

4 Severity of disability in relation to health conditions—measures on impairments/limitations and disabling conditions

The previous chapter has presented prevalence estimates of disability and long-term health conditions. This chapter explores severity of disability, in relation to health conditions, based on a group of measures relating to impairments/limitations and disabling conditions. The first part of the chapter focuses on measurements relating to the information collected by the disability survey screening questions on impairments and limitations. The second part concentrates on measurements relating to the information on disabling conditions. Patterns of associated multiple conditions and disabilities are explored. Severity of disability is measured in terms of:

- whether a health condition is more likely to be associated with one or more impairments or limitations restricting everyday activities
- whether a health condition is more likely to be reported as the main condition causing the most problems associated with disability
- whether a health condition is more likely to be associated with multiple impairments or conditions.

4.1 Measures and main data items

As discussed in Chapter 1, severity of disability can be measured in relation to different dimensions of disability. This section looks at a group of measures focusing on impairments/limitations and disabling conditions. For each of the selected health conditions or impairments, these measures estimate:

- the likelihood of ‘disability’ defined by the ABS disability survey screening questions that focus on impairments and limitations; this measures the severity in terms of the presence of one or more of the impairments or limitations
- the likelihood of a conditions being reported as the main disabling condition among other conditions; this indicates whether some health conditions are more likely to cause more problems than other conditions
- the mean number of disabling conditions (multiple conditions and co-morbidity)
- multiple impairments or limitations associated with a given disabling condition.

The last two measures examine whether some health conditions are more likely to be associated with multiple impairments, disabling conditions and disability groups. This is of interest, assuming that the presence of multiple conditions or disabilities is likely to be associated with a more severe experience of disability for an individual with specific health conditions.

4.2 Likelihood of ‘disability’ defined by the ABS disability survey screening questions

In the 1998 Disability Survey, ‘disability’ is effectively defined by a list of screening questions consisting of a variety of impairments and limitations (Box 2.1). A person is considered to have a disability if he/she has a ‘limitation, restriction or impairment’, which has lasted, or is likely to last, for at least six months and restricts everyday activities (ABS 1999:67) (see detailed discussion in Chapter 2 and Section 3.2). This survey’s operational definition of ‘disability’ aims to capture a broad spectrum of people who have various experiences of disability, since disability experience is often complex and multidimensional.

The measurement in this section estimates the likelihood of ‘disability’ (as defined by the survey screening questions) for each of the selected health conditions. A person is considered to have a specific health condition and also have a disability if:

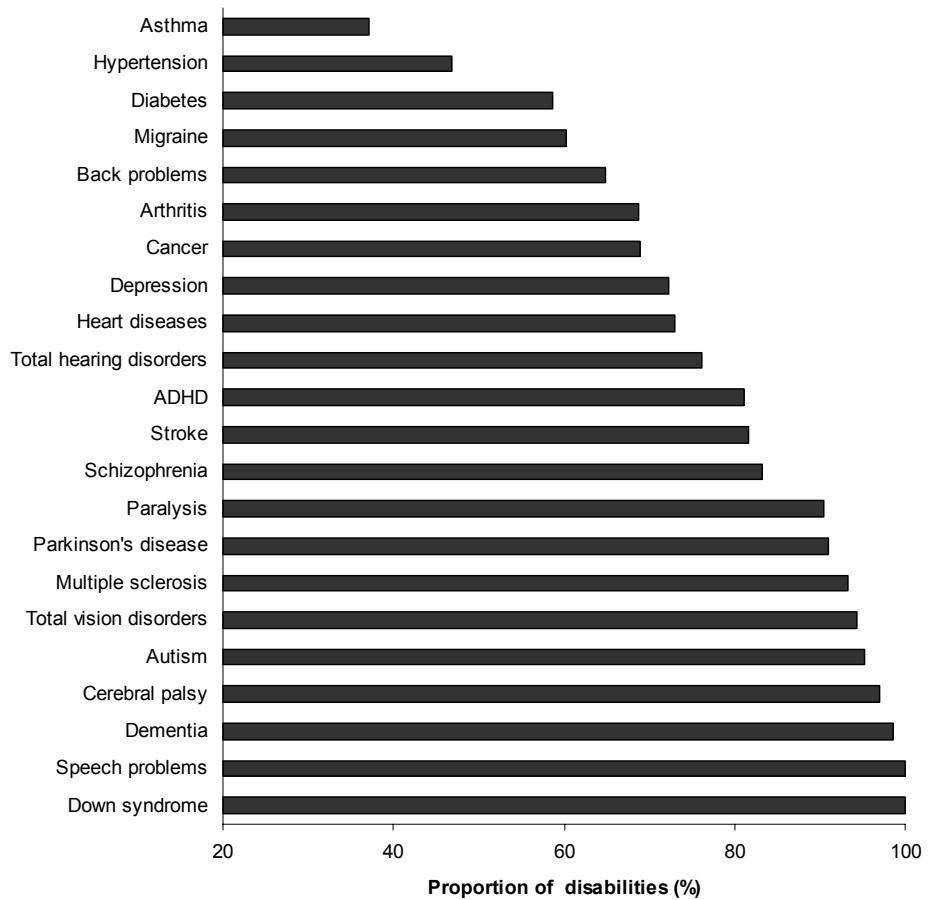
- a specific health conditions was reported by or for them
- a positive response was made by or for them to one or more of the 17 screening questions.

Overall, of the 6.7 million Australians who reported at least one long-term health condition (36% of the total Australian population), 3.6 million people (19.3% of the total population) reported one or more impairments or limitations (Section 4.4). These people were considered by the survey as having a ‘disability’.

For the selected health conditions, each row of Table 4.1 shows the proportions of disability among people with a given condition. These proportions have been ranked to consider whether people with a given condition reported a higher proportion of disability than those with other conditions.

Overall, the estimated proportions of people with disability for the selected conditions differed from the ranking pattern based on the estimated frequencies of those conditions (Table 3.1). Conditions associated with intellectual/learning, psychiatric, sensory and neurological disorders, including some physical conditions, were more likely to be associated with a disability (Figure 4.1). For each of the top ten conditions, at least 90% of people with these conditions had a disability: Down syndrome (100%), speech problems (100%), dementia (99%), cataract (97%), cerebral palsy (97%), autism (95%), total vision disorders (94%), multiple sclerosis (93%) and Parkinson’s disease (91%).

In contrast, some conditions that had been on the top of the list in terms of their prevalence (Table 3.1) tended to be ranked at the bottom of the list in Table 4.1, for example, arthritis, back problems, hypertension and asthma.



Source: Table 4.1.

Figure 4.1: Proportion of people with disability among people with a specific health condition (based on all conditions) for all ages, 1998

Table 4.1: Proportions of people with 'disability' among people with a specific health condition (based on all conditions), by age, 1998

| Health conditions | Aged under 65 years | Health conditions | Aged 65 years or over | Health conditions | All ages |
|-----------------------------|---------------------|-----------------------------|-----------------------|-----------------------------|----------|
| Down syndrome | 100.0 | ADHD | **100.0 | Down syndrome | 100.0 |
| Dementia | *100.0 | Down syndrome | **100.0 | Speech problems | 100.0 |
| Speech problems | 100.0 | Speech problems | 100.0 | Dementia | 98.6 |
| Cerebral palsy | 96.9 | Multiple sclerosis | **100.0 | Cataract | 97.1 |
| Cataract | 96.3 | Cerebral palsy | **100.0 | Cerebral palsy | 97.0 |
| Autism | 95.3 | Dementia | 98.5 | Autism | 95.3 |
| Multiple sclerosis | 92.3 | Schizophrenia | *97.5 | Total vision disorders | 94.4 |
| Paralysis | 90.9 | Cataract | 97.3 | Multiple sclerosis | 93.3 |
| Total vision disorders | 90.4 | Total vision disorders | 96.9 | Parkinson's disease | 91.0 |
| Epilepsy | 85.1 | Epilepsy | 95.3 | Paralysis | 90.4 |
| Parkinson's disease | *84.7 | Glaucoma | 94.9 | Glaucoma | 86.8 |
| ADHD | 81.0 | Parkinson's disease | 92.8 | Epilepsy | 86.5 |
| Schizophrenia | 80.7 | Paralysis | *89.6 | Osteoporosis | 85.6 |
| Osteoporosis | 80.0 | Osteoporosis | 88.4 | Schizophrenia | 83.3 |
| Stroke | 77.4 | Depression | 85.9 | Stroke | 81.7 |
| Depression | 68.2 | Total hearing disorders | 84.6 | ADHD | 81.1 |
| Total hearing disorders | 67.5 | Hearing loss, noise-induced | 83.9 | Total hearing disorders | 76.1 |
| Hearing loss, noise-induced | 66.9 | Stroke | 83.6 | Hearing loss, noise-induced | 74.2 |
| Heart diseases | 66.1 | Back problems | 78.4 | Heart diseases | 72.9 |
| Glaucoma | 64.4 | Heart diseases | 76.4 | Depression | 72.2 |
| Arthritis | 64.3 | Cancer | 75.5 | Cancer | 68.9 |
| Back problems | 61.4 | Migraine | *74.9 | Arthritis | 68.8 |
| Cancer | 60.8 | Arthritis | 73.4 | Back problems | 64.8 |
| Migraine | 58.8 | Asthma | 73.3 | Migraine | 60.2 |
| Diabetes | 51.6 | Diabetes | 66.3 | Diabetes | 58.7 |
| Hypertension | 37.4 | Hypertension | 55.3 | Hypertension | 46.8 |
| Asthma | 32.4 | Autism | — | Asthma | 37.1 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.

2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

4.3 Likelihood of being reported as main disabling condition

This section explores the likelihood of a health condition being reported as the main condition, i.e. being identified by survey respondents as causing the most problems for them (see Box 2.2 and Table 2.1 for the explanation of key terms).

Table 4.2 presents the estimates of selected health conditions based on all conditions and compares these with those based on main conditions. For people with a disability, the last figure in each row shows the proportion being reported as main disabling condition for a given health condition. These proportions are ranked to assess whether a given condition is more likely to be reported as main condition among people with a disability (Figure 4.2).

ADHD, multiple sclerosis, Down syndrome, cerebral palsy and autism were most likely to be considered as main disabling conditions. For instance, among all people who reported ADHD as a condition, 89.4% said it was the main disabling condition. Among people with ADHD and a disability, 90.3% said ADHD was the main disabling condition.

Hypertension (11%) was least likely to be reported as main disabling condition, followed by people with speech problems (15%), hearing loss due to regular noise (21%) and diabetes (26%). This pattern suggested that these conditions were more likely to be one of the co-morbidity conditions for people with a disability.

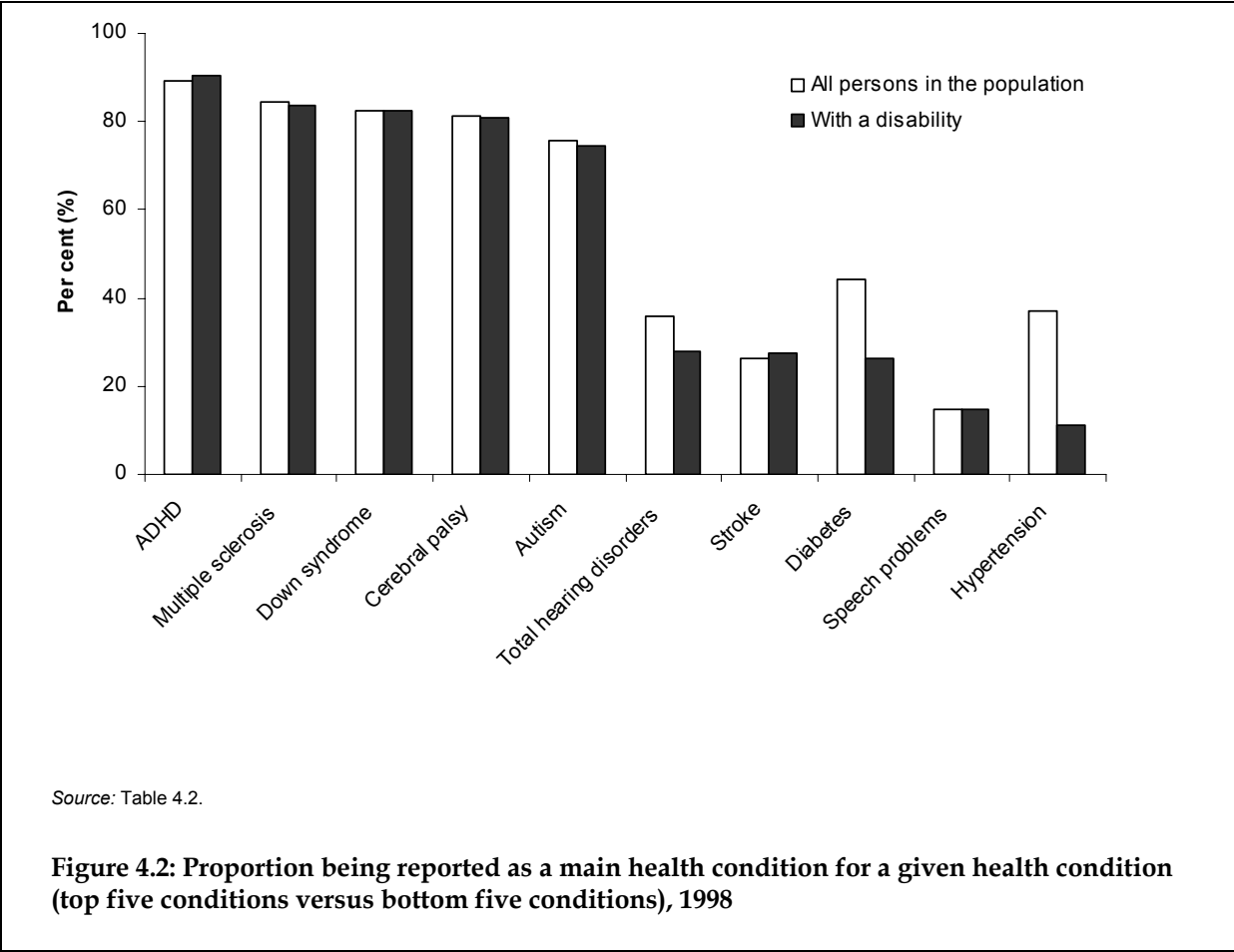


Table 4.2: Comparisons of main condition and all conditions: proportion being reported as the main condition among other conditions for a given condition, 1998

| Health conditions | People with a condition | | People with a disability | | Main condition as a percentage of all conditions | |
|-----------------------------|-------------------------|----------------|--------------------------|----------------|--|-------------------|
| | All conditions | Main condition | All conditions | Main condition | With a condition | With a disability |
| | No. ('000) | No. ('000) | No. ('000) | No. ('000) | (%) | (%) |
| ADHD | 74.2 | 66.3 | 60.1 | 54.3 | 89.4 | 90.3 |
| Multiple sclerosis | 14.4 | 12.2 | 13.4 | 11.2 | 84.6 | 83.5 |
| Down syndrome | 9.9 | *8.2 | 9.9 | *8.2 | 82.5 | *82.5 |
| Cerebral palsy | 23.1 | 18.8 | 22.4 | 18.1 | 81.3 | 80.8 |
| Autism | 13.0 | 9.8 | 12.4 | 9.2 | 75.7 | 74.5 |
| Parkinson's disease | 34.1 | 23.8 | 31.1 | 22.2 | 69.8 | 71.3 |
| Schizophrenia | 36.6 | 24.8 | 30.5 | 19.5 | 67.9 | 64.1 |
| Dementia | 101.8 | 64.8 | 100.3 | 63.8 | 63.6 | 63.6 |
| Back problems | 1,554.7 | 1,041.5 | 1,007.1 | 600.8 | 67.0 | 59.7 |
| Migraine | 91.3 | 62.7 | 55.0 | 29.9 | 68.7 | 54.3 |
| Paralysis | 24.5 | 13.5 | 22.2 | 12.0 | 55.0 | 54.2 |
| Arthritis | 1,608.7 | 859.0 | 1,107.5 | 497.1 | 53.4 | 44.9 |
| Asthma | 1,101.6 | 785.7 | 408.7 | 170.9 | 71.3 | 41.8 |
| Osteoporosis | 84.7 | 36.0 | 72.5 | 29.1 | 42.5 | 40.2 |
| Epilepsy | 105.1 | 47.3 | 90.9 | 35.5 | 45.0 | 39.1 |
| Cancer | 123.0 | 56.9 | 84.7 | 31.4 | 46.3 | 37.1 |
| Depression | 245.7 | 111.3 | 177.3 | 62.9 | 45.3 | 35.5 |
| Total vision disorders | 370.4 | 127.3 | 349.7 | 113.2 | 34.4 | 32.4 |
| Cataract | 81.7 | 27.0 | 79.3 | 25.1 | 33.0 | 31.6 |
| Heart diseases | 589.2 | 233.2 | 429.5 | 134.9 | 39.6 | 31.4 |
| Glaucoma | 65.0 | 20.8 | 56.4 | 16.2 | 32.1 | 28.7 |
| Total hearing disorders | 1,315.9 | 471.0 | 1,001.6 | 280.6 | 35.8 | 28.0 |
| Stroke | 282.1 | 74.3 | 230.3 | 63.6 | 26.3 | 27.6 |
| Diabetes | 414.0 | 183.2 | 243.0 | 63.4 | 44.2 | 26.1 |
| Hearing loss, noise-induced | 444.8 | 128.0 | 330.1 | 69.1 | 28.8 | 20.9 |
| Speech problems | 244.0 | 36.5 | 244.0 | 35.7 | 14.9 | 14.6 |
| Hypertension | 1,363.2 | 506.3 | 638.2 | 71.6 | 37.1 | 11.2 |
| Other | | 1839.2 | | 1170.8 | | |
| Total | | 6713.4 | | 3610.0 | | |

Note: Estimates marked with * have an associated relative standard error of between 25% and 50% and should be used with caution.

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

4.4 Multiple associated conditions and co-morbidity

This section explores health conditions in relation to multiple associated conditions and co-morbidity. Co-morbidity refers to the circumstance where a person has two or more health conditions at the same time. The analysis first explores severity of disability in relation to the number of conditions for the individuals and for main disability groups. Exploratory analysis on patterns of multiple conditions and multiple impairments associated with a given health condition are also presented.

Number of long-term health conditions

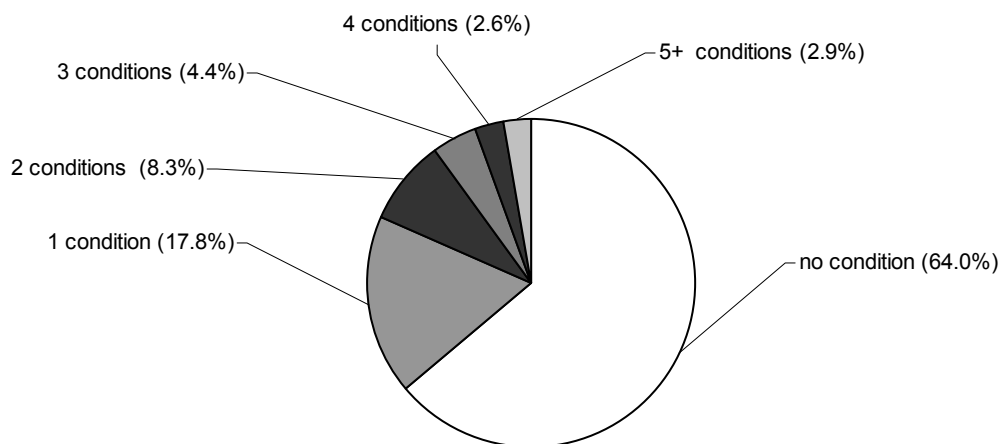
Among the general population, about 6.7 million (36% of the total Australian population) reported at least one long-term health condition. Of these, around half (3.4 million) had two or more conditions (Table 4.3 and Figure 4.3a).

Over 84% of people aged 65 or older reported at least one condition compared to 29% for people aged under 65. About 63% of people aged 65 or over had two or more conditions and an average of 2.5 conditions, compared to 12% of people aged under 65 with an average of 0.5 conditions (Figure 4.3b).

Almost the same proportions of males and females reported at least one condition and the percentage distribution of the number of conditions was similar for both males and females.

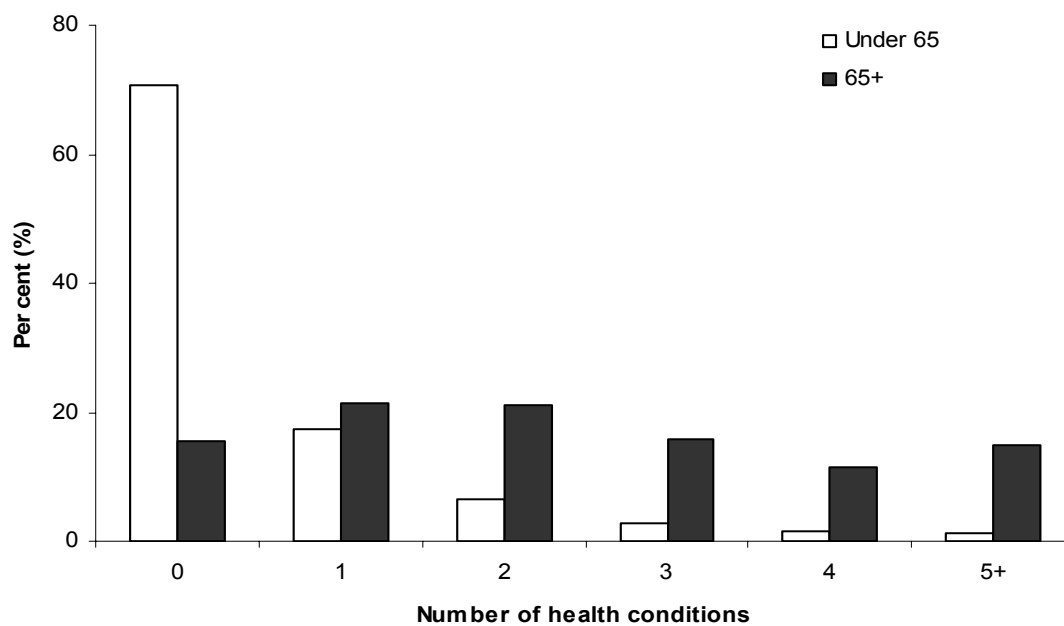
Table 4.4 and Figure 4.4 show the pattern of multiple conditions, in terms of mean number of conditions by disability status. The presence of multiple conditions is likely to be associated with a more severe experience of disability for the individual. The average numbers of conditions were 0.8 for the general population and 2.1 for people with at least one health condition, compared to 2.7 for people with a disability. People with a profound core activity restriction had the highest mean number of conditions, 3.7 for people of all ages.

Among people with a disability, the relatively low mean number of conditions for people with a schooling or employment restriction only was largely because they did not have other restrictions, for example restrictions in self-care or mobility activity. It is also due to the fact that information about schooling restriction was collected only among people of school age (5–20) and employment restriction was only applicable to people of working-age (15–64). Those people were younger and less likely to have multiple conditions than older people.



Source: Table 4.3.

