment. Among both full-time workers and part-time workers, mean hours worked per week do not significantly differ between the disabled and non-disabled. However, because a higher proportion of the disabled are employed part-time (19 percent compared with 12 percent for the non-disabled for males, and 54 percent compared with 46 percent for females), the average hours of work among all employed disabled persons is somewhat lower than among all employed non-disabled persons.

Welfare dependency rates present almost a mirror image to the employment rates, with welfare payments comprising the primary income source for 43 percent of disabled males and 50 percent of disabled females, compared with 10 percent and 26 percent of their respective non-disabled counterparts. In fact, the difference in the welfare dependency rate is, for males, of identical magnitude to the difference in the employment rate, and is almost identical for females. Consistent with the rates of employment and welfare dependence, mean weekly income is significantly lower for persons with disabilities. The income disadvantage of the disabled is, on average, \$210 per week for males and \$92 per week for females. This corresponds to a greater relative disadvantage for disabled males, and is consistent with the greater difference in employment and welfare dependence rates for males.

Persons with a schooling or employment restriction

The ability to identify those persons with disabilities who have a schooling or employment restriction (as defined in Section 3) allows us to focus attention on persons for whom the disability might be thought detrimental to labour market performance. It can be interpreted as a narrower definition of disability, perhaps more relevant to the study of labour market outcomes.

¹⁴ As discussed in Section 2, the extent to which this is due to a greater propensity for the unemployed to identify as disabled (for example, as a rationalisation of labour market failure) is not known.

Table 4.3 Labour market outcomes, welfare dependence and income of persons aged 15-64 years with a schooling or employment restriction – 1998

	Means		Difference from non-disabled	
	Restricted	Other disabled	Restricted	Other disabled
Males				
Proportion of all disabled	73.0	27.0	-	-
Employed (%)	43.8 (1.27)	76.9 (1.78)	-41.9 (1.32)	-8.8 (1.82)
- employed full-time (%)	33.5 (1.21)	68.3 (1.97)	-42.3 (1.29)	-7.6 (2.02)
Unemployed (%)	8.3 (0.71)	7.8 (1.14)	1.5 (0.75)	1.1 (1.16)
Not in labour force (%)	47.9 (1.28)	15.3 (1.52)	40.4 (1.31)	7.8 (1.55)
Mean hours – full-time workers	49.0 (0.60)	50.6 (0.66)	0.2 (0.62)	1.9 (0.68)
Mean hours – part-time workers	17.4 (0.73)	17.6 (1.38)	-1.3 (0.79)	-1.1 (1.42)
Welfare dependent (%)	52.9 (1.16)	16.4 (1.54)	42.8 (1.20)	6.3 (1.57)
Mean weekly income (\$)	387.76 (8.82)	646.09 (17.52)	-279.66 (9.82)	-21.34 (18.04)
Females				
Proportion of all disabled	69.8	30.2	-	-
Employed (%)	37.9 (1.30)	51.3 (2.04)	-29.2 (1.38)	-15.9 (2.10)
- employed full-time (%)	16.1 (0.98)	27.1 (1.82)	-20.3 (1.10)	-9.3 (1.88)
Unemployed (%)	3.3 (0.48)	5.1 (0.90)	-2.2 (0.53)	-0.4 (0.93)
Not in labour force (%)	58.8 (1.32)	43.6 (2.03)	31.5 (1.39)	16.3 (2.08)
Mean hours – full-time workers	44.3 (0.70)	44.9 (0.83)	0.8 (0.72)	1.4 (0.84)
Mean hours – part-time workers	17.9 (0.50)	17.8 (0.76)	-0.1 (0.53)	-0.2 (0.77)
Welfare dependent (%)	55.6 (1.21)	35.5 (1.94)	30.0 (1.29)	9.9 (1.99)
Mean weekly income (\$)	304.24 (6.92)	371.02 (12.90)	-112.01 (7.74)	-45.23 (13.36)

Note: Standard errors in parentheses.

Table 4.3 presents descriptive statistics for both restricted disabled and other disabled persons in 1998. It shows that over two thirds of disabled persons aged 15-64 years (73 percent of males and 70 percent of females) reported a schooling or employment restriction. As anticipated, outcomes are significantly worse for the restricted disabled than for those who do not have a schooling or employment restriction. Compared with the unrestricted disabled, the employment rate among the restricted disabled is 33 percentage points lower for males and 13 percentage

points lower for females, while the welfare dependency rate is 37 percentage points higher for males and 20 points higher for females.

It is, however, notable that even those disabled without schooling or employment restrictions appear to perform less well than the non-disabled. The employment rate of the unrestricted disabled is 9 percentage points lower for males and 16 percentage points lower for females, and the welfare dependence rate is, for males and females respectively, 6 percentage points higher and 10 percentage points higher. This may to some extent be due to differences between the unrestricted disabled and the non-disabled in characteristics other than disability, such as age and educational attainment.

Age group

The demographic characteristics presented in Table 4.1 showed persons with disabilities to be on average over 7 years older than other persons. Comparing outcomes by age group (Table 4.4) is a way of controlling for this effect, and also allows us to investigate whether the relative labour market performance of the disabled varies with age. For both males and females, non-disabled and disabled, employment rates and income follow a hump-shaped pattern, increasing in age up to about the 35-44 years age group and decreasing thereafter. The pattern is more pronounced for males than females, and there is one exception to this pattern, which is that, for disabled females, 15-24 year olds have the highest employment rate of all age groups.

Comparing the disabled with the non-disabled, the standout feature is that the relative employment rates of the disabled tend to be lower in the older age groups. Employment rates of disabled males in the 15-24, 25-34 and 35-44 years age groups are approximately 70 percent of the rates for non-disabled males, whereas it is 60 percent for the 45-54 years group and 47 percent for the 55-64 years group. The pattern is even more stark for females, for whom a monotonic relationship between relative employment rates and age group is evident: the relative employment rate (of disabled to non-disabled) is 83, 74, 70, 64 and 51 percent for each of the respective age groups from 15-24 years through to 55-64 years. This may to some extent reflect the differences in the severity and impairment type composition by age.

A similar pattern of greater disadvantage for older age groups is evident for personal income for males. It is not evident for females, however, primarily because of the very low average personal income of non-disabled females aged 55-64 years. Welfare dependence varies less with age for all groups – males and females, disabled and non-disabled. In spite of this, comparing the disabled with the non-disabled, for both males and females there is a large spike in the relative incidence of welfare dependence in the 45-54 years age group.

Table 4.4 Labour market outcomes, welfare dependence and income of disabled persons by age group – 1998

	15-24		25-34		35-44		45-54		55-64	
	Disab.	Non-disab.	Disab.	Non-disab.	Disab.	Non-disab.	Disab.	Non-disab.	Disab.	Non-disab.
Males										
Employed (%)	53.7 (3.72)	74.8 (1.07)	60.8 (2.79)	89.2 (0.64)	67.9 (2.23)	92.0 (0.55)	55.3 (2.10)	91.7 (0.63)	34.4 (1.94)	70.9 (1.44)
Employed full-time (%)	40.2 (3.65)	55.9 (1.22)	51.5 (2.85)	81.3 (0.81)	57.8 (2.36)	86.3 (0.70)	45.2 (2.10)	84.4 (0.83)	25.8 (1.79)	57.7 (1.56)
Unemployed (%)	24.7 (3.22)	12.3 (0.81)	11.8 (1.84)	6.4 (0.51)	5.6 (1.10)	5.3 (0.46)	6.7 (1.06)	5.1 (0.50)	3.8 (0.78)	4.1 (0.63)
Not in labour force (%)	21.6 (3.07)	12.9 (0.83)	27.4 (2.55)	4.4 (0.42)	26.5 (2.11)	2.7 (0.33)	38.0 (2.05)	3.2 (0.40)	61.8 (1.99)	25.0 (1.37)
Welfare dependent (%)	43.2 (3.44)	14.9 (0.88)	34.3 (2.49)	9.4 (0.60)	33.2 (2.10)	7.8 (0.55)	42.6 (1.94)	6.5 (0.56)	55.6 (1.86)	14.9 (1.12)
Mean income (\$)	325.12 (21.54)	374.11 (7.40)	508.20 (20.01)	704.79 (7.67)	559.46 (19.80)	788.82 (8.11)	505.89 (17.95)	783.25 (9.77)	351.83 (13.09)	591.40 (13.72)
Females										
Employed (%)	55.7 (4.04)	67.4 (1.13)	50.3 (2.98)	68.2 (0.93)	51.9 (2.40)	73.8 (0.88)	47.1 (2.06)	72.6 (1.02)	20.4 (1.73)	39.0 (1.48)
Employed full-time (%)	26.1 (3.57)	37.3 (1.17)	25.5 (2.59)	42.8 (0.99)	23.2 (2.02)	35.1 (0.95)	23.8 (1.76)	40.4 (1.12)	6.7 (1.07)	15.2 (1.09)
Unemployed (%)	10.3 (2.47)	11.6 (0.77)	5.5 (1.36)	5.1 (0.44)	4.0 (0.94)	4.5 (0.41)	3.3 (0.73)	4.2 (0.46)	1.5 (0.52)	1.1 (0.32)
Not in labour force (%)	34.0 (3.85)	21.0 (0.98)	44.1 (2.96)	26.7 (0.88)	44.1 (2.38)	21.8 (0.82)	49.7 (2.07)	23.2 (0.96)	78.1 (1.78)	59.9 (1.49)
Welfare dependent (%)	44.9 (3.84)	24.1 (1.03)	54.5 (2.79)	30.1 (0.91)	42.0 (2.20)	25.0 (0.86)	41.2 (1.92)	14.5 (0.80)	62.7 (1.91)	38.2 (1.47)
Mean income (\$)	300.90 (17.43)	313.50 (6.09)	373.46 (16.63)	455.15 (6.88)	387.75 (15.39)	460.65 (7.15)	331.04 (12.31)	463.69 (8.56)	249.11 (9.17)	304.23 (9.47)

Note: Standard errors in parentheses.

Analysis by age group therefore demonstrates that disability has enormous implications for the labour market performance and welfare dependence of older persons: not only is the incidence of disability increasing in age (Figure 4.1), but its adverse implications for labour market outcomes and welfare dependence are also greater for older age groups.

Severity of core activity restriction

Table 4.5 shows labour force participation, welfare dependence and income are all ordered by disability severity. For example, for both males and females the full-time employment rate of the unrestricted disabled is approximately 2.5 times that of the profoundly or severely restricted. Differences in outcomes by severity are, however, generally greater for males than females. For example, the difference between males and females in the incidence of welfare dependence goes from 2.5 percentage points higher for males for the profound/severe group to 6.4 percentage points lower for the moderate/mild group, to 10.5 percentage points lower for the unrestricted group. In light of the findings for non-disabled persons presented in Table 4.2 (which show lower participation and higher welfare dependence for females than males), this suggests that increasing severity of disability is associated with greater relative disadvantage in the labour market for males than females. That is, increasing severity of disability is associated with a bigger decrease in the probability of employment, a bigger decrease in expected income and a bigger increase in the probability of welfare dependence, for males compared with females.

Table 4.5 Labour market outcomes, welfare dependence and income of disabled persons aged 15-64 years by severity of core activity restriction – 1998

	Profound/Severe	Moderate/Mild	None
Males			
Employed (%)	33.0 (2.21)	52.0 (1.57)	68.9 (1.87)
Employed full-time (%)	24.0 (2.00)	41.2 (1.54)	60.0 (1.98)
Unemployed (%)	4.6 (0.98)	7.9 (0.84)	11.3 (1.28)
Not in labour force (%)	62.4 (2.27)	40.2 (1.54)	19.8 (1.61)
Welfare dependent (%)	63.8 (1.74)	43.2 (1.54)	26.6 (1.75)
Mean income (\$)	327.86 (14.38)	437.76 (11.69)	582.78 (16.49)
Females			
Employed (%)	29.6 (2.02)	41.5 (1.58)	55.4 (2.18)
Employed full-time (%)	12.6 (1.47)	17.9 (1.23)	29.1 (1.99)
Unemployed (%)	3.0 (0.76)	3.0 (0.55)	6.2 (1.05)
Not in labour force (%)	67.4 (2.08)	55.5 (1.60)	38.5 (2.13)
Welfare dependent (%)	61.3 (1.74)	49.6 (1.60)	37.1 (2.10)
Mean income (\$)	272.71 (10.96)	320.35 (8.64)	385.00 (13.71)

Note: Standard errors in parentheses.

Type of impairment

The nature of disability is also characterised by the type of impairment. In Table 4.6, an ordering of outcomes by impairment type is evident, with multiple impairments being associated with the worst outcomes, followed by ‘mental’, ‘mobility’ and finally ‘sensory’ impairments. This is consistent with Hum and Simpson (1996), who find a similar ordering of outcomes using Canadian data. Hum and Simpson in fact find that persons with sensory-type impairments outperform even the non-disabled. The descriptive statistics presented in Table 4.6 suggest this is not the case in Australia, since, for example, the non-disabled still have higher employment rates and less welfare dependence than those with sensory impairments. However, in Table 4.6 we do not control for other differences, such as age, which may be able to account for the lower performance of persons with sensory impairments.¹⁵

Table 4.6 Labour market outcomes, welfare dependence and income of disabled persons aged 15-64 years by type of impairment – 1998

	Sensory	Mobility	Mental	Multiple
Males				
Employed (%)	78.8 (2.46)	56.6 (1.43)	50.4 (4.26)	29.6 (2.09)
Employed full-time (%)	69.8 (2.76)	46.2 (1.44)	37.6 (4.12)	21.4 (1.88)
Unemployed (%)	7.1 (1.55)	8.2 (0.80)	15.8 (3.10)	6.2 (1.11)
Not in labour force (%)	14.1 (2.09)	35.2 (1.38)	33.8 (4.03)	64.2 (2.20)
Welfare dependent (%)	15.6 (2.18)	37.3 (1.38)	50.0 (3.94)	69.2 (1.66)
Mean income (\$)	652.56 (22.68)	486.41 (11.68)	323.31 (23.01)	316.79 (13.09)
Females				
Employed (%)	59.0 (3.98)	44.8 (1.33)	37.5 (4.57)	24.6 (2.34)
Employed full-time (%)	27.6 (3.62)	21.0 (1.09)	15.7 (3.44)	10.7 (1.68)
Unemployed (%)	1.8 (1.08)	3.5 (0.49)	9.9 (2.82)	3.9 (1.06)
Not in labour force (%)	39.2 (3.95)	51.7 (1.34)	52.6 (4.72)	71.5 (2.46)
Welfare dependent (%)	34.2 (3.81)	44.8 (1.33)	62.1 (4.29)	70.1 (1.87)
Mean income (\$)	414.80 (24.11)	331.11 (7.78)	286.64 (19.80)	268.35 (11.98)

Note: Standard errors in parentheses.

Age of disability onset

As discussed in Section 3, age of onset is likely to be relevant to labour market outcomes in several ways. Those disabled earlier in life have a longer history of disadvantage, which may

¹⁵ This is an issue taken up in Section 5.

affect the life paths open. For example, a person disabled at a younger age may not have as good opportunities for education as a person disabled later in life, which then restricts later options in the labour market. On the other hand, a person disabled earlier may be better able to adapt to the disability and function in the labour market than a person disabled later in life. It may also be that disability onset in later life is more likely to be associated with a certain type of person (e.g. manual labourer), implying outcomes depend on age of onset because of systematic differences in the types of people who become disabled later in life. Disability severity and nature may also systematically vary by age of onset.

As with the preceding analysis, the issue with the interpretation of the descriptive analysis presented in this section is that other important characteristics are also likely to vary systematically with the characteristic of interest. In particular (as is suggested by the last two sources of dependence of outcomes on age of onset mentioned above), the age, severity and impairment type composition of the disabled population is likely to vary with age of onset. For example, there can be no persons in the sample aged less than 44 years with an age of onset of 45-64 years. Mobility and multiple impairment types may also be more likely to arise in later life.¹⁶ Nonetheless, examination of the simple descriptive statistics is informative.

Table 4.7 contains labour market outcomes and incidence of welfare dependence for each of five age-at-onset groups. The main feature of the statistics is that only persons whose age of disability onset was 45-64 years differ significantly in outcomes from any other group. An interesting aspect is that there are not large differences between the other age-at-onset groups in labour force participation and welfare dependence. This is particularly striking in light of likely differences in age and disability-type composition by age of onset.

Although we should be aware that the oldest onset age group will also tend to comprise older persons, the indications from Table 4.7 are that older-age onset has the most adverse consequences of all onset ages. This may in part reflect the type of disability that tends to occur among older persons, and also the type of person who gets disabled at older ages. But it may also reflect the reduced ability of persons to adapt to disability at older ages. The regression analysis in Section 5 can go some way to resolving the roles played by these different factors.

¹⁶ Consequently, the regression results presented in Section 5 are likely to be more informative. Also, because of this issue, consideration of the effect of timing of onset with respect to the obtaining of educational qualifications is taken up only in Section 5, since it is unlikely that useful inferences can be made in this respect from descriptive statistics.