Figure 4.3a: Percentage of persons in the population by number of health conditions, 1998



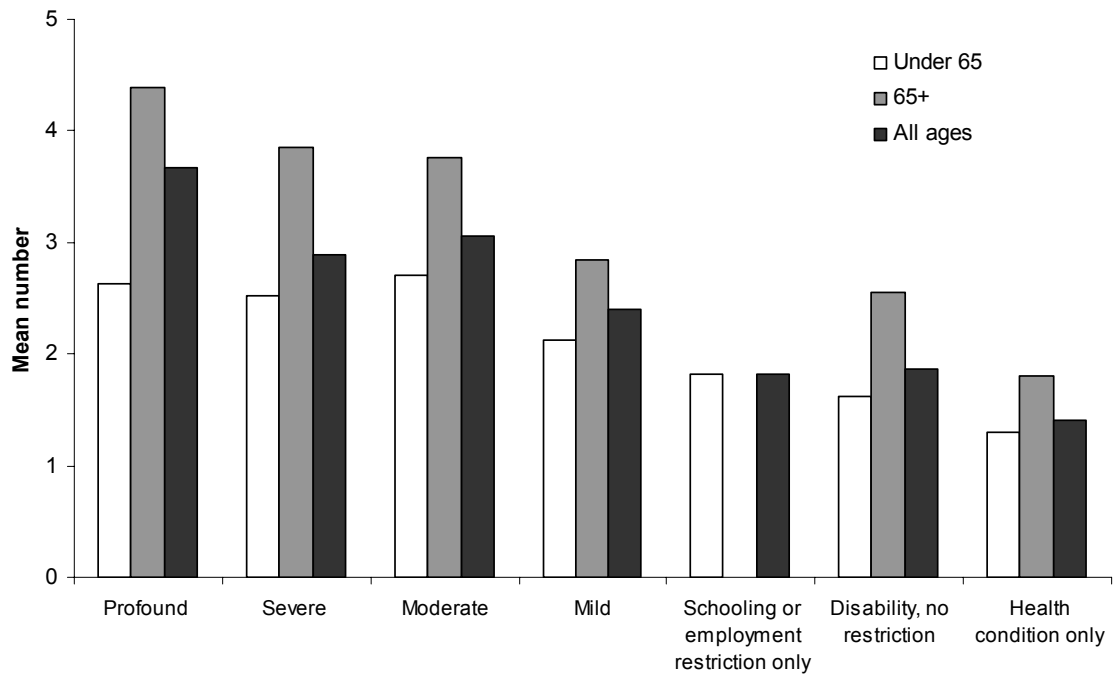
Source: Table 4.3.

Figure 4.3b: Percentage of persons in the population by number of health conditions, by age group, 1998

Table 4.3: All persons: number of health conditions by age and sex, 1998

| Number of conditions | Male | Female | Aged 0–64 | Aged 65+ | Total person | Total population |
|------------------------------------|----------------|----------------|------------------|-----------------|---------------------|-------------------------|
| Per cent (sum horizontally) | | | | | | No. ('000) |
| 0 | 50.3 | 49.7 | 97.0 | 3.0 | 100.0 | 11,946.6 |
| 1 | 50.0 | 50.0 | 85.4 | 14.6 | 100.0 | 3,312.8 |
| 2 | 49.2 | 50.8 | 69.2 | 30.8 | 100.0 | 1,552.4 |
| 3 | 47.3 | 52.7 | 56.5 | 43.5 | 100.0 | 818.3 |
| 4 | 46.1 | 53.9 | 46.9 | 53.1 | 100.0 | 491.1 |
| 5+ | 44.4 | 55.6 | 37.8 | 62.2 | 100.0 | 538.5 |
| Total | 49.7 | 50.3 | 87.8 | 12.2 | 100.0 | 18,659.7 |
| Per cent (sum vertically) | | | | | | |
| 0 | 64.7 | 63.3 | 70.7 | 15.6 | 64.0 | |
| 1 | 17.8 | 17.7 | 17.3 | 21.4 | 17.8 | |
| 2 | 8.2 | 8.4 | 6.5 | 21.1 | 8.3 | |
| 3 | 4.2 | 4.6 | 2.8 | 15.7 | 4.4 | |
| 4 | 2.4 | 2.8 | 1.4 | 11.5 | 2.6 | |
| 5+ | 2.6 | 3.2 | 1.2 | 14.8 | 2.9 | |
| Total % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | |
| Total population ('000) | 9,282.0 | 9,377.6 | 16,391.1 | 2,268.6 | 18,659.7 | |
| Mean no. of conditions | 0.72 | 0.79 | 0.52 | 2.45 | 0.75 | |

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.



Source: Table 4.4.

Figure 4.4: Mean number of health conditions in the population by disability status, by age group, 1998

Table 4.4: All persons: mean number of health conditions by disability status, by age and sex, 1998

| | Male | Female | 0-64 | 65+ | Total |
|---|-------------|-------------|-------------|-------------|-------------|
| Profound | 3.35 | 3.90 | 2.63 | 4.39 | 3.67 |
| Severe | 2.76 | 3.00 | 2.53 | 3.86 | 2.89 |
| Moderate | 2.99 | 3.14 | 2.70 | 3.76 | 3.06 |
| Mild | 2.37 | 2.43 | 2.12 | 2.85 | 2.40 |
| Schooling or employment restriction only | 1.87 | 1.75 | 1.82 | — | 1.82 |
| Disability no restriction | 1.92 | 1.79 | 1.62 | 2.55 | 1.86 |
| Health condition only ^(a) | 1.39 | 1.43 | 1.30 | 1.80 | 1.41 |
| Total with a condition^(b) | 2.03 | 2.14 | 1.76 | 2.90 | 2.09 |
| Total with a disability | 2.55 | 2.80 | 2.24 | 3.52 | 2.67 |
| Total population | 0.72 | 0.79 | 0.52 | 2.45 | 0.75 |

(a) Includes people with a health conditions but no disability.

(b) Includes people with and without a disability.

Note: The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

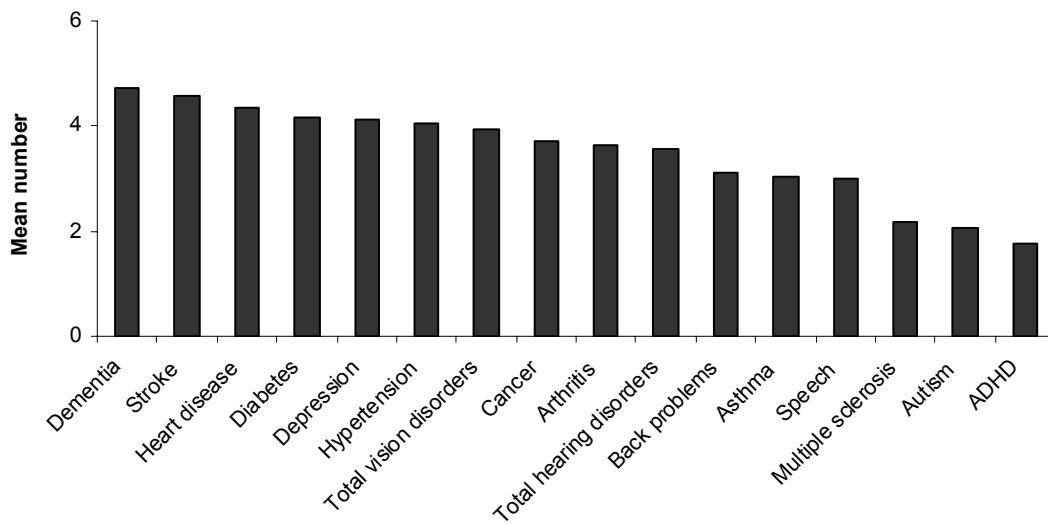
Mean number of disabling conditions for selected health conditions

All disabling conditions

For people with a disability, Table 4.5 lists the mean number of associated conditions for each of the selected health conditions. The estimates for each of the selected conditions were based on all reported conditions, whether or not these were reported as main condition for an individual. People with multiple conditions may be included into more than one condition category. For example, if a person had dementia, stroke, diabetes and heart disease, and if dementia was reported as the main condition, all these conditions are counted in each of the four condition categories respectively, not just the dementia category.

Multiple conditions were reported among people with most of the selected conditions (Figure 4.5). People with dementia led the list, with an average of 4.7 conditions. The next in line was stroke (4.6), followed by glaucoma (4.5), osteoporosis (4.4), heart disease (4.4), cataracts (4.3), diabetes (4.2), depression (4.1) and hypertension (4.1).

People who were less likely to report multiple conditions were those with ADHD (1.8), autism (2.1) and multiple sclerosis (2.2). It is worth noting that most people with ADHD and autism were children of school age and they were less likely to have conditions more commonly associated with older ages. This could contribute to the relatively low average number of conditions for people in these groups.



Source: Table 4.5.

Figure 4.5: people with a disability: mean number of health conditions by selected health condition (based on all conditions) for all ages, 1998

Table 4.5: People with a disability: mean number of conditions by selected health condition (based on all disabling conditions), by age and sex, 1998

| Health conditions | Male | Female | Aged 0-64 | Aged 65+ | Total with a disability |
|-----------------------------|------|--------|-----------|----------|-------------------------|
| Dementia | 4.73 | 4.72 | **5.32 | 4.70 | 4.72 |
| Stroke | 4.53 | 4.62 | 4.18 | 4.75 | 4.58 |
| Glaucoma | 4.33 | 4.57 | 4.33 | 4.50 | 4.46 |
| Osteoporosis | 4.47 | 4.42 | 3.90 | 4.67 | 4.43 |
| Heart disease | 4.06 | 4.68 | 3.88 | 4.56 | 4.36 |
| Cataracts | 4.02 | 4.44 | 2.45 | 4.73 | 4.30 |
| Diabetes | 4.16 | 4.20 | 3.81 | 4.49 | 4.18 |
| Depression | 4.11 | 4.16 | 3.72 | 5.29 | 4.14 |
| Hypertension | 4.06 | 4.05 | 3.79 | 4.21 | 4.05 |
| Total vision disorders | 3.70 | 4.13 | 2.96 | 4.50 | 3.93 |
| Parkinson's disease | 3.52 | 4.38 | 2.80 | 4.12 | 3.85 |
| Paralysis | 3.58 | 3.96 | 2.87 | *5.46 | 3.74 |
| Cancer | 3.83 | 3.60 | 2.95 | 4.23 | 3.72 |
| Arthritis | 3.73 | 3.58 | 3.27 | 3.96 | 3.64 |
| Total hearing disorders | 3.37 | 3.85 | 2.97 | 4.04 | 3.57 |
| Hearing loss, noise-induced | 3.37 | 3.49 | 3.19 | 3.59 | 3.38 |
| Down syndrome | 3.08 | 3.33 | 3.19 | **3.50 | 3.19 |
| Epilepsy | 3.28 | 3.05 | 2.85 | 4.87 | 3.15 |
| Cerebral palsy | 2.97 | 3.30 | 3.07 | **5.52 | 3.13 |
| Back problems | 3.02 | 3.23 | 2.75 | 4.28 | 3.12 |
| Migraine | 3.01 | 3.10 | 2.92 | *4.32 | 3.08 |
| Schizophrenia | 2.69 | 3.53 | 2.88 | *3.82 | 3.05 |
| Asthma | 2.83 | 3.20 | 2.70 | 4.18 | 3.03 |
| Speech | 2.80 | 3.33 | 2.40 | 4.56 | 3.01 |
| Multiple sclerosis | 1.57 | 2.34 | 2.03 | **3.09 | 2.18 |
| Autism | 1.82 | 3.10 | 2.05 | — | 2.05 |
| ADHD | 1.65 | 2.42 | 1.76 | **7.79 | 1.77 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.

2. The symbol '—' means nil or rounded to zero (including null cells).

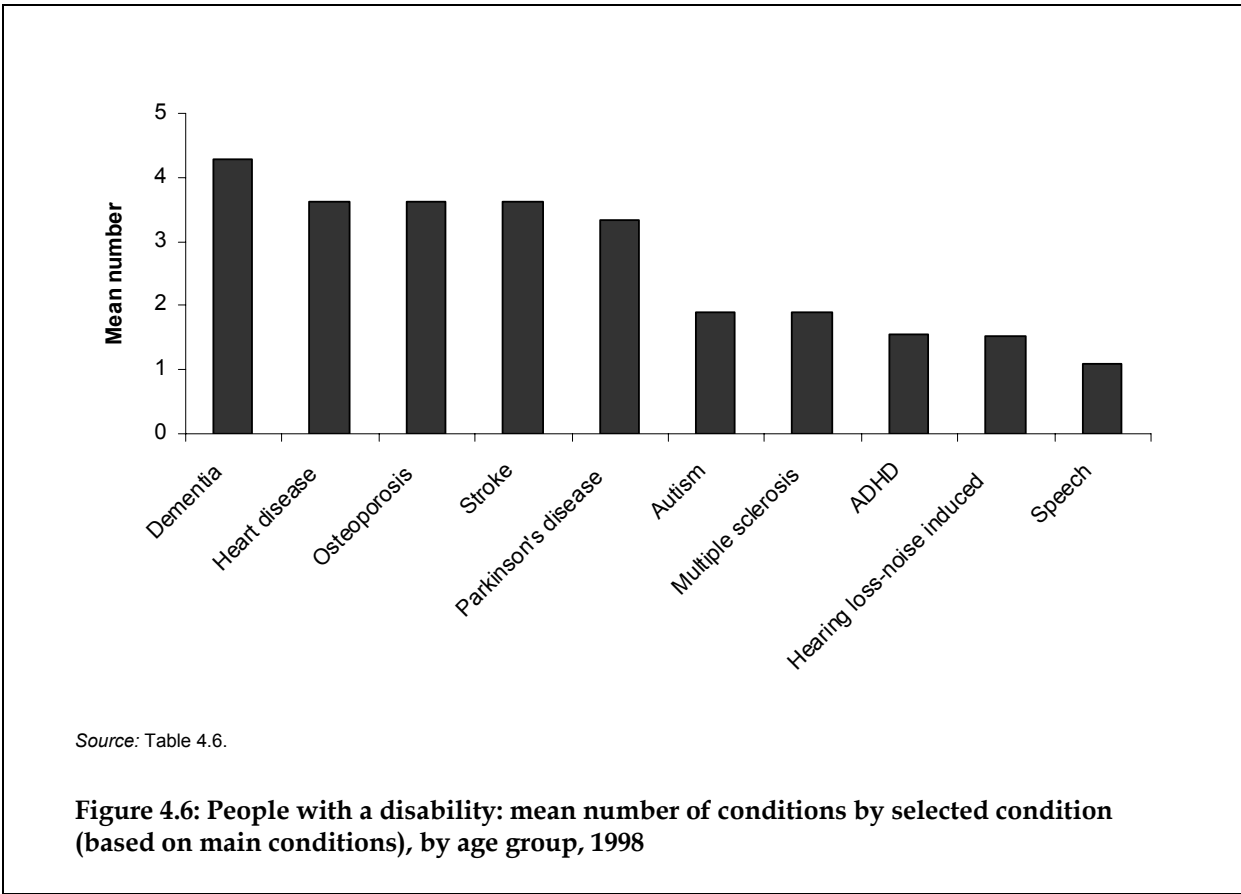
Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Main disabling conditions

Table 4.6 presents the mean number of associated conditions for people with each of the selected health conditions, on the basis of main disabling conditions. The overall pattern of multiple conditions is similar to the pattern based on all disabling conditions (Table 4.5). People with dementia had the highest mean number of conditions (4.3). Cataracts were replaced with Parkinson's disease as one of the top ten conditions, otherwise the top ten conditions were the same as those based on all disabling conditions. An average of three or more conditions was reported by people with a top ten condition (Figure 4.6).

People with speech difficulties, hearing loss due to regular noise, ADHD, multiple sclerosis and autism were ranked at the bottom of the list, each with an average of less than two conditions.

One possible explanation for the low average number of conditions reported by people with speech problems as the main condition was that these problems were often associated with other conditions such as dementia, stroke and autism that were more likely to be described as the 'main condition' (Table 4.6). The other possible explanation was that a large proportion of people with speech problems were at younger ages at the time of survey, especially those reporting these problems as their main conditions.⁷ These people were less likely than older people to have associated multiple conditions.



⁷ On the basis of all disabling conditions, 72% of people reporting speech problems were aged under 65 years; if only the main disabling conditions were considered, 98% of people with reporting speech problems were aged under 65.

Table 4.6: People with a disability: mean number of conditions by selected health condition (based on main disabling condition), by age and sex, 1998

| Selected conditions | Male | Female | Aged 0–64 | Aged 65+ | Total with a disability |
|--------------------------------|-------------|-------------|-------------|-------------|-------------------------|
| Dementia | 4.29 | 4.29 | **3.11 | 4.30 | 4.29 |
| Heart disease | 3.37 | 4.06 | 3.15 | 3.96 | 3.63 |
| Osteoporosis | 4.60 | 3.46 | 3.10 | 3.88 | 3.62 |
| Stroke | 3.66 | 3.57 | 2.89 | 3.87 | 3.61 |
| Parkinson's disease | 3.16 | 3.61 | *2.49 | 3.62 | 3.33 |
| Glaucoma | 2.90 | 3.46 | *3.21 | 3.21 | 3.21 |
| Diabetes | 3.39 | 2.99 | 2.80 | 3.68 | 3.18 |
| Depression | 3.18 | 3.11 | 2.92 | 4.45 | 3.14 |
| Other vision disorders | 2.92 | 3.32 | 2.06 | 3.87 | 3.13 |
| <i>Total vision disorders</i> | <i>2.85</i> | <i>3.19</i> | <i>1.97</i> | <i>3.63</i> | <i>3.03</i> |
| Hypertension | 3.11 | 3.12 | 2.85 | 3.31 | 3.12 |
| Paralysis | 2.69 | 3.19 | *2.02 | *5.07 | 2.87 |
| Arthritis | 2.78 | 2.87 | 2.39 | 3.22 | 2.84 |
| Cataracts | 2.57 | 2.68 | *1.22 | 3.34 | 2.63 |
| Cerebral palsy | 2.47 | 2.70 | 2.54 | **4.91 | 2.58 |
| Down syndrome | 2.67 | 2.47 | *2.57 | **3.50 | *2.58 |
| Back problems | 2.43 | 2.57 | 2.25 | 3.55 | 2.49 |
| Schizophrenia | 2.24 | 2.72 | 2.20 | *3.41 | 2.43 |
| Cancer | 2.75 | 1.65 | 1.67 | 3.02 | 2.30 |
| Epilepsy | 2.19 | 2.09 | 1.93 | *3.64 | 2.13 |
| Migraine | 2.70 | 1.73 | 1.98 | **3.69 | 2.09 |
| Asthma | 2.00 | 2.18 | 1.86 | 3.14 | 2.09 |
| Other hearing disorders | 2.15 | 2.00 | 1.71 | 2.58 | 2.08 |
| <i>Total hearing disorders</i> | <i>1.92</i> | <i>1.98</i> | <i>1.61</i> | <i>2.37</i> | <i>1.94</i> |
| Autism | 1.66 | 3.13 | 1.91 | — | 1.91 |
| Multiple sclerosis | 1.44 | 2.04 | 1.85 | **2.27 | 1.89 |
| ADHD | 1.53 | 1.64 | 1.54 | **9.00 | 1.54 |
| Hearing loss, noise-induced | 1.50 | 1.56 | 1.33 | 1.74 | 1.51 |
| Speech | 1.05 | 1.28 | 1.08 | **1.58 | 1.09 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Mean number of conditions for significant disability groups

In Australia, disabilities are often classified into 'disability groups'. Disability groups, such as 'intellectual disability' and 'physical disability' provide a broad categorisation of disabilities based not only underlying health conditions and impairments, but also on activity limitations, participation restrictions and related environmental factors (see Chapter 2 for detailed definitions). Australian disability administrators, peak bodies, people with disabilities and service providers use disability groups as a basis for describing groups of

people with similar experience of disability and patterns of impairments, activity limitation, participation restrictions and related environmental factors (AIHW 2003a).

AIHW has published a report that provides a range of estimates of prevalence of the main disability groups that may suit different purposes (AIHW 2003b). For example, prevalence may be estimated either on the basis of disabling conditions only, or using information combining disabling condition and certain levels/severities of activity limitations or participation restrictions.

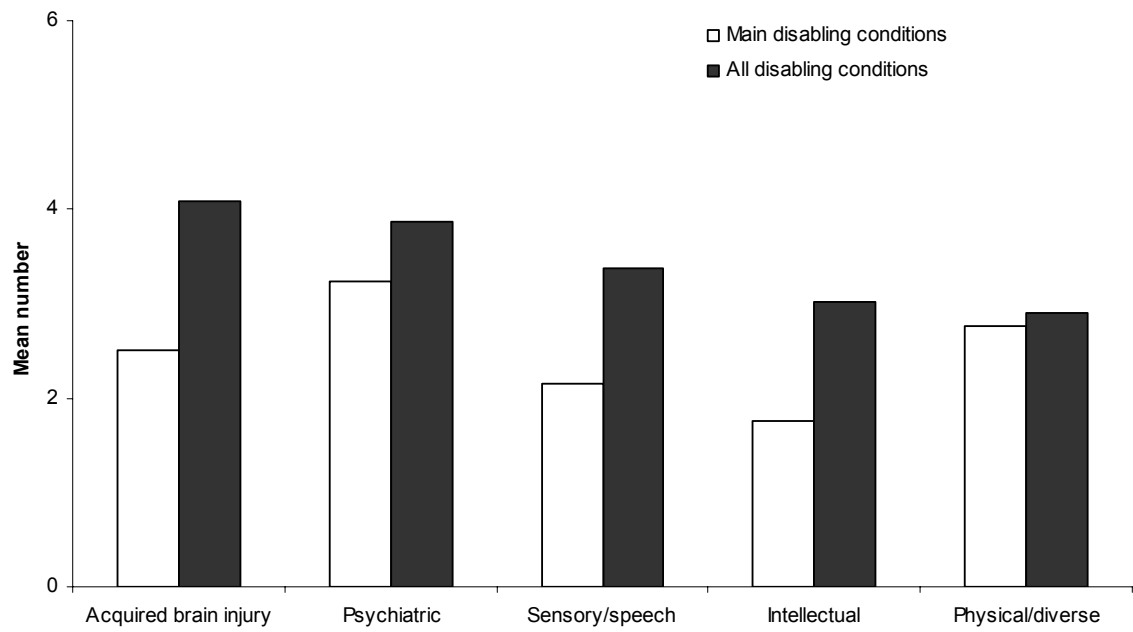
In this section, the estimates of five disability groups (intellectual, psychiatric, sensory/speech, acquired brain injury and physical/diverse) in Table 4.7 use only data on the main disabling condition or all disabling conditions. Survey information about certain levels/severity of activity limitations or participation restrictions is not included in the estimation. A full list of impairments and disabling conditions related to specific disability groups is presented in Appendix 1.

The general pattern shows that, of the five disability groups, the mean number of conditions was relatively high for people with psychiatric disability, whether considering main disabling condition (the highest) or all disabling conditions (the second highest) (Table 4.7; Figure 4.7). In contrast, the mean number of conditions for people with an intellectual disability tended to be lower, either on the basis of main disabling conditions (fifth) or all disabling conditions (fourth).

The relatively high mean number of conditions for people with psychiatric disability may be largely because this disability was more common among the adult population who were more likely to acquire other age-related conditions. One of the main conditions associated with psychiatric disability was dementia. People with dementia had the highest mean number of disabling conditions (tables 4.5 and 4.6).

Intellectual disability is an early onset disability. Analysis of Australian disability survey data indicated that the prevalence rates of intellectual disability were markedly higher among children of school age than the adult population and were highest for those aged 10 to 14 (AIHW: Wen 1997; AIHW 2003b). The relatively low average number of conditions for this group could be partly due to the fact that most people with an intellectual disability surveyed were young at the time of survey and had not reach the life stage that was more likely to acquire various age-related conditions, especially physical and sensory conditions.

When the estimates were based on all reported conditions, the mean number of conditions was highest for the acquired brain injury disability group. Acquired brain injuries are often associated with multiple disabilities arising from damage to the brain acquired after birth due to various causes: traumatic accidents, stroke, brain tumours, infection, poisoning, lack of oxygen, degenerative neurological diseases etc. Acquired brain injuries can result in reduced and/or deteriorating cognitive, physical, emotional or independent functioning (AIHW: Fortune & Wen 1999; AIHW 2003b).



Source: Table 4.7.

Figure 4.7: People with a disability: mean number of health conditions by disability groups for all ages, 1998

Table 4.7: People with a disability: mean number of conditions by disability groups, by age and sex, 1998

| Disability groups | Male | Female | Aged 0-64 | Aged 65+ | Total with a disability |
|---------------------------------|------|--------|-----------|----------|-------------------------|
| Main disabling condition | | | | | |
| Intellectual | 1.66 | 2.03 | 1.72 | *4.25 | 1.76 |
| Psychiatric | 3.13 | 3.32 | 2.75 | 4.36 | 3.24 |
| Sensory/speech | 2.01 | 2.38 | 1.60 | 2.84 | 2.16 |
| Acquired brain injury | 2.33 | 2.75 | 2.26 | *4.91 | 2.50 |
| Physical/diverse | 2.72 | 2.82 | 2.33 | 3.58 | 2.77 |
| All disabling conditions | | | | | |
| Intellectual | 2.69 | 3.52 | 2.46 | 4.71 | 3.02 |
| Psychiatric | 3.71 | 3.99 | 3.33 | 4.90 | 3.87 |
| Sensory/speech | 3.16 | 3.64 | 2.74 | 3.98 | 3.37 |
| Acquired brain injury | 3.99 | 4.22 | 3.64 | 5.45 | 4.09 |
| Physical/diverse | 2.85 | 2.97 | 2.46 | 3.68 | 2.91 |

Note: Estimates marked with * have an associated relative standard error of between 25% and 50%. These estimates should be used with caution.

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Patterns of associated conditions and disabilities

This section provides an exploratory analysis of the patterns of multiple conditions among people who had one or more of the selected health conditions as well as those who had one or more types of disabilities.

Associated conditions

For people with a disability with each of the selected conditions, each column of Table 4.8 shows the estimates of proportions of people with the other conditions. These estimates are based on all reported conditions, thus the co-morbid conditions reported by people with multiple conditions may be classified into more than one condition category.

People with dementia were likely to report other selected conditions, six conditions being reported by over one-fifth of them: total hearing (43%), arthritis (32%), speech (30%), total vision (26%), heart diseases (26%) and stroke (23%). The proportion of people with depression (9.5%) was highest among people with dementia compared with people with other conditions.

People who had stroke were the most likely to report heart diseases (31%) and diabetes (16%) as other conditions. People with stroke also reported high proportions with arthritis (42%), hypertension (37%) and total hearing (37%). For example, this relationship may be reflected in the pattern:

- Diabetes was most commonly reported by those with stroke (16%), hypertension (15%), heart disease (13%) and dementia (13%).
- Hypertension most frequently occurred among people with diabetes (38%), stroke (37%), osteoporosis (33%) and heart disease (32%).
- People with osteoporosis were the most likely to also report the highest proportion of arthritis (48%).

Of those conditions that more frequently occurred among younger people (Table A6.1), speech problems were reported by 76% of people with autism and 55% of people with cerebral palsy. Asthma was reported by 23% of people with ADHD and 20% of people with autism.

The proportion reporting back problems (35%) was highest for people with depression, possibly because these conditions were more prevalent among older working-age people.

Discussions on the patterns of multiple conditions for people with some low-frequency conditions, for example, autism, Down syndrome, cerebral palsy and Parkinson’s disease, are not possible on the basis of the data in Table 4.8 due to the high relative standard errors.

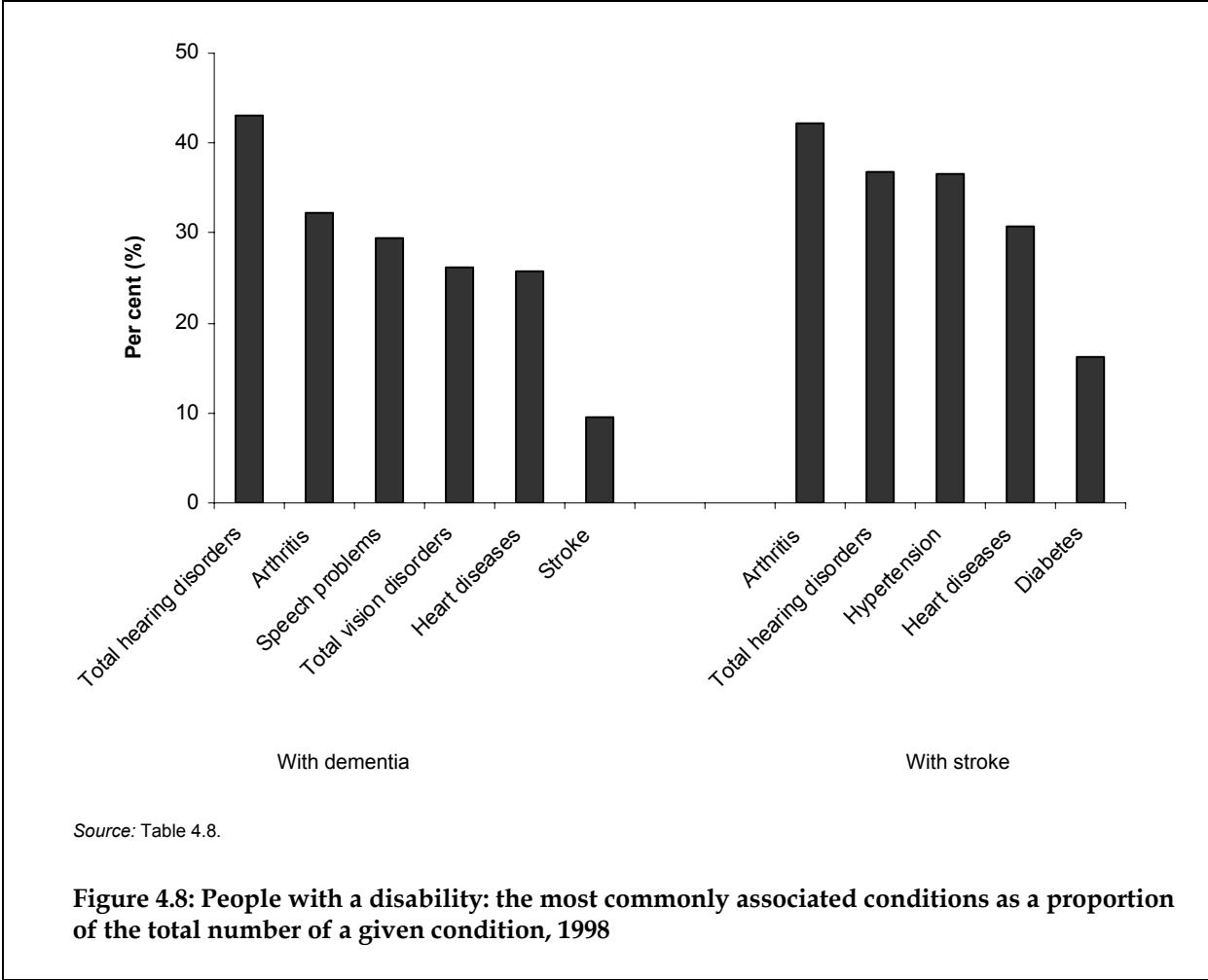


Table 4.8: People with a disability: associated conditions as a proportion of the total number of a given health condition, 1998

| | Dementia | Stroke | Glaucoma | Osteoporosis | Heart diseases | Cataracts | Diabetes | Depression | Hypertension |
|---|--------------|--------------|-------------|--------------|----------------|-------------|--------------|--------------|--------------|
| Per cent of column total (Total number of a given condition) | | | | | | | | | |
| Dementia | 100.0 | 10.1 | *11.5 | *8.6 | 6.0 | *9.0 | 5.4 | 5.4 | 2.6 |
| Stroke | 23.3 | 100.0 | *11.9 | *10.0 | 16.5 | 14.2 | 15.4 | 10.2 | 13.2 |
| Glaucoma | *6.5 | *2.9 | 100.0 | **2.0 | 2.5 | **1.3 | *2.3 | **1.3 | 2.6 |
| Osteoporosis | *6.2 | *3.2 | **2.6 | 100.0 | 3.9 | *6.7 | *2.2 | *3.7 | 3.7 |
| Heart diseases | 25.7 | 30.7 | 18.7 | 22.8 | 100.0 | 28.2 | 23.5 | 12.7 | 21.7 |
| Cataracts | *7.1 | 4.9 | **1.8 | *7.3 | 5.2 | 100.0 | *2.8 | **1.4 | 3.9 |
| Diabetes | 13.2 | 16.2 | *9.8 | *7.4 | 13.3 | *8.7 | 100.0 | 6.1 | 14.5 |
| Depression | 9.5 | 7.8 | **4.0 | *9.0 | 5.2 | **3.0 | 4.4 | 100.0 | 5.5 |
| Hypertension | 16.6 | 36.7 | 29.7 | 32.6 | 32.3 | 31.7 | 38.0 | 19.6 | 100.0 |
| Total vision disorders | 26.1 | 19.4 | 100.0 | 16.0 | 16.0 | 100.0 | 16.5 | 9.1 | 13.7 |
| Parkinson's disease | *6.5 | *1.8 | **1.0 | **2.1 | *1.5 | **2.5 | *1.3 | *1.5 | *0.7 |
| Paralysis | **1.2 | *2.5 | **0.7 | — | *0.6 | **1.5 | *0.4 | **0.6 | *0.4 |
| Cancer | *4.2 | 4.4 | **2.3 | **0.9 | 3.0 | *4.0 | *3.7 | *2.4 | 3.2 |
| Arthritis | 32.3 | 42.2 | 42.8 | 48.2 | 41.4 | 43.4 | 38.2 | 36.1 | 49.1 |
| Total hearing disorders | 43.0 | 36.7 | 40.3 | 33.8 | 41.6 | 38.9 | 30.9 | 24.0 | 36.9 |
| Hearing loss, noise-induced | *4.7 | 10.7 | *7.3 | **1.0 | 13.2 | *4.4 | 11.0 | 6.1 | 12.6 |
| Down syndrome | **0.1 | **0.3 | — | — | *0.3 | **0.1 | — | — | — |
| Epilepsy | *3.2 | 4.4 | **1.5 | **2.1 | *1.2 | **0.3 | *1.3 | *2.5 | *0.8 |
| Cerebral palsy | **0.2 | *1.1 | **2.1 | — | *0.2 | **0.1 | — | **0.1 | **0.3 |
| Back problems | *7.9 | 19.7 | 19.8 | 22.5 | 23.2 | 18.1 | 23.6 | 35.1 | 26.8 |
| Migraine | **0.7 | **0.5 | — | — | *0.3 | **0.4 | *1.6 | *3.6 | *0.6 |
| Schizophrenia | **1.4 | **0.5 | **0.2 | **0.2 | *0.2 | **0.4 | **0.9 | **1.3 | 0.2 |
| Asthma | *2.8 | 7.2 | *8.7 | *7.8 | 9.6 | *5.3 | 9.1 | 12.9 | 8.2 |
| Speech | 29.5 | 18.2 | *4.6 | *2.8 | 5.0 | *6.7 | 5.2 | 7.1 | 2.9 |
| Multiple sclerosis | **0.1 | **0.2 | 0.1 | **1.0 | — | **0.1 | — | **0.6 | **0.3 |
| Autism | — | **0.2 | — | — | — | — | — | — | — |
| ADHD | — | **0.2 | — | — | 0.1 | — | — | *1.9 | — |
| Total ('000) | 100.3 | 230.3 | 56.4 | 72.5 | 429.5 | 79.3 | 243.0 | 177.3 | 638.2 |

(continued)

Table 4.8 (continued): People with a disability: associated conditions as a proportion of the total number of a given health condition, 1998

| | Total vision | Parkinson's disease | Paralysis | Cancer | Arthritis | Total hearing | Hearing loss, noise-induced | Down syndrome | Epilepsy |
|--|--------------|---------------------|-------------|-------------|----------------|----------------|-----------------------------|---------------|-------------|
| Per cent of column total (Total number of a given condition) | | | | | | | | | |
| Dementia | 7.5 | *20.9 | **5.2 | *5.0 | 2.9 | 4.3 | *1.4 | **0.9 | *3.5 |
| Stroke | 12.8 | *13.1 | *26.3 | 12.1 | 8.8 | 8.4 | 7.4 | **7.2 | 11.0 |
| Glaucoma | 16.1 | **1.8 | **1.8 | **1.5 | 2.2 | 2.3 | *1.3 | — | **0.9 |
| Osteoporosis | 3.3 | **5.0 | **0.1 | **0.7 | 3.2 | 2.4 | **0.2 | — | **1.7 |
| Heart diseases | 19.6 | *20.2 | **11.0 | 15.2 | 16.1 | 17.8 | 17.2 | **13.8 | *5.5 |
| Cataracts | 22.7 | **6.5 | **5.2 | *3.7 | 3.1 | 3.1 | *1.1 | **1.1 | **0.2 |
| Diabetes | 11.5 | *9.8 | **4.8 | *10.5 | 8.4 | 7.5 | 8.1 | — | *3.5 |
| Depression | 4.6 | *8.7 | **5.0 | *5.0 | 5.8 | 4.3 | 3.3 | **0.2 | *4.9 |
| Hypertension | 25.1 | *14.1 | *12.8 | 24.0 | 28.3 | 23.5 | 24.3 | — | *5.7 |
| Total vision disorders | 100.0 | *16.2 | *17.2 | 12.2 | 11.1 | 12.1 | 8.9 | **3.5 | *5.8 |
| Parkinson's disease | *1.4 | 100.0 | **0.5 | **1.5 | *0.6 | 0.9 | **0.5 | — | **0.3 |
| Paralysis | *1.1 | **0.4 | 100.0 | **0.3 | *0.3 | *0.3 | — | **7.9 | **1.5 |
| Cancer | 2.9 | *4.2 | **1.1 | 100.0 | 3.0 | 3.2 | 3.2 | — | **1.4 |
| Arthritis | 35.2 | *20.6 | *13.0 | 39.5 | 100.0 | 36.7 | 35.6 | **18.0 | 14.8 |
| Total hearing disorders | 34.6 | 29.5 | *14.4 | 37.7 | 33.2 | 100.0 | 100.0 | **19.2 | 15.2 |
| Hearing loss, noise-induced | 8.4 | **5.1 | **0.3 | 12.4 | 10.6 | 33.0 | 100.0 | — | **2.6 |
| Down syndrome | **0.1 | — | **3.5 | — | **0.2 | **0.2 | — | 100.0 | **0.1 |
| Epilepsy | *1.5 | **0.9 | **6.2 | **1.6 | 1.2 | 1.4 | **0.7 | **1.3 | 100.0 |
| Cerebral palsy | *1.1 | **0.3 | **8.5 | — | **0.2 | **0.2 | — | — | *5.8 |
| Back problems | 19.1 | *13.4 | **7.3 | 21.5 | 29.6 | 25.7 | 32.4 | **22.3 | 12.9 |
| Migraine | *0.9 | **1.8 | **1.8 | **1.1 | 1.0 | *0.8 | **0.7 | — | **1.3 |
| Schizophrenia | **0.3 | **1.0 | **0.8 | **0.1 | *0.4 | *0.5 | — | — | **1.0 |
| Asthma | 7.5 | **3.2 | *12.2 | *4.6 | 9.3 | 8.0 | 7.4 | **0.2 | 15.0 |
| Speech | 7.7 | 32.0 | *24.5 | *6.3 | 2.8 | 5.6 | *1.7 | *69.2 | 18.7 |
| Multiple sclerosis | *0.8 | — | **0.3 | — | *0.3 | **0.1 | — | — | **0.2 |
| Autism | **0.1 | — | — | — | — | — | — | — | **1.5 |
| ADHD | **0.2 | — | — | — | **0.1 | *0.5 | — | — | **1.3 |
| Total ('000) | 349.7 | 31.1 | 22.2 | 84.7 | 1,107.5 | 1,001.6 | 330.1 | 9.9 | 90.9 |

(continued)

Table 4.8 (continued): People with a disability: associated conditions as a proportion of the total number of a given health condition, 1998

| | Cerebral palsy | Back problems | Migraine | Schizophrenia | Asthma | Speech problems | Multiple sclerosis | Autism | ADHD |
|---|----------------|----------------|-------------|---------------|--------------|-----------------|--------------------|-------------|-------------|
| Per cent of column total (Total number of a given condition) | | | | | | | | | |
| Dementia | **0.8 | *0.8 | **1.2 | **4.6 | *0.7 | 12.1 | **0.4 | — | — |
| Stroke | **10.9 | 4.5 | **2.1 | **3.5 | 4.1 | 17.2 | **3.5 | **4.5 | **0.6 |
| Glaucoma | **5.3 | 1.1 | — | **0.4 | *1.2 | *1.1 | **0.3 | — | — |
| Osteoporosis | **0.1 | 1.6 | — | **0.4 | *1.4 | **0.8 | **5.3 | — | — |
| Heart diseases | **3.0 | 9.9 | **2.7 | **2.8 | 10.1 | 8.7 | **0.2 | — | **0.4 |
| Cataracts | **0.3 | 1.4 | **0.6 | **1.0 | *1.0 | *2.2 | **0.3 | — | — |
| Diabetes | **0.2 | 5.7 | *7.2 | **7.0 | 5.4 | 5.1 | **0.6 | — | — |
| Depression | **1.2 | 6.2 | *11.5 | **7.8 | 5.6 | 5.2 | **8.2 | — | *5.7 |
| Hypertension | **7.7 | 17.0 | *7.3 | **5.0 | 12.9 | 7.6 | **15.2 | — | **0.1 |
| Total vision disorders | *16.8 | 6.6 | *5.9 | **3.2 | 6.4 | 11.0 | *20.2 | **2.1 | *1.4 |
| Parkinson's disease | **0.5 | *0.4 | **1.0 | **1.0 | **0.2 | 4.1 | — | — | — |
| Paralysis | **8.4 | **0.2 | **0.7 | **0.6 | *0.7 | *2.2 | **0.5 | — | — |
| Cancer | **0.1 | 1.8 | **1.7 | **0.4 | *1.0 | *2.2 | — | — | — |
| Arthritis | **8.4 | 32.5 | 20.3 | *13.7 | 25.1 | 12.9 | *24.2 | — | **1.7 |
| Total hearing disorders | **9.2 | 25.6 | *14.7 | *15.7 | 19.6 | 23.2 | **6.3 | **2.1 | *8.2 |
| Hearing loss, noise-induced | — | 10.6 | **4.3 | — | 5.9 | *2.3 | — | — | — |
| Down syndrome | — | **0.2 | — | — | — | *2.8 | — | — | — |
| Epilepsy | 23.6 | 1.2 | **2.2 | **3.0 | 3.3 | 7.0 | **1.6 | **11.2 | **2.0 |
| Cerebral palsy | 100.0 | — | — | — | *0.7 | 5.0 | — | **4.5 | **0.6 |
| Back problems | **1.4 | 100.0 | 24.1 | *21.0 | 24.0 | 8.1 | **17.0 | — | **3.0 |
| Migraine | — | 1.3 | 100.0 | **3.6 | *2.1 | — | — | — | **1.8 |
| Schizophrenia | — | *0.6 | **2.0 | 100.0 | *0.8 | *1.2 | **0.2 | — | **0.9 |
| Asthma | *12.8 | 9.7 | *15.5 | *10.3 | 100.0 | 8.3 | **5.2 | 20.0 | 23.2 |
| Speech | 55.0 | 2.0 | **0.1 | *9.8 | 5.0 | 100.0 | *27.1 | 75.7 | *13.3 |
| Multiple sclerosis | — | **0.2 | — | **0.1 | **0.2 | *1.5 | 100.0 | — | — |
| Autism | **2.5 | — | — | — | **0.6 | 3.8 | — | 100.0 | **1.2 |
| ADHD | **1.6 | **0.2 | **2.0 | **1.7 | 3.4 | *3.3 | — | **5.9 | 100.0 |
| Total ('000) | 22.4 | 1,007.1 | 55.0 | 30.5 | 408.7 | 244.0 | 13.4 | 12.4 | 60.1 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Sources: Table A5.1; AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Associated disabilities

In this section, analysis of patterns of multiple conditions uses data that are more aggregated, namely disability groups rather than health conditions.

Table 4.9 illustrates the pattern of associated disabilities for people with several of the selected conditions. Each row of the table gives the estimates of associated disability groups reported by people with a given condition. The estimates were calculated as the proportions of the total number of people with a given condition. People with a specific condition may be associated with more than one type of disability so the sum of the components of each row may be larger than 100%. The estimates of disability groups use data on all disabling conditions. Survey information about certain levels/severity of activity limitations or participation restrictions is not included in the estimation. A full list of impairments and disabling conditions related to specific disability groups is presented in Appendix 1.

People with dementia (by definition in the psychiatric disability group) were most likely to have multiple disabilities: 90% of them had physical/diverse disability, 80% intellectual disability, 69% sensory/speech disability and 16% disability associated with acquired brain injury (Figure 4.9; Table 4.9).

High proportions of people with multiple associated disabilities were also found for people with autism, Down syndrome, cerebral palsy, Parkinson’s disease, schizophrenia, speech and stroke, each with a relatively high proportion in three or more associated disability groups.

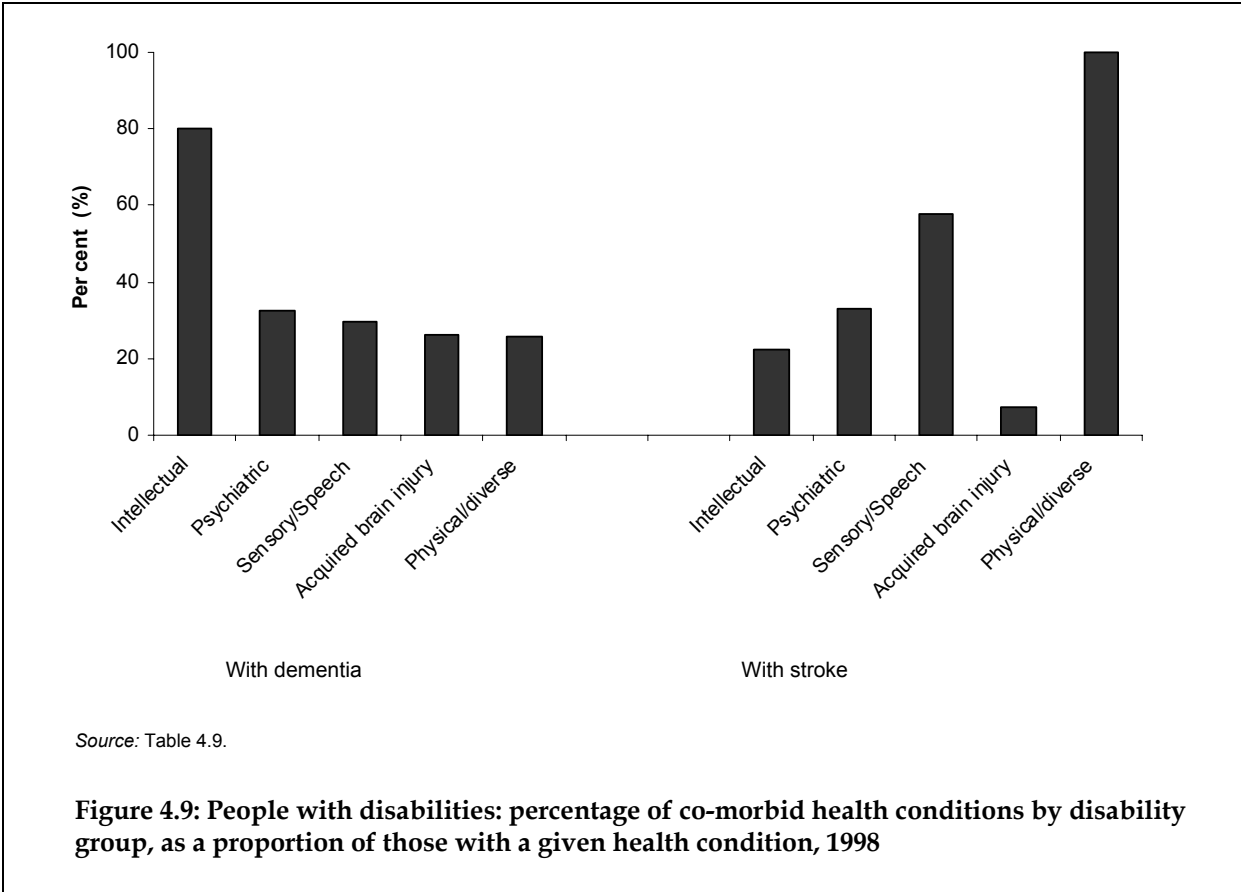


Table 4.9: People with a disability: associated conditions (based on all disabling conditions) by disability group, as a proportion of the total number of a given health condition, 1998

| Health conditions | Intellectual | Psychiatric | Sensory/ speech | Acquired brain injury | Physical/ diverse | Total ('000) |
|---|--------------|-------------|--------------------|-----------------------------|----------------------|-----------------|
| Per cent of the total number of a given health condition | | | | | | |
| ADHD | 100.0 | 30.9 | 18.6 | **3.3 | 27.9 | 60.1 |
| Autism | 100.0 | *70.1 | *75.7 | **8.5 | *50.9 | 12.4 |
| Down syndrome | 100.0 | *66.5 | *69.6 | **6.8 | *44.0 | 9.9 |
| Schizophrenia | 47.7 | 100.0 | *24.7 | *9.6 | 48.6 | 30.5 |
| Depression | 20.3 | 100.0 | 32.1 | 10.6 | 84.3 | 177.3 |
| Dementia | 80.0 | 96.6 | 69.4 | 15.9 | 90.2 | 100.3 |
| Cataracts | 12.0 | 20.9 | 100.0 | *5.0 | 80.7 | 79.3 |
| Glaucoma | *13.4 | 25.6 | 100.0 | *9.1 | 88.0 | 56.4 |
| Total vision disorders | 14.6 | 24.7 | 100.0 | 10.6 | 80.9 | 349.7 |
| Hearing loss, noise-induced | 5.6 | 15.3 | 100.0 | 3.3 | 80.7 | 330.1 |
| Total hearing disorders | 10.2 | 21.2 | 100.0 | 5.1 | 78.4 | 1,001.6 |
| Speech | 56.6 | 43.4 | 100.0 | 17.7 | 61.2 | 244.0 |
| Heart diseases | 9.4 | 24.1 | 52.7 | 4.7 | 100.0 | 429.5 |
| Stroke | 22.4 | 32.9 | 57.6 | 7.5 | 100.0 | 230.3 |
| Hypertension | 6.5 | 20.8 | 46.2 | 4.3 | 100.0 | 638.2 |
| Asthma | 14.3 | 18.8 | 27.2 | 4.7 | 100.0 | 408.7 |
| Arthritis | 6.1 | 21.6 | 40.8 | 4.5 | 100.0 | 1,107.5 |
| Back problems | 5.5 | 20.2 | 30.9 | 5.7 | 100.0 | 1,007.1 |
| Osteoporosis | 6.1 | 32.1 | 45.1 | **2.2 | 100.0 | 72.5 |
| Parkinson's disease | 29.2 | 41.7 | 57.4 | *12.2 | 100.0 | 31.1 |
| Multiple sclerosis | **11.9 | **16.7 | *42.8 | **1.4 | 100.0 | 13.4 |
| Epilepsy | 33.1 | 36.5 | 33.6 | 23.8 | 100.0 | 90.9 |
| Migraine | *8.1 | 30.1 | 19.5 | *6.1 | 100.0 | 55.0 |
| Cerebral palsy | 48.0 | *36.2 | 62.7 | *39.4 | 100.0 | 22.4 |
| Paralysis | *33.3 | *29.9 | *38.0 | *24.1 | 100.0 | 22.2 |
| Diabetes | 11.9 | 23.6 | 44.2 | 6.0 | 93.6 | 243.0 |
| Cancer | 10.9 | 17.6 | 47.7 | *4.3 | 92.3 | 84.7 |

Note: Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.