Table 4.7 Labour market outcomes, welfare dependence and income of disabled persons aged 15-64 years by age at disability onset – 1998

	Infant	Child	Young adult	Prime adult	Old adult
Males					
Employed (%)	59.4 (3.57)	55.6 (4.02)	58.9 (2.01)	56.3 (1.94)	36.0 (2.21)
Employed full-time (%)	48.2 (3.63)	44.9 (4.02)	48.5 (2.04)	46.9 (1.95)	26.9 (2.04)
Unemployed (%)	12.1 (2.37)	14.1 (2.81)	10.6 (1.26)	6.8 (0.98)	3.0 (0.78)
Not in labour force (%)	28.6 (3.29)	30.2 (3.71)	30.5 (1.88)	36.8 (1.88)	61.0 (2.25)
Welfare dependent (%)	43.8 (3.61)	39.9 (3.96)	37.0 (1.97)	39.7 (1.91)	52.9 (2.30)
Mean income (\$)	433.67 (26.45)	398.94 (29.24)	511.84 (16.09)	489.01 (15.42)	370.42 (15.88)
Females					
Employed (%)	54.4 (3.61)	42.1 (3.86)	50.3 (2.26)	42.8 (2.00)	29.0 (1.99)
Employed full-time (%)	28.6 (3.28)	16.4 (2.89)	22.1 (1.88)	20.7 (1.64)	13.2 (1.48)
Unemployed (%)	2.4 (1.10)	5.9 (1.84)	5.6 (1.04)	3.4 (0.73)	2.6 (0.69)
Not in labour force (%)	43.3 (3.59)	52.0 (3.90)	44.0 (2.24)	53.8 (2.01)	68.5 (2.04)
Welfare dependent (%)	46.3 (3.62)	51.8 (3.90)	45.9 (2.25)	46.4 (2.01)	54.8 (2.18)
Mean income (\$)	347.64 (19.10)	306.64 (18.10)	356.29 (13.32)	334.09 (11.55)	279.71 (11.60)

Note that 1.7% of males with a disability and 1.9% of females with a disability do not fall into any of the above categories because age of onset was not determined. Standard errors in parentheses.

4.4. Employed persons with disabilities

In this section, the focus switches to employed disabled persons, with comparisons drawn first with non-employed disabled persons, and second with employed non-disabled persons. Comparisons with the non-employed disabled can be interpreted as comparisons of the characteristics of those disabled persons who are “successfully” operating in the labour market, in the sense of holding employment, with the characteristics of those who are not. For example, this may generate insights into the factors associated with success in the labour market for the disabled. Comparisons with the employed non-disabled provide important additional information on the employment outcomes of the disabled, including the industry and occupation composition

of employment of the disabled vis-à-vis the non-disabled.

Turning first to comparisons with the non-employed disabled, Table 4.8 shows significant differences in the composition of disability exist, not only in terms of severity of core activity restriction, but also type of impairment and age of onset. The employed are more likely to have sensory or mobility type impairments, less likely to have multiple impairments, and less likely to have had disability onset occur after age 45.

The employed also differ significantly from the non-employed in almost all demographic characteristics compared in Table 4.8. Age, education, region of birth and family type all appear to matter for whether a person with a disability holds a job. The employed are on average younger, more highly educated, less likely to be an immigrant from a non-English speaking country and more likely to be part of a couple with dependent children.

Consistent with the preceding analysis by age and by age of onset (Section 4.3), the much higher rate of old-age onset for the non-employed disabled, and the older average age of the non-employed, suggest there is an important connection between ageing, mature-age disability onset and barriers to employment. There are several possible hypotheses for the nature of this relationship. One hypothesis is that persons who encounter difficulties in the labour market at these ages are more likely to report disability onset at this time as a way of “rationalising” their failure in the labour market (endogeneity of reporting).

An alternative hypothesis is that persons who experience mature-age onset have greater difficulty adapting to the disability, and possibly also lower incentives for doing so, and this manifests as a higher rate of non-employment. Difficulties adapting may be associated simply with age, but may also be connected with the type of person who tends to experience older-age onset. Specifically, low-skill workers tend to do manual work which may be more commonly associated with mature-age onset. Such persons may furthermore not be as employable once disabled as other workers, having limited skills that are themselves more adversely affected by disability. On the incentives side, a similar “type” effect may operate. Mature-age onset may be disproportionately associated with low-skill workers, who have associated with disability a lower opportunity cost (forgone wages) of non-employment/welfare receipt. Note also that those with older-age onset have less time to retirement at the time of onset, which reduces the payoff to investing in new skills (and which applies to *all* older age-at-onset persons).

There is some additional support for this hypothesis provided by the very high rate of non-completion of high school among the non-employed disabled, suggesting they are disproportionately low-skilled. However, the hypothesis is perhaps not so supported by the lower

rate of mobility-only disability among the non-employed.

Table 4.8A Employed persons with disabilities: Characteristics of the employed compared with the non-employed – 1998 – Males aged 15-64 years

	Employed	Non-employed	Difference
Severity (%):			
Profound or severe	13.5 (1.03)	30.7 (1.47)	-17.2 (1.79)
Moderate or mild	48.4 (1.50)	50.0 (1.60)	-1.6 (2.19)
No restriction	38.1 (1.46)	19.3 (1.26)	18.9 (1.93)
Type (%):			
Sensory	19.9 (1.20)	6.0 (0.76)	13.9 (1.42)
Mobility	60.4 (1.47)	51.9 (1.60)	8.4 (2.17)
Mental	6.8 (0.76)	7.5 (0.84)	-0.7 (1.13)
Multiple	13.0 (1.01)	34.6 (1.52)	-21.6 (1.82)
Age of onset (%):			
Infant	11.0 (0.94)	8.5 (0.89)	2.6 (1.30)
Child	7.6 (0.80)	6.8 (0.80)	0.8 (1.13)
Young adult	32.8 (1.41)	25.7 (1.39)	7.2 (1.98)
Prime age adult	32.9 (1.41)	28.6 (1.44)	4.3 (2.02)
Older adult	15.1 (1.08)	30.0 (1.46)	-14.9 (1.82)
Mean age (years)	42.3 (0.36)	46.8 (0.44)	-4.5 (0.57)
Educational attainment (%):			
Bachelor's degree or higher	12.6 (1.00)	3.9 (0.62)	8.7 (1.18)
Other post-school	45.6 (1.50)	33.0 (1.50)	12.5 (2.12)
Comp. High school	9.4 (0.88)	8.4 (0.89)	1.0 (1.25)
Not completed high school	32.4 (1.41)	54.6 (1.59)	-22.2 (2.12)
Foreign-born – ESB (%)	11.6 (0.96)	9.8 (0.95)	1.8 (1.35)
Foreign-born – NESB (%)	12.7 (1.00)	19.9 (1.27)	-7.2 (1.62)
Family type (%):			
Single person, no dependents	25.8 (1.32)	35.6 (1.53)	-9.8 (2.02)
Couple, no dependents	36.4 (1.45)	43.8 (1.58)	-7.4 (2.15)
Single person with dependents	0.9 (0.28)	3.1 (0.55)	-2.2 (0.62)
Couple with dependents	36.8 (1.45)	17.5 (1.21)	19.3 (1.89)

Note: Excludes those residing in cared accommodation. Standard errors in parentheses.

Table 4.8B Employed persons with disabilities: Characteristics of the employed compared with the non-employed – 1998 – Females aged 15-64 years

	Employed	Non-employed	Difference
Severity (%):			
Profound or severe	18.2 (1.33)	31.3 (1.37)	-13.1 (1.90)
Moderate or mild	48.0 (1.72)	49.0 (1.47)	-1.0 (2.26)
No restriction	33.8 (1.63)	19.7 (1.17)	14.1 (2.01)
Type (%):			
Sensory	11.1 (1.08)	5.6 (0.68)	5.5 (1.27)
Mobility	73.4 (1.52)	65.5 (1.40)	8.0 (2.07)
Mental	5.4 (0.78)	6.5 (0.73)	-1.1 (1.07)
Multiple	10.1 (1.04)	22.5 (1.23)	-12.4 (1.61)
Age of onset (%):			
Infant	12.2 (1.13)	7.4 (0.77)	4.8 (1.36)
Child	8.4 (0.96)	8.4 (0.82)	0.0 (1.26)
Young adult	30.1 (1.58)	21.5 (1.21)	8.6 (1.99)
Prime age adult	31.1 (1.59)	30.1 (1.35)	1.0 (2.09)
Older adult	17.7 (1.32)	31.5 (1.37)	-13.7 (1.90)
Mean age (years)	41.5 (0.40)	47.4 (0.37)	-5.8 (0.55)
Educational attainment (%):			
Bachelor's degree or higher	17.0 (1.29)	4.9 (0.63)	12.1 (1.44)
Other post-school	38.9 (1.68)	24.5 (1.27)	14.4 (2.10)
Comp. High school	10.7 (1.06)	10.8 (0.92)	-0.2 (1.40)
Not completed high school	33.4 (1.62)	59.8 (1.44)	-26.4 (2.17)
Foreign-born – ESB (%)	13.4 (1.17)	10.2 (0.89)	3.2 (1.47)
Foreign-born – NESB (%)	11.6 (1.10)	19.6 (1.17)	-8.0 (1.61)
Family type (%):			
Single person, no dependents	28.2 (1.55)	28.8 (1.33)	-0.6 (2.04)
Couple, no dependents	38.5 (1.68)	42.5 (1.46)	-4.0 (2.22)
Single person with dependents	7.7 (0.92)	9.9 (0.88)	-2.2 (1.27)
Couple with dependents	25.6 (1.50)	18.8 (1.15)	6.8 (1.89)

Note: Excludes those residing in cared accommodation. Standard errors in parentheses.

Comparing the employed disabled with the employed non-disabled (Table 4.9) reveals that, even though younger and more educated than their non-employed counterparts, the employed disabled are still on average older and less well educated than the employed non-disabled. As noted in Section 4.3, a lower proportion of the employed disabled are employed full-time, and this has the effect of lowering average hours of work per week by 1.6 hours (for both males and females) compared with other persons.

Table 4.9 also shows that persons with disabilities who are employed are significantly more likely to work in the agriculture, forestry and fishing industries, and significantly less likely to work in the wholesale and retail trade industries, than are other persons. Females with disabilities who are employed are also more likely to work in the health, education and industries, and are more likely to work in the public sector. Interestingly, persons with disabilities are more likely to work as managers and administrators, given they are employed. This may to some extent be because of lower exit from the labour market due to disability for persons in these occupations, reflecting the nature of the work and the higher opportunity cost of exiting the labour market for these individuals. Not consistent with this story is that labourers also make up a significantly higher proportion of workers for persons with disabilities. However, this is potentially explained by the nature of the work itself leading to a higher rate of disability among labourers. Also notable for males is that workers with disabilities are significantly less likely to work in professional occupations. This may, at least partly, be due to the educational requirements of most professions, combined with the lower educational attainment of persons with disabilities.

Table 4.9A Employed persons with disabilities compared with other employed persons – 1998 –
Males aged 15-64 years

	Disabled	Non-disabled	Difference
Mean age (years)	42.3 (0.36)	37.3 (0.13)	5.0 (0.39)
Educational attainment (%):			
Degree or higher	12.6 (1.00)	17.8 (0.43)	-5.2 (1.09)
Other PS	45.6 (1.50)	39.2 (0.55)	6.4 (1.59)
Comp. HS	9.4 (0.88)	16.5 (0.42)	-7.2 (0.97)
Not comp. HS	32.4 (1.41)	26.4 (0.49)	6.0 (1.49)
Employed full-time (%)	81.4 (1.17)	88.5 (0.36)	-7.1 (1.22)
Mean hours worked	43.7 (0.54)	45.3 (0.17)	-1.6 (0.56)
Work at home (%)	8.9 (0.85)	3.8 (0.21)	5.1 (0.88)
Mean income (\$)	690.9 (11.45)	752.9 (4.22)	-61.9 (12.21)
Industry (%):			
Agriculture	7.8 (0.81)	4.6 (0.24)	3.2 (0.84)
Manufacturing	18.6 (1.17)	16.8 (0.42)	1.7 (1.24)
Construction	11.7 (0.97)	11.3 (0.35)	0.4 (1.03)
Trade	16.6 (1.12)	19.6 (0.44)	-3.0 (1.20)
Transport	8.3 (0.83)	8.4 (0.31)	-0.2 (0.88)
Finance	13.0 (1.01)	14.3 (0.39)	-1.3 (1.08)
Government	4.8 (0.65)	4.9 (0.24)	0.0 (0.69)
Community services	7.8 (0.80)	7.6 (0.30)	0.1 (0.86)
Other services	8.4 (0.83)	9.6 (0.33)	-1.2 (0.90)
Other industries	3.0 (0.52)	2.7 (0.18)	-0.3 (0.55)
Public sector (%)	15.7 (1.09)	15.5 (0.40)	0.2 (1.17)
Occupation (%):			
Manager	11.8 (0.97)	9.6 (0.33)	2.2 (1.02)
Professional	13.6 (1.03)	16.8 (0.42)	-3.2 (1.11)
Associate professional	10.5 (0.92)	11.8 (0.36)	-1.3 (0.99)
Tradesperson	21.8 (1.24)	22.6 (0.47)	-0.8 (1.33)
Adv. clerical, service	9.5 (0.88)	9.5 (0.33)	0.0 (0.94)
Production, transport	14.1 (1.05)	14.4 (0.39)	-0.2 (1.12)
Elem. clerical, service	5.7 (0.70)	5.6 (0.26)	0.1 (0.74)
Labourer	13.0 (1.01)	9.6 (0.26)	3.4 (1.06)

Note: Excludes those residing in cared accommodation. Standard errors in parentheses.

Table 4.9B Employed persons with disabilities compared with other employed persons – 1998 –
Females aged 15-64 years

	Disabled	Non-disabled	Difference
Mean age (years)	41.5 (0.40)	36.5 (0.14)	5.0 (0.43)
Educational attainment (%):			
Degree or higher	17.0 (1.29)	20.5 (0.50)	-3.5 (1.39)
Other PS	38.9 (1.68)	31.1 (0.57)	7.8 (1.77)
Comp. HS	10.7 (1.06)	19.1 (0.49)	-8.4 (1.17)
Not comp. HS	33.4 (1.62)	29.4 (0.56)	4.1 (1.72)
Employed full-time (%)	46.3 (1.72)	54.2 (0.62)	-8.0 (1.82)
Mean hours worked	30.2 (0.57)	31.8 (0.19)	-1.6 (0.60)
Work at home (%)	12.0 (1.12)	8.3 (0.34)	3.7 (1.17)
Mean income (\$)	507.3 (10.51)	543.7 (4.05)	-36.5 (11.26)
Industry (%):			
Agriculture	5.1 (0.76)	2.9 (0.21)	2.2 (0.79)
Manufacturing	7.8 (0.92)	8.5 (0.34)	-0.7 (0.98)
Construction	2.3 (0.52)	2.4 (0.19)	-0.1 (0.55)
Trade	14.4 (1.21)	20.2 (0.50)	-5.8 (1.31)
Transport	3.7 (0.65)	4.1 (0.24)	-0.3 (0.70)
Finance	15.4 (1.24)	15.5 (0.45)	-0.2 (1.32)
Government	4.4 (0.70)	4.3 (0.25)	0.1 (0.75)
Community services	33.3 (1.62)	28.7 (0.56)	4.6 (1.72)
Other services	13.2 (1.17)	13.0 (0.41)	0.3 (1.24)
Other industries	0.33 (0.20)	0.46 (0.08)	-0.1 (0.22)
Public sector (%)	26.1 (1.51)	22.0 (0.51)	4.1 (1.60)
Occupation (%):			
Manager	6.0 (0.81)	4.0 (0.24)	1.9 (0.85)
Professional	21.1 (1.40)	21.3 (0.51)	-0.2 (1.49)
Associate professional	9.3 (1.00)	9.2 (0.36)	0.2 (1.06)
Tradesperson	3.1 (0.60)	3.6 (0.23)	-0.5 (0.64)
Adv. clerical, service	34.9 (1.64)	37.4 (0.60)	-2.5 (1.75)
Production, transport	1.9 (0.47)	2.9 (0.21)	-1.0 (0.51)
Elem. clerical, service	11.3 (1.09)	13.5 (0.42)	-2.2 (1.17)
Labourer	12.4 (1.14)	8.1 (0.34)	4.3 (1.18)

Note: Excludes those residing in cared accommodation. Standard errors in parentheses.

5. Estimating the relationship between disability and labour market outcomes and welfare dependence

In this section, the focus is on applying a regression approach to some of the outcome measures examined descriptively in the preceding section. Specifically, Probit models of the probability of employment and the probability of welfare dependence, and OLS models of the number of weekly hours of work, are estimated. The estimated models include variables for disability status, severity, type, age of onset and timing with respect to educational attainment, as well variables for age, highest educational qualification, country of birth and family type.

Although the regression approach is extremely useful for isolating the impact of disability on outcomes, two issues bear noting. First is that systematic differences between persons with disabilities and persons without disabilities in *unobserved* characteristics, such as motivation and innate ability, may exist. For example, reporting of disability may be correlated with these characteristics if disability is used as an “excuse” by some individuals for non-participation in the labour force or unemployment. A related second issue is that characteristics themselves may depend on disability. For example, we may not want to hold educational attainment constant in examining the effect of disability on the probability of employment, since educational attainment may itself depend on disability, and is a mechanism for transmitting the effects of disability on the employment probability.

5.1. The effect of disability on the probability of employment

Table 5.1 reports Probit estimates of the impact of characteristics on the probability of employment for two alternative specifications, for males and females separately. For both specifications, all variables are dummy variables.

Specification (1A) contains variables for:

- age group (in years): 15-24, 25-34, 35-44, 45-54 and 55-64 (15-24 the omitted dummy);
- educational attainment: bachelor’s degree or higher, other post-school qualification, completed high school and didn’t complete high school (didn’t complete high school omitted);
- country of birth: Australian-born, born in the main English-speaking countries, born in another country (Australian-born omitted);
- family type: single with no dependent children, couple with no dependent children, single with dependent children and couple with dependent children (single with no dependent

children omitted); and

- disability: equal to one if disabled according to the ABS SDAC98 definition.

Rather than report coefficient estimates, Table 5.1 presents, for each independent variable, estimates of the effect on the probability of employment of a discrete change of the variable from 0 to 1, evaluated at mean values of the independent variables.

Specification (1A) shows, controlling for age, educational attainment, region of birth and family type, a strong negative effect of disability on the probability of employment for both males and females. Evaluated at mean values of characteristics, the presence of a disability decreases the probability of employment by 0.29 for males and 0.23 for females. The value of holding constant characteristics other than disability is illustrated by comparison with the descriptive statistics on employment rates. These “raw” data imply disability decreases the probability of employment by 0.33 for males and 0.25 for females (given by the difference in employment rates between persons with disabilities and other persons). Thus, the descriptive statistics overstate the effect of disability on employment rates, because differences in other characteristics, such as age, are partially responsible for the lower employment rates of persons with disabilities.

Specification (1B) adds interactions between the disability dummy and all other variables to assess how the effect of disability depends on individual characteristics. The results show the effect of disability worsens with age, up to around 54 years of age for males and 44 years of age for females. Attainment of a bachelor’s degree or higher reduces the adverse effects of disability, compared with not completing high school, by 0.1, while obtaining other post-school qualifications has a 0.05 relative benefit. Completing high school also reduces the adverse effects by 0.05 for males, but for females does not significantly alter the probability of employment compared with not completing high school. The effect of disability on the probability of employment does not depend (significantly) on country of birth, and for males does not depend on family living arrangements. For females, however, the negative effect of disability is significantly lower for those with dependent children.

Table 5.1: Probit Estimates – Effect of disability on the probability of employment - 1998

	Males		Females	
	(1A)	(1B)	(1A)	(1B)
AGE2534	0.086 (7.63)	0.096 (8.04)	0.036 (2.19)	0.050 (2.93)
AGE3544	0.115 (9.94)	0.127 (10.02)	0.140 (8.42)	0.165 (9.39)
AGE4554	0.100 (8.89)	0.127 (10.02)	0.052 (3.00)	0.078 (4.15)
AGE5564	-0.080 (-5.16)	-0.072 (-4.08)	-0.318 (-15.40)	-0.317 (-13.75)
DEGREE	0.114 (10.17)	0.094 (7.24)	0.272 (19.42)	0.262 (17.11)
OTHP	0.089 (10.03)	0.073 (6.75)	0.171 (14.66)	0.162 (12.37)
CHS	0.035 (3.15)	0.022 (1.79)	0.126 (9.00)	0.128 (8.41)
ESB	-0.002 (-0.17)	-0.005 (-0.35)	0.002 (0.10)	-0.007 (-0.38)
NESB	-0.112 (-9.23)	-0.119 (-8.67)	-0.192 (-13.19)	-0.200 (-12.69)
C_NODEP	0.089 (9.51)	0.097 (8.78)	0.041 (2.91)	0.038 (2.32)
S_DEP	-0.110 (-3.80)	-0.092 (-2.83)	-0.233 (-10.95)	-0.256 (-10.78)
C_DEP	0.098 (10.14)	0.087 (7.86)	-0.141 (-9.51)	-0.167 (-10.16)
DISABLED	-0.292 (-25.29)	-0.217 (-5.77)	-0.226 (-16.03)	-0.173 (-3.21)
DISAB_2534		-0.104 (-2.54)		-0.128 (-2.19)
DISAB_3544		-0.130 (-3.15)		-0.235 (-4.10)
DISAB_4554		-0.215 (-5.05)		-0.196 (-3.54)
DISAB_5564		-0.096 (-2.38)		-0.088 (-1.54)
DISAB_DEGREE		0.107 (4.07)		0.091 (2.05)
DISAB_OTHP		0.054 (2.97)		0.056 (1.90)
DISAB_CHS		0.063 (2.40)		-0.039 (-0.89)
DISAB_ESB		0.005 (0.18)		0.042 (1.05)
DISAB_NESB		0.027 (1.14)		0.059 (1.56)
DISAB_C_NODEP		-0.033 (-1.36)		0.013 (0.38)
DISAB_S_DEP		-0.104 (-1.42)		0.097 (1.98)
DISAB_C_DEP		0.040 (1.81)		0.146 (4.05)
Number of obs.	11401	11401	11779	11779
Wald Chi ²	1505.2	1581.6	1593.0	1656.4
Pseudo R ²	0.174	0.181	0.136	0.140

Note: The reported statistic is the effect on the probability of employment of a discrete change of the dummy variable from 0 to 1. z statistics in parentheses are for the test that the underlying coefficient is zero. See Appendix D for a description of the variables.

Note that these effects may partially reflect variation in the severity and type composition of disability across individuals with different characteristics. For example, it may be that disabled females without dependent children tend to be more severely disabled than females with

dependent children. In Table 5.2, the dependence of the employment effects of disability on the severity, type and age of onset of the disability is explored. Probit estimates for three specifications are presented, for males and females separately. Specifications (2A) and (2B) contain the same variables for age, education, country of birth and family type as specification 1A in Table 5.1, adding to the disability dummy variable additional dummy variables for the extent and nature of the disability. Specification (2A) has the following disability variables¹⁷:

- severity of core activity restriction(s): profound or severe, moderate or mild and no restriction (no restriction omitted);
- type of impairment: sensory, mobility, mental, multiple (sensory omitted);
- age of onset of disability (years): 0-4, 5-14, 15-29, 30-44, 45-64 (0-4 omitted)

Sensory disabilities that cause no core activity restriction and onset before the age of 30 are not associated with any disadvantage in the labour market as measured by the probability of employment, reflected in the insignificant estimates for the disabled dummy variable and for the 5-14 and 15-29 age of onset dummies. As might be expected, the more severe the disability, the lower the probability of employment, and the presence of multiple types of impairments has a large negative effect on employment prospects. However, both mobility and mental impairment types are also associated with significantly lower probabilities of employment.

The potential for persons disabled earlier in life to be better positioned to make career (and other) choices that improve their employability *given the constraints imposed by the disability*, was noted in Section 4. A competing story is that disadvantage is a cumulative function of time disabled – those disabled at a younger age have had available pathways adversely affected from a younger age. The inclusion of age of onset variables in Specification (2A) sheds some light on the relative merits of these hypotheses, with the coefficient estimates tending to support the former hypothesis over the latter. That is, older-age onset (after the age of 44 years) is associated with a significantly lower probability of employment, an effect which is especially pronounced for females.¹⁸

¹⁷ A dummy variable equal to one if a person has an employment restriction could potentially have been included. It was decided not to use such a variable, because it is very closely related to the outcome variable (employment), and does not provide much meaningful information on the nature of the disability.

¹⁸ The potential for systematic differences by age of disability onset in other unobserved characteristics, the effects of which are incorrectly being attributed to age of onset, should of course be noted.

Table 5.2 Probit Estimates: Effect of severity, type and age of onset of disability on the probability of employment – 1998

	Males			Females		
	(2A)	(2B)	(2C)	(2A)	(2B)	(2C)
DISABLED	0.010 (0.37)	-0.017 (-0.60)	0.001 (0.05)	0.030 (0.63)	0.028 (0.55)	0.026 (0.58)
DISAB_SEV1	-0.224 (-7.35)	-0.216 (-7.00)	-0.219 (-7.09)	-0.197 (-5.21)	-0.197 (-5.17)	-0.211 (-5.80)
DISAB_SEV2	-0.066 (-3.15)	-0.058 (-2.76)	-0.075 (-3.48)	-0.068 (-2.22)	-0.067 (-2.19)	-0.091 (-3.03)
DISAB_MOBILITY	-0.181 (-5.67)	-0.180 (-5.62)	-0.178 (-5.43)	-0.097 (-1.98)	-0.097 (-1.95)	-0.075 (-1.59)
DISAB_MENTAL	-0.261 (-5.10)	-0.259 (-4.95)	-0.284 (-5.32)	-0.223 (-3.15)	-0.222 (-3.13)	-0.241 (-3.51)
DISAB_MULTIPLE	-0.396 (-9.41)	-0.397 (-9.37)	-0.431 (-9.96)	-0.331 (-5.64)	-0.331 (-5.59)	-0.295 (-5.17)
DISAB_CHILD	0.005 (0.20)	-0.009 (-0.38)	0.002 (0.07)	-0.085 (-2.96)	-0.084 (-2.82)	-0.089 (-3.13)
DISAB_Y_ADULT	0.000 (0.00)	-0.003 (-0.21)	-0.003 (-0.17)	-0.035 (-1.87)	-0.036 (-1.92)	-0.034 (-1.84)
DISAB_P_ADULT	-0.025 (-1.64)	-0.014 (-0.88)	-0.029 (-1.82)	-0.070 (-3.62)	-0.070 (-3.50)	-0.061 (-3.30)
DISAB_O_ADULT	-0.039 (-2.35)	-0.027 (-1.57)	-0.042 (-2.48)	-0.102 (-4.58)	-0.102 (-4.47)	-0.093 (-4.28)
ED_AFT_DISAB		0.013 (0.41)			-0.002 (-0.04)	
DEG_AFT_DISAB		0.118 (2.78)			0.051 (0.71)	
OTHPA_AFT_DISAB		0.067 (2.04)			0.005 (0.10)	
CHS_AFT_DISAB		0.047 (0.93)			-0.025 (-0.33)	
Number of obs.	11401	11401	11401	11779	11779	11779
Wald Chi ²	1603.4	1630.0	1392.7	1666.2	1669.8	1053.5
Pseudo R ²	0.196	0.198	0.1639	0.146	0.146	0.085

Note: The reported statistic is the effect on the probability of employment of a discrete change of the dummy variable from 0 to 1. z statistics in parentheses are for the test that the underlying coefficient is zero. See Appendix E for estimates for the other regressors and Appendix D for a description of the variables.

Specification (2B) adds to specification (2A) a dummy variable equal to one if the highest qualification was obtained after the onset of the disability, as well as interactions of this variable with the three education dummies. These dummies tell us whether it matters for outcomes whether education was completed before or after disability onset, and whether it differs by *level* of attainment. A priori, we might expect those who acquired their disability before finishing education to do better, since the decision to complete education was made on the basis that it was beneficial, given the existence of the disability. Some of those who acquired a disability after obtaining the education, by contrast, may not have chosen or been able to complete the education if the disability had existed earlier. For males, the estimated coefficients do indeed imply that, for those who completed some form of post-school qualification, those who acquired the disability before completing their education do better than those who acquired the disability after completing their education. This is indicated by the positive coefficients on the interactions of the ‘degree’ and ‘other post school’ variables with the dummy variable for timing of onset with respect to educational attainment. Females also have positive estimated effects of completing post-school qualifications after disability onset, but the coefficient estimates are not significantly different from zero at the 5% level.

Specification (2C) provides a test of robustness. It contains the same variables for the type and severity of the disability as specification (2A), but omits variables for educational attainment and family type, on the basis that these are likely to be endogenous with respect to disability. That is, the presence of a disability may affect the educational attainment and living arrangements of a person, and these factors may then in turn affect the probability of employment. For example, a person with a disability may be less likely to complete higher education because of the restrictions imposed by the disability.¹⁹ Coefficient estimates are, however, quite similar to those obtained in the richer specifications, suggesting this is not an important issue.²⁰

5.2. The effect of disability on the probability of welfare dependence

As indicated by the results in Section 4, welfare dependence is, to a significant extent, the counterpart to employment, and the Probit estimates for the most part bear this out. However,

¹⁹ There is, however, also the possibility of disability being endogenous with respect to the other regressors. For example, obtaining less education may render a person more likely to become disabled because of the type of jobs that person is able to obtain.

²⁰ Other, richer specifications were also estimated, in particular fully interacting the disability variables with the variables for other characteristics. However, because of limited sample sizes, coefficient estimates were very imprecise.

differences can arise, because non-employment doesn't necessarily imply welfare dependence, and welfare dependence doesn't necessarily imply non-employment. For example, a non-employed person with a disability might have a partner to provide support, might receive worker's compensation for a work-related injury or might live off superannuation or other assets. Similarly, a welfare dependent person with a disability may still work on a part-time basis, or even on a full-time basis if he or she is a permanently blind DSP recipient.

Tables 5.3 and 5.4 present results for the same set of specifications as presented in Tables 5.1 and 5.2, but replacing the dependent variable with the dummy variable "principal source of income is welfare payments". For specification (3A) in Table 5.3, for both males and females, the disability coefficient estimate is indeed the mirror image of the corresponding estimate in the employment equation (1A). Evaluated at mean values of characteristics, disability increases the probability of welfare dependence by 0.28 for males and 0.24 for females, compared with its effect of decreasing the probability of employment by 0.29 for males and 0.23 for females.

However, some differences do arise in specification (3B) compared with specification (1B), when the effect of disability on the probability of welfare dependence is allowed to depend on characteristics. In particular, a finding for employment probability was that the (negative) effect of disability was significantly less pronounced for the youngest age group (15-24 years) than other age groups. By contrast, the effect of disability on the probability of welfare dependence is not significantly different for the 15-24, 25-34 and 35-44 years age groups. That is, disability among young persons appears to have more adverse consequences for welfare dependence than it does for employment. Reasons for this are not readily apparent, but are possibly connected to the (negative) implications of disability for enrolment in education courses. The effect of disability on welfare dependence also appears to be *less* pronounced than the employment effect for females aged 55-64. This may reflect a higher proportion of such women having partner income rendering them ineligible for welfare payments than is the case for women in other age groups.

In Table 5.4, where the effect of the type, severity and age of onset of the disability on welfare dependence is examined, results are very similar to (the opposite of) the results for employment. One exception is that mature-age disability onset does not have the significant negative effects on male welfare dependence that it does on male employment. In both specifications (4A) and (4C), mature-age onset acts to decrease the male probability of employment by 0.04, but has no (statistically significant) effect on the male probability of welfare dependence.

Table 5.3 Probit Estimates: Effect of disability on the probability of welfare dependence – 1998

	Males		Females	
	(3A)	(3B)	(3A)	(3B)
AGE2534	-0.029 (-2.64)	-0.031 (-2.63)	0.035 (2.23)	0.021 (1.27)
AGE3544	-0.042 (-3.79)	-0.052 (-4.21)	-0.081 (-5.29)	-0.093 (-5.69)
AGE4554	-0.044 (-4.07)	-0.070 (-5.63)	-0.083 (-5.24)	-0.110 (-6.29)
AGE5564	0.050 (3.61)	0.029 (1.78)	0.231 (11.28)	0.251 (10.74)
DEGREE	-0.113 (-11.92)	-0.096 (-8.76)	-0.257 (-21.09)	-0.249 (-18.49)
OTHP	-0.076 (-10.38)	-0.064 (-6.93)	-0.152 (-14.82)	-0.140 (-12.00)
CHS	-0.063 (-6.88)	-0.058 (-5.38)	-0.134 (-11.05)	-0.135 (-10.11)
ESB	-0.003 (-0.31)	0.000 (0.03)	-0.003 (-0.19)	0.002 (0.11)
NESB	0.060 (5.76)	0.065 (5.34)	0.092 (6.89)	0.093 (6.35)
C_NODEP	-0.091 (-11.47)	-0.092 (-9.30)	-0.145 (-11.56)	-0.143 (-9.48)
S_DEP	0.150 (5.72)	0.153 (5.16)	0.314 (15.11)	0.347 (14.88)
C_DEP	-0.089 (-10.85)	-0.070 (-7.27)	0.115 (8.58)	0.151 (9.87)
DISABLED	0.282 (27.65)	0.293 (8.21)	0.240 (17.96)	0.275 (5.35)
DISAB_2534		0.006 (0.21)		0.091 (1.71)
DISAB_3544		0.061 (1.84)		0.091 (1.76)
DISAB_4554		0.139 (3.81)		0.141 (2.71)
DISAB_5564		0.085 (2.39)		-0.024 (-0.51)
DISAB_DEGREE		-0.100 (-4.80)		-0.069 (-1.69)
DISAB_OTHP		-0.043 (-2.83)		-0.058 (-2.35)
DISAB_CHS		-0.029 (-1.19)		0.036 (0.93)
DISAB_ESB		-0.005 (-0.22)		-0.019 (-0.56)
DISAB_NESB		-0.018 (-0.89)		-0.015 (-0.47)
DISAB_C_NODEP		-0.003 (-0.17)		-0.009 (-0.29)
DISAB_S_DEP		0.018 (0.33)		-0.103 (-2.51)
DISAB_C_DEP		-0.068 (-4.20)		-0.157 (-5.69)
Number of obs.	11757	11757	12081	12081
Wald Chi ²	1398.5	1511.6	1675.9	1719.92
Pseudo R ²	0.181	0.189	0.161	0.167

Note: The reported statistic is the effect on the probability of welfare dependence of a discrete change of the dummy variable from 0 to 1. z statistics in parentheses are for the test that the underlying coefficient is zero. See Appendix D for a description of the variables.