Sources: Table A5.2; AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Multiple impairments and limitations associated with a condition

A health condition may be associated with a variety of impairments. Section 3.3 detailed the reported main conditions for each of the associated impairments or limitations. Describing the pattern of various impairments associated with a condition is essential for a better understanding of the associations between health conditions and disability. This section examines which health conditions are more likely to be associated with multiple impairments.

For people with a disability, each row of Table 4.10 shows the estimates of impairments (as identified by the survey screening questions) associated with a given main condition. Dementia and stroke were the most likely to be associated with multiple impairments, relating to almost all the listed impairments and limitations.

Dementia was strongly associated with intellectual/learning and mental impairments: 72,200 people with dementia as a main condition had difficulty learning or understanding things, 66,900 had mental illness or conditions requiring help or supervision, 16,200 had nervous or emotional conditions causing restrictions. Dementia was also associated with physical and sensory impairments: 37,000 people with dementia had restriction in physical activities or in doing physical work, 11,200 reported incomplete use of feet or legs and 20,000 reported speech difficulties.

Stroke had a strong association with physical impairments and limitations: 57,000 people reporting stroke as a main condition were restricted in physical activities or in doing physical work, 51,700 had difficulty gripping or holding things, 49,200 reported incomplete use of feet or legs, 45,100 reported incomplete use of arms or fingers and 10,500 had chronic or recurrent pain or discomfort. Stroke was also associated with sensory/speech and intellectual/learning impairments: 29,800 people with stroke as a main condition had speech difficulties and 18,300 people had difficulty learning or understanding things.

People with musculoskeletal disorders, such as arthritis and back problems, frequently had multiple physical impairments or limitations, for instance, restriction in physical activities or in doing physical work, incomplete use of feet or legs and difficulty gripping or holding things. People with musculoskeletal disorders as a main condition were also more likely to suffer chronic or recurrent pain or discomfort (491,000 for people with back problems and 448,700 for people with arthritis).

Heart disease had a strong association with shortness of breath or breathing difficulties (142,600), restriction in physical activities or doing physical work (102,300) and chronic or recurrent pain or discomfort (43,200).

Table 4.10: People with a disability: main conditions associated with a specific impairment or limitation ('000), 1998

| Health conditions | Loss of sight ^(a) | Loss of hearing ^(b) | Speech difficulties | Shortness of breath or breathing difficulties | Chronic or recurrent pain or discomfort | Blackouts, fits or loss of consciousness | Difficulty learning or understanding things |
|-----------------------------|------------------------------|--------------------------------|---------------------|---|---|--|---|
| ADHD | **0.6 | — | *2.8 | — | — | — | 47.7 |
| Autism | — | — | *7.4 | — | — | **0.4 | 10.9 |
| Down syndrome | — | **0.1 | **2.3 | — | — | — | *7.8 |
| Schizophrenia | — | — | **0.7 | — | **0.1 | — | *8.2 |
| Depression | **0.4 | — | **0.3 | **0.8 | **1.9 | — | *4.6 |
| Dementia | **0.7 | *2.8 | 20.0 | **0.2 | **0.5 | **0.4 | 72.2 |
| Cataract | 74.8 | — | — | — | — | — | — |
| Glaucoma | 36.4 | **0.1 | — | — | — | — | **0.1 |
| Other vision disorders | 128.9 | **0.3 | **0.2 | **0.6 | **2.1 | — | **1.7 |
| Hearing loss, noise-induced | — | 329.6 | — | — | — | — | **0.6 |
| Other hearing disorders | **0.8 | 637.8 | 11.3 | — | **2.2 | **1.5 | 12.6 |
| Speech impediment | — | — | 67.2 | **0.6 | **0.1 | — | **0.3 |
| Heart diseases | — | **0.1 | **0.6 | 142.6 | 43.2 | *7.4 | **0.2 |
| Stroke | *8.5 | *5.4 | 29.8 | *4.1 | 10.5 | *3.8 | 18.3 |
| Hypertension | **0.4 | **0.1 | — | 22.4 | **2.1 | *6.9 | — |
| Asthma | — | — | **0.1 | 358.3 | *3.1 | **1.4 | — |
| Arthritis | **0.5 | **0.5 | **0.2 | *2.5 | 448.7 | **0.6 | — |
| Back problems | **0.3 | — | **0.5 | *3.7 | 491.0 | *1.5 | **1.1 |
| Osteoporosis | — | **0.2 | — | — | 26.1 | — | — |
| Parkinson's disease | **0.1 | **0.2 | *6.7 | **0.7 | *4.6 | **0.2 | *2.9 |
| Multiple sclerosis | **2.5 | **0.3 | *3.6 | **1.0 | *5.6 | — | **1.5 |
| Epilepsy | — | — | *1.0 | — | **0.3 | 76.6 | *6.0 |
| Migraine | — | — | — | — | 28.6 | *3.2 | — |
| Cerebral palsy | — | **0.1 | *8.7 | **0.5 | *3.8 | *3.1 | *5.3 |
| Paralysis | **0.6 | **0.4 | **0.7 | **0.4 | *4.9 | **0.7 | **0.1 |
| Diabetes | 15.2 | **0.4 | — | *2.9 | *5.4 | 9.4 | **0.1 |
| Cancer | *0.4 | — | **1.4 | 9.6 | 17.3 | **1.9 | *2.1 |

(continued)

Table 4.10 (continued): People with a disability: main conditions associated with a specific impairment or limitation ('000), 1998

| Impairments | Incomplete use of arms or fingers | Difficulty gripping or holding things | Incomplete use of feet or legs | Nervous or emotional condition causing restriction | Restriction in physical activities or in doing physical work | Disfigurement or deformity | Mental illness or condition requiring help or supervision | Long-term condition or ailments receiving treatment or medication |
|-----------------------------|-----------------------------------|---------------------------------------|--------------------------------|--|--|----------------------------|---|---|
| ADHD | **0.5 | **1.2 | — | *5.3 | **0.9 | — | 12.9 | *2.3 |
| Autism | — | **0.7 | — | *3.4 | *2.7 | — | *7.9 | — |
| Down syndrome | **0.1 | **0.1 | **0.1 | — | *2.8 | **0.4 | *5.9 | — |
| Schizophrenia | **0.1 | **0.1 | **0.1 | 20.7 | *6.7 | — | 16.9 | **1.1 |
| Depression | — | **0.1 | — | 151.3 | 14.5 | — | 25.2 | *8.9 |
| Dementia | *6.6 | *8.5 | 11.2 | 16.2 | 37.0 | **1.2 | 66.9 | **0.8 |
| Cataract | — | — | — | — | — | — | — | **0.9 |
| Glaucoma | — | — | — | — | **1.6 | — | — | 9.3 |
| Other vision disorders | — | **0.2 | **0.1 | — | 19.1 | *3.0 | **0.2 | *4.1 |
| Hearing loss, noise-induced | — | — | — | — | — | **0.1 | — | **0.7 |
| Other hearing disorders | — | **0.4 | **1.0 | **0.7 | *4.5 | — | **0.6 | *6.5 |
| Speech impediment | — | — | **0.6 | — | — | — | — | — |
| Heart diseases | **1.0 | **1.1 | *5.7 | **0.1 | 102.3 | — | **0.3 | 106.2 |
| Stroke | 45.1 | 51.7 | 49.2 | **2.1 | 57.0 | *7.6 | *6.2 | **2.0 |
| Hypertension | — | — | — | **0.3 | 15.4 | — | — | 282.0 |
| Asthma | — | — | — | — | 40.8 | — | — | 25.9 |
| Arthritis | 117.7 | 324.8 | 167.0 | **0.1 | 263.7 | 20.1 | **0.5 | 82.8 |
| Back problems | 15.7 | 26.6 | 46.6 | **0.3 | 368.4 | 16.5 | **1.7 | 46.1 |
| Osteoporosis | *3.9 | *3.6 | *8.5 | — | 19.9 | **2.0 | **0.1 | 9.5 |
| Parkinson's disease | 10.4 | 14.1 | 13.5 | **2.5 | 19.8 | **0.8 | **1.5 | *1.0 |
| Multiple sclerosis | *7.5 | 10.2 | 9.2 | **1.4 | 11.4 | **0.4 | **0.2 | — |
| Epilepsy | **0.1 | **1.0 | **0.1 | **1.2 | *5.0 | — | **0.9 | 9.5 |
| Migraine | — | — | — | — | *2.8 | — | **0.6 | 12.4 |
| Cerebral palsy | 12.4 | 12.4 | 13.1 | **0.2 | 14.5 | *5.5 | *3.5 | **0.2 |
| Paralysis | 10.5 | 9.9 | 12.6 | **0.7 | 12.6 | **2.2 | **0.3 | — |
| Diabetes | **0.7 | **2.5 | *6.3 | — | 10.3 | **0.2 | **0.1 | 97.0 |
| Cancer | **1.7 | **2.4 | **1.9 | — | 16.2 | *5.2 | **0.7 | 27.2 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

5 Severity of disability in relation to health conditions—five measures on activities and participation

The previous chapter has explored severity of disability in relation to health conditions using a group of ‘severity’ measures based on impairments/limitations and disabling conditions. This chapter uses a second group of severity measures which examine severity of disability in terms of core activity restrictions. Level of participation restrictions in employment is also examined.

5.1 Measures and main data items

Severity of disability can be examined in relation to different dimensions of disability, depending on specific purposes. In the 1998 Disability Survey definitions, severity of disability is chiefly measured by the need for, and the frequency of, personal assistance in three ‘core activities’ of self-care, mobility and communications (see Box 2.2).

The group of measures in this chapter uses multidimensional data combining not only health conditions but also activity limitations and participation restrictions. This may provide information relevant to planning for long-term care, disability support services and other community services.

This group of measures corresponds to the activities/participation components of the ICF. The key severity criterion for this group of measures is the level of need for assistance in core activities. This chapter examines the following associations⁸:

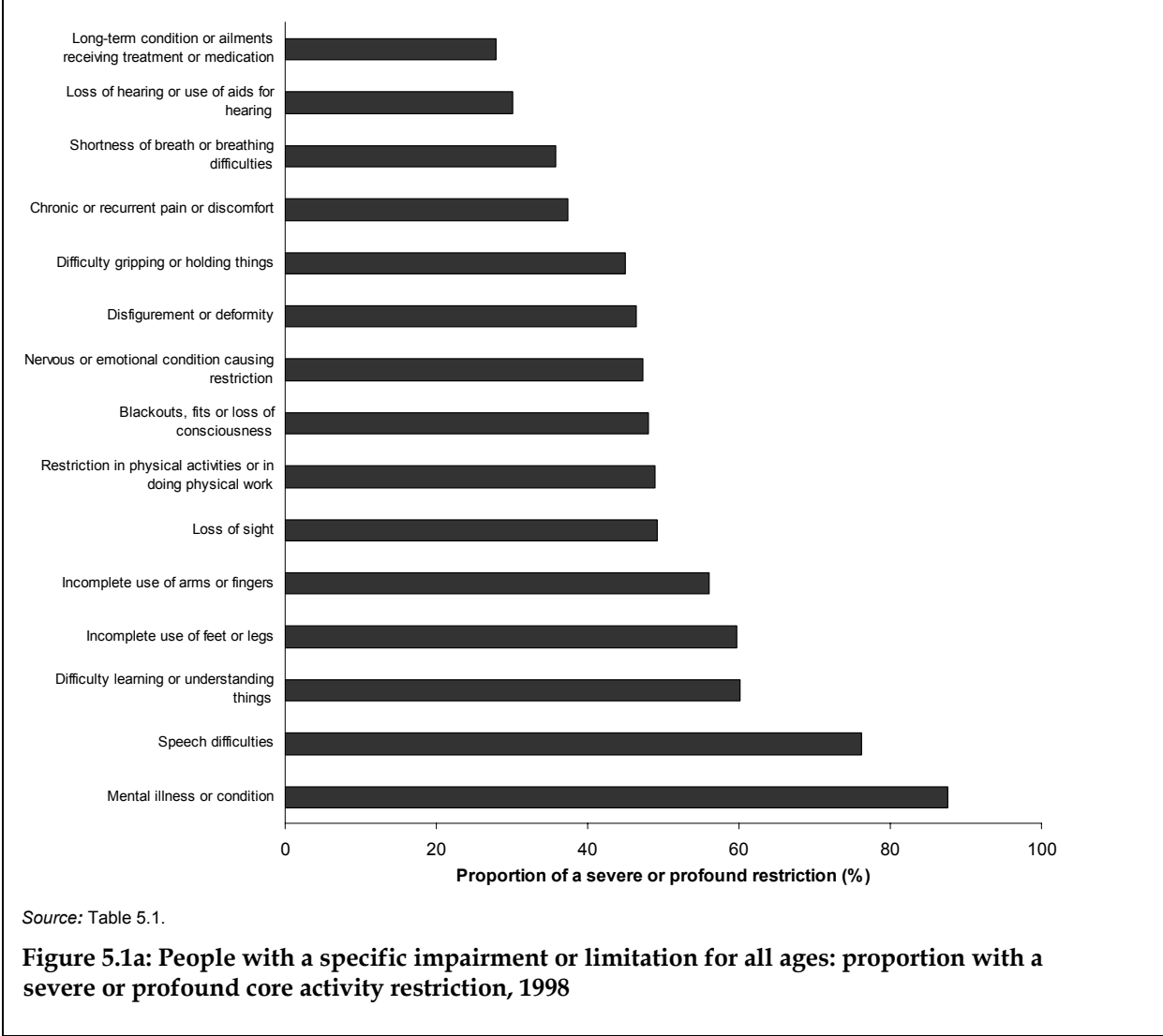
- Likelihood of severe or profound core activity restrictions, with a given impairment or limitation
- Likelihood of severe or profound core activity restrictions, for selected health conditions
- The number of core activities in which assistance is needed, for selected health conditions
- The frequency of help needed, for selected health conditions
- Level of restrictions in employment participation, for selected health conditions.

5.2 Likelihood of severe or profound core activity restrictions, with a given impairment or limitation

This section explores the likelihood of a severe or profound core activity restriction among people with various impairments or limitations (from the disability survey screening questions). An activity restriction may be associated with a number of different impairments

⁸ The disability survey also collected information about schooling restriction among people aged 5–20 years. However, the severity of schooling limitations was not classified in the survey.

or limitations. Severity of core activity restriction varied according to the type of impairment a person had. For people with a disability reporting various types of impairments and limitations, each row of Table 5.1 shows the proportion with a severe or profound core activity restriction. These proportions have been ranked to examine whether people with a given impairment are more likely to be associated with a severe or profound core activity restriction than those with other impairments (Figure 5.1a).



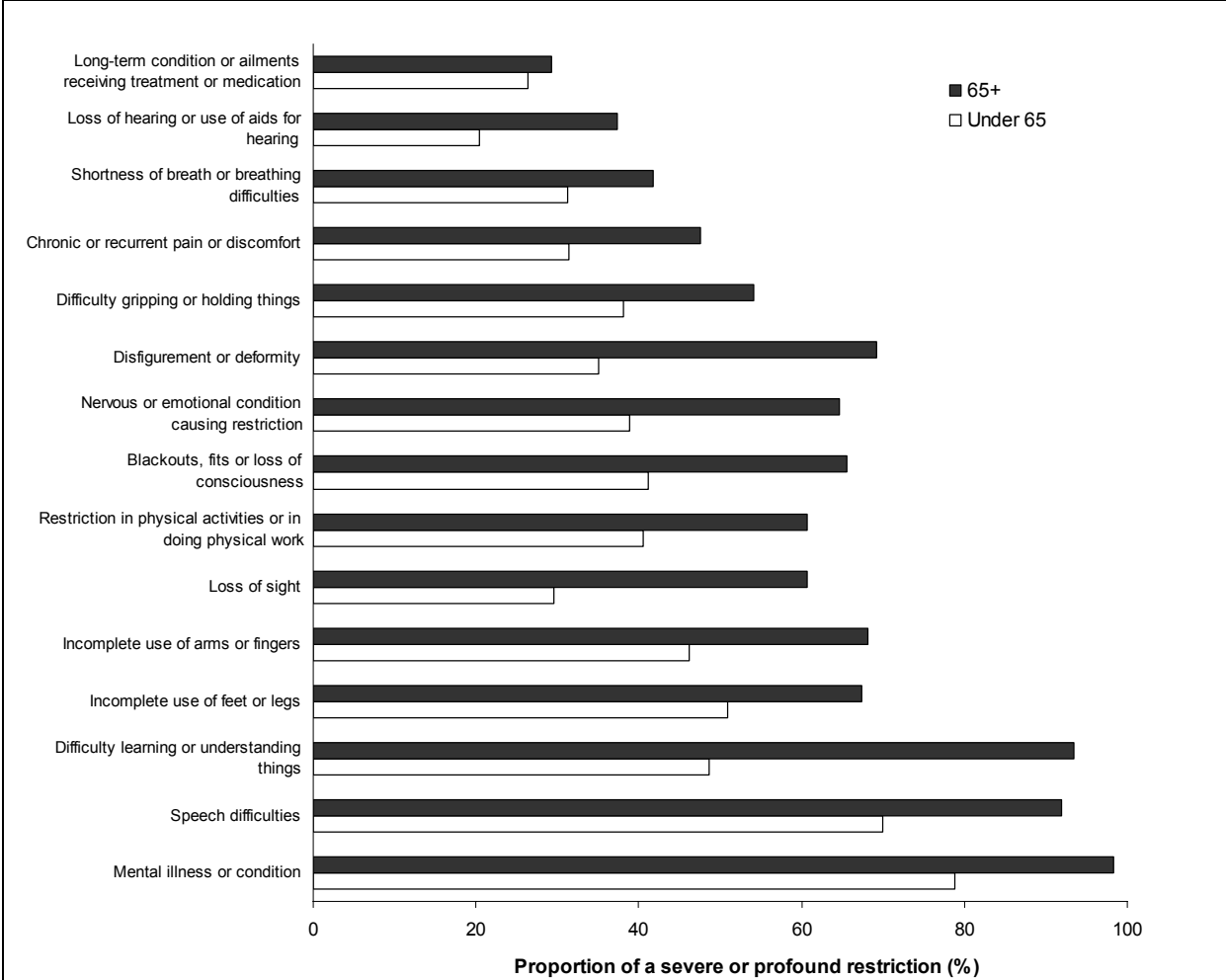
People with a mental illness or condition requiring personal help (88%)⁹ and those with speech difficulties (76%)¹⁰ were the most likely to have a severe or profound core activity restriction, followed by those with difficulty learning or understanding things (60%), incomplete use of feet or legs (60%) and incomplete use of arms or fingers (56%).

⁹ Mental illness or conditions were more likely to be associated with dementia (see Table 4.10).

¹⁰ Speech difficulties were more likely to be associated with underlying conditions such as dementia or stroke (see Table 4.8).

Receiving treatment or medication for a long-term condition or ailment (and still restricted) was ranked at the bottom of the list, with only 28% of people of all ages reporting that limitation having a severe or profound core activity restriction.

The age pattern indicated a higher proportion of severe or profound core activity restriction for those aged 65 or over than for those aged under 65 across all types of impairments (Figure 5.1b). The largest age difference was among those who had difficulty learning or understanding things, with 93% for those aged 65 or over compared to 49% for those aged under 65 years. The high proportion for those aged 65 or more was largely related to people with an underlying condition associated with dementia (Table 3.8).



Source: Table 5.1.

Figure 5.1b: People with a specific impairment or limitation by age groups: proportion with a severe or profound core activity restriction, 1998

Table 5.1: People with a disability: proportion of severe or profound core activity restriction among people with a specific impairment, 1998

| | 0–64 | | 65+ | | All ages | |
|---|------|------|------|------|----------|------|
| | % | Rank | % | Rank | % | Rank |
| Mental illness or condition requiring help or supervision | 78.8 | 1 | 98.3 | 1 | 87.6 | 1 |
| Speech difficulties | 70.0 | 2 | 91.9 | 3 | 76.2 | 2 |
| Difficulty learning or understanding things | 48.6 | 4 | 93.4 | 2 | 60.2 | 3 |
| Incomplete use of feet or legs | 50.9 | 3 | 67.4 | 6 | 59.7 | 4 |
| Incomplete use of arms or fingers | 46.2 | 5 | 68.1 | 5 | 56.0 | 5 |
| Loss of sight (not corrected by glasses or contact lenses) | 29.5 | 13 | 60.7 | 9 | 49.2 | 6 |
| Restriction in physical activities or in doing physical work | 40.6 | 7 | 60.6 | 10 | 48.9 | 7 |
| Blackouts, fits or loss of consciousness | 41.1 | 6 | 65.5 | 7 | 48.1 | 8 |
| Nervous or emotional condition causing restriction | 38.9 | 8 | 64.6 | 8 | 47.3 | 9 |
| Disfigurement or deformity | 35.1 | 10 | 69.2 | 4 | 46.4 | 10 |
| Difficulty gripping or holding things | 38.1 | 9 | 54.1 | 11 | 45.0 | 11 |
| Chronic or recurrent pain or discomfort | 31.4 | 11 | 47.5 | 12 | 37.3 | 12 |
| Shortness of breath or breathing difficulties | 31.3 | 12 | 41.7 | 13 | 35.8 | 13 |
| Loss of hearing where communication is restricted, or use aids for hearing | 20.4 | 15 | 37.4 | 14 | 30.1 | 14 |
| Receiving treatment or medication for a long-term condition or ailments (and still restricted in everyday activities) | 26.4 | 14 | 29.3 | 15 | 27.9 | 15 |

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

5.3 Likelihood of severe or profound core activity restrictions, for selected health conditions

This section examines some significant health conditions and the likelihood of an associated severe or profound core activity restriction. Table 5.2 shows the proportions of people with a severe or profound core activity restriction among Australians who had each of the selected health conditions.

The overall pattern depicts a quite different picture compared to that based on the estimated frequencies of specific health conditions. Many conditions that were on the top of the list in terms of their frequencies (Table 3.4) were ranked towards the bottom of the list in terms of the likelihood of being associated with a severe or profound core activity restriction (Table 5.2 and Figure 5.2). These include asthma (12% of people with this condition had a severe or profound core activity restriction), hypertension (15%), back problems (19%), arthritis (23%) and hearing (23%).

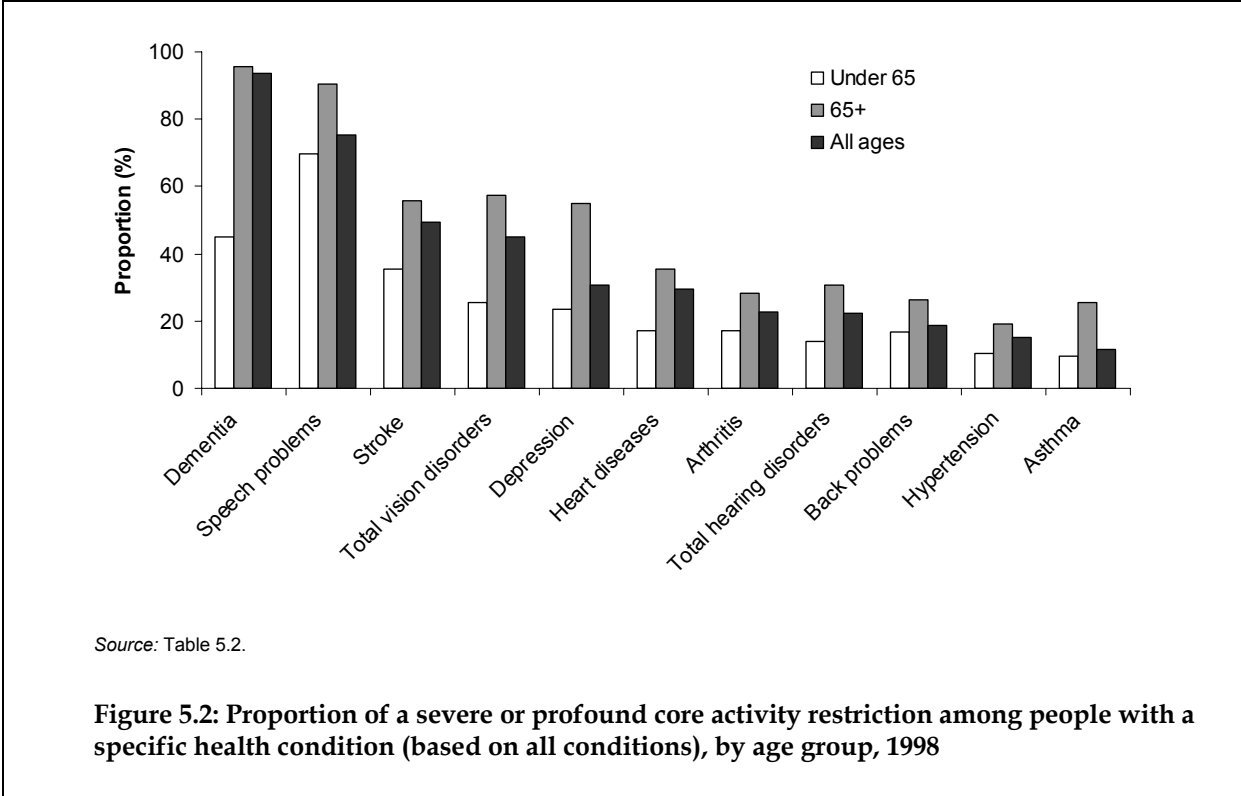
In contrast, conditions associated with intellectual, learning, psychiatric and neurological disorders and some physical conditions were ranked on the top of the list in Table 5.2. The top five conditions most likely to be associated with a severe or profound core activity restriction were autism (95%), dementia (94%), Down syndrome (92%), cerebral palsy (84%) and speech problems (76%). This was followed by Parkinson’s disease (75%), multiple sclerosis (73%), paralysis (59%), cataract (52%) and schizophrenia (50%).

For people aged under 65, conditions associated with congenitally related disorders or which occurred in early childhood were ranked highest: autism (95% of people with this condition had a severe or profound core activity restriction), Down syndrome (92%) and cerebral palsy (83%).

Dementia (96% of people with this condition had a severe or profound core activity restriction) led the list for people aged 65 or over, followed by schizophrenia (93%), speech problems (90%) and Parkinson’s disease (82%). Most of these conditions are highly related to age.¹¹

It should be noted that the estimates were based on all reported conditions. The associations between health conditions and activity limitations are complex. An activity limitation may be associated with a number of different health conditions, or with just one of a number of reported conditions and it is not possible to tell which from the survey data. Multiple conditions are more common among older people. Two persons with the same health condition can have different levels of activity limitation, and two persons with the same level of activity limitation do not necessarily have the same health condition.

When the estimates based on main condition rather than all conditions were considered, speech problems were ranked lower but stroke was higher, especially for those aged 65 or over (Table A5.1). This reflects that the reported speech problems may be associated with conditions such as dementia and stroke for those aged 65 or over, and autism for those aged under 65. The relatively high ranking for speech problems in the estimates based on all conditions could reflect their associations with those other underlying conditions.



11 The estimates for ADHD, Down syndrome and cerebral palsy in this age group have very higher relative standard errors and are considered too unreliable for this comparison.

Table 5.2: Proportion of severe or profound core activity restrictions among people with a specific condition (based on all conditions), by age, 1998

| Health conditions | Aged under 65 years | Health conditions | Aged 65 years or over | Health conditions | All ages |
|-----------------------------|---------------------|-----------------------------|-----------------------|-----------------------------|----------|
| Autism | 95.3 | ADHD | **100.0 | Autism | 95.3 |
| Down syndrome | 91.5 | Down syndrome | **100.0 | Dementia | 93.6 |
| Cerebral palsy | 83.2 | Cerebral palsy | **100.0 | Down syndrome | 91.5 |
| Multiple sclerosis | 74.9 | Dementia | 95.6 | Cerebral palsy | 83.6 |
| Speech problems | 69.6 | Schizophrenia | *93.4 | Speech problems | 75.5 |
| Parkinson's disease | *53.7 | Speech problems | 90.4 | Parkinson's disease | 75.4 |
| Paralysis | *48.6 | Parkinson's disease | 81.6 | Multiple sclerosis | 73.3 |
| Dementia | **45.2 | Paralysis | *78.1 | Paralysis | 58.6 |
| ADHD | 43.7 | Epilepsy | 67.5 | Cataract | 51.9 |
| Schizophrenia | 42.1 | Multiple sclerosis | **62.5 | Schizophrenia | 50.2 |
| Epilepsy | 40.0 | Cataract | 57.4 | Stroke | 49.3 |
| Stroke | 35.5 | Total vision disorders | 57.2 | Glaucoma | 45.1 |
| Osteoporosis | 32.7 | Stroke | 55.8 | Total vision disorders | 45.0 |
| Cataract | *28.2 | Depression | 55.1 | Osteoporosis | 44.3 |
| Total vision disorders | 25.6 | Glaucoma | 54.2 | ADHD | 43.8 |
| Cancer | 23.9 | Osteoporosis | 50.3 | Epilepsy | 43.7 |
| Depression | 23.3 | Cancer | 35.6 | Depression | 30.5 |
| Glaucoma | *20.0 | Heart diseases | 35.6 | Cancer | 30.3 |
| Heart diseases | 17.2 | Diabetes | 32.5 | Heart diseases | 29.4 |
| Arthritis | 17.0 | Total hearing disorders | 30.9 | Diabetes | 24.2 |
| Back problems | 16.9 | Arthritis | 28.4 | Arthritis | 22.7 |
| Diabetes | 16.4 | Back problems | 26.3 | Total hearing disorders | 22.5 |
| Migraine | 15.1 | Asthma | 25.4 | Back problems | 18.8 |
| Total hearing disorders | 13.9 | Hypertension | 19.3 | Migraine | 15.1 |
| Hypertension | 10.3 | Hearing loss, noise-induced | 16.7 | Hypertension | 15.1 |
| Asthma | 9.7 | Migraine | **14.5 | Hearing loss, noise-induced | 12.4 |
| Hearing loss, noise-induced | 9.1 | Autism | — | Asthma | 11.5 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

5.4 Number of core activities in which help is needed, for selected health conditions

This section explores the number of core activities in which help was needed for people with selected health conditions. The focus of this measure is now on people with a disability.¹²

Table 5.3 shows the percentage distributions of the number of core activities in which help was needed, for people with each of the selected health conditions. For each of the selected conditions, the proportion needing help with all three activities was ranked.

The overall pattern was similar to that for the proportion having a severe or profound core activity restriction (Section 5.3). People with dementia, Down syndrome and autism were more likely to have more need for assistance; about 60% of people with those conditions needed help with all three core activities (Figure 5.3). A high proportion needing help with three activities was also reported by people with cerebral palsy (52%), speech problems (38%) and Parkinson's disease (35%).

About 95% of people with autism (11,700), 84% of people with dementia (84,300) or Down syndrome (8,300), and 78% of those with cerebral palsy (17,300) needed help with at least two core activities.

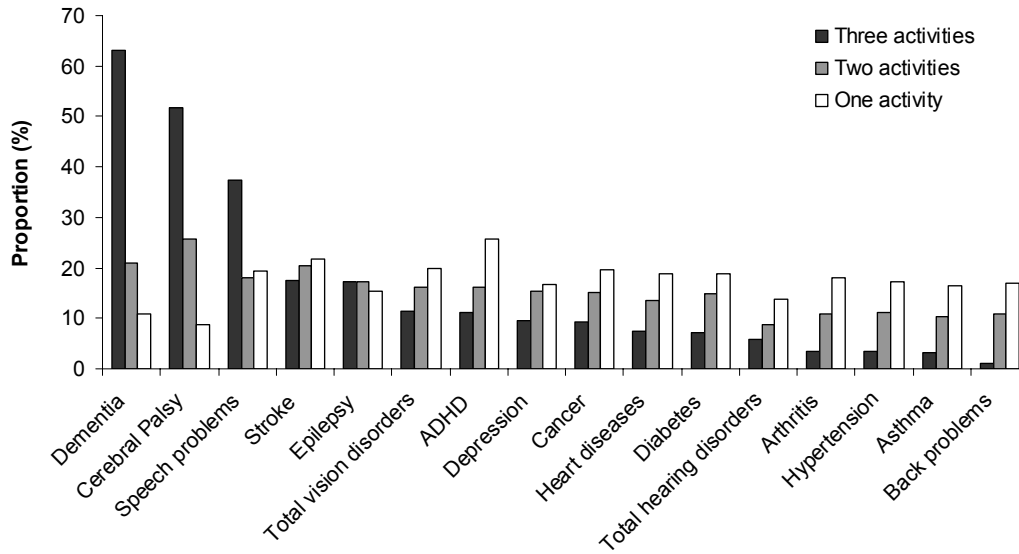
Of people with paralysis, about 60% needed help with at least two core activities, including 26% who needed help with all three activities.

In contrast, people with back problems, asthma, migraine, hypertension, arthritis and hearing disorders were ranked at the bottom of the list. Between 85% and 95% of people with these conditions either required no assistance or needed help with only one core activity.

If the estimates are based on main condition only, the pattern is similar to that for the previous measure. Speech problems were ranked toward the bottom of the list while stroke was in the top five of the list.¹³

12 The denominator for the previous measurement was all persons with a specific health condition. For this measurement, the denominator was people with a disability reporting a specific health condition, since the information about need for help with core activities was only collected among people with a disability.

13 When only the main condition is considered, many cells of the data table contain smaller estimates which are subject to very high relative standard errors. Therefore, this data table is not discussed but included in the Appendix tables: Table A5.2.



Source: Table 5.3.

Figure 5.3: People with a disability: number of core activities in which help needed, as a proportion of people with a disability who had a given condition (based on all conditions), 1998

Table 5.3: People with a disability: number of core activities in which help needed, as a proportion of people with a disability who had a given condition (based on all disabling conditions), 1998

| Health conditions | Three core activities | Two core activities | One core activity | No need for help with core activities | Total (%) | Total with a disability ('000) |
|-----------------------------|-----------------------|---------------------|-------------------|---------------------------------------|-----------|--------------------------------|
| Down syndrome | *63.5 | **19.7 | **8.4 | **8.4 | 100.0 | 9.9 |
| Dementia | 63.0 | 21.0 | 10.8 | *5.2 | 100.0 | 100.3 |
| Autism | *60.2 | *34.7 | **5.2 | **0.0 | 100.0 | 12.4 |
| Cerebral palsy | 51.7 | *25.8 | **8.7 | *13.8 | 100.0 | 22.4 |
| Speech problems | 37.5 | 17.9 | 19.4 | 25.2 | 100.0 | 244.0 |
| Parkinson's disease | 35.3 | *29.4 | *18.0 | 17.3 | 100.0 | 31.1 |
| Paralysis | *25.6 | *34.0 | **5.2 | *35.2 | 100.0 | 22.2 |
| Stroke | 17.4 | 20.5 | 21.7 | 40.3 | 100.0 | 230.3 |
| Epilepsy | 17.3 | 17.3 | 15.4 | 50.0 | 100.0 | 90.9 |
| Glaucoma | *12.9 | 19.8 | 19.1 | 48.2 | 100.0 | 56.4 |
| Cataract | 12.1 | 15.2 | 26.1 | 46.6 | 100.0 | 79.3 |
| Total vision disorders | 11.5 | 16.1 | 19.9 | 52.5 | 100.0 | 349.7 |
| ADHD | *11.3 | 16.3 | 25.6 | 46.9 | 100.0 | 60.1 |
| Schizophrenia | *11.1 | *20.2 | *23.0 | 45.7 | 100.0 | 30.5 |
| Depression | 9.5 | 15.4 | 16.7 | 58.4 | 100.0 | 177.3 |
| Osteoporosis | *9.4 | 19.4 | 22.3 | 48.8 | 100.0 | 72.5 |
| Cancer | *9.3 | 15.0 | 19.5 | 56.2 | 100.0 | 84.7 |
| Heart diseases | 7.4 | 13.6 | 19.0 | 60.1 | 100.0 | 429.5 |
| Diabetes | 7.2 | 14.9 | 18.8 | 59.1 | 100.0 | 243.0 |
| Multiple sclerosis | **6.3 | *53.7 | **18.6 | *21.4 | 100.0 | 13.4 |
| Total hearing disorders | 5.9 | 8.8 | 13.9 | 71.4 | 100.0 | 1,001.6 |
| Arthritis | 3.6 | 11.0 | 18.1 | 67.4 | 100.0 | 1,107.5 |
| Hypertension | 3.4 | 11.1 | 17.2 | 68.4 | 100.0 | 638.2 |
| Migraine | **3.3 | *6.1 | *13.6 | 77.0 | 100.0 | 55.0 |
| Asthma | 3.3 | 10.2 | 16.5 | 70.0 | 100.0 | 408.7 |
| Back problems | 1.1 | 10.8 | 16.8 | 71.3 | 100.0 | 1,007.1 |
| Hearing loss, noise-induced | **0.6 | 4.7 | 10.9 | 83.8 | 100.0 | 330.1 |

Note: Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

5.5 Frequency of need for help with core activities, for selected health conditions

In the 1998 survey new questions were asked of those people with a disability about how often a person needed assistance with a specific activity. The range of frequencies recorded in the data file includes those who needed help from less than once per month to six times or more per day (Table 5.4).

This section examines severity of disability associated with various health conditions by looking at the likelihood of needing more frequent assistance with core activities. The percentage distributions of the highest frequencies of need for help were estimated for people with each of the selected health conditions; this was the highest frequency of need for help with any one of the three core activities, regardless of the number of activities in which help was needed.

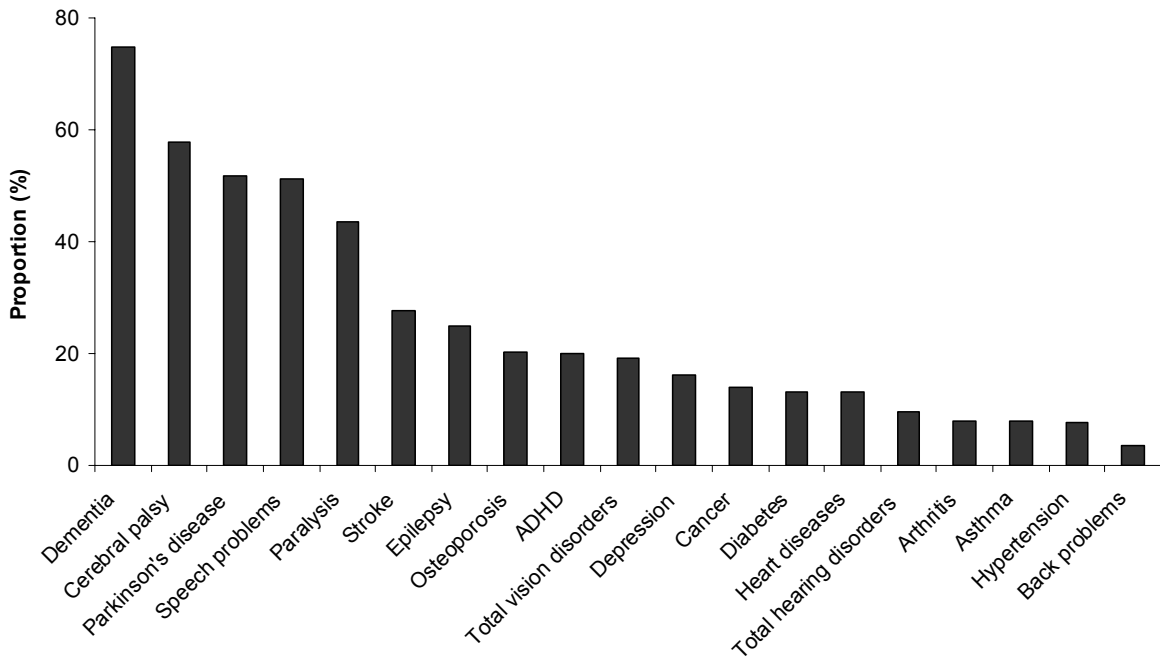
Table 5.4 shows the percentage distributions of the highest frequencies of need for assistance for each of the selected health conditions. For example, about 58% of people with cerebral palsy needed help three times or more a day, meaning that they required assistance at least three times a day with at least one of the three core activities, while they might have a lower frequency of need for help with other activities. The proportions of people reporting their highest frequencies of need for help as at least three times a day for each of the selected conditions are ranked.

Overall, the pattern is similar to those of the previous two measures. Dementia led the list with 75% of people with this condition needing help at least three times a day (Figure 5.4). About 60% of people with autism and 58% with cerebral palsy also needed assistance three or more times a day, followed by Parkinson's disease (52%), speech problems (51%) and Down syndrome (48%).

In contrast, conditions that were more likely to be associated with relatively low frequencies of need for help were back problems, migraine, hypertension, asthma, arthritis and hearing disorders. Only about 2-10% of people with those conditions required assistance three or more times a day.

If the estimates are based on main condition only, the pattern is also similar to that of the previous two measures. Speech problems were ranked toward the middle of the list (11th) rather than the top five of the list while stroke was in the top five of the list.¹⁴

14 When only the main condition is considered, many cells of the data table contain smaller estimates which are subject to very higher relative standard errors. Therefore, this data table is not discussed but included in Appendix tables: Table A5.3.



Source: Table 5.4.

Figure 5.4: People with a disability: proportion of people by the highest frequency (3+ per day) of need for assistance with core activities, by selected conditions (based on all conditions), 1998

Table 5.4: People with a disability: the highest frequency of need for assistance with core activities, as a proportion of people with a disability who had a specific condition (based on all disabling conditions), 1998

| Health conditions | Highest frequency of need for assistance with core activities | | | | | | | Total (%) | Total number ('000) |
|-----------------------------|---|---------|----------|--------|-----------|----------|------------------|-----------|---------------------|
| | 3+/day | 1-2/day | 2-6/week | 1/week | 1-3/month | <1/month | No need for help | | |
| Dementia | 74.7 | 11.9 | *3.5 | *2.7 | **1.1 | **1.0 | *5.2 | 100.0 | 100.3 |
| Autism | *63.4 | *26.1 | **4.9 | — | — | **5.7 | — | 100.0 | 12.4 |
| Cerebral palsy | 57.9 | *14.9 | **8.2 | — | — | **5.2 | *13.8 | 100.0 | 22.4 |
| Parkinson's disease | 51.8 | *18.3 | **6.6 | **2.5 | **1.4 | **2.1 | *17.3 | 100.0 | 31.1 |
| Speech problems | 51.1 | 9.0 | 5.4 | *1.9 | 5.3 | *2.2 | 25.2 | 100.0 | 244.0 |
| Down syndrome | *47.6 | **25.7 | **3.0 | *0.7 | **14.6 | — | **8.4 | 100.0 | 9.9 |
| Paralysis | 43.6 | *14.4 | **4.5 | *0.2 | **1.9 | **0.2 | *35.2 | 100.0 | 22.2 |
| Multiple sclerosis | *35.0 | **12.4 | **9.4 | **4.9 | **4.3 | **12.6 | *21.4 | 100.0 | 13.4 |
| Stroke | 27.8 | 8.8 | 8.3 | 6.3 | 5.0 | *3.5 | 40.3 | 100.0 | 230.3 |
| Epilepsy | 25.0 | *5.5 | *6.3 | **2.1 | *4.1 | *6.9 | 50.0 | 100.0 | 90.9 |
| Glaucoma | 22.4 | *6.1 | *6.8 | *9.4 | **3.9 | **3.2 | 48.2 | 100.0 | 56.4 |
| Cataract | 21.3 | *5.3 | *4.4 | 11.3 | *5.7 | *5.4 | 46.6 | 100.0 | 79.3 |
| Osteoporosis | 20.3 | *8.2 | *8.6 | **3.1 | *7.9 | **3.0 | 48.8 | 100.0 | 72.5 |
| ADHD | 20.0 | 19.7 | **3.0 | **4.1 | **2.1 | **4.2 | 46.9 | 100.0 | 60.1 |
| Total vision disorders | 19.1 | 7.3 | 5.4 | 7.6 | 4.2 | 3.9 | 52.5 | 100.0 | 349.7 |
| Depression | 16.2 | 7.3 | 6.7 | *4.5 | *2.6 | *4.3 | 58.4 | 100.0 | 177.3 |
| Schizophrenia | *15.8 | *14.2 | *10.6 | **6.2 | **4.5 | **3.0 | 45.7 | 100.0 | 30.5 |
| Cancer | 14.1 | *9.1 | *7.8 | *3.9 | *5.3 | *3.6 | 56.2 | 100.0 | 84.7 |
| Diabetes | 13.1 | 8.3 | 4.6 | 5.2 | 4.0 | 5.5 | 59.1 | 100.0 | 243.0 |
| Heart diseases | 13.1 | 7.2 | 6.4 | 5.4 | 4.4 | 3.3 | 60.1 | 100.0 | 429.5 |
| Total hearing disorders | 9.6 | 4.4 | 4.3 | 3.2 | 3.3 | 4.0 | 71.4 | 100.0 | 1,001.6 |
| Arthritis | 8.0 | 5.6 | 5.1 | 3.9 | 4.3 | 5.7 | 67.4 | 100.0 | 1,107.5 |
| Asthma | 8.0 | 5.6 | 4.6 | 2.5 | 3.3 | 6.2 | 70.0 | 100.0 | 408.7 |
| Hypertension | 7.6 | 5.1 | 6.0 | 4.2 | 3.8 | 4.9 | 68.4 | 100.0 | 638.2 |
| Migraine | **4.4 | **4.6 | **3.4 | **2.0 | **2.9 | *5.7 | 77.0 | 100.0 | 55.0 |
| Back problems | 3.6 | 4.6 | 4.7 | 3.5 | 4.4 | 7.9 | 71.3 | 100.0 | 1,007.1 |
| Hearing loss, noise-induced | *1.7 | 3.7 | 2.9 | *1.7 | *2.4 | 3.8 | 83.8 | 100.0 | 330.1 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

5.6 Level of participation restrictions in employment

Employment restriction and need for assistance

Information about employment restriction was collected in the ABS 1998 Disability Survey for persons with a disability aged 15–64 years living in households. Four levels of severity of restrictions in employment were classified by the survey (Box 5.1).