Table 5.4 Probit Estimates: Effect of severity, type and age of onset of disability on the probability of welfare dependence – 1998

	Males			Females		
	(4A)	(4B)	(4C)	(4A)	(4B)	(4C)
DISABLED	0.003 (0.13)	0.007 (0.27)	0.015 (0.58)	-0.015 (-0.36)	-0.027 (-0.61)	-0.006 (-0.14)
DISAB_SEV1	0.203 (7.75)	0.193 (7.24)	0.202 (7.49)	0.182 (5.15)	0.181 (5.09)	0.189 (5.63)
DISAB_SEV2	0.062 (3.56)	0.058 (3.25)	0.071 (3.81)	0.072 (2.57)	0.072 (2.56)	0.099 (3.60)
DISAB_MOBILITY	0.158 (5.58)	0.166 (5.73)	0.159 (5.38)	0.078 (1.78)	0.085 (1.89)	0.053 (1.25)
DISAB_MENTAL	0.280 (5.78)	0.259 (5.30)	0.317 (6.27)	0.251 (3.63)	0.242 (3.47)	0.262 (3.93)
DISAB_MULTIPLE	0.401 (10.26)	0.407 (10.27)	0.443 (10.88)	0.335 (5.91)	0.334 (5.80)	0.296 (5.53)
DISAB_CHILD	-0.019 (-1.02)	-0.025 (-1.20)	-0.017 (-0.86)	0.113 (4.10)	0.101 (3.51)	0.113 (4.17)
DISAB_Y_ADULT	-0.014 (-1.07)	-0.005 (-0.41)	-0.012 (-0.86)	0.051 (2.85)	0.055 (3.09)	0.051 (2.97)
DISAB_P_ADULT	0.001 (0.09)	0.002 (0.11)	0.004 (0.29)	0.057 (3.20)	0.063 (3.40)	0.051 (2.97)
DISAB_O_ADULT	0.015 (1.05)	0.013 (0.90)	0.014 (0.96)	0.108 (5.17)	0.113 (5.26)	0.094 (4.68)
ED_AFT_DISAB		0.056 (2.00)			0.073 (1.80)	
DEG_AFT_DISAB		-0.122 (-4.26)			-0.079 (-1.21)	
OTHPA_AFT_DISAB		-0.077 (-3.45)			-0.088 (-2.03)	
CHS_AFT_DISAB		-0.021 (-0.50)			-0.013 (-0.20)	
Number of obs.	11757	11757	11757	12081	12081	12081
Wald Chi ²	1571.6	1604.0	1297.9	1757.6	1765.9	772.7
Pseudo R ²	0.209	0.213	0.160	0.174	0.174	0.065

Note: The reported statistic is the effect on the probability of welfare dependence of a discrete change of the dummy variable from 0 to 1. z statistics in parentheses are for the test that the underlying coefficient is zero. See Appendix E for estimates for the other regressors and Appendix D for a description of the variables.

A further difference between the results for employment and the results for welfare dependence arises in Specification (4C). In both the male and female welfare dependence equations, negative effects of disability onset before completing education arise for those with no post-school qualifications, where no such effects are found in the employment equations. That is, the coefficient on the dummy variable for completing education after onset is significantly greater than zero (although only at the 10% level for females), and the coefficient on the interaction of this variable with the completed high school dummy is not significantly different from zero.

5.3. The effect of disability on hours worked by employed persons

In Table 4.9, it was found for both males and females that employed persons with a disability worked 1.6 hours less than other employed persons, primarily due to a higher incidence of part-time employment. The question that follows is whether this is due to other differences in characteristics between disabled persons and other persons, or the disability itself. Indeed, also at issue is whether other characteristics are acting to reduce the disparity, so that the effect of disability is larger than 1.6 hours. Rather than explore this issue in detail, results are presented in Table 5.5 for only a single specification, which does not examine the many various potential interactions between disability and other characteristics, nor variations in effects by severity, type and age of onset.²¹

The determinants of hours worked for males and females are very different, reflecting the much higher incidence of part-time work among females.²² Nonetheless, the effect of disability on weekly hours of work is almost identical, with the presence of disability acting to decrease hours of work by 2.2 hours for males and 2 hours for females. Thus, controlling for industry, sector, occupation, age, education, country of birth and family type, disability acts to decrease weekly hours worked by 0.6 hours *more* than is apparent from the actual difference in average hours worked between disabled and non-disabled workers.

²¹ Specifications were in fact estimated which incorporated various interactions, but none was statistically significant, to some extent reflecting the sample size limitations. Note that the models do not estimate the impact of disability on hours of work of *all* persons, since only employed persons are included in the sample.

²² A dummy variable for part-time work could have been included, but this is, in part, what the model is trying to *explain*.

Table 5.5 OLS estimates of the determinants of hours of work of employed persons aged 15-64 years.

	Males	Females
MANUF	-6.434 (-6.32)	9.049 (6.21)
CONSTR	-3.832 (-3.54)	1.016 (0.54)
TRADE	-5.967 (-5.76)	7.636 (5.31)
TRANS	-2.860 (-2.49)	6.632 (4.18)
FINANCE	-7.856 (-7.28)	6.175 (4.36)
GOVT	-6.387 (-5.25)	5.812 (3.74)
COMSERV	-9.365 (-7.62)	2.726 (1.94)
OTHSERV	-8.808 (-7.71)	4.065 (2.80)
OTHIND	-3.750 (-2.96)	7.810 (3.87)
PUBLIC	-3.824 (-6.87)	1.926 (3.79)
MANAGER	13.989 (17.83)	14.481 (11.68)
PROF	8.353 (10.97)	6.084 (7.22)
PARAPROF	11.510 (15.27)	10.461 (11.31)
TRADEPSN	5.514 (8.75)	5.994 (4.78)
ADCLERK	4.323 (5.80)	2.119 (3.08)
PRODTRAN	4.964 (7.28)	2.056 (1.64)
ELCLERK	-1.675 (-1.74)	-4.952 (-5.92)
AGE2534	6.409 (12.12)	2.282 (4.28)
AGE3544	8.038 (14.29)	2.211 (3.70)
AGE4554	8.356 (14.38)	2.017 (3.29)
AGE5564	4.305 (5.65)	-5.623 (-6.37)
DEGREE	1.027 (1.60)	3.103 (4.59)
OTHPS	-0.352 (-0.82)	0.385 (0.79)
CHS	-2.846 (-5.24)	-1.034 (-1.87)
ESB	-0.915 (-1.78)	0.181 (0.32)
NESB	-2.420 (-5.10)	0.974 (1.70)
C_NODEP	2.206 (5.04)	-0.464 (-0.99)
S_DEP	-1.278 (-0.89)	-5.378 (-6.45)
C_DEP	2.708 (6.35)	-7.870 (-15.75)
CONSTANT	38.531 (33.45)	24.484 (16.36)
DISABLED	-2.153 (-3.69)	-2.018 (-3.39)
Number of obs.	9120	7405
R ²	0.181	0.181

The dependent variable is number of hours worked per week in all jobs. Industry, occupation and sector dummies are for main job. t-statistics are reported in parentheses. See Appendix D for a description of the variables.

6. Trends over time

In this section attention turns to movements over time in the relationship between disability and labour market and welfare receipt outcomes. The capacity to undertake such analysis is, however, severely constrained by the available data. The SDAC93 is in fact the only survey for which unit record data comparable to that contained in the SDAC98 CURF is available. This constrains us to study of changes over a very limited time frame of 5 years. Furthermore, even with this data source, there are a number of issues of comparability with the 1998 CURF. As a consequence, the analysis of trends from these two surveys is more limited than the analysis undertaken for 1998 only, and is only of a descriptive nature. However, data on receipt of Disability Support Pensions are also used as a way of investigating trends in welfare receipt of persons with disabilities over the last twenty years.

6.1. Issues in comparisons of 1993 with 1998

The most important issue for comparability of the 1993 and 1998 surveys concerns the identification of disability. Both the 1993 and 1998 surveys identify persons as possessing a disability based on a set of “screening” questions – 17 questions in 1998 (itemised in Section 3), and 15 questions in 1993. Comparing the criteria applied for the two surveys shows that in 1998 the ABS added two additional disability criteria, modified three of the existing criteria and changed the wording for six other existing criteria (see Appendix F for details).

Given the data items available in each survey, most of the steps that can be taken to achieve greater consistency in the definition of disability involve adjustments to the 1998 survey. This requires both the elimination from the disabled population in the 1998 survey those who would not have been treated as having a disability in the 1993 survey, and the addition of those who are not treated as having a disability in 1998, but would have been treated as having a disability in 1993. Thus, the definition of disability to be adopted for the purposes of comparing 1993 with 1998 is that employed by the ABS for the 1993 survey. However, there is some ambiguity concerning the appropriate treatment of “unspecified” impairments. Some impairments would be treated as unspecified in 1993 but as one of the additional specific impairments in 1998. Consequently, excluding those having only “unspecified” impairments may produce a better match across the surveys, albeit one that excludes many persons who would be regarded as having a disability in both surveys. Given this issue, sensitivity tests are conducted applying the 1993 definition of disability, but excluding those with unspecified impairments.²³

²³ Hereafter, the definition of disability that includes unspecified impairments is referred to as the “inclusive match”,

Similar to defining disability, issues also arise over comparability of classifications of disability for the 1993 and 1998 surveys, details of which are contained in Appendix F. For most of the other variables used for the analysis of 1998, comparable variables can be derived from the 1993 CURF, including variables for age, educational attainment, region of birth, family type, labour force status, welfare dependence and hours worked.²⁴

6.2. Results

Incidence and composition of disability

Table 6.1 reports the incidence of disability among persons aged 15-64 years in 1993 and 1998 for alternative definitions of disability. Irrespective of the definition adopted (including focusing on those with specific restrictions or schooling/employment restrictions), the incidence of disability is significantly higher in 1998. This implies other sources than simply a different definition of disability are behind the increase. However, the increase seems implausibly large over such a short time frame for it to correspond to the actual increase in disability.

Possible reasons for *actual* increases in the incidence of disability include population ageing, lifestyle changes and improved medical technology reducing mortality due to certain health conditions, none of which could have changed so dramatically in 5 years. Other reasons for increases in *reported* disability include increases in awareness of disability, changes to community notions of disability, attitudinal changes to reporting and survey instrument changes, the last of which is probably the most significant in this case. Thus, despite attempts to match the two surveys, concerns over comparability remain. Correspondingly, caution is required in interpreting comparisons between the two surveys.²⁵

Interestingly, the 1993 definition (inclusive match) implies a higher incidence of disability in 1998 than is implied by the 1998 definition. This is primarily because of the treatment of hearing

while the definition of disability that excludes these impairments is referred to as the “narrow match”.

²⁴ An exception is the income variable. The 1993 survey CURF does contain information on personal weekly income, but it is only reported in categories of width \$100 and is top-coded at \$800.

²⁵ Davis et al (2001) estimate that 60 percent of the increase in reported *profound or severe* disability in the population is due to changes to survey methods, 15 percent is due to changes in the age structure of the population, and the remaining 25 percent is due to increased awareness of disability, increased preparedness to report disability and actual increases in profound and severe disabilities. In Table F3 in Appendix F, the role played by changes to the age distribution in changes to *all* disability is examined. It shows that, adopting a common definition of disability in both years (the 1993 definition), changes to the age structure account for 20 percent of the increase in reported disability.

loss, with any hearing loss treated as a disability in 1993, whereas in 1998 it was required to be a *restricting* impairment. The 1993 definition does, however, imply a lower incidence of schooling or employment restrictions in 1998 than does the 1998 definition, reflecting the impact of treating as possessing a disability, under the 1998 definition, those with only chronic pain or shortness of breath.²⁶

Table 6.1 Incidence of disability – Persons aged 15-64 years (%)

	1993	1998
1993 definition, inclusive match		
All with a disability	15.5 (0.22)	18.3 (0.25)
Specific restriction	11.3 (0.19)	13.7 (0.22)
School/emp. restriction	8.8 (0.17)	11.5 (0.21)
1993 definition, narrow match		
All with a disability	13.2 (0.20)	17.0 (0.24)
Specific restriction	9.7 (0.18)	12.7 (0.22)
School/emp. restriction	7.6 (0.16)	10.6 (0.20)
1998 definition		
All with a disability		17.3 (0.24)
Specific restriction		14.9 (0.23)
School/emp. restriction		12.4 (0.21)

Note: The narrow match excludes from the disabled population persons with only “other” or “unspecified” impairments, while the inclusive match includes them. Standard errors in parentheses.

From Table 6.1 it appears that, when adopting the 1993 definition of disability, differences between the 1993 and 1998 surveys in disability incidence are not greater for the inclusive match than for the narrow match. Table F3.1 in Appendix F, which presents the severity composition for the alternative definitions (at the detailed level of five severity levels), also shows that the differences in the severity composition are not greater for the inclusive match.²⁷ The remaining

²⁶ Note that a person can have a schooling or employment restriction only if that person also has a disability as dictated by the definition adopted.

²⁷ Tables presented in Appendix F explore the comparability of the 1993 and 1998 surveys in some detail by examining the composition of disability for alternative definitions of disability in each survey. As mentioned, Table F3.1 presents the severity composition of disability, while Table F3.2 presents the impairment type composition at the detailed level (from 13 to 17 types, depending on the definition). Table F3.3 examines the role played by changes to the age structure in producing changes in the incidence and composition of disability. See Appendix F for further discussion.

results presented in this section therefore focus on the inclusive match in preference to the narrow match, on the basis that the narrow definition excludes many persons with disabilities.

Table 6.2 reports the incidence of disability by gender, and by age and gender, for 1993 and 1998 (in 1998 using both the ABS 1993 definition (inclusive match) and the ABS 1998 definition). Disability has increased among both males and females, and in all age groups. The increase appears to be greater for males than females (3 percentage points versus 2.6 percentage points). Adopting the 1993 definition, growth in the numbers with disabilities has been greatest for 55-64 year olds. Notable, however, is that the 1993 definition leads to lower reported disability in 1998 among persons aged 15-24 years, but higher reported disability among all other age groups. Most striking is that disability among males aged 55-64 years is 4.6 percentage points lower adopting the 1998 definition compared with the 1993 definition.

Table 6.2 Incidence of disability by gender and age (%)

	All with a disability			Schooling/employment restriction		
	1993	1998 ¹	1998 ²	1993	1998 ¹	1998 ²
Males						
15-64	16.4 (0.32)	19.4 (0.36)	17.9 (0.35)	9.5 (0.25)	12.3 (0.30)	13.0 (0.31)
15-24	7.5 (0.51)	9.5 (0.68)	9.9 (0.69)	3.9 (0.37)	5.5 (0.53)	6.3 (0.57)
25-34	10.0 (0.53)	11.8 (0.62)	11.5 (0.61)	5.4 (0.40)	7.4 (0.50)	8.1 (0.52)
35-44	14.2 (0.61)	17.3 (0.70)	15.7 (0.68)	8.0 (0.47)	10.7 (0.57)	11.6 (0.59)
45-54	22.0 (0.82)	24.4 (0.85)	22.2 (0.82)	12.4 (0.65)	16.2 (0.73)	17.0 (0.74)
55-64	37.7 (1.10)	41.3 (1.19)	36.7 (1.16)	24.6 (0.98)	26.5 (1.07)	27.0 (1.07)
Females						
15-64	14.5 (0.30)	17.1 (0.34)	16.7 (0.34)	8.1 (0.23)	10.8 (0.28)	11.7 (0.29)
15-24	7.8 (0.53)	7.7 (0.61)	8.2 (0.63)	4.0 (0.39)	4.2 (0.46)	4.9 (0.49)
25-34	9.7 (0.51)	10.7 (0.58)	9.9 (0.56)	4.6 (0.36)	6.7 (0.47)	7.1 (0.48)
35-44	13.2 (0.58)	15.4 (0.66)	14.6 (0.64)	7.1 (0.44)	10.1 (0.55)	11.1 (0.57)
45-54	19.2 (0.78)	23.1 (0.83)	22.9 (0.83)	12.6 (0.66)	15.2 (0.71)	16.6 (0.73)
55-64	29.3 (1.06)	34.6 (1.14)	33.8 (1.14)	16.3 (0.86)	20.7 (0.97)	21.8 (0.99)

Notes: ¹ 1993 definition of disability, inclusive match

² 1998 definition of disability

Standard errors in parentheses.

The incidence of schooling and employment restrictions is also reported in Table 6.2, and, in terms of changes between 1993 and 1998, shows a similar pattern for males and females in aggregate when the 1993 definition is used. However, in contrast to the results for disability in

general, the incidence of schooling or employment restrictions increases, for all age groups, in moving from the 1993 definition of disability to the 1998 definition (and by similar percentage point amounts).