The four levels of restriction are broadly consistent with the four levels of severity of core activity restriction. A severe or profound employment restriction refers to being unable to work, needing or receiving ongoing personal assistance or supervision; a moderate or mild employment restriction refers to not needing ongoing personal assistance or supervision but with various restrictions and difficulties in employment, including use of special equipment and modified work environment.

Box 5.1: ABS 1998 Survey of Disability, Ageing and Carers: employment restrictions and their severity

***Profound**–Permanently unable to work because of own condition/disability, and no provision could be made to enable work.*

***Severe**–Needed/would need ongoing assistance or supervision at work because of conditions; and received assistance from disability job placement program or agency.*

***Moderate**–Restricted in type of work could do because of health conditions; often needed time off work; restricted in number of hours worked; and difficulty in changing jobs/getting better job.*

***Mild**– Did not need ongoing personal assistance or supervision, time off, shorter hours or have difficulty changing or getting better job, but needed ‘employer other arrangements’: needed employer to provide training/retraining, special equipment, modified buildings/fittings, special/free transport or parking.*

Source: ABS unpublished document on data items of the 1998 Survey of Disability, Ageing and Carers.

Overall, among people aged 15–64 with a severe or profound core activity restriction living in households, 321,700 people were not in the labour force and 18,700 were unemployed, while 151,900 people were employed (Table 5.5).

Over 80% of people who were not in the labour force had a severe or profound employment restriction (Table 5.5). The proportion of people with a severe employment restriction was higher for unemployed people (20%) than employed people (13%). (By definition, no one who reported a profound employment restriction was in the labour force.)

The overall picture also illustrates associations between the level of participation in employment and social support in the workplace and various aspects of the individuals’ environment. About 73% of people who were not in the labour force said that they would need a support person if they were employed. For people in the labour force, a substantially higher proportion of unemployed people than employed people reported various employment restrictions, such as need for time off work and need for employer to provide equipment or special arrangements.

Table 5.5: People aged 15–64 with a severe or profound core activity restriction living in households: labour force status, by employment restrictions, severity of employment restriction, requirements to enable workforce participation, 1998

| | Employed | | Unemployed | | Not in the labour force | |
|---|--------------|-------|-------------|-------|-------------------------|------|
| | No. ('000) | % | No. ('000) | % | No. ('000) | % |
| Severity of employment restriction | | | | | | |
| Profound | — | — | — | — | 221.6 | 68.9 |
| Severe | 19.5 | 12.8 | *3.7 | 20.0 | 39.4 | 12.3 |
| Moderate | 112.7 | 74.1 | 14.3 | 76.4 | 43.5 | 13.5 |
| Mild to no employment restriction | 19.8 | 13.0 | **0.7 | **3.5 | 17.1 | 5.3 |
| Employment restrictions^(a) | | | | | | |
| Restricted in type of job | 125.2 | 82.4 | 16.5 | 88.1 | 68.0 | 21.1 |
| Restricted in number of hours | 83.9 | 55.2 | 11.3 | 60.5 | 35.7 | 11.1 |
| Difficulty in changing job or getting a better job | 104.3 | 68.6 | 14.9 | 79.6 | 52.9 | 16.4 |
| Need for time off work | 28.6 | 18.8 | *8.5 | 45.3 | 31.6 | 9.8 |
| Need for employer provided equipment and/or special arrangements | 26.4 | 17.4 | *8.9 | *47.8 | 33.6 | 10.4 |
| Need for ongoing supervision or assistance | 19.5 | 12.8 | *3.4 | *18.3 | 25.3 | 7.9 |
| Need for support person | — | — | — | — | 235.8 | 73.3 |
| Other employer arrangements^(a) | | | | | | |
| A disability support person or someone at work to assist/train on the job | 14.4 | 9.5 | **0.8 | **4.3 | 10.0 | 3.1 |
| Special equipment | 10.2 | 6.7 | *4.8 | *25.8 | 11.6 | 3.6 |
| Training or retraining | **2.5 | **1.6 | — | — | 7.7 | 2.4 |
| Different duties | *8.9 | *5.9 | **1.1 | **5.7 | 12.6 | 3.9 |
| Total | 151.9 | | 18.7 | | 321.7 | |

(a) Total may be not equal to the sum of the components as the questions on employment restrictions, arrangements and requirements were asked separately in the survey.

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Level of participation restrictions in employment, for selected health conditions

This measurement explores health conditions in relation to the level of participation restriction in employment. Table 5.6 shows the percentage distributions of the level of restrictions in employment for working-age people with the selected health conditions. A large proportion of working-age people with some specific conditions was in cared accommodation¹⁵, for instance, people with dementia (27%), cerebral palsy (16%),

¹⁵ Cared accommodation refers to non-private dwellings such as hospitals, homes for the aged, nursing homes, aged care hostels and children's homes. Independent living units located within retirement villages are excluded (ABS 1999).

schizophrenia (13%), speech problems (14%), Down syndrome (13%) and paralysis (13%). While the information about participation restriction was not collected among people in cared accommodation, it is reasonable to assume that those living in cared accommodation had a profound level of participation restriction, meaning that they were permanently unable to work and no provision could be made to enable them to work. In Table 5.6, therefore, people living in cared accommodation and people with a profound employment restriction were grouped together as an additional broad group (Column 2). The proportions of this group for each of the selected conditions were ranked to find whether people with a given condition reported a higher level of participation restriction in employment than those with other conditions.

The results indicate that the ranking pattern differs from the previous 'severity' measures in this chapter, which focused on need for assistance with core activities. Some health conditions that were ranked in the top list by previous measures were excluded from the discussion due to the small estimates and large relative standard errors. Dementia and Parkinson's disease were mostly related to people aged 65 year or over, while most people with autism were aged under 15.

Stroke and schizophrenia were at the top of the list in terms of the level of restriction in employment, with over 60% of people with those conditions either living in cared accommodation or having a profound employment restriction (permanently unable to work). This was followed by people with osteoporosis (57%) and heart disease (57%) (Figure 5.5).

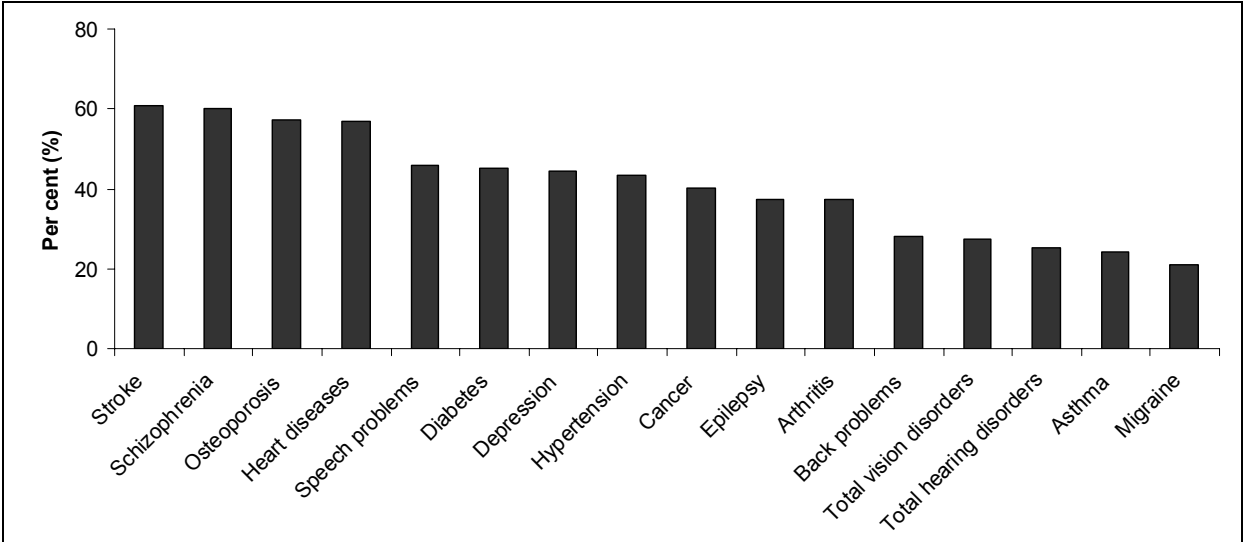
Although the estimates in Table 5.6 appear to indicate that 46% of people with speech problems were permanently unable to work, the estimates based on main condition shows that only about 8,700 working-age people with a disability reported speech problems as their main condition (Table A5.4). Of these, 93% had either mild or no restriction in employment and no one had a profound restriction or was living in cared accommodation. This suggested that the reported speech problems among working-age people were likely to be associated with the effects of stroke and other conditions affecting work.

It is worth noting that a high proportion of people with diabetes (44%), depression (43%) and arthritis (37%) had a profound restriction in employment, and this was also true when estimates based on main conditions was considered (Table A5.4): diabetes (30%), depression (34%) and arthritis (31%).

Even though the estimates based on all conditions showed a high proportion of profound employment restriction among people with hypertension (43%), cancer (40%) and epilepsy (31%), the numbers of people with these conditions as main conditions reduced dramatically and the estimates were subject to high relative standard errors (Table A5.4).

There were several possible explanations for the differences between the pattern measured using severity of restriction in employment and the pattern measured by the three measures focusing on severity of restriction in core activities. First, the focus of life areas is different between these measurements. The measurement on severity of restriction in employment focuses on people's involvement in economic activities in terms of doing paid work, while the measurements on core activity restrictions concentrate on tasks relating to basic daily activities of self-care, mobility and communication.

Second, the pattern of health conditions for the working-age population differs from that of the total population. Several conditions which were likely to be associated with more severe disability were not particularly prevalent among people of working age.



Source: Table 5.6.

Figure 5.5: People with a disability aged 15–64: proportion of a profound employment restriction or living in cared accommodation for a given health condition (based on all disabling conditions), 1998

Table 5.6: People with a disability aged 15–64: health conditions (based on all disabling conditions), by severity of employment restriction, 1998

| Health conditions | Sum of profound and living in cared accommodation | Living in cared accommodation | Per cent | | | | Total (%) | Total No. ('000) |
|-----------------------------|---|-------------------------------|----------|--------|----------|------------------------|-----------|------------------|
| | | | Profound | Severe | Moderate | Mild or no restriction | | |
| Autism | **100.0 | **9.2 | **90.8 | — | — | — | 100.0 | **1.6 |
| Parkinson's disease | *68.4 | **5.9 | *62.5 | — | **18.0 | **13.6 | 100.0 | *6.4 |
| Dementia | *66.0 | **26.6 | **39.4 | **34.0 | — | — | 100.0 | *4.0 |
| Stroke | 60.9 | **3.6 | 57.3 | *7.7 | 16.5 | 14.9 | 100.0 | 66.4 |
| Schizophrenia | 60.1 | **12.6 | 47.5 | *16.6 | *16.9 | **6.4 | 100.0 | 24.9 |
| Osteoporosis | 57.2 | **0.3 | 57.0 | **2.2 | *21.7 | *18.8 | 100.0 | 23.1 |
| Heart diseases | 56.8 | **0.6 | 56.2 | *4.6 | 22.2 | 16.5 | 100.0 | 127.7 |
| Glaucoma | *56.7 | **1.7 | *55.0 | **4.8 | **21.3 | **17.2 | 100.0 | 10.8 |
| Down syndrome | *54.0 | **12.6 | *41.4 | *36.9 | — | **9.0 | 100.0 | 8.4 |
| Cerebral palsy | *53.7 | **15.6 | *38.2 | **17.2 | *23.9 | **5.2 | 100.0 | 12.1 |
| Speech problems | 46.0 | 13.7 | 32.3 | 17.3 | 19.2 | 17.4 | 100.0 | 85.6 |
| Diabetes | 45.1 | **1.1 | 44.0 | *5.6 | 25.8 | 23.6 | 100.0 | 109.3 |
| Depression | 44.3 | **1.4 | 42.9 | 9.8 | 31.2 | 14.8 | 100.0 | 126.1 |
| Hypertension | 43.3 | **0.6 | 42.7 | *3.5 | 28.0 | 25.2 | 100.0 | 242.1 |
| Cancer | 40.2 | **0.5 | 39.6 | **5.7 | 36.6 | *17.5 | 100.0 | 31.7 |
| Epilepsy | 37.5 | *6.7 | 30.8 | *11.0 | 25.2 | 26.2 | 100.0 | 63.2 |
| Arthritis | 37.4 | **0.2 | 37.2 | 3.5 | 33.1 | 26.0 | 100.0 | 517.4 |
| Multiple sclerosis | *35.3 | **8.4 | *26.9 | **13.7 | *42.3 | **8.8 | 100.0 | 11.5 |
| Paralysis | *28.1 | **13.3 | **14.9 | **11.2 | *41.3 | *19.3 | 100.0 | 14.0 |
| Hearing loss, noise-induced | 28.1 | — | 28.1 | *2.9 | 31.9 | 37.1 | 100.0 | 168.2 |
| Back problems | 28.1 | **0.1 | 27.9 | 6.5 | 46.5 | 18.9 | 100.0 | 761.5 |
| Cataract | *27.5 | **4.7 | *22.9 | **5.3 | *22.8 | *44.4 | 100.0 | 11.5 |
| Total vision disorders | 27.3 | *3.2 | 24.1 | 7.9 | 35.6 | 29.2 | 100.0 | 115.6 |
| Total hearing disorders | 25.3 | **0.3 | 24.9 | 5.4 | 33.8 | 35.5 | 100.0 | 409.2 |
| Asthma | 24.1 | **0.5 | 23.7 | 5.4 | 38.0 | 32.5 | 100.0 | 235.7 |
| Migraine | 20.9 | — | 20.9 | *5.6 | 35.4 | 38.1 | 100.0 | 47.3 |
| ADHD | **8.6 | **0.4 | **8.2 | *18.5 | *36.1 | *36.8 | 100.0 | 17.3 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

6 Disability, health conditions and other factors—multivariate analyses

6.1 Introduction

The previous three chapters presented analyses of the associations between the prevalence and severity of disability, and health conditions in the Australian population. These analyses do not take into account personal or environmental factors that may influence these relationships. This chapter examines how such factors are related to measures of the severity of disability for selected health conditions.

The only data source for the Australian population that is appropriate for such analyses is the Survey of Ageing, Disability and Carers, 1998. As well as the items on disability and health condition, the survey contains a number of items relating to a person's characteristics and situation. The impact of disability is probably related to a wide range of such factors and many of these may interact. To better understand these relationships it is necessary to move beyond simple bivariate analyses and use multivariate techniques, designed to isolate the relationship with each possible factor.

The two main aims of these analyses were to explore what personal and environmental factors are significantly associated with each of three different measures of the 'severity' of disability, and to examine variations in the pattern of these factors for different selected health conditions. Severity is used here as a term indicating the impact of disability on a person's life (see Section 1.2 for further discussion of this).

There are two important issues to consider in interpreting the results of these analyses. Firstly, the survey data provide information on only a limited number of all the possible personal and environmental characteristics that could be postulated as being associated with the severity of disability. In particular, there are only a few items that might be regarded as environmental factors. Secondly, any association found between the severity of disability and any particular characteristic could occur for a number of reasons that involve different pathways of relationship. For example, *if* low income was found to be associated with a greater likelihood of severe disability, this may occur because:

- (a) having a low income increases the likelihood of a person's disability being more severe
- (b) having a more severe disability increases the likelihood of a person having a low income
- (c) one or more other characteristics of a person increase the likelihood of a person having both a low income and a more severe disability
- (d) of some combination of any two or all of a, b and c.

This means that any model of the severity of disability will be predictive only in the statistical sense, that is, for a particular health condition, given a certain set of personal and environmental characteristics, it is possible to estimate the probability of a person experiencing a certain severity of disability, however measured.

Given the above limitations, the multivariate analyses described in this chapter are exploratory and designed to stimulate ideas about the analytical strategy and possible areas for further investigation. This exploration is to give a general picture of the degree to which

the personal and environmental factors in the survey are associated with the severity of disability, rather than to examine any particular associations in detail. Given this, there has been no adjustment for the fact that, due to the large number of analyses and the large survey sample, it is possible that there will be some statistically significant results that will occur by chance and so do not reflect meaningful differences in the population. However, it may be possible to draw some conclusions about some particular factors if they show strong and consistent patterns.

Some interesting results will be discussed without attempting to precisely quantify the magnitude of all the possible associations. Further work is necessary to accurately determine the relative importance of different factors and to identify interactions among them, as well as to explore the relationship between disability and different combinations of health conditions. Such work could be more targeted in its approach so as to test specific hypotheses in a structured way. The exploratory analyses reported here may suggest particular hypotheses that could be tested with more sophisticated modelling approaches.

Consistent with the concepts of the ICF, the severity of disability is here measured in terms of activity limitations and participation restrictions. The range of questions in the survey allows severity to be measured in a number of possible ways. Different measures involve more or less restricted groups of people. Three representative measures of severity were selected, resulting in three models, which progressively limit the population being analysed from all people in the population to people with a disability, to people with a severe or profound core activity restriction. That is, within the overall spectrum of disability, the three models progressively examine a more restricted range in finer detail.

The models using each of these measures will be referred to as models A, B and C and are detailed in the next section:

- A. The presence of 'severe or profound' activity restrictions for the three core activities for all people with and without a disability
- B. The frequency of the need for help in the three core activities, for people with a disability only
- C. The amount of assistance received from carers, for people with a severe or profound core activity restriction only.

The first two of these measures are also discussed and examined in Chapter 5. Another measure examined in that chapter – the number of core activities in which assistance was needed – was also tested here in less detail.

Section 6.2 describes the statistical methods used for the analysis and readers who are not familiar with multivariate analysis may choose to skip part or all of this section. Sections 6.3, 6.4 and 6.5 discuss the results for the three models in detail and Section 6.6 gives an overview of these.

6.2 Statistical analysis

Regression models

The analyses were carried out by multivariate logistic regression, which is appropriate given the nature of the variables of interest. There were three models (A, B and C) corresponding to the three measures of severity of disability chosen (see below). In each case, all selected potential factors were forced into the multivariate model, and backward elimination ($p <$

0.05) was used to obtain a parsimonious final model. However, three factors were retained in the model regardless of their statistical significance: sex, age and survey component (household or cared accommodation¹⁶, in models A and B only). This was firstly because they were used as stratifying variables in the survey, and secondly because of their basic importance in the population.

Ordered multiple outcomes logistic regression was used to determine the associations between the response variable (the measure of severity of disability) and the covariates (the personal and environmental factors). This regression model assumes the relationship:

$$\text{logit}(\text{prob}(Y \leq j)) = \log\left(\frac{\text{prob}(Y \leq j)}{1 - \text{prob}(Y \leq j)}\right) = \alpha_j + \beta'x \text{ for } j=1, \dots, k$$

where the response of the variable Y is measured in one of k+1 different categories, α_j are k intercept parameters, and β is the slope parameter vector not including the intercept term. By construction, $\alpha_1 < \alpha_2 < \dots < \alpha_{k-1} < \alpha_k$ holds. This model fits a common slope cumulative model, which is a parallel lines regression model based on the cumulative probabilities of the response categories.

The three models are described in detail below.

Weighting of survey sample

To enable the data provided by each person to be expanded to provide estimates relating to the total Australian population, each record in the ABS survey data includes a weight calculated by post-stratification at the level of state by capital city/rest of state by age group by sex for both the household and cared accommodation components of the survey. The data are weighted to match the age and sex distribution of the 1998 estimated population of Australia.

For the analysis, the normalised weight was used so that the weighted cases sum to the actual sample size. With this option, the estimated covariance matrix of the parameter estimators is invariant to the scale of the weight variable.

The final effective sample for the survey includes 36,948 persons for the household component and 5,716 persons for the cared accommodation component.

Model A

The measure of severity is whether the person has a severe or profound core activity restriction, that is, with two categories, yes or no. For *total* conditions, this analysis was done in two ways:

- including all people, with the 'no' category including both people with a disability but without a severe or profound activity restriction, and people without a disability, whether or not they have a long-term condition. Obviously, all those people without a long-term health condition will not have a severe or profound core activity restriction.
- including all people with one or more conditions, with the 'no' category including both people with a disability but without a severe or profound activity restriction, and people with at least one condition but without a disability.

¹⁶ Cared accommodation refers to non-private dwellings such as: hospitals, homes for the aged, nursing homes, aged care hostels and children's homes. Independent living units located within villages are excluded (ABS 1999).

For each *separate* condition the analysis could by definition include only people who had at least one condition (see below for the conditions selected).

Model B

This model includes all people with a disability (19% of the population). The measure of severity is a scale of need for assistance. To calculate this scale a score is given from 0 to 180 based on the actual frequency of assistance for each area of the three core activities, as in Table 6.1. The scores for the three core areas are summed and then grouped into four levels as follows:

- level 0: sum of the scores equals zero
- level 1: sum of the scores is greater than zero and less than or equal to 180
- level 2: sum of the scores is greater than 180 and less than or equal to 360
- level 3: sum of the scores is greater than 360.

The relationship between this measure and having a severe or profound activity restriction is shown in Table 6.2. Only 14% of all people without a severe or profound core activity restriction have a disability; however, all these by definition have no need for assistance (level 0) and they are the majority of people with a disability. A small number of people who had a severe/profound activity restriction did not record a need for assistance when answering the questions on frequency. These two groups together constituted 69% of all people with a disability. Most people with a severe or profound activity restriction were in the level 1 category (78%) with lesser numbers in the higher two categories. All people with a need for assistance must by definition have a severe or profound activity restriction.

Model C

The third measure of severity of disability is based on a scale of the amount of informal assistance received in the areas of self-care, communication and mobility from primary carers. The model includes only people who have a severe or profound activity restriction (6.1% of the population). This is because most people who do not have a severe or profound activity restriction do not have a primary informal carer and this data item was not collected for them.