Table 6.3 presents the proportion of the *population* with each level of core activity restriction and each impairment type. Reporting the proportion of the population makes clearer the changes in the reporting of disability than does focusing on the proportion of the *disabled* population, since the latter population is significantly larger in 1998 than in 1993. The incidence of all levels of core activity restriction increases between 1993 and 1998. The greatest proportionate increase has been in the incidence of profound or severe disability, with the proportion of the population reporting such disability (as defined in 1993) increasing by 50 percent for both males and females. A consequence of this is that profound or severe disability rises from 15 to 20 percent of all disability for males, and from 20 to 25 percent of all disability for females. In terms of impairment type, the incidence in the population of all impairment types also increases between 1993 and 1998.

Table 6.3 Composition of disability 1993 & 1998 – Persons aged 15-64 years – 1993 definition (inclusive match): Proportion of the *population* (%)

	Males		Females	
	1993	1998	1993	1998
Severity:				
Profound or severe	2.50 (0.133)	3.82 (0.177)	2.86 (0.142)	4.21 (0.183)
Moderate or mild	6.83 (0.215)	8.18 (0.253)	6.45 (0.209)	7.07 (0.233)
No core activity restriction	7.04 (0.219)	7.35 (0.241)	5.21 (0.189)	5.87 (0.214)
Type:				
Sensory	4.03 (0.168)	4.86 (0.198)	2.15 (0.124)	2.49 (0.142)
Mobility	7.20 (0.221)	8.06 (0.251)	7.98 (0.231)	8.83 (0.258)
Mental	1.20 (0.093)	1.64 (0.117)	1.78 (0.113)	2.20 (0.133)
Multiple	3.94 (0.166)	4.79 (0.197)	2.61 (0.136)	3.63 (0.170)

Note: Standard errors in parentheses.

Characteristics and outcomes of persons with disabilities

Focusing on the 1993 (inclusive match) definition of disability, Table 6.4 compares characteristics of persons with disabilities with other persons in both 1993 and 1998.

Table 6.4 Demographic characteristics of disabled persons aged 15-64 years – 1993 and 1998

	1993		1998	
	Disabled*	Non-disabled	Disabled*	Non-disabled
Males				
Mean age (years)	44.9 (0.26)	36.2 (0.12)	45.0 (0.25)	36.9 (0.13)
Educational attainment (%):				
Bachelor's degree or higher	7.2 (0.50)	13.7 (0.33)	8.7 (0.55)	16.8 (0.39)
Other post-school	41.5 (0.96)	39.3 (0.46)	39.2 (0.96)	37.7 (0.51)
Comp. High school	4.7 (0.41)	9.2 (0.27)	8.8 (0.56)	18.0 (0.40)
Not completed high school	46.6 (0.97)	37.8 (0.46)	43.2 (0.97)	27.5 (0.47)
Foreign-born – ESB (%)	10.9 (0.61)	11.2 (0.30)	10.7 (0.61)	10.8 (0.32)
Foreign-born – NESB (%)	13.3 (0.66)	14.9 (0.34)	15.7 (0.71)	16.0 (0.38)
Family type (%):				
Single person, no dependents	25.0 (0.84)	20.3 (0.38)	30.8 (0.90)	25.3 (0.45)
Couple, no dependents	40.8 (0.96)	31.7 (0.44)	39.9 (0.96)	32.8 (0.49)
Single person with dependents	1.8 (0.26)	2.6 (0.15)	1.9 (0.27)	1.9 (0.14)
Couple with dependents	30.9 (0.90)	45.3 (0.47)	26.3 (0.86)	40.0 (0.51)
Cared accommodation	1.5 (0.24)	0.0 (0.01)	1.0 (0.20)	0.0 (0.01)
Females				
Mean age (years)	43.6 (0.27)	36.7 (0.12)	44.9 (0.26)	37.3 (0.13)
Educational attainment (%):				
Bachelor's degree or higher	7.0 (0.53)	11.1 (0.29)	10.3 (0.63)	16.4 (0.38)
Other post-school	29.6 (0.95)	30.8 (0.43)	30.3 (0.95)	28.7 (0.46)
Comp. High school	5.5 (0.47)	8.2 (0.26)	10.9 (0.64)	18.8 (0.40)
Not completed high school	58.0 (1.02)	49.8 (0.47)	48.5 (1.03)	36.0 (0.49)
Foreign-born – ESB (%)	10.7 (0.64)	10.9 (0.29)	11.3 (0.65)	9.9 (0.30)
Foreign-born – NESB (%)	12.8 (0.69)	15.1 (0.33)	15.7 (0.75)	16.8 (0.38)
Family type (%):				
Single, no dependents	23.6 (0.88)	15.2 (0.34)	27.9 (0.93)	20.9 (0.41)
Couple, no dependents	39.4 (1.01)	32.3 (0.44)	39.0 (1.01)	32.0 (0.47)
Single with dependents	9.3 (0.60)	8.4 (0.26)	9.4 (0.60)	8.1 (0.28)
Couple with dependents	26.3 (0.91)	44.1 (0.46)	22.8 (0.87)	39.0 (0.49)
Cared accommodation	1.3 (0.24)	0.0 (0.01)	0.9 (0.20)	0.0 (0.01)

* 1993 definition, inclusive match. Standard errors in parentheses.

The characteristics of persons with disabilities compared with other persons are in fact remarkably similar in the two survey years. This is perhaps surprising in light of the significant increase in reported disability. The only significant change is a relative increase in the proportion of persons with disabilities who are NESB immigrants. NESB immigrants comprised approximately two percentage points less of the disabled population than they did of the non-disabled population in 1993, but by 1998 were approximately the same proportion of the disabled and non-disabled populations.

Table 6.5 examines labour market outcomes and welfare dependence. For males, despite the increase in the proportion of the disabled who have an employment restriction (as well as the overall rise in reported disability), there is no evidence of a relative worsening of labour market outcomes. Movements in employment rates and hours worked are very similar for disabled and non-disabled males. Notable, however, is the failure of welfare dependence to fall among disabled males, in contrast to the significant 1.6 percentage point decline among other males.

For females, the opposite pattern with respect to welfare dependence is evident: welfare dependence declines among the disabled by 6 percentage points, compared to an insignificant 0.6 percentage point decline for the non-disabled, suggesting a relative improvement in outcomes for the disabled. However, it is also the case for females that, in contrast to males, relative changes in labour market outcomes of disabled persons have occurred, and these do not appear favourable. While it is true that the proportion of disabled females who are unemployed has declined relative to other females, the proportion not in the labour force has increased by 1.1 percentage points, compared with a 3.2 percentage point *decrease* for non-disabled females. As a consequence, despite the relative fall in unemployment, the proportion employed has still relatively declined for disabled females. The interesting question is how we reconcile the relative decline in employment with the relative decline in welfare dependence. No obvious explanation is forthcoming.

An important implication of Table 6.5 in conjunction with Table 6.1, applicable to both males and females, is a significant increase in the proportion of the population classified as both disabled and not in the labour force. That is, Table 6.1 shows there has been a significant increase in the proportion of the working-age population classified as disabled, but Table 6.5 shows there has not a corresponding increase in labour force participation of persons with disabilities, implying an increase in non-participation associated with the rise in reported disability. The logical inference is that, between 1993 and 1998, disability has become more important in terms of its adverse consequences for the labour market, driven by the rise in

reported disability and the failure of relative labour market outcomes of persons with disabilities compared with other persons to improve.

Table 6.5 Labour market outcomes and welfare dependence of disabled persons aged 15-64 years – 1993 and 1998

	1993		1998	
	Disabled*	Non-disabled	Disabled*	Non-disabled
Males				
Employed (%)	52.5 (1.06)	82.3 (0.36)	54.8 (1.05)	85.8 (0.36)
- employed full-time (%)	45.6 (1.06)	75.0 (0.41)	45.1 (1.05)	75.9 (0.45)
Unemployed (%)	11.5 (0.68)	11.0 (0.30)	8.0 (0.57)	6.8 (0.26)
Not in labour force (%)	36.0 (1.02)	6.7 (0.24)	37.2 (1.02)	7.4 (0.27)
Mean hours – full-time workers	48.6 (0.36)	48.0 (0.12)	49.7 (0.42)	48.7 (0.15)
Mean hours – part-time workers	18.9 (0.76)	21.1 (0.32)	17.8 (0.64)	18.7 (0.31)
Work at home (%)	5.0 (0.47)	4.3 (0.19)	4.4 (0.43)	3.3 (0.19)
Employment restriction (%)	58.1 (0.96)	0.0 (0.00)	63.5 (0.94)	0.9 (0.10)
Welfare dependent (%)	40.8 (0.96)	11.6 (0.30)	40.6 (0.96)	10.0 (0.31)
Females				
Employed (%)	39.0 (1.09)	61.0 (0.46)	42.3 (1.09)	67.2 (0.48)
- employed full-time (%)	20.4 (0.90)	34.7 (0.45)	19.7 (0.88)	36.4 (0.49)
Unemployed (%)	8.2 (0.62)	8.5 (0.26)	3.9 (0.43)	5.5 (0.23)
Not in labour force (%)	52.7 (1.12)	30.5 (0.43)	53.8 (1.10)	27.3 (0.45)
Mean hours – full-time workers	44.2 (0.46)	43.4 (0.13)	44.0 (0.51)	43.6 (0.16)
Mean hours – part-time workers	18.3 (0.46)	18.7 (0.16)	18.1 (0.42)	18.0 (0.16)
Work at home (%)	4.1 (0.44)	4.4 (0.19)	5.1 (0.48)	5.5 (0.23)
Employment restriction (%)	55.7 (1.03)	0.0 (0.00)	62.9 (1.00)	1.0 (0.10)
Welfare dependent (%)	54.7 (1.03)	26.3 (0.41)	48.6 (1.03)	25.7 (0.44)

* 1993 definition, inclusive match. Standard errors in parentheses.

The characteristics of employed persons with disabilities are compared with the characteristics of non-employed persons with disabilities in Table 6.6. It shows that the proportion of the employed with profound or severe restrictions increased significantly less than did the proportion of the non-employed. The proportion of the non-employed with multiple impairments also increased, compared with a smaller increase for employed females and a decrease for employed males. These patterns suggest that, relative to other severity levels and impairment types, severe

disability and multiple impairments were more important in their adverse consequences for obtaining employment in 1998 than was the case in 1993.

Table 6.6A Employed disabled persons compared with non-employed disabled persons – 1993 and 1998 – 1993 definition of disability (inclusive match) – Males aged 15-64 years

	1993		1998	
	Employed	Non-employed	Employed	Non-employed
Severity (%):				
Profound or severe	8.0 (0.78)	21.6 (1.30)	10.6 (0.87)	29.2 (1.43)
Moderate or mild	36.1 (1.39)	48.9 (1.57)	38.9 (1.38)	47.2 (1.56)
No restriction	55.9 (1.44)	29.6 (1.44)	50.5 (1.42)	23.5 (1.33)
Type (%):				
Sensory	35.8 (1.39)	13.0 (1.06)	36.2 (1.36)	12.2 (1.03)
Mobility	41.4 (1.43)	48.1 (1.57)	41.7 (1.40)	42.5 (1.55)
Mental	7.0 (0.74)	7.6 (0.83)	8.5 (0.79)	8.4 (0.87)
Multiple	15.9 (1.06)	31.4 (1.46)	13.6 (0.97)	36.9 (1.51)
Mean age (years)	42.8 (0.35)	47.4 (0.43)	43.3 (0.34)	47.1 (0.43)
Educational attainment (%):				
Bachelor's degree or higher	10.9 (0.90)	3.4 (0.57)	12.5 (0.94)	4.3 (0.63)
Other post-school	50.5 (1.45)	32.9 (1.48)	45.3 (1.41)	32.7 (1.47)
Comp. High school	4.5 (0.60)	5.2 (0.70)	9.3 (0.82)	8.5 (0.87)
Not completed high school	34.2 (1.37)	58.5 (1.55)	32.9 (1.33)	54.5 (1.56)
Foreign-born – ESB (%)	12.4 (0.95)	9.5 (0.92)	11.4 (0.90)	10.1 (0.94)
Foreign-born – NESB (%)	9.3 (0.84)	18.0 (1.21)	12.3 (0.93)	19.9 (1.25)
Family type (%):				
Single, no dependents	22.4 (1.21)	28.6 (1.42)	27.1 (1.26)	36.1 (1.51)
Couple, no dependents	38.6 (1.41)	44.7 (1.57)	37.3 (1.37)	44.0 (1.56)
Single with dependents	1.0 (0.29)	2.7 (0.51)	1.0 (0.29)	3.0 (0.53)
Couple with dependents	38.0 (1.41)	24.0 (1.35)	34.6 (1.35)	16.9 (1.18)

Standard errors in parentheses.

Table 6.6B Employed disabled persons compared with non-employed disabled persons – 1993 and 1998 – 1993 definition of disability (inclusive match) – Females aged 15-64 years

	1993		1998	
	Employed	Non-employed	Employed	Non-employed
Severity (%):				
Profound or severe	11.7 (1.13)	23.6 (1.24)	16.3 (1.25)	29.5 (1.33)
Moderate or mild	40.8 (1.72)	47.4 (1.46)	39.0 (1.65)	43.5 (1.45)
No restriction	47.5 (1.75)	28.9 (1.32)	44.7 (1.68)	27.0 (1.30)
Type (%):				
Sensory	19.8 (1.40)	12.0 (0.95)	20.4 (1.37)	10.4 (0.89)
Mobility	59.5 (1.72)	53.2 (1.45)	53.8 (1.69)	50.6 (1.46)
Mental	10.1 (1.06)	13.6 (1.00)	13.4 (1.15)	12.5 (0.96)
Multiple	10.6 (1.08)	21.2 (1.19)	12.3 (1.11)	26.6 (1.29)
Mean age (years)	39.9 (0.41)	46.0 (0.39)	41.8 (0.39)	47.1 (0.37)
Educational attainment (%):				
Bachelor's degree or higher	14.3 (1.23)	2.5 (0.45)	17.1 (1.28)	5.4 (0.66)
Other post-school	37.5 (1.70)	25.1 (1.26)	38.7 (1.65)	24.7 (1.26)
Comp. High school	5.8 (0.82)	5.4 (0.66)	10.9 (1.05)	11.1 (0.92)
Not completed high school	42.4 (1.73)	67.0 (1.37)	33.3 (1.60)	58.8 (1.44)
Foreign-born – ESB (%)	12.0 (1.14)	10.0 (0.87)	12.9 (1.13)	10.2 (0.88)
Foreign-born – NESB (%)	7.7 (0.93)	16.3 (1.08)	10.6 (1.04)	19.6 (1.16)
Family type (%):				
Single, no dependents	21.2 (1.44)	25.7 (1.27)	28.2 (1.52)	28.2 (1.31)
Couple, no dependents	40.5 (1.72)	39.6 (1.43)	36.8 (1.63)	41.3 (1.44)
Single with dependents	6.6 (0.87)	11.2 (0.92)	8.4 (0.94)	10.2 (0.88)
Couple with dependents	31.6 (1.63)	23.5 (1.24)	26.6 (1.50)	20.3 (1.17)

Standard errors in parentheses.

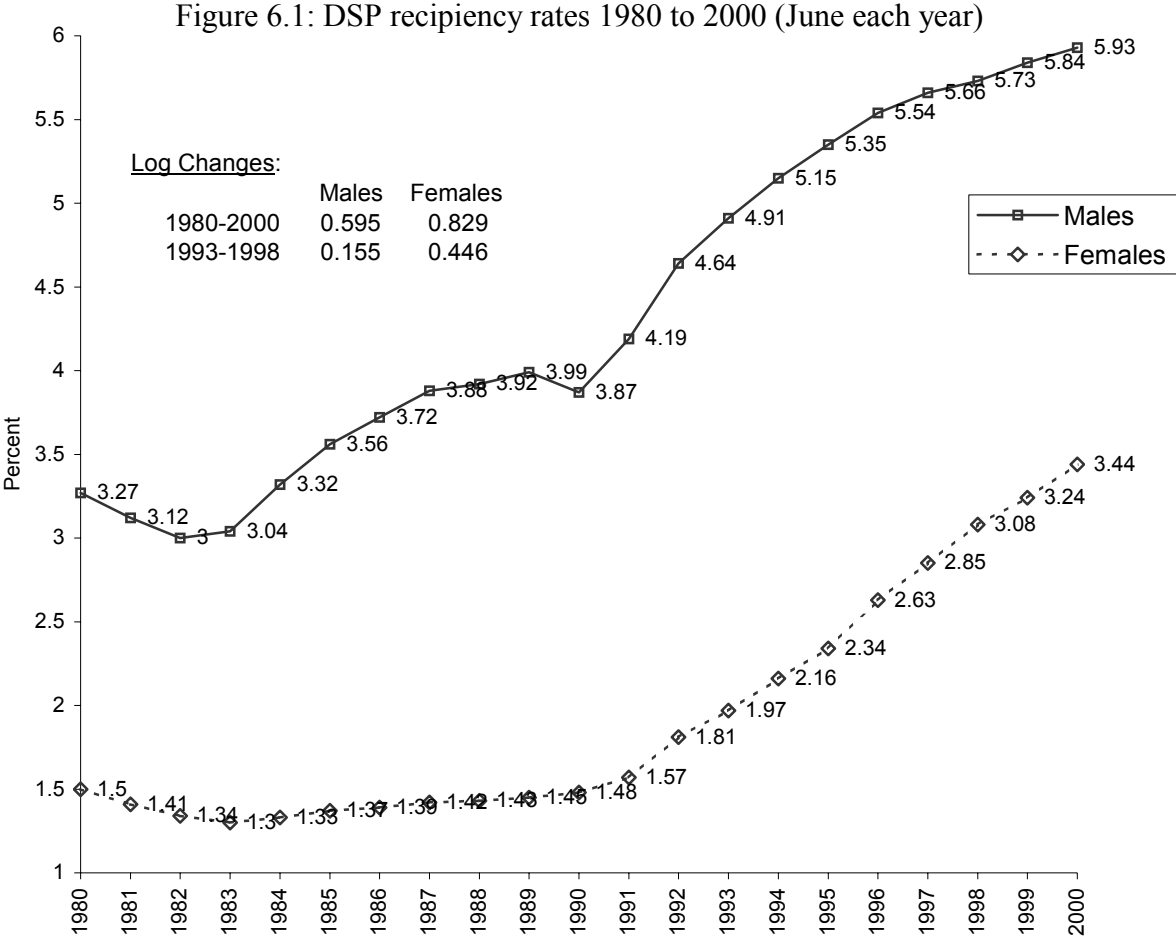
Table 6.6 also shows NESB immigrants represent a much lower proportion of the employed than they do of the non-employed for persons with disabilities, implying NESB immigrants with disabilities are less successful in obtaining employment than other persons with disabilities.²⁸ However, there is some evidence that the disadvantage experienced by *male* NESB immigrants with disabilities did decrease between 1993 and 1998. The proportion of employed males with

²⁸ This was in fact found to be the case in 1998 in the Probit equations estimated in Section 5.

disabilities who are NESB immigrants increased by three percentage points, compared with a 1.9 percentage point increase in the proportion of the non-employed who are NESB immigrants.