Table 6.1: Score of frequency of need for help in the core activities for regression model B

| Frequency | Score |
|--|-------|
| Do not need assistance because of disability | 0 |
| Less than once a month | 0.5 |
| One to three times a month | 2 |
| Once a week | 4 |
| Two to six times a week | 16 |
| Once a day | 30 |
| Twice a day | 60 |
| Three to five times a day | 120 |
| Six or more times a day | 180 |

Table 6.2: All persons: severe/profound core activity restriction by frequency of need for assistance (based on all conditions), by sex, 1998

| | Without disability | Level 0 | Level 1 | Level 2 | Level 3 | All persons |
|---|--------------------|----------------|--------------|--------------|-------------|-----------------|
| Severe/profound | | | | | | |
| Number ('000) | | | | | | |
| Male | | | | | | |
| Yes | — | 9.2 | 400.7 | 56.7 | 38.9 | 505.5 |
| No | 7,460.9 | 1,315.2 | **0.4 | — | — | 8,776.6 |
| <i>Total</i> | 7,460.9 | 1,324.4 | 401.1 | 56.7 | 38.9 | 9,282.0 |
| Female | | | | | | |
| Yes | — | *7.1 | 484.1 | 79.8 | 60.1 | 631.0 |
| No | 7,588.7 | 1,156.7 | **1.2 | — | — | 8,746.6 |
| <i>Total</i> | 7,588.7 | 1,163.7 | 485.3 | 79.8 | 60.1 | 9,377.6 |
| Persons | | | | | | |
| Yes | — | 16.2 | 884.8 | 136.4 | 99.0 | 1,136.5 |
| No | 15,049.7 | 2,471.9 | **1.6 | — | — | 17,523.2 |
| Total | 15,049.7 | 2,488.1 | 886.4 | 136.4 | 99.0 | 18,659.7 |
| Per cent by frequency of need for assistance | | | | | | |
| Male | | | | | | |
| Yes | — | 1.8 | 79.3 | 11.2 | 7.7 | 100.0 |
| No | 85.0 | 15.0 | — | — | — | 100.0 |
| <i>Total</i> | <i>80.4</i> | <i>14.3</i> | <i>4.3</i> | <i>0.6</i> | <i>0.4</i> | <i>100.0</i> |
| <i>Total with disability</i> | <i>..</i> | <i>72.7</i> | <i>22.0</i> | <i>3.1</i> | <i>2.1</i> | <i>100.0</i> |
| Female | | | | | | |
| Yes | — | *1.1 | 76.7 | 12.6 | 9.5 | 100.0 |
| No | 86.8 | 13.2 | — | — | — | 100.0 |
| <i>Total</i> | <i>80.9</i> | <i>12.4</i> | <i>5.2</i> | <i>0.9</i> | <i>0.6</i> | <i>100.0</i> |
| <i>Total with disability</i> | <i>..</i> | <i>65.1</i> | <i>27.1</i> | <i>4.5</i> | <i>3.4</i> | <i>100.0</i> |
| Persons | | | | | | |
| Yes | — | 1.4 | 77.9 | 12.0 | 8.7 | 100.0 |
| No | 85.9 | 14.1 | — | — | — | 100.0 |
| Total | 80.7 | 13.3 | 4.8 | 0.7 | 0.5 | 100.0 |
| Total with disability | .. | 68.9 | 24.6 | 3.8 | 2.7 | |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

In the survey, the number of hours per week of care received from the co-resident primary carer was asked for people living in households, categorised as under 20 hours, 20 to 39 hours, 40 or more hours or 'not applicable'. People who were recorded as 'not applicable' for this question were further categorised into two groups depending upon whether they had a main provider of care. In this case a main provider could be either a primary carer who was not co-resident, or else a formal service provider who provided assistance with one or more

of self-care, communication or mobility.¹⁷ People living in cared accommodation were not asked the question on number of hours of care and for this measure were assumed to be in the highest category. That is, this scale assumes that people who do not have a main provider received the least assistance while people who live in cared accommodation received the most assistance. Thus this measure of informal assistance has six ranked categories as shown in Table 6.3.

Table 6.3: Categories in descending order for the amount of assistance received for core activities for regression model C

| Determinants | Category |
|---|---|
| People living in cared accommodation | Living in cared accommodation |
| People living in households with a co-resident primary carer | 40 or more hours per week of assistance 20 to 39 hours per week of assistance Under 20 hours per week of assistance |
| People living in households without a co-resident primary carer | |
| (a) Other informal primary carer or formal care provider for assistance with self-care, communication and/or mobility | Have main provider |
| (b) No care provider for self-care, communication or mobility | No main provider |

The relationship between this measure and the frequency of need for assistance (model B) is shown in Table 6.4. Almost all (99%) of people with no recorded need for assistance (level 0) are excluded from this analysis as they do not have a severe/profound activity restriction. (The small number that are included are those who had a severe/profound activity restriction but did not record a need for assistance when answering the questions on frequency. These are also the only people recorded as not having a main provider.)

There is a strong relationship between the two measures for people who are included in the model C analysis. The majority of people (74%) with a level 3 frequency of need are in cared accommodation, while the majority of people (69%) with a level 1 frequency of need have a main provider with no weekly hours of care recorded. The distribution of people with a level 2 frequency of need was more even, although concentrated in the two groups for cared accommodation and 40 or more hours of care per week.

The patterns of relationship between the two measures are different for males and females. This is examined further in the discussion of results for model C.

¹⁷ It is possible for a person to receive both informal and formal care for assistance with self-care, mobility and communication; however, there was no question on the amount of formal care provided.

Table 6.4: All persons with disability: frequency of need for assistance by amount of assistance received from primary carers (based on all conditions), by sex, 1998

| Need for assistance | Not severe/ profound | Cared accommodation | 40 or more hours/wk | 20–39 hours/wk | Less than 20 hours /wk | Have main provider | No main provider | All with disability |
|--|-------------------------|------------------------|------------------------|-------------------|---------------------------|-----------------------|---------------------|------------------------|
| Number ('000) | | | | | | | | |
| Males | | | | | | | | |
| Level 3 | — | 23.7 | 12.2 | **1.2 | **0.3 | **1.6 | — | 38.9 |
| Level 2 | — | 15.9 | 19.9 | *7.2 | *2.9 | 10.8 | — | 56.7 |
| Level 1 | **0.4 | 15.5 | 50.8 | 18.5 | 47.6 | 268.3 | — | 401.1 |
| Level 0 | 1,315.2 | **1.0 | — | — | — | — | *8.2 | 1,324.4 |
| Total | 1,315.6 | 56.1 | 82.8 | 26.9 | 50.8 | 280.7 | *8.2 | 1,821.1 |
| Females | | | | | | | | |
| Level 3 | — | 49.2 | 9.7 | — | **0.5 | **0.7 | — | 60.1 |
| Level 2 | — | 33.4 | 21.1 | 9.0 | *5.2 | 11.0 | — | 79.8 |
| Level 1 | 1.2 | 34.4 | 40.0 | 22.7 | 48.3 | 338.8 | — | 485.3 |
| Level 0 | 1,156.7 | **1.8 | — | — | **0.7 | — | *4.5 | 1,163.7 |
| Total | 1,157.9 | 118.9 | 70.7 | 31.7 | 54.7 | 350.6 | *4.5 | 1,788.9 |
| Persons | | | | | | | | |
| Level 3 | — | 73.0 | 21.9 | **1.2 | **0.7 | **2.3 | — | 99.0 |
| Level 2 | — | 49.3 | 41.0 | 16.2 | *8.1 | 21.9 | — | 136.4 |
| Level 1 | **1.6 | 49.9 | 90.7 | 41.1 | 95.9 | 607.2 | — | 886.4 |
| Level 0 | 2,471.9 | **2.8 | — | — | **0.7 | — | 12.7 | 2,488.1 |
| Total | 2,473.5 | 174.9 | 153.5 | 58.6 | 105.5 | 631.3 | 12.7 | 3,610.0 |
| Per cent of all with disability | | | | | | | | |
| Males | | | | | | | | |
| Level 3 | — | 60.9 | 31.3 | **3.1 | **0.7 | **4.0 | — | 100.0 |
| Level 2 | — | 28.0 | 35.1 | *12.7 | *5.1 | 19.1 | — | 100.0 |
| Level 1 | **0.1 | 3.9 | 12.7 | 4.6 | 11.9 | 66.9 | — | 100.0 |
| Level 0 | 99.3 | **0.1 | — | — | — | — | *0.6 | 100.0 |
| Total | 72.2 | 3.1 | 4.5 | 1.5 | 2.8 | 15.4 | *0.5 | 100.0 |
| Total S/P | .. | 11.1 | 16.4 | 5.3 | 10.0 | 55.5 | *1.6 | 100.0 |
| Females | | | | | | | | |
| Level 3 | — | 81.9 | 16.1 | 0.0 | **0.8 | **1.2 | — | 100.0 |
| Level 2 | — | 41.9 | 26.4 | 11.3 | *6.5 | 13.8 | — | 100.0 |
| Level 1 | 0.3 | 7.1 | 8.2 | 4.7 | 9.9 | 69.8 | — | 100.0 |
| Level 0 | 99.4 | **0.2 | — | — | **0.1 | 0.0 | *0.4 | 100.0 |
| Total | 64.7 | 6.6 | 4.0 | 1.8 | 3.1 | 19.6 | *0.3 | 100.0 |
| Total S/P | .. | 18.8 | 11.2 | 5.0 | 8.7 | 55.6 | 0.7 | 100.0 |
| Persons | | | | | | | | |
| Level 3 | — | 73.7 | 22.1 | **1.2 | **0.7 | **2.3 | — | 100.0 |
| Level 2 | — | 36.1 | 30.0 | 11.9 | 6.0 | 16.0 | — | 100.0 |
| Level 1 | **0.2 | 5.6 | 10.2 | 4.6 | 10.8 | 68.5 | — | 100.0 |
| Level 0 | 99.3 | **0.1 | — | — | — | — | 0.5 | 100.0 |
| Total | 68.5 | 4.8 | 4.3 | 1.6 | 2.9 | 17.5 | 0.4 | 100.0 |
| Total S/P | .. | 15.4 | 13.5 | 5.2 | 9.3 | 55.5 | 1.1 | 100.0 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Long-term health conditions

Modelling by logistic regression was undertaken for all health conditions (termed here ‘total conditions’ analysis) and each selected health condition separately. Ten of the possible 27 health conditions discussed in the previous chapters are reported on here. These were selected to give a range of conditions with regard to policy importance, prevalence, severity and age groups most affected. The 10 conditions are autism, ADHD, depression, dementia, stroke, asthma, arthritis, cerebral palsy, paralysis and total vision disorders (glaucoma, cataracts and other vision disorders combined). These 10 conditions cover a range of rankings for prevalence, the percentage of people with the condition having a disability and the percentage having a severe or profound activity limitation (Table 6.5).

As discussed in Chapter 4, estimates based on all conditions are more inclusive than estimates based only on main condition. Therefore for each condition, the analysis was carried out for all people who had the condition, whether as their main condition or not (‘all conditions’), as the standard analysis, and for people who had the condition as their main condition for comparison. It should be kept in mind that the age range of people included in the analysis may vary with the nature of the condition. For example, in the survey population, stroke generally includes people over the age of 30, while autism includes mostly people under the age of 20.

Table 6.5: Rankings of the 10 health conditions (out of 27 conditions) selected for regression modelling (based on all conditions)

| Condition | Rank by prevalence | Rank by % having disability | Rank by prevalence having severe/profound activity limitation | Rank by % having severe/profound activity limitation |
|------------------------|--------------------|-----------------------------|---|--|
| Autism | 26 | 5 | 25 | 1 |
| ADHD | 19 | 15 | 18 | 15 |
| Depression | 11 | 19 | 12 | 17 |
| Dementia | 15 | 2 | 11 | 2 |
| Total vision disorders | 9 | 6 | 7 | 13 |
| Stroke | 10 | 14 | 8 | 11 |
| Asthma | 5 | 26 | 9 | 27 |
| Arthritis | 1 | 21 | 1 | 21 |
| Cerebral palsy | 24 | 4 | 21 | 4 |
| Paralysis | 23 | 9 | 23 | 8 |

Personal and environmental factors

The Survey of Disability, Ageing and Carers contains a large number of items that could be considered as potential personal and a small number of items that may be considered as potential environmental factors, and so possibly included in some form in the regression models as covariates. To ensure that the analyses were meaningful and practicable a smaller group of items was selected, to cover a range of areas while ensuring that they were not too highly correlated with each other.

The 14 items chosen were age, sex, birthplace, marital status, survey component (household or cared accommodation), number of conditions, geographical location, the index of relative socioeconomic disadvantage (one of the Socio-Economic Indexes for Areas or SEIFA), age of onset of main condition, house tenure, whether completed Year 12, level of post-school

education qualification, number of types of aids or equipment used¹⁸ and type of class/school. Only a few of these items, for example, number of types of aids and type of class/school, might be regarded as being 'environmental' rather than 'personal' factors. Table 6.6 shows the categories used for these items. The last two items were not asked for people who did not have a disability and so were not included in model A.

Labour force status and duration of unemployment were selected for testing; however, in most cases when labour force status was introduced into the model, it had a destabilizing affect on the estimates for other factors, particularly age. This was probably due to both its strong relationship to other factors and the large proportion of people for whom it is not applicable. These two factors were the only ones that had a high covariance with any of the others. Thus they were not included in the analysis with the other covariates but were tested by adding them to the final model for total conditions and each selected condition.

The survey had two components – the household component and the cared accommodation component. Information for the cared accommodation component was obtained by using a mail-back form completed by an administrative staff member of the establishment, and this form included only a subset of the questions asked of people in households. This part of the collection was designed to identify only disability status and assistance needs, so some information was either not applicable and/or not collected. This included seven items in the above list: age of onset of the main condition, house tenure, whether completed Year 12, level of post-school education qualification, labour force status, duration of unemployment and type of class or school. Partly for this reason, the survey component was included as a covariate in models A and B, whether or not it was statistically significant (as were age and sex, see Section 6.3 below). In model C, 'living in cared accommodation' is one category of the measure of severity of disability, so the survey component was not included as a covariate.

The SEIFA index of relative socio-economic disadvantage is formed using the area-based socioeconomic indexes for areas developed by the ABS. It reflects the socioeconomic characteristic of the area in which an individual lives, rather than being a direct measure of each individual's socioeconomic status. The index includes attributes such as income, educational attainment, unemployment and job skill levels. An area in the most disadvantaged group would have a smaller proportion of households with high incomes, tertiary education, employees in skilled occupations, and other similar characteristics.

Bradbury et al. (2001) also did a multivariate analysis to assess the extend of the relationship between disability and socioeconomic disadvantage for those people living in households based on data from the 1998 Survey of Disability, Ageing and Carers. They found that the percentage of adults with disability fell as the geographic location became more socioeconomically advantaged.

Appendix Tables A6.1 to A6.3 give the population of people with each of the selected 10 health conditions by the personal and environmental factors. Some of the factors are not applicable for some conditions, mostly due to respondent's age.

¹⁸ Types of aids and equipment include eating aids, showering aids, toilet aids, incontinence aids, dressing aids, electric wheelchair, scooter, manual wheelchair, cane, crutches or walking stick, walking frame, seating and bedding, modified car or car aids, other mobility aids, low-tech aids for reading and writing, high-tech aids for reading and writing, low-tech aids for speech, high-tech aids for speech, mobile or cordless phone to communicate, fax machine to communicate, hearing aids and cochlear implants, other aids for hearing, meal preparation aids, medical aids, home modification, aids for moving around home and aids for moving around outside of home.

Table 6.6: Personal and environmental factors included in regression models, and their categories

| | | |
|--------------------------------|---|---------------------------------|
| Age | Index of relative socioeconomic disadvantage (SEIFA) | Labour force status |
| 0–14 years | Lower 30% | Employed |
| 15–44 years | Middle 40% | Unemployed |
| 45–64 years | Upper 30% | Not in the labour force |
| 65–74 years | Not applicable | Not applicable |
| 75+ years | Age of onset | Duration of unemployment |
| Sex | 0–17 years | 1–26 weeks (Ref.) |
| Male | 18–44 years | 27–52 weeks |
| Female | 45–64 years | 53–103 weeks |
| Survey component | 65+ years | 104 or more weeks |
| Household | Not applicable | Not applicable |
| Cared accommodation | Not known | Type of class/school |
| Country of birth | House tenure | Ordinary class |
| Australia, UK, Ireland and USA | Renter | Special class |
| Other places | Owner | Special school |
| Marital status | Boarder | Not applicable |
| Married | Rent-free | Number of aids used |
| Separated | Other | 0 |
| Never married | Not applicable | 1 |
| Not known | Year 12 completed | 2 |
| Number of conditions | Yes | 3 |
| | No | 4 |
| Geographic location | Not applicable | 5+ |
| Capital city | Post-school qualification | |
| Rest of state | Bachelor degree or higher | |
| | Diploma | |
| | Vocational | |
| | Not applicable | |

Note: The first category for each factor is the reference category to which other categories are compared in the regression model.

6.3 Factors associated with severe or profound core activity restriction (model A)

General

The two model A analyses of the presence of a severe or profound core activity restriction for total conditions (described in Section 6.2 above) showed similar results. That is, the same factors were statistically significantly associated with the presence of severe or profound activity restriction regardless of whether all people were included in the analysis (with or without a long-term health condition) or only people with a long-term health condition. The results for the latter analysis are given in Table 6.7 (model A column).

In both cases, 10 of the 12 personal and environmental factors are statistically significantly associated with the presence of severe or profound activity restriction. The exceptions are geographical location and post-school qualification. Of the 10 health conditions modelled separately, geographical location was statistically significantly associated with the presence of severe or profound activity restriction for autism and paralysis, and post-school qualification was so associated for paralysis only.

The results for model A will be described in some detail in this section, and then those for models B and C will be discussed in less detail in sections 6.4 and 6.5 by comparing them with the other models and noting the important differences.

Due to the exploratory nature of the analyses, no adjustment has been made for the large number of statistical tests carried out in the analyses (see Section 6.1 for further discussion). Therefore it is possible that there will be some statistically significant results that will occur by chance and so do not reflect meaningful differences in the population. However, some factors show associations that are both highly statistically significant and consistent across analyses and these are likely to reflect patterns that are present in the population.

Number of long-term health conditions and survey component

Two factors that had particularly strong associations with the likelihood of having a severe or profound core activity restriction were the number of long-term health conditions and survey component. The likelihood of a severe or profound disability increases with the number of conditions. This shows that the relationship between particular health conditions and the severity of disability will be complicated by any other conditions a person may have, that is, co-morbidity. This association with the number of conditions was statistically significant also in the models for eight out of the 10 individual conditions, the exceptions being autism and ADHD (Table 6.8). This appears to be because nearly all people with either of these conditions are in the younger age group and very few of them have more than two conditions (see Table A6.1).

For the survey component, people in cared accommodation were much more likely to have a severe or profound restriction than people in households. As might be expected, almost all people in cared accommodation (97%) have a severe or profound disability. This means both that a person is more likely to have a severe/profound disability if they are in cared accommodation and that this association is not explained by the other factors that are in the model. This result does not rule out the possibility of there being other unexamined factors associated both with having a severe or profound disability and being in cared accommodation.

Table 6.7: Results of logistic regression models A, B and C for total conditions

| Covariates | Odds ratio (95% CI) | | |
|---|-------------------------|--------------------------|----------------------|
| | Model A | Model B | Model C |
| Age | | | |
| 0–14 years | | | |
| 15–44 years | ***0.27 (0.22, 0.35) | ***0.17 (0.13, 0.22) | ***0.30 (0.23, 0.41) |
| 45–64 years | ***0.29 (0.21, 0.36) | ***0.16 (0.12, 0.22) | ***0.23 (0.17, 0.33) |
| 65–74 years | ***0.18 (0.13, 0.24) | ***0.09 (0.06, 0.12) | ***0.16 (0.11, 0.24) |
| 75+ years | ***0.39 (0.29, 0.53) | ***0.13 (0.09, 0.17) | ***0.21 (0.14, 0.31) |
| Sex | | | |
| Male | | | |
| Female | ***1.20 (1.09, 1.32) | ***1.36 (1.24, 1.48) | 0.93 (0.83, 1.05) |
| Survey component | | | |
| Household | | | |
| Cared accommodation | ***56.74 (36.71, 87.70) | ***76.51 (50.27, 116.44) | |
| Country of birth | | | |
| Australia, UK, Ireland and USA | | | |
| Other countries | ***1.35 (1.17, 1.56) | ***1.47 (1.30, 1.66) | **0.76 (0.64, 0.90) |
| Marital status | | | |
| Married | | | |
| Separated | ***0.72 (0.63, 0.83) | ***0.65 (0.58, 0.74) | ***0.22 (0.19, 0.27) |
| Never married | *0.81 (0.67, 0.97) | **0.79 (0.68, 0.92) | ***0.30 (0.24, 0.39) |
| Not known | 0.69 (0.06, 7.85) | 1.00 (0.32, 3.13) | |
| Number of conditions | | | |
| | ***1.69 (1.64, 1.75) | ***1.20 (1.16, 1.23) | ***1.17 (1.14, 1.21) |
| Geographic location | | | |
| Capital city | | | |
| Rest of state | | | ***0.67 (0.59, 0.75) |
| Index of relative socioeconomic disadvantage (SEIFA) | | | |
| Lower 30% | | | |
| Middle 40% | 0.96 (0.86, 1.07) | | ***0.74 (0.65, 0.84) |
| Upper 30% | **0.81 (0.71, 0.92) | | ***0.67 (0.57, 0.78) |
| Not applicable | 1.45 (0.50, 4.22) | | ***0.05 (0.01, 0.16) |
| Age of onset | | | |
| 0–17 years | | | |
| 18–44 years | 0.95 (0.80, 1.11) | 0.98 (0.84, 1.13) | **0.76 (0.62, 0.92) |
| 45–64 years | 0.73 (0.60, 0.89) | 0.93 (0.78, 1.11) | 1.05 (0.83, 1.32) |
| 65+ years | 1.10 (0.86, 1.40) | **1.34 (1.08, 1.65) | **1.49 (1.13, 1.96) |
| Not applicable | | | |
| Not known | | | 0.87 (0.51, 1.51) |

(continued)

Table 6.7 (continued): Results of logistic regression models A, B and C for total conditions

| Covariates | Odds ratio (95% CI) | | |
|----------------------------------|----------------------|-------------------------|-----------------------|
| | Model A | Model B | Model C |
| Owner | | | |
| Renter | 1.04 (0.92, 1.19) | 1.02 (0.91, 1.15) | 0.96 (0.83, 1.12) |
| Boarder | ***3.39 (2.65, 4.34) | ***3.51 (2.82, 4.37) | ***3.86 (2.99, 4.98) |
| Rent-free | ***2.47 (1.96, 3.11) | ***2.37 (1.92, 2.92) | ***3.19 (2.51, 4.06) |
| Other | **2.05 (1.20, 3.49) | | ***1.56 (0.87, 2.80) |
| Not applicable | 0.92 (0.63, 1.34) | ***1.15 (0.82, 1.60) | |
| Year 12 completed | | | |
| Year 12 completed | | | |
| Year 12 not completed | ***1.37 (1.18, 1.58) | ***1.33 (1.15, 1.52) | |
| Not applicable | ***1.61 (1.37, 1.88) | ***1.56 (1.34, 1.81) | |
| Post-school qualification | | | |
| Bachelor degree or higher | | | |
| Diploma | | 0.87 (0.67, 1.15) | 1.44 (0.98, 2.12) |
| Vocational | | 0.97 (0.78, 1.20) | **1.64 (1.22, 2.21) |
| Not applicable | | 1.11 (0.90, 1.37) | ***2.10 (1.58, 2.79) |
| Labour force status | | | |
| Employed | | | |
| Unemployed | | | |
| Not in labour force | | | |
| Not applicable | | | |
| Duration of unemployment | | | |
| 1–26 weeks | | | |
| 27–52 weeks | | | |
| 53–103 weeks | | | |
| 104 or more weeks | | | |
| Not applicable | | | |
| Type of class/school | | | |
| Ordinary class | | | |
| Special class | | ***1.72 (1.27, 2.33) | ***2.02 (1.45, 2.83) |
| Special school | | ***23.27 (14.77, 36.67) | ***9.49 (6.40, 14.08) |
| Not applicable | | ***1.66 (1.26, 2.18) | *1.39 (1.02, 1.89) |
| Number of aids used | | | |
| 0 | | | |
| 1 | | ***1.57 (1.41, 1.75) | 0.95 (0.81, 1.10) |
| 2 | | ***3.19 (2.75, 3.71) | 1.12(0.92, 1.36) |
| 3 | | ***6.03 (4.97, 7.32) | ***1.76 (1.41, 2.20) |
| 4 | | ***9.36 (7.53, 11.63) | ***1.92 (1.52, 2.42) |
| 5+ | | ***21.27 (17.93, 25.24) | ***3.85 (3.24, 4.56) |

Notes

1. First category for each factor is the reference category against which other categories were compared.
2. Only statistically significant results are given. The statistical significance is indicated as follows: *** significant at the 0.1 per cent level; ** significant at the 1 per cent level; * significant at the 5 per cent level.
3. Measures of severity of disability in each model were: presence of severe or profound core activity restriction for people with a long-term health condition (model A), need for assistance with core activities by people with a disability (model B) and amount of informal assistance received for core activities by people with a severe or profound activity restriction (model C).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Cared accommodation is associated with only six of the 10 conditions separately: depression, dementia, total vision disorders, stroke, arthritis and asthma. The first five of these all had substantial numbers of people in cared accommodation (Table A6.1). In contrast, only a small proportion (0.7%) of people with asthma was in cared accommodation. For these people it is most likely that they were in cared accommodation because they had disabilities related to conditions other than asthma and thus had multiple conditions associated with severe or profound activity restriction.