DSP receipt

Between 1980 and 2000, the rate of DSP receipt among males increased by 60 percent, from 3.3 percent of males aged 15-64 years in 1980, to 5.9 percent in 2000 (Figure 6.1).²⁹ The rate of growth has been even greater for females, at 83 percent, from a recipiency rate of 1.5 percent in 1980 to 3.4 percent in 2000. The female recipiency rate actually declined in the early 1980s, but has increased in every year since 1984. Over the period spanned by the two SDAC datasets, the rate of receipt grew by 16 percent for males, and by 45 percent for females. This is despite the period 1993 to 1998 being one of declining unemployment.



Note: Recipiency rate is given by the number of DSP recipients divided by the population aged 15-64 years. Statistics from the LDS indicate that between 2,000 and 6,000 male DSP recipients are not aged between 15 & 64 years.

Sources: FaCS (2001), LDS 1% sample and ABS (2002).

²⁹ Percentage changes are, in this section, evaluated at mean values of the respective variables.

The growth in DSP receipt is, for males, consistent with the results on welfare dependence of persons with disabilities obtained from the SDAC. Tables 6.2 and 6.5 together imply that the proportion of males both with a disability and dependent on welfare increased from 6.7 percent in 1993 to 7.9 percent in 1998, a 16 percent increase, which is the same as the rate of growth in DSP receipt. However, the proportion of *females* both with a disability and welfare dependent increased from 7.9 percent to 8.3 percent, an increase of less than 5 percent, which is much less than the 45 percent increase in DSP receipt. This suggests that between 1993 and 1998 there was a large increase in the proportion of female welfare recipients who received DSP as opposed to some other payment type. That is, the large growth in female DSP receipt between 1993 and 1998 is not reflective of a large increase in welfare dependency of disabled females. Rather, a large number of disabled females appear to have switched to DSP from other payment types. This is consistent with the discontinuation in the 1990s of certain payment types for females, such as widow pension, and other changes such as the progressive increase in the minimum qualifying age for the age pension for females that began in 1995.³⁰

Table 6.7 presents DSP recipiency rates for each of 6 age groups for the period 1995 to 2000 using the LDS 1% sample. Although this does not exactly match the period covered by the two ABS surveys, it provides information on likely patterns in DSP receipt over the period. It shows the recipiency rate is strongly ordered by age among both males and females. Significantly, however, growth in the male recipiency rate is inversely related to age: the 15-24 years age group had the strongest rate of growth (24 percent), followed by the 25-34 years group (21 percent), 35-44 group (18 percent) and 45-54 group (3 percent), while the 55-64 years age group in fact experienced a *decline* in the recipiency rate of 5 percent. The male DSP recipient population has therefore been getting younger in recent years. Why this is the case warrants further investigation.

In marked contrast to the experience of males, growth in the female rate of DSP receipt between 1995 and 2000 has been strongest among 55-64 year olds, at 73 percent. The rate of growth among the other age groups is relatively similar, at approximately 25 percent, with the exception of the 45-54 year old group, among whom growth was 21 percent. The stronger growth among females aged 55-64 years will to some extent reflect the changes to payment types and eligibility criteria that occurred in the period, such as the increases in the female qualifying age for age pension that began in 1995 (from age 60, reaching age 65 by 2013) and the closure of the wife pension to new entrants in 1995.

³⁰ ACOSS (2002) estimate that these changes account for 20 percent of the total increase in DSP receipt.

Table 6.7: DSP recipiency rates by age 1995-2000 (June each year)

	15-24	25-34	35-44	45-54	55-64	15-64
Males						
1995	1.11	2.18	3.34	6.73	20.80	5.38
1996	1.18	2.26	3.43	6.85	20.87	5.51
1997	1.21	2.29	3.69	6.91	20.66	5.61
1998	1.38	2.42	3.87	6.68	20.42	5.69
1999	1.35	2.52	4.05	6.98	20.18	5.84
2000	1.41	2.68	4.01	6.96	19.80	5.89
Log change	0.240	0.208	0.182	0.034	-0.049	0.090
Females						
1995	0.83	1.33	2.03	4.54	3.89	2.29
1996	0.84	1.45	2.14	4.85	4.99	2.56
1997	0.87	1.47	2.26	5.13	5.49	2.74
1998	0.99	1.44	2.39	5.48	6.83	3.05
1999	1.04	1.51	2.62	5.52	7.29	3.23
2000	1.07	1.70	2.68	5.58	8.04	3.43
Log change	0.254	0.241	0.279	0.207	0.725	0.403

Source: LDS 1% sample and ABS (2002).

7. Conclusion

A significant proportion of the working age population in Australia has a disability, and the indications are that this proportion has been growing in recent years, and will likely continue to grow. The implications of disability for the labour market and welfare system therefore matter a great deal.

Consistent with intuition, disability is found to be associated with significant disadvantage in the labour market and high rates of welfare dependence, and both these performance dimensions are worse the more severe is the disability. Less obvious is the finding of an important connection between ageing, mature-age disability onset and barriers to employment – specifically, disability onset is more likely the older a person gets, and the consequences of disability for labour market participation are worse the older the person *and* the older the age of onset. There are some indications from the analysis undertaken in this paper that this “compounding” of effects is connected to the type of person acquiring a disability at mature ages (less educated, working in

manual occupations), as well as the tendency for older persons to suffer more severe disabilities. Investigation of the nature and sources of the barriers to employment by older persons with a disability, and in particular those with mature-age disability onset, would seem to be an important future line of inquiry. Understanding these barriers is a key step in developing appropriate policies to increase employment among mature-age persons with disabilities.

Indeed, the policy importance of improving accessibility to the labour market extends to all persons with disabilities. While participation in the labour market and rates of welfare dependence of the disabled relative to the non-disabled do not appear to have changed dramatically in recent years, growth in reported disability means that the issue has been of growing importance, and is likely to continue to grow in importance.

A further (incidental) finding which is of some interest is that single parents are much more likely to possess a disability than are parents in couples. Assuming reporting of disability does not depend on family type, this implies that a person who has dependent children is more likely to separate from his or her partner if he or she has a disability. An interpretation of this finding is that disability is not only detrimental to success in the labour market, but also to success in the family (if a two-parent family is viewed as a success). More detailed examination of this issue may provide insights into the nature of relationship between family outcomes and disability, and the factors underlying this relationship.

Further investigation of the rise in DSP receipt is also likely to be valuable. Understanding the sources of growth in DSP receipt is critical to formulation of policy responses. Although Cai (2002) has explored this issue, there are many questions that remain unanswered. A broad-based, long-running panel dataset over the 1980s and 1990s would be very valuable in this regard. Unfortunately, no such data exist. However, a *quasi*-panel dataset (for example, constructed using the ABS income surveys) may still furnish many of the insights that panel data would provide. In particular, it would facilitate insights into the sources of increased DSP receipt over the period spanned by the quasi-panel dataset, identifying the roles played by “cohort” effects, “age” effects and “year” effects. The specific nature of year effects could also be examined further, providing the potential for understanding the roles played by factors such as changes in the unemployment rate and changes in government policy. The suggested approach might also be able to shed light on the finding that the male DSP recipient population has been getting younger since 1995.

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Appendices

Appendix A: Defining and classifying disability

Arriving at a satisfactory definition of disability is an important task, and one which is not entirely straightforward. The issue in fact occupies a significant amount of the literature relating to disability. The World Health Organisation (WHO) defines a disability according to the International Classification of Functioning, Disability and Health 2001 (ICF) as an impairment of body structure or function, a limitation in activities or a restriction in participation. Such a definition is not on its own useful, since necessary thresholds for impairments, limitations and restrictions to qualify as disabilities need to be established, to some extent an arbitrary and subjective process. The WHO ICF itself does provide a detailed and systematic basis for defining and classifying disability.

In Australia, the Australian Institute of Health and Welfare (AIHW) has examined the issues surrounding defining and classifying disability extensively in several publications. This includes Madden and Hogan (1997), who conclude that decisions with respect to defining and classifying disability will naturally depend on the purpose at hand. For example, definitions may differ if the purpose is to:

- identify carer-type needs;
- define eligibility criteria for financial assistance; or
- understand the experience of people in society with limiting health conditions.

However, Madden and Hogan also make the point that, irrespective of purpose, there should be a consistent approach to defining and classifying disability, and we should be able to determine the relationship between different definitions and classifications. A related point is that defining and classifying disability are not distinct processes. For example, we might classify disability according to severity. A disability may be defined to exist only if a particular threshold level of severity is reached, with different thresholds corresponding to different definitions of disability, and with all definitions comprising a subset of the broadest interpretation of disability.

The important guiding principle adopted in this paper is that a broad notion of disability, one consistent with community notions of disability, should be employed. This does not, however, preclude adopting for some purposes more narrow concepts of disability. These can be defined as subsets of the broad definition of disability, based on severity level, impairment type and other characteristics. For example, the issue is particularly pertinent with respect to how the definition relates to eligibility criteria for disability benefits – in Australia, the disability support pension (DSP). Most notions of disability encompass a broader range of conditions than do those that satisfy the eligibility requirements of DSP. Interest in the relationship between disability, labour market outcomes and welfare dependence therefore extends beyond those eligible for DSP, since inferior labour market outcomes for other persons with disabilities are still of potential policy relevance, and other persons with disabilities are still often eligible for other welfare payments. Nonetheless, there is also particular policy interest in the outcomes of that subset of the disabled population (likely to be) eligible for DSP. Consequently, it would be useful to additionally employ a narrower concept of disability based on DSP eligibility.

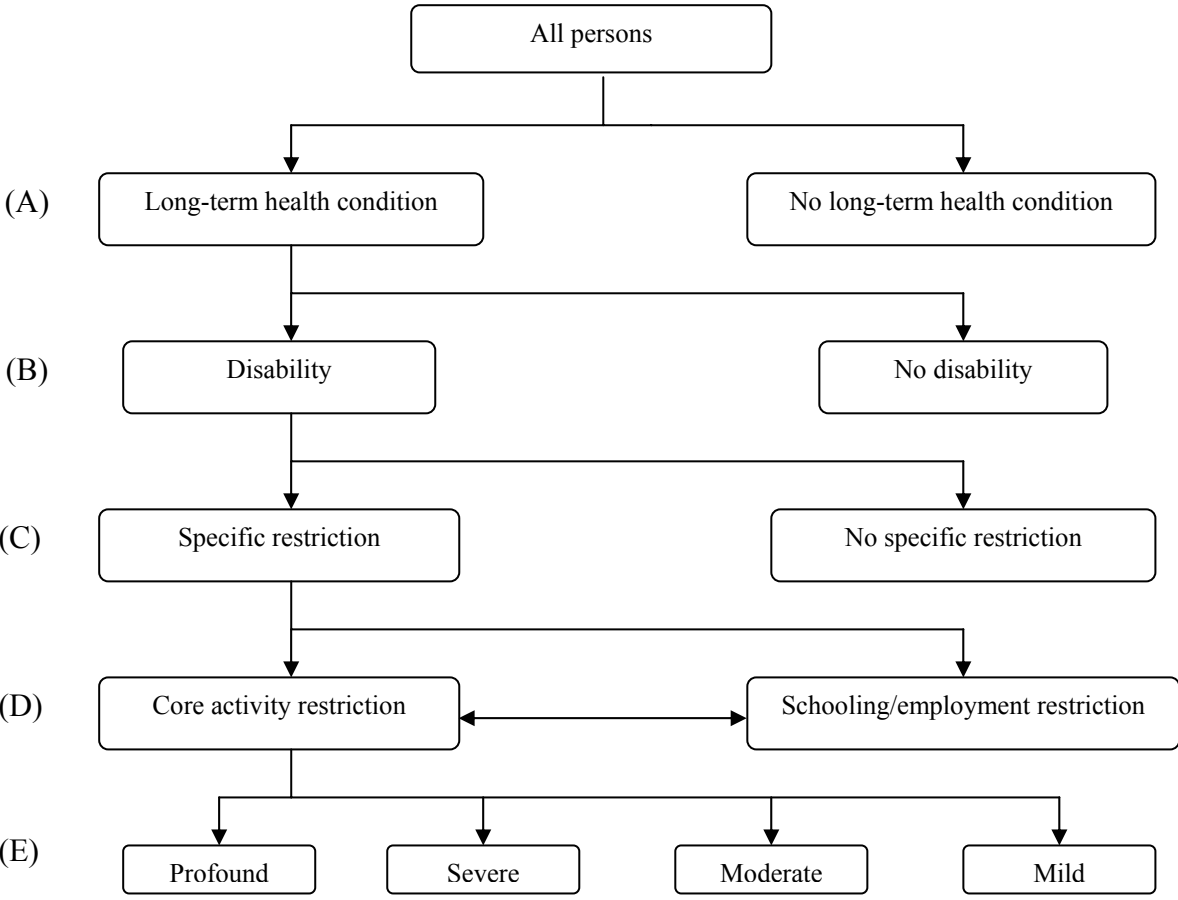
A further important point with respect to defining and classifying disability is that these are not stationary concepts. Community views of what constitutes disability are subject to change over time, and this raises important issues for comparability of analysis undertaken over time – even if the same definition of disability is employed by the surveying agency, community responses may change in line with changes in perceptions and attitudes. Similarly, issues arise for comparability across countries and even regions within countries. For example, people living in regional areas may have different notions of impairment to city-dwellers.

Notwithstanding the above considerations, as a practical matter, the approach taken in this paper was necessarily dictated to a significant extent by the approach taken in the collection and collation of the primary data sets used, the ABS Surveys of Disability, Ageing and Carers in 1993 and 1998. The ABS approach in these surveys is given by Figure A1, and is based on the WHO International Classification of Impairments, Disabilities and Handicaps 1980 (ICIDH).

The ABS approach involves distinguishing between *health conditions*, which are essentially diseases and disorders, and *disabilities*, which are impairments, restrictions and limitations that result from health conditions. Health conditions are classified by the ABS according to the WHO International Classification of Diseases (currently in its tenth revision, and known in short form as ICD-10).

The framework provided by Figure A1 also classifies disabilities according to severity of core activity restriction(s). In addition to this framework for defining and classifying disability, both the 1993 and 1998 CURFs contain data items that permit alternative definitions of disability, and that allow classification of disability in other ways, including according to type of impairment, underlying medical cause/health conditions, general cause (disease, accident, etc.) and age of disability onset.

Figure A1: ABS framework for defining and classifying disability



Long-term health condition: A disease or disorder which has lasted, or is likely to last, six months or more. The derivation of disability from long-term health conditions is not explicitly identified by the ABS, but is implicit in the approach taken by the ABS in the two surveys. For example, a data item “main disabling condition” is in both unit record files, which is interpreted as the health condition which is the primary source of the disability.

Disability: A restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being.

Specific restriction: A restriction in core activities (communication, mobility and self care), schooling or employment. A person with a specific restriction can have one or both of a core activity restriction and a schooling employment restriction. In the 1993 survey, the term “handicap” is used in place of “specific restriction”.³¹

Schooling restriction: Unable to attend school; attends a special school; attends special classes at an ordinary school; needs at least one day a week off school, on average; has difficulty at school.

Employment restriction: permanently unable to work; restricted in type of work can/could do; needs/would need at least one day a week off work, on average; restricted in the number of hours can/could work; requires special equipment/modified work environment; needs ongoing assistance/supervision; would find it difficult to change jobs/get a better job. In 1993, there is no mention of the criterion “need for assistance/supervision”, and the criterion “often needs time off work” is used instead of “needs at least one day a week off work”.

The ABS approach in the SDAC (based on the 1980 WHO definition of disability) is not entirely consistent with the more recent ICF, which does not view disability as specifically deriving from long-term health conditions, but rather as deriving from complex interactions between health conditions and contextual (environmental and personal) factors. However, the 1980 WHO approach is the one taken in this paper, since it is not feasible to implement the ICF approach given the data items available in the unit record files.

³¹ Note that, according to the ABS, the terms “handicapped” and “disabled” were never actually used by interviewers in either survey.

Based on this approach, there are however still a number of issues for defining and classifying disability to do with differences between the 1993 and 1998 surveys. At each level (A) to (E) in Figure A1, the ABS applied different criteria to determine from the information provided the category or categories to which a person belongs. Indeed, the information obtained and how it was obtained differs between the surveys. To some extent, individual data items in the CURFs can be used to create consistent criteria, but it is not possible to eliminate all differences, and some ambiguities remain regarding the best approach to addressing inconsistencies. Furthermore, the process of achieving a consistent definition of disability across the two surveys may lead to a set of disability criteria that do not exactly correspond to the ABS criteria in either 1993 or 1998, nor with current notions of what constitutes a disability. This provides the motivation for focusing on 1998 for the first two components of this paper and for the relatively limited scope of comparisons undertaken for the third component.

Appendix B: Other potential ways to classify disability

Cause

Both the 1993 and 1998 SDAC CURFs permit classification of disability by the following causes of the underlying health condition:

1. Work-related causes/over-work
2. Accident or injury
3. Other causes

Although cause of disability has appeal as a characteristic of disability, this categorisation of disability is not used, primarily because more than 50% of disabled persons report “other” causes.

Severity

The SDAC98 also contains separate variables for level of communication, mobility and self care restriction. Categories are the same as for severity of disability. The main problem with using these variables is that they are closely related to the total severity variable, which seems to be adequate for the purposes of investigating outcomes by level of disability severity.

Impairment type (or nature of disability)

There are several potential alternative ways available to classify by type:

1. Impairment which causes most problems

This is perhaps the best alternative to the classification system by impairment type actually adopted, although it is not available using the SDAC93. In the SDAC98, the same 17 impairment types are used for this data item as are used to itemise *all* impairment types suffered (which is the information used to create the impairment type variable used in this paper). Although this information is useful for characterising the most important impairment type, a key advantage of the impairment type classification system actually adopted in this paper is that it can also be implemented using the 1993 CURF, whereas the ‘most important impairment type’ classification system cannot.

2. “Core activity” restriction(s).

For each person with a disability, the SDAC98 records whether the person has a communication restriction, a mobility restriction and a self care restriction. This allows the following classification system based on type of core activity restrictions:

1. Communication
2. Mobility
3. Self care
4. Multiple
5. None

This can also be implemented using the SDAC93, but the impairment type classification system actually employed was preferred to the above system, primarily because it is consistent with the existing literature (for example, Hum and Simpson (1996)).

3. Main disabling condition

The SDAC98 CURF contains information on main disabling condition, which is the (underlying health) condition that causes the impairment. Similar information is available in the SDAC93 CURF. While this could be used, it's not clear how to classify conditions (there are 97 categories in 1998 and 43 categories in 1993), and, as with the

preceding approach, it is not consistent with the existing literature.

4. Medical condition as recognised for DSP purposes.

Given this paper seeks to examine welfare receipt of the disabled, it is potentially of interest to examine outcomes of persons classified according to medical condition as recognised for DSP eligibility. These medical conditions are as follows:

1. Acquired brain impairment
2. Amputation
3. Cancer/tumour
4. Chronic fatigue/post viral syndrome
5. Congenital abnormality
6. Chronic pain
7. Circulatory system
8. Endocrine and immune system
9. Intellectual/learning
10. Musculo-skeletal and connective tissue
11. Nervous system
12. Psychological/psychiatric
13. Respiratory system
14. Skin disorders and burns
15. Sense organs
16. Visceral disorder

These medical conditions are in fact essentially the same as (aggregations of) the main disabling conditions given in the SDAC93 and SDAC98 (the preceding potential classification system). This classification system is therefore likewise not used in this paper because of difficulties in interpretation and because it is not consistent with existing literature. Nonetheless, it is of some interest to consider how the above 16 medical conditions might translate into the impairment types used in this paper. The conditions that would likely fall into each impairment type category are as follows:

- Sensory: 15
- Mobility: 2, 3, 4, 5, 6, 7, 8, 10, 11, 13, 14 and 16
- Mental: 9 and 12

Depending on the nature of the impairment caused, Condition 1 (acquired brain impairment) might correspond to either the “mobility” or the “mental” impairment type (or both, i.e. “multiple”).

5. Classification system used for open employment services

Another way to classify by the type of disability is to follow the system used for “open employment services”, which are administered by federal and state governments. Open employment services comprise employment assistance provided by a service outlet to clients whose employment contracts are with other organisations or who are self-employed. (The other form of employment assistance is called “supported employment services”, which are services for workers whose employment contracts are with the service outlet.)

Persons in these programs are classified according to *primary* disability group:

- intellectual/learning
 - intellectual
 - specific learning/ADD
 - autism
 - unspecified
- psychiatric
- physical
- acquired brain injury
- neurological
- sensory
 - vision
 - hearing
 - speech
 - deafblind

It does not appear possible to implement classification along these lines. Approximation may be possible (in 1998 only) using the ‘restriction/impairment which causes most problem’ data item, but has not been attempted in this paper.

Appendix C: Industry groups

- Agriculture, forestry and fishing (“agriculture”)
- Manufacturing
- Construction
- Wholesale trade; retail trade (“trade”)
- Transport and storage; communication services (“transport”)
- Finance and insurance; property and business services (“finance”)
- Government administration and defence (“government”)
- Education; health and community services (“community services”)
- Cultural and recreational services; personal and other services; accommodation, cafes and restaurants (“other services”)
- Mining; electricity, gas and water; not known (“other”)

Appendix D: Dummy variables used in regression equations

Age in years: AGE1524, AGE2534, AGE3544, AGE4554, AGE5564

Highest educational qualification: DEGREE (bachelor’s degree or higher), OTHPS (other post-school qualification), CHS (completed highest level of high school), NCHS (did not complete the highest level of high school).

Region of birth: ESB (born overseas in one of the main English-speaking countries), NESB (born overseas in country other than main English-speaking countries), NB (born in Australia).

Family type: S_NODEP (single, no dependent children), C_NODEP (couple, no dependent children), S_DEP (single with dependent children), C_DEP (couple with dependent children).

Disability status: DISABLED (classified as having a disability according to the 1998 ABS definition).

Interaction terms with disability status: DISAB_[VARIABLE NAME FROM LIST ABOVE] is DISABLED interacted with the respective variable.

Severity of core activity restriction: DISAB_SEV1 (profound or severe), DISAB_SEV2 (moderate or mild), DISAB_SEV3 (no core activity restriction).

Type of impairment: DISAB_SENSORY (sensory/speech), DISAB_MOBILITY (mobility/physical), DISAB_MENTAL (mental/emotional), DISAB_MULTIPLE (more than one of the preceding types).

Age of disability onset: DISAB_INFANT (aged 0-4 years), DISAB_CHILD (aged 5-14 years), DISAB_Y_ADULT (aged 15-29 years), DISAB_P_ADULT (aged 30-44 years), DISAB_O_ADULT (aged 45-64 years).

Timing of disability onset with respect to educational attainment: ED_AFT_DISAB (completed education after disability onset)

Timing of disability onset with respect to educational attainment interacted with level of attainment: DEG_AFT_DISAB (bachelor’s degree or higher), OTHPS_AFT_DISAB (other post-school qualification), CHS_AFT_DISAB (completed highest level of school), NCHS_AFT_DISAB (did not complete the highest level of high school).

Industry in main job: AGRIC (agriculture, forestry and fishing), MANUF (manufacturing), CONSTR (construction), TRADE (wholesale trade; retail trade), TRANS (transport and storage; communication services), FINANCE (finance and insurance; property and business services), GOVT (government administration and defence), COMSERV (education; health and community services), OTHSERV (cultural and recreational services; personal and other services; accommodation, cafes and restaurants), OTHIND (mining; electricity, gas and water; not known).

Sector of employment in main job: PUBLIC (public sector)

Occupation in main job: MANAGER (managers and administrators), PROF (professionals), ASSPROF (associate professionals), TRADEPSN (tradespersons and related workers), ADCLERK (advanced clerical and service workers; intermediate clerical, sales and service workers), PRODTRAN (intermediate production and transport workers), ELCLERK (elementary clerical, sales and service workers), LABOURER (labourers and related workers).

Appendix E: Additional regression results

Table E1: Additional Probit estimates from Table 5.2 – Effect of severity, type and age of onset of disability on the probability of employment – 1998.

	Males			Females		
	(2A)	(2B)	(2C)	(2A)	(2B)	(2C)
AGE2534	0.087 (7.62)	0.087 (7.70)	0.120 (11.20)	0.038 (2.32)	0.038 (2.30)	0.006 (0.35)
AGE3544	0.119 (10.05)	0.120 (10.11)	0.158 (14.62)	0.151 (8.92)	0.150 (8.90)	0.077 (4.84)
AGE4554	0.109 (9.34)	0.110 (9.41)	0.142 (12.95)	0.069 (3.90)	0.069 (3.89)	0.067 (3.99)
AGE5564	-0.066 (-3.94)	-0.066 (-3.98)	-0.014 (-0.93)	-0.291 (-12.93)	-0.291 (-12.93)	-0.253 (-12.19)
DEGREE	0.110 (9.68)	0.102 (8.59)		0.267 (18.87)	0.265 (18.18)	
OTHP	0.083 (9.26)	0.077 (8.27)		0.169 (14.43)	0.169 (13.97)	
CHS	0.030 (2.66)	0.027 (2.30)		0.121 (8.56)	0.121 (8.46)	
ESB	-0.002 (-0.18)	-0.003 (-0.24)	0.010 (0.77)	0.002 (0.12)	0.002 (0.12)	0.020 (1.19)
NESB	-0.114 (-9.43)	-0.113 (-9.36)	-0.100 (-8.48)	-0.194 (-13.17)	-0.194 (-13.17)	-0.163 (-11.66)
C_NODEP	0.089 (9.39)	0.090 (9.47)		0.037 (2.58)	0.037 (2.59)	
S_DEP	-0.114 (-3.93)	-0.116 (-3.99)		-0.245 (-11.45)	-0.245 (-11.44)	
C_DEP	0.095 (9.69)	0.096 (9.77)		-0.155 (-10.33)	-0.155 (-10.31)	

Note: The reported statistic is the effect on the probability of welfare dependence of a discrete change of the dummy variable from 0 to 1. z statistics in parentheses are for the test that the underlying coefficient is zero. See Appendix D for a description of the variables.

Table E2: Additional Probit estimates from Table 5.4 – Effect of severity, type and age of onset of disability on the probability of welfare dependence – 1998.

	Males			Females		
	(4A)	(4B)	(4C)	(4A)	(4B)	(4C)
AGE2534	-0.028 (-2.55)	-0.028 (-2.50)	-0.056 (-5.34)	0.033 (2.13)	0.034 (2.17)	0.066 (4.41)
AGE3544	-0.044 (-3.83)	-0.043 (-3.75)	-0.075 (-7.29)	-0.089 (-5.67)	-0.088 (-5.59)	-0.006 (-0.38)
AGE4554	-0.049 (-4.38)	-0.049 (-4.28)	-0.076 (-7.23)	-0.096 (-5.91)	-0.095 (-5.81)	-0.111 (-7.25)
AGE5564	0.044 (2.93)	0.046 (3.05)	0.007 (0.53)	0.203 (9.14)	0.205 (9.19)	0.114 (5.84)
DEGREE	-0.110 (-11.45)	-0.101 (-10.07)		-0.253 (-20.65)	-0.251 (-19.79)	
OTHP	-0.071 (-9.42)	-0.064 (-8.10)		-0.149 (-14.50)	-0.145 (-13.64)	
CHS	-0.059 (-6.33)	-0.057 (-5.80)		-0.128 (-10.44)	-0.127 (-10.13)	
ESB	-0.003 (-0.30)	-0.003 (-0.25)	-0.018 (-1.56)	-0.002 (-0.15)	-0.002 (-0.15)	-0.021 (-1.36)
NESB	0.061 (5.82)	0.061 (5.83)	0.043 (4.15)	0.093 (6.92)	0.093 (6.94)	0.065 (5.01)
C_NODEP	-0.091 (-11.19)	-0.091 (-11.23)		-0.142 (-11.22)	-0.142 (-11.18)	
S_DEP	0.157 (5.97)	0.158 (6.01)		0.329 (15.66)	0.329 (15.68)	
C_DEP	-0.086 (-10.23)	-0.086 (-10.25)		0.130 (9.53)	0.131 (9.55)	

Note: The reported statistic is the effect on the probability of welfare dependence of a discrete change of the dummy variable from 0 to 1. z statistics in parentheses are for the test that the underlying coefficient is zero. See Appendix D for a description of the variables.

Appendix F: Comparability of the 1993 and 1998 SDAC

F1. Identifying disability

Both the 1993 and 1998 surveys identify persons as possessing a disability based on a set of “screening” questions – 17 questions in 1998 (itemised in Section 3), and 15 questions in 1993. For the 1993 survey, a person is defined to have a disability if that person has one or more of the following that had lasted, or was likely to last, for a period of

six months or more:

1. Partial or total loss of sight that is not corrected by lenses
2. Partial or total loss of hearing
3. Anything wrong with speech (unable to speak, or difficulty speaking)
4. Slow at learning or understanding
5. Has blackouts, fits or loses consciousness
6. Need to be helped or supervised in doing things because of any mental illness
7. Incomplete use of arms or fingers
8. Incomplete use of legs or feet
9. A nervous or emotional condition for which he or she was receiving treatment
10. Restriction in physical activity or physical work
11. Any disfigurement or deformity
12. Long-term treatment or taking any medicine or tablets for a condition or ailment that still restricts them in any way
13. Difficulty gripping or holding small objects
14. Head injury, stroke or other brain damage with long-term effects that restrict in any way
15. Any other condition restricting in any way

Comparing these with the criteria applied for the 1998 survey, we see that in 1998 the ABS added two additional disability criteria, modified three of the existing criteria and changed the wording for six other existing criteria. The additional criteria were:

16. Restricted in everyday activities by chronic or recurrent pain
17. Restricted in everyday activities by shortness of breath or breathing difficulties

The criteria modified were:

2. Hearing loss *which creates difficulty communicating or for which an aid is used*. This implies a narrower definition of disability with respect to hearing loss in 1998 than in 1993.
8. A nervous or emotional condition that *restricts everyday activities* (and that may be either treated or not treated). Thus, those who were receiving treatment but were not restricted by the condition were treated as possessing a disability only in the 1993 survey, and those who were restricted but not being treated were only treated as possessing a disability in the 1998 survey.
11. Treatment of a long-term condition *other than those already mentioned, that restricts everyday activities*. The important difference here is probably that the restriction must be on everyday activities, rather than in any way. Although 'any way' would seem to include 'everyday activities', it is unclear whether this was how it was interpreted in practice in the 1993 survey. The term 'everyday activities' may have suggested to respondents a different range of types of restrictions than 'any way' was interpreted to include.

The criteria for which the wording was changed were:

3. *Difficulty* learning or understanding.
8. Restriction in doing *everyday* physical activity or physical work.
9. '*A*' disfigurement or deformity (not 'any').
10. Difficulty gripping (with no examples provided by the interviewer).
11. Restricted in '*everyday activities*' (not 'any way').
12. Restricted in '*everyday activities*' (not 'any way').

The effects of these changes in wording are ambiguous.

Although many of the above changes appear somewhat innocuous, disability estimates are in fact likely to be quite sensitive to the wording and the details of each disability criterion. Individual data items in the unit record files allow us to redefine disability for each of the surveys in a more consistent manner, but some differences cannot be eliminated, and the issue remains of the sensitivity of responses to unchanged questions to the modification and addition of other questions, as well as other changes in survey methodology. In particular:

- not all of the differences in the criteria that were modified in 1998 can be eliminated.
- the effects of changes to the wording of criteria cannot be eliminated, and are unknown.
- the two additional screening questions for disability may increase the proportion of respondents indicating that they have other conditions identified by the unchanged screening questions.
- the 1993 survey was paper-based, while in 1998 computer assisted interviewing (CAI) was introduced, which may have affected reporting of disability
- the 1998 survey asked about self perceptions of health, which the 1993 survey did not, and which may affect reporting of objective measures of health.

Given the data items available for the two surveys, most of the steps that can be taken to achieve greater consistency in the definition of disability across the two surveys involve adjustments to the 1998 survey. This requires both the

elimination from the disabled population in the 1998 survey those who would not have been treated as having a disability in the 1993 survey, and the addition of those who are not treated as having a disability in 1998, but would have been treated as having a disability in 1993. Thus, the definition of disability adopted for the purposes of comparing 1993 with 1998 is that employed by the ABS for the 1993 survey.

To achieve this we eliminate those who did not suffer from any impairment that was treated as a disability in the 1993 survey, but who had one or more of the following:

1. Chronic or recurrent pain
2. Shortness of breath or breathing difficulties
3. Nervous or emotional condition which restricts everyday activities, but for which not receiving treatment.

We also add to the group defined as having a disability those having:

1. A nervous or emotional condition for which receiving treatment, but which does not restrict everyday activities.
2. Hearing loss which does not cause communication difficulties and for which no aids are used.

It is, however, unclear whether these are the only changes that should be made. The issues include:

1. Whether criterion 15 should be included, since this may comprise a different set of impairments/conditions in the two surveys. For example:
 - o Some of those with chronic pain or shortness of breath may be included in this category in the 1993 survey.
 - o The additional screening questions in the 1998 survey may have led to reporting of additional “other” long term conditions to those reported in the 1993 survey.
 - o The interviewer “prompts” for “other” long-term conditions may have differed between the two surveys.Consequently, excluding those having only “any other long-term condition that restricts everyday activities” may produce a better match across the surveys, albeit one that excludes many persons who would be regarded as having a disability in both surveys. On the basis of this issue, sensitivity tests are conducted in Section 6 and in Appendix F3 excluding those with unspecified impairments.
2. Whether the 1993 survey implicitly has requirements that conditions cause a restriction, in order for the respondent to be recorded as having the condition. For example, for hearing loss it may be implicit that it causes difficulties of some sort; likewise for nervous/emotional conditions receiving treatment. No attempt has been made to address this possibility.

Note that the resulting definition is likely to differ from that which is currently regarded as constituting disability, since the 1998 definition is more likely to be in accordance with current notions of disability than is the 1993 definition.

F2. Classifying disability

Similar to defining disability, issues arise over comparability of classifications of disability for the 1993 and 1998 surveys. The additional screening questions, modifications to existing screening questions, the introduction of the SF-12 assessment instrument of health status (12 questions that provide a generic measure of health status – SF stands for “short form”), the use of computer assisted interviewing (CAI) and the obtaining of additional information on severity for persons in cared accommodation, are all important for their potential effects on how persons are classified in the two surveys.

Identification of specific restrictions

In addition to the differences between the two surveys in reporting of specific restrictions that derive from differences in the definition of disability, a further source of difference is that the “SF-12” assessment instrument of health status was introduced in 1998 and placed after the survey screening questions, but before questions on core activity restrictions. This would not increase reported disability, but would potentially increase reported core activity restrictions in 1998 compared with 1993.

Severity of core activity restriction

The 1993 SDAC contains a variable similar to the severity of core activity restriction variable contained in the SDAC98. Although it is called “severity of total *handicap*”, it is in fact a measure of severity with respect to the core activities – self-care, mobility and communication – and has the same categories as the severity variable in the 1998 survey.³² However, in addition to the effects of factors affecting the identification of disability and specific

³² Since a handicap is equivalent to a specific restriction, the logical implication is that variable should include

restrictions, the severity of core activity restriction identified is likely to differ between the two surveys for those in cared accommodation. This is because additional information was collected in 1998 to distinguish severe from moderate restriction for these individuals, leading to an increase in the number of people in cared accommodation classified as having a severe restriction in 1998.

Type of impairment

As discussed, like the 1998 survey, the 1993 CURF has a set of dummy variables for the restrictions/impairments caused by the condition(s) from which the person suffers, using which we can potentially classify individuals into one of the four groups examined for 1998. For the matched definition, the relevant impairments are:

1. sight - partial or total loss
2. hearing - partial or total loss
3. speech difficulties
4. blackouts/fits
5. learning or understanding difficulty
6. incomplete use of arms/fingers
7. difficulty gripping/holding
8. incomplete use of feet/legs
9. nervous or emotional condition for which receiving treatment
10. restricted in physical activities
11. disfigurement or deformity
12. help received for mental illness/condition
13. Head injury, stroke or other brain damage
14. Other (1993) or impairment not specified (1998)

A comparable classification of impairment types to that employed in the 1998-only analysis is achieved by combining the above impairments as follows:

- 1, 2 & 3 (sensory)
- 4, 6, 7, 8, 10 & 11 (mobility)
- 5, 9, 12 & 13 (mental)

F3. Comparison of composition of disability in 1993 and 1998 for alternative definitions of disability

The comparability and the sources of the differences between the 1993 and 1998 surveys are explored further here by examining the severity and impairment type composition of disability at the most disaggregated level possible for each of the definitions of disability. Table F3.1 compares the severity composition and Table F3.2 the impairment type composition. Table F3.3 examines, adopting a common definition of disability (the 1993 definition), the role played by changes to the age composition of the population aged 15-64 years versus other sources of change in the incidence and composition of disability.

Table F3.1 shows that the proportion of the population classified as having a disability with no core activity restriction is actually lower in 1998 adopting the 1998 definition of disability than adopting the 1993 definition. This is probably because hearing loss and nervous or emotional conditions must be restricting impairments to qualify as disabilities under the 1998 definition, whereas the 1993 definition does not impose such a requirement. This contention is supported by Table F3.2, by comparing for 1998 the incidence of items 2 and 9 with items 2A and 9A respectively. For the other levels of severity (mild through to profound), regardless of the definition adopted, the 1998 survey has a greater proportion of the population with disabilities of each level of severity. There are, however, no indications that either of the two 1993 definitions – the inclusive definition or the narrow definition – provides a better match between the two surveys in terms of the severity composition of disability. Therefore, on the basis of the quality of the match between 1993 and 1998 in terms of severity composition, the inclusive match is to be preferred to the narrow match, since the narrow match excludes from the disabled population many people who would generally be regarded as having a disability.

schooling/employment restrictions, along with core activity restrictions, in determining the overall severity of handicap. However, the SDAC 1993 User Guide makes it clear this is not the case.

Table F3.1: Severity of core activity restriction composition – Persons with disabilities aged 15-64 years – Proportion of the population (%)

	1993 ¹	1993 ²	1998 ¹	1998 ²	1998 ³
Severity of restriction:			Males		
Profound	1.04 (0.087)	1.03 (0.086)	1.12 (0.097)	1.11 (0.097)	1.13 (0.098)
Severe	1.46 (0.103)	1.37 (0.099)	2.70 (0.149)	2.63 (0.148)	2.86 (0.154)
Moderate	2.17 (0.125)	1.92 (0.117)	3.37 (0.166)	3.20 (0.162)	3.55 (0.171)
Mild	4.66 (0.180)	4.13 (0.170)	4.81 (0.197)	4.48 (0.191)	5.16 (0.204)
No restriction	7.04 (0.219)	6.23 (0.206)	7.35 (0.241)	7.00 (0.235)	5.18 (0.204)
			Females		
Profound	1.02 (0.086)	0.98 (0.084)	1.12 (0.096)	1.11 (0.095)	1.14 (0.097)
Severe	1.84 (0.115)	1.58 (0.106)	3.09 (0.157)	2.92 (0.153)	3.27 (0.162)
Moderate	2.00 (0.119)	1.66 (0.109)	3.05 (0.156)	2.75 (0.149)	3.40 (0.165)
Mild	4.45 (0.176)	3.39 (0.154)	4.02 (0.179)	3.45 (0.166)	4.64 (0.191)
No restriction	5.21 (0.189)	4.01 (0.167)	5.87 (0.214)	5.35 (0.205)	4.24 (0.183)

1 = 1993 definition, inclusive match

2 = 1993 definition, narrow match

3 = 1998 definition

Note: Standard errors in parentheses.

Comparing the incidence of each impairment type in Table F3.2 shows significant increases in most impairment types, with the largest percentage point increases in ‘difficulty gripping or holding things’ and ‘a restriction in physical activities or physical work’. There were decreases for ‘receiving treatment for restricting long-term condition’ and ‘other restricting condition’. These decreases in ‘unspecified’ impairments most likely reflect the addition of other impairment type categories in 1998, especially ‘restricted by chronic or recurring pain’, which applied to over 6.5 percent of the population aged 15-64 years. The differences between the two surveys in the proportion of the population with these ‘unspecified’ impairments therefore provides a motivation for the use of the narrow 1993 definition of disability for some of the analysis undertaken in the paper.

Table F3.2: Incidence of each type of impairment – Persons aged 15-64 years – Proportion of the population (%)

	Males		Females	
	1993	1998	1993	1998
1. Partial or total loss of sight	1.09 (0.089)	1.00 (0.092)	0.51 (0.061)	0.69 (0.075)
2. Partial or total loss of hearing	5.47 (0.194)	6.73 (0.231)	2.80 (0.141)	3.36 (0.164)
3. Speech difficulties	0.88 (0.080)	0.86 (0.085)	0.50 (0.060)	0.50 (0.064)
4. Blackouts, fits or loss of consciousness	0.79 (0.076)	0.91 (0.088)	0.90 (0.081)	1.18 (0.098)
5. Slowness at learning or understanding	1.19 (0.093)	2.09 (0.132)	0.94 (0.082)	1.29 (0.103)
6. Incomplete use of arms or fingers	1.68 (0.110)	2.11 (0.133)	1.28 (0.096)	1.83 (0.122)
7. Difficulty gripping or holding things	1.33 (0.098)	2.91 (0.155)	2.11 (0.123)	4.17 (0.182)
8. Incomplete use of feet or legs	2.22 (0.126)	2.63 (0.148)	1.50 (0.104)	2.08 (0.130)
9. Treatment for nerves or an emotional condition	1.57 (0.106)	1.92 (0.126)	2.51 (0.133)	3.23 (0.161)
10. A restriction in physical activities or physical work	7.24 (0.221)	8.67 (0.260)	5.19 (0.189)	6.81 (0.229)
11. A disfigurement or deformity	0.99 (0.085)	1.05 (0.094)	0.66 (0.069)	0.97 (0.089)
12. Need for help or supervision due to a mental illness	0.48 (0.059)	0.82 (0.083)	0.41 (0.054)	0.68 (0.075)
13. Effects of head injury, stroke or other brain damage	1.36 (0.099)	1.46 (0.111)	0.88 (0.080)	1.16 (0.098)

14. Receiving treatment for restricting long-term condition	5.62 (0.197)	1.75 (0.121)	4.93 (0.185)	1.68 (0.117)
15. Other restricting condition	2.57 (0.135)	2.39 (0.141)	3.29 (0.152)	2.76 (0.149)

16. Restricted by breathing difficulties		1.78 (0.122)		1.58 (0.113)
17. Restricted by chronic or recurring pain		6.69 (0.230)		6.49 (0.224)
2A. Restricted by hearing loss		3.27 (0.164)		1.59 (0.114)
9A. Restricted by nervous or emotional condition		1.61 (0.116)		1.63 (0.115)

1993 definition, narrow match: 1-13

1993 definition, inclusive match: 1-15

1998 definition: 1-17, with 2A in place of 2 and 9A in place of 9.

Note: Add the qualification "other than already mentioned" to No. 14 for 1998. Standard errors in parentheses.

Table F3.3 indicates that changes to the age distribution account for 20 percent of the increase in reported disability (0.6 of the 3 percentage points increase for males, and 0.5 of the 2.6 percentage points increase for females). Thus, 80 percent of the increase is due to increased reporting of impairments at each age level. Note that, because we have defined disability in the same manner for both 1993 and 1998, this increase is not due to changes to the definition of disability between the two surveys. Rather, actual reporting of impairments has increased, because of changes to the wording of the screening questions and other differences between the two surveys, and perhaps because of an increase in propensity to report disability, as well as an increase in actual disability at each age level.

Changes to the age distribution have had little effect on the severity and impairment type composition of disability. Between 1993 and 1998 there was significant increased reporting of severe and moderate core activity restrictions. There were also significant increases in reporting of most impairment types. The largest increases were for "slowness at learning or understanding", "difficulty gripping or holding things" and "need for help or supervision due to a mental illness". For males, there was no significant change in reporting of "loss of sight", "blackouts", "disfigurement", "head injury" and "other conditions", and for both males and females no significant change in "speech difficulties". Both males and females experienced a significant decrease in reporting of the unspecified impairment "treatment of long term condition", reflecting the addition of other specific impairment types.

Table F3.3: Incidence and composition of disability – 1993 definition (inclusive match) – holding constant the age distribution among 15-64 year olds at the 1993 distribution (% of the population)

	Males				Females			
	1993	1998 ^{CF}	1998	Age-adjusted change	1993	1998 ^{CF}	1998	Age-adjusted change
Disabled	16.4 (0.32)	18.83 (0.361)	19.4 (0.36)	2.4 (0.48)	14.5 (0.30)	16.63 (0.339)	17.1 (0.34)	2.1 (0.45)
Severity of restriction:								
Profound	1.04 (0.087)	1.11 (0.097)	1.12 (0.097)	0.1 (0.13)	1.02 (0.086)	1.10 (0.095)	1.12 (0.096)	0.1 (0.13)
Severe	1.46 (0.103)	2.59 (0.147)	2.70 (0.149)	1.1 (0.18)	1.84 (0.115)	2.97 (0.154)	3.09 (0.157)	1.1 (0.19)
Moderate	2.17 (0.125)	3.21 (0.163)	3.37 (0.166)	1.0 (0.21)	2.00 (0.119)	2.91 (0.153)	3.05 (0.156)	0.9 (0.19)
Mild	4.66 (0.180)	4.71 (0.195)	4.81 (0.197)	0.0 (0.27)	4.45 (0.176)	3.91 (0.176)	4.02 (0.179)	-0.5 (0.25)
No restriction	7.04 (0.219)	7.19 (0.238)	7.35 (0.241)	0.2 (0.32)	5.21 (0.189)	5.75 (0.212)	5.87 (0.214)	0.5 (0.28)
Type of impairment:								
1. Loss of sight	1.09 (0.089)	0.98 (0.091)	1.00 (0.092)	-0.1 (0.13)	0.51 (0.061)	0.68 (0.075)	0.69 (0.075)	0.2 (0.10)
2. Loss of hearing	5.47 (0.194)	6.44 (0.226)	6.73 (0.231)	1.0 (0.30)	2.80 (0.141)	3.25 (0.161)	3.36 (0.164)	0.5 (0.21)
3. Speech difficulties	0.88 (0.080)	0.86 (0.085)	0.86 (0.085)	0.0 (0.12)	0.50 (0.060)	0.49 (0.064)	0.50 (0.064)	0.0 (0.09)
4. Blackouts, etc.	0.79 (0.076)	0.91 (0.088)	0.91 (0.088)	0.1 (0.12)	0.90 (0.081)	1.20 (0.099)	1.18 (0.098)	0.3 (0.13)
5. Slow to learn/understand	1.19 (0.093)	2.14 (0.133)	2.09 (0.132)	1.0 (0.16)	0.94 (0.082)	1.30 (0.103)	1.29 (0.103)	0.4 (0.13)
6. Incomp. use arms/fingers	1.68 (0.110)	2.05 (0.131)	2.11 (0.133)	0.4 (0.17)	1.28 (0.096)	1.74 (0.119)	1.83 (0.122)	0.5 (0.15)
7. Difficulty gripping/holding	1.33 (0.098)	2.80 (0.152)	2.91 (0.155)	1.5 (0.18)	2.11 (0.123)	3.95 (0.177)	4.17 (0.182)	1.8 (0.22)
8. Incomplete use of feet/legs	2.22 (0.126)	2.54 (0.145)	2.63 (0.148)	0.3 (0.19)	1.50 (0.104)	1.99 (0.127)	2.08 (0.130)	0.5 (0.16)
9. Nerves/emotional cond.	1.57 (0.106)	1.83 (0.124)	1.92 (0.126)	0.3 (0.16)	2.51 (0.133)	3.14 (0.159)	3.23 (0.161)	0.6 (0.21)
10. Restricted physically	7.24 (0.221)	8.34 (0.255)	8.67 (0.260)	1.1 (0.34)	5.19 (0.189)	6.54 (0.225)	6.81 (0.229)	1.4 (0.29)
11. Disfigurement/deformity	0.99 (0.085)	1.04 (0.094)	1.05 (0.094)	0.1 (0.13)	0.66 (0.069)	0.95 (0.088)	0.97 (0.089)	0.3 (0.11)
12. Mental illness	0.48 (0.059)	0.83 (0.084)	0.82 (0.083)	0.4 (0.10)	0.41 (0.054)	0.67 (0.074)	0.68 (0.075)	0.3 (0.09)
13. Head injury, stroke, etc.	1.36 (0.099)	1.42 (0.109)	1.46 (0.111)	0.1 (0.15)	0.88 (0.080)	1.14 (0.097)	1.16 (0.098)	0.3 (0.13)
14. Treatment for condition	5.62 (0.197)	1.67 (0.118)	1.75 (0.121)	-4.0 (0.23)	4.93 (0.185)	1.60 (0.114)	1.68 (0.117)	-3.3 (0.22)
15. Other condition	2.57 (0.135)	2.31 (0.139)	2.39 (0.141)	-0.3 (0.19)	3.29 (0.152)	2.63 (0.146)	2.76 (0.149)	-0.7 (0.21)

Notes:

- Standard errors in parentheses.
- 1998^{CF}: counterfactual (age distribution the same as in 1993). Statistics are obtained by reweighting observations in the 1998 sample so that the proportion in each age group in the reweighted sample is the same as in 1993. The mean age in 1993 is 37.66 and is 38.54 in 1998, so younger persons receive more weight than older persons in the reweighted sample compared with the original sample weights.
- Age-adjusted change: 1998^{CF} - 1993, which is the change between 1993 and 1998 holding the age distribution among persons aged 15-64 constant at the 1993 distribution (essentially that due to increased reporting at each age level).
- 1998^{CF} to 1998 (not reported) is the change due to changes in the age distribution.