Table 6.8: Summary of the results of logistic regression model A for 10 selected conditions: association of factors with the presence of severe or profound activity restriction for all people with the condition ('all conditions' model)

| Factor | | | | | | | | | | |
|---------------------------|----------|----------|------------|----------|------------------------|----------|----------|-----------|----------------|-----------|
| | Autism | ADHD | Depression | Dementia | Total vision disorders | Stroke | Asthma | Arthritis | Cerebral palsy | Paralysis |
| Age | | | * | **** | **** | **** | ** | **** | | |
| Sex | | | | **** | * | ** | | **** | | **** |
| Survey component | | | **** | **** | **** | **** | **** | **** | | |
| Number of conditions | | | **** | | **** | **** | **** | **** | * | ** |
| Age of onset | | | ** | **** | | **** | * | * | | |
| Country of birth | | | | | *** | | | ** | | **** |
| Marital status | | | **** | **** | *** | **** | | **** | | |
| Location | | | * | | | | | | | ** |
| SEIFA | | | | | | * | | | | |
| House tenure | | | ** | | **** | **** | | **** | | * |
| Year 12 | | | **** | ** | | | *** | ** | | ** |
| Post-school qualification | | | | | | | | | | *** |
| Total | 0 | 0 | 8 | 6 | 7 | 7 | 5 | 9 | 1 | 7 |

Note: **** Significant at the 0.01 per cent level; *** Significant at the 0.1 per cent level; ** Significant at the 1 per cent level; * Significant at the 5 per cent level.

Sex, age and age of onset

For 'total conditions' there is a strong statistically significant association between sex and the likelihood of severe/profound activity. This was also the case for five of the 10 selected individual health conditions. For total conditions, dementia, total vision disorders, stroke and arthritis females were more likely to have a severe /profound core activity restriction than males, but for paralysis the reverse is true. For each condition, this generally reflects the proportion of males and females who had a severe/profound activity restriction (Table 6.9).

When no other factors are taken into account, the likelihood of severe/profound activity restrictions for people with a long-term health condition is highest in the youngest and oldest age groups (24% for those aged under 15, and 39% for those aged 75 and over) and lowest in the 15 to 44 year age group (11%, Table 6.10). For the 75 years and over age group people tend to have more conditions on average than the younger age groups. For any specified number of conditions they are also more likely to have a severe or profound activity restriction than all other age groups except for those aged under 15. For the latter age group, the average number of conditions is much lower but the severity of disability is higher than for any age group, regardless of the number of conditions.

Table 6.9: People with a severe or profound core activity restriction: prevalence of health conditions (based on all conditions), by sex, 1998

| Health condition | Male | Female | All |
|------------------------|----------------------|---------|-------|
| | Number ('000) | | |
| Autism | 10.1 | **2.3 | 12.4 |
| ADHD | 27.4 | *5.1 | 32.5 |
| Depression | 25.6 | 49.4 | 75.0 |
| Dementia | 30.7 | 64.5 | 95.2 |
| Total vision disorders | 63.3 | 103.4 | 166.7 |
| Stroke | 60.2 | 79.0 | 139.2 |
| Asthma | 52.0 | 74.5 | 126.5 |
| Arthritis | 112.6 | 252.3 | 364.9 |
| Cerebral palsy | 9.5 | 9.8 | 19.3 |
| Paralysis | *8.2 | *6.2 | 14.4 |
| | Per cent | | |
| Autism | 94.4 | **100.0 | 95.4 |
| ADHD | 43.2 | *47.2 | 43.8 |
| Depression | 29.1 | 31.3 | 30.5 |
| Dementia | 86.7 | 97.1 | 93.5 |
| Total vision disorders | 37.6 | 51.1 | 45.0 |
| Stroke | 45.8 | 52.5 | 49.3 |
| Asthma | 10.3 | 12.5 | 11.5 |
| Arthritis | 17.3 | 26.4 | 22.7 |
| Cerebral palsy | 83.3 | 84.5 | 83.5 |
| Paralysis | *63.6 | *53.4 | 58.8 |

Note: Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Table 6.10: People with a severe or profound core activity restriction: number of health conditions by age, 1998

| Age group | 1 | 2 | 3 | 4 | 5+ | 1 or more | All |
|--------------|----------------------------|--------------|--------------|--------------|--------------|-----------------|-----------------|
| | Number ('000) | | | | | | |
| 0–14 years | 82.3 | 43.0 | 10.7 | *5.2 | *3.2 | 144.3 | 144.3 |
| 15–44 years | 83.5 | 63.3 | 36.3 | 15.6 | 25.7 | 224.5 | 224.5 |
| 45–64 years | 59.3 | 65.1 | 55.9 | 42.7 | 64.1 | 287.2 | 287.2 |
| 65–74 years | 10.8 | 24.3 | 32.6 | 28.3 | 44.2 | 140.2 | 140.2 |
| 75+ years | 14.5 | 43.8 | 73.3 | 66.7 | 141.9 | 340.2 | 340.2 |
| Total | 250.5 | 239.5 | 208.8 | 158.6 | 279.1 | 1,136.50 | 1,136.50 |
| | Prevalence rate (%) | | | | | | |
| 0–14 years | 16.9 | 53.1 | 70.4 | *75.4 | *100.0 | 24.3 | 3.7 |
| 15–44 years | 6.2 | 14.6 | 24.6 | 26.9 | 50.5 | 11.0 | 2.7 |
| 45–64 years | 6.0 | 11.7 | 18.7 | 25.8 | 42.9 | 13.3 | 7.1 |
| 65–74 years | 3.3 | 8.6 | 18.3 | 22.2 | 36.3 | 13.5 | 10.9 |
| 75+ years | 9.2 | 22.5 | 41.2 | 49.9 | 66.6 | 38.8 | 34.7 |
| Total | 7.6 | 15.4 | 25.5 | 32.3 | 51.8 | 16.9 | 6.1 |

Note: Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

However, when other factors are included as in the models here, this pattern changes somewhat because age is related to a number of other factors, including the number of conditions and the likelihood of living in cared accommodation, both of which generally increase with age. For total conditions the main difference is between the 0 to 14 year age group and all others, with the former group being more likely to have a severe/profound activity restriction after other factors are taken into account (Table 6.10).

Among the 10 individual conditions, age was statistically significantly associated with the likelihood of severe/profound activity restriction for total vision disorders, stroke, asthma, arthritis, depression and dementia. The first four of these followed the general pattern above, as did depression except that both the 0–14 and 45–64 year age groups were associated with a higher risk of having severe/profound activity restriction. On the other hand, for dementia the risk increased with increasing age.

Overall, people whose age of onset of the condition was between ages 45 and 64 years appear less likely to have a severe or profound activity restriction than those whose age of onset was earlier or later (Table 6.7). However, this pattern varies for the five out of 10 conditions for which there is a statistically significant association. The relationship for arthritis is similar to the overall pattern. For depression the likelihood of severe/profound activity restriction is greater for people whose age of onset was under 45 compared to those for whom it was age 45 and over, but for stroke, the likelihood increased with age of onset. For dementia, the greatest likelihood of severe/profound activity restriction was for people whose age of onset was between 18 and 64. For asthma, the least likelihood was for people whose age of onset was under 18.

The same six conditions (depression, dementia, total vision disorders, stroke, asthma and arthritis) had statistically significant associations for number of conditions, survey component and age, and five of these (not total vision disorders) also had such an association for age of onset. Of the other four selected conditions, cerebral palsy and paralysis had a statistically significant relationship for the number of conditions. For dementia and cerebral palsy the association between severe/profound activity restriction and number of conditions is not as strong as for the other conditions ($0.01 < p < 0.05$) because for both these conditions most people had a severe or profound activity restriction regardless of the number of conditions.

Marital status

Married people were more likely to have a profound or severe activity restriction than people who had never married or who had separated or divorced. This is possibly because people who have difficulty with activities of everyday living are more likely to receive assistance if they have a partner who can provide that assistance. Thus they will answer yes when asked if they need assistance and will be recorded as having a severe activity restriction. An unmarried person with a similar disability may not receive assistance on a day-to-day basis and may carry out the same activities on their own but with difficulty. Thus they will be recorded as having a moderate activity restriction. That this might be the case is shown by the fact that, of people with a severe or profound activity restriction, a much greater proportion of married people have a severe activity restriction rather than a profound activity restriction, as compared to single people (Table 6.11).

This pattern is replicated for five of the 10 conditions (depression, dementia, total vision disorders, stroke and arthritis). However, for dementia it appears to be true only for people

who have been separated and not those who have never married, whose risk of severe/profound activity restriction appears to be higher than those who are married.

Table 6.11: People in the Australian population by marital status and disability status (based on all conditions), 1998

| | Profound | Severe | Moderate | Mild | Other | All |
|-----------------------|--------------------------------------|--------------|--------------|----------------|-----------------|-----------------|
| Marital status | Number ('000) | | | | | |
| Married/de facto | 176.9 | 324.9 | 375.6 | 582.1 | 7,354.9 | 8,814.4 |
| Separated | 197.2 | 133.0 | 183.0 | 258.3 | 1,239.5 | 2,011.0 |
| Never married | 160.7 | 140.5 | 100.7 | 190.2 | 7,238.6 | 7,830.7 |
| Not known | *3.0 | **0.2 | — | **0.1 | **0.3 | *3.5 |
| Total | 537.8 | 598.7 | 659.4 | 1,030.6 | 15,833.0 | 18,659.7 |
| | Per cent by disability status | | | | | |
| Married/de facto | 2.0 | 3.7 | 4.3 | 6.6 | 83.4 | 100.0 |
| Separated | 9.8 | 6.6 | 9.1 | 12.8 | 61.6 | 100.0 |
| Never married | 2.1 | 1.8 | 1.3 | 2.4 | 92.4 | 100.0 |
| Not known | *85.7 | **5.7 | — | **2.9 | **8.6 | 100.0 |
| Total | 2.9 | 3.2 | 3.5 | 5.5 | 84.9 | 100.0 |
| | Per cent by marital status | | | | | |
| Married/de facto | 32.9 | 54.3 | 57.0 | 56.5 | 46.5 | 47.2 |
| Separated | 36.7 | 22.2 | 27.8 | 25.1 | 7.8 | 10.8 |
| Never married | 29.9 | 23.5 | 15.3 | 18.5 | 45.7 | 42.0 |
| Not known | 0.6 | — | — | — | — | — |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

Other factors

For the remaining factors when total conditions are considered, the following characteristics are less likely to be associated with severe or profound disability: being born in Australia, United Kingdom, Ireland or the United States of America; not being in the lowest 30% on the SEIFA scale; being an owner or renter; and having completed Year 12 at school.

Birth place is significantly associated with severe/profound activity restriction for three conditions: total vision disorders, arthritis and paralysis. The first two of these follow the pattern for total conditions with people born in Australia, United Kingdom, Ireland or the United States of America having less likelihood of having severe/profound restriction; however, the reverse is true for the last condition.

With some slight exceptions, the direction of any statistically significant associations for the selected individual conditions is the same as that for total conditions for house tenure, completion of year 12 schooling and SEIFA. For house tenure, owners and sometimes renters were less likely to have severe/profound activity restriction than those living in other situations. The individual conditions with consistent statistical significant associations included depression, total vision disorders, stroke, arthritis and paralysis for house tenure;

depression, dementia, asthma, arthritis and paralysis for completion of year 12; and paralysis only for SEIFA. The main exception is for dementia for which there is a weak negative association with year 12 completion (in the reverse direction).

Geographical location had a statistically significant association for depression and paralysis, with people in capital cities more likely to have a severe or profound activity restriction.

For the 10 conditions examined there was considerable variation in the number of factors that were statically significantly associated with the likelihood of severe or profound activity restriction. For autism and ADHD there were no significant associations and for cerebral palsy there was only a significant association with the number of conditions. Of the 10 selected conditions these three were the ones that occurred mostly in the lower age groups so that a number of the factors did not apply. Most people with autism and cerebral palsy also had a severe or profound activity restriction (95% and 84% respectively), although this was not the case with ADHD (44%; Table A6.1). Five of the 10 conditions (total vision disorders, arthritis, depression, stroke and paralysis) had between seven and nine statistically significant associations, whereas asthma had five and dementia had six.

As discussed in Section 6.2, because labour force status had a high correlation with some other factors, it was tested by adding it to the final model after all other factors had been tested. It does appear that being in the labour force is associated with a reduced presence of severe/profound activity restriction for total conditions and each of depression, total vision disorders, stroke, asthma and arthritis. There were no statistically significant associations with duration of unemployment.

In general, for each of the analyses based on main condition, the factors that were statistically significant were a subset of those in the corresponding analysis of all conditions. The main exception was dementia, for which age, marriage, age of onset and year 12 schooling were replaced by country of birth, survey component and SEIFA as statistically significant factors, with only sex and number of conditions appearing in both models. This difference is most likely due to the fact that almost all people (94%) with dementia did have a severe/profound activity restriction and so differences between groups was based on a small number of people. In such a situation, among pairs or groups of related factors, one or the other may show up as being the most important when slightly different groups of people are included.

6.4 Factors associated with frequency of help needed in the three core activities for those who have disabilities (model B)

Comparison with model A

For total conditions among people who had a disability, 12 of the 14 personal and environmental factors were statistically significantly associated with the frequency of help needed in the three core activities (Table 6.7). This includes nine of the same factors as in model A plus the two extra factors that were possible to include in model B but not model A, namely the number of types of aids/equipment used and the type of class/school. The other statistically significant factor was post-school qualification, instead of SEIFA as in model A.

In general, for the 10 selected conditions the same factors are statistically significantly associated with frequency of help needed as for severe/profound activity restriction, with

one or two additional factors for most conditions. For each condition, the patterns of association were generally similar for those factors that showed statistically significant associations with both measures.

As with the likelihood of severe or profound activity restriction, married people on average recorded a greater frequency of need for assistance than people who had never married or who had separated or divorced. This probably occurs for similar reasons to those suggested in the previous section, that is, people with a partner are on average more likely to say they need a higher frequency of help because their partner is there to provide it. Thus using the frequency of assistance needed as a measure of severity of disability may be compounded by the amount of informal assistance that is actually available.

Excluding paralysis (see below), there were only five associations that were statistically significant for severe/profound activity restriction but not for frequency of help needed, and four of these were only significant at the 5% level (Table 6.12). For arthritis, there was no statistically significant association for survey component with frequency of help needed, as there was for severe/profound activity restriction, suggesting that the other factors have a stronger association with the former measure for people in cared accommodation.

Table 6.12: Summary of the results of logistic regression model B for 10 selected long-term health conditions: association of factors with need for assistance with core activities for people with a disability and with the condition ('all conditions' model)

| Factor | Autism | ADHD | Depression | Dementia | Total vision disorders | Stroke | Asthma | Arthritis | Cerebral palsy | Paralysis |
|---------------------------|----------|----------|------------|-----------|------------------------|-----------|----------|-----------|----------------|-----------|
| Age | | | **** | **** | **** | *** | **** | **** | | **** |
| Sex | | | ** | **** | * | ** | | **** | | * |
| Survey component | | | **** | **** | **** | **** | **** | | | **** |
| Number of conditions | * | | **** | | * | * | **** | **** | | |
| Age of onset | | | ** | **** | * | **** | | | | **** |
| Country of birth | | | | * | **** | ** | | **** | | |
| Marital status | | | **** | **** | ** | **** | | **** | | |
| Location | | * | * | | * | | | * | | |
| SEIFA | | | | | | | | | * | |
| House tenure | | | *** | **** | **** | **** | | **** | ** | * |
| Year 12 | | | **** | *** | | | * | *** | * | **** |
| Post-school qualification | | | | **** | | | | | | *** |
| Type of class/school | | | ** | | **** | **** | **** | | *** | |
| Number of aids used | | ** | **** | **** | **** | **** | **** | **** | *** | **** |
| Total | 1 | 2 | 11 | 10 | 11 | 10 | 6 | 9 | 5 | 8 |

Note: **** Significant at the 0.01 per cent level; *** Significant at the 0.1 per cent level; ** Significant at the 1 per cent level; * Significant at the 5 per cent level.

Paralysis is the only one of the 10 conditions for which there is a distinctly different pattern of association for model B compared to model A. Age, age of onset, survey component and post-school education were statistically significant whereas country of birth, number of conditions and geographical location were not. This may be because for this condition the two measures were not so closely correlated as for the other conditions. The associations with age and survey component follow the general pattern for these factors. However, in contrast to other selected conditions, but as for this condition in model A, males with paralysis on average received more frequent assistance than did females. People whose age

of onset of paralysis was between 15 and 64 years received more frequent assistance than those whose age of onset was earlier or later.

For other conditions, the small number of factors that had a statistically significant association with frequency of help needed but not severe/profound activity restriction followed the general pattern for total conditions, with a few exceptions. In particular, people with dementia born in Australia, United Kingdom, Ireland or the United States of America on average received more frequent assistance than those born elsewhere, and people with cerebral palsy in the lower 30% SEIFA group received more frequent assistance than those in the middle and upper SEIFA groups.

As with the likelihood of severe/profound activity restriction, for each of the analyses based on main condition, the factors that were statistically significant were a subset of those in the corresponding analysis of all conditions. The number of statistically significant associations was always less than the number for the 'all conditions' analysis. The most extreme example of this was vision disorders, for which there were no statistically significant associations for the analysis of main condition.

Number of aids used and type of class or school

The number of different types of aids used had a strong positive association with the frequency of assistance received for total conditions and all selected conditions except autism. For paralysis the pattern appeared to be slightly different, with people with one type of aid receiving less frequent assistance and people with two or more types of aid receiving more frequent assistance, on average, compared to people using no aids.

The type of class or school was also strongly related to the frequency of assistance for total conditions and for depression, vision disorders, stroke, asthma and cerebral palsy. Generally children attending special schools received the most frequent assistance on average, followed by children attending special classes in mainstream schools. The exception was depression, for which children attending special classes had the least frequent assistance on average. In this case the children are likely to be attending special classes as a result of some other condition.

Number of core activities in which assistance was needed

A fourth measure, the number of core activities in which assistance was needed, was also tested. The results for this measure were very similar to those for the frequency of assistance needed for the core activities (model B) and are not reported separately.

6.5 Factors associated with amount of assistance received from carers (model C)

This analysis includes only those people who had severe or profound core activity restriction. As with model B, almost all factors in the model for total conditions have a statistically significant association with the amount of assistance received (Table 6.7). The differences are that the association for geographic location was statistically significant while those for sex and completion of year 12 schooling were not.

For seven of the 10 selected conditions, in general the same factors were statistically significantly associated with the amount of assistance received as for frequency of help, with one or two additional factors for most conditions (Table 6.13). Cerebral palsy, paralysis and to a lesser extent dementia had differing sets of associated factors to those in model B. Excluding these three, there were only nine associations that were statistically significant for frequency of help needed but not for amount of assistance received, and six of these were only significant at the 5% level. The other three were completion of year 12 for stroke and arthritis, and country of birth for arthritis.

Table 6.13: Summary of the results of logistic regression model C for 10 selected long-term health conditions: association of factors with amount of assistance received for core activities for people with the condition and a severe or profound core activity restriction ('all conditions' model)

| Factor | Autism | ADHD | Depression | Dementia | Total vision disorders | Stroke | Asthma | Arthritis | Cerebral palsy | Paralysis |
|---------------------------|----------|----------|------------|----------|------------------------|-----------|----------|-----------|----------------|-----------|
| Age | | | *** | | **** | *** | **** | **** | | |
| Sex | | | ** | **** | * | ** | ** | **** | | * |
| Number of conditions | | | | **** | * | | **** | **** | **** | |
| Age of onset | | | *** | *** | **** | **** | | * | | |
| Country of birth | | | **** | | ** | ** | | | | |
| Marital status | | | **** | | **** | **** | ** | **** | | |
| Location | | | | | ** | **** | * | * | | |
| SEIFA | | | ** | | **** | **** | | *** | | |
| House tenure | | | **** | **** | **** | ** | * | **** | | |
| Year 12 | | | **** | **** | ** | ** | | | | |
| Post-school qualification | | | * | **** | **** | ** | | ** | | |
| Type of class/school | | | **** | | ** | | ** | | | |
| Number of aids used | | ** | * | | ** | **** | ** | **** | | |
| Total | 0 | 1 | 11 | 6 | 13 | 11 | 8 | 10 | 1 | 1 |

Note: **** Significant at the 0.01 per cent level; *** Significant at the 0.1 per cent level; ** Significant at the 1 per cent level; * Significant at the 5 per cent level.

For each of the seven conditions with similar sets of associated factors for models B and C, the patterns of association were generally similar for those factors that showed statistically significant associations with both measures. There were exceptions: sex, number of aids used and country of birth.

As with the likelihood of severe/profound activity restriction and/or the frequency of help needed, sex was also statistically significantly associated with the amount of informal assistance received for people with depression, vision disorders, stroke, asthma and dementia. However, in each case, whereas on average females were more likely to have a severe/profound activity restriction (model A) or on average received more frequent help (model B), males on average received a greater amount of informal assistance (model C).

Although the two measures 'frequency of assistance' and 'amount of informal assistance' are obviously highly correlated, they do not correspond completely and the latter measure is for a more restricted population. The difference between males and females is much clearer for frequency of assistance (see Table 6.2, proportion of people with disability for males and females). The proportion of people in the three highest levels (levels 1, 2 and 3) is greater for females than males, with the opposite being the case for the lowest level (level 0, 65% versus 73%). For amount of assistance received, although there is a higher proportion of females

than males in the highest category, cared accommodation (19% versus 11%), for other categories on average males receive more assistance per week than females (see Table 6.4, proportion of people with a severe or profound core activity restriction for males and females).

For total conditions, there was no statistically significant association between sex and amount of assistance received, after controlling for other factors. For some particular conditions, the contrast between the two measures differed more between the sexes, and the result was a statistically significant association in the opposite direction, after controlling for other factors. For example, for arthritis the proportion of females in the three highest frequency of need categories was greater than that for males and the reverse was true for the lowest category (414,000 out of 664,000, or 62%, compared to 332,000 out of 444,000, or 75%; Table 6.14). However, for the amount of assistance received, the proportion of females in both the highest category (cared accommodation, 15% versus 10% for males) and the lowest effective category (main provider without hours recorded, 60% versus 54%) was higher than that for males (see Table 6.14).

The relationship of the number of types of aid used with the amount of assistance needed appeared to be more complex than that with the frequency of assistance. For total conditions, only people with three aids or more on average appeared to have a higher level of assistance needed than people who used no, one or two aids. This was also the case for vision disorders, arthritis and depression. For stroke and asthma the dividing category was five or more aids. (Only ADHD appeared to show an increasing pattern of amount of assistance with the number of aids; however, the confidence limits were very wide.)

These patterns may be the result of a two-way relationship between the number of aids and the amount of assistance needed. For total conditions and for a number of selected conditions there tends to be a bimodal distribution for the number of aids used, so that the majority of people are either using none or one, or five or more (see Table A6.3). People with severe/profound activity restriction who require a high level of assistance may either require a large number of aids or, because of the severity of their disability, may not be able to use them much at all.

As with sex, country of birth also showed an opposite pattern to that generally found in model B, for total conditions, vision disorders and stroke. That is, people born in Australia, United Kingdom, Ireland or the United States of America on average had a higher level of assistance. This was also the case for depression. The reasons for this are not apparent.

In contrast to both models A and B the amount of informal assistance received for paralysis was only statistically significantly associated with one factor, sex. For cerebral palsy the number of conditions was the only factor with a statistically significant association, as it was in model A. The reasons for this are not clear, but it may be partly due to the fact that both conditions have a comparatively small number of people with a severe/profound activity restriction, and for each of these conditions the majority are concentrated in one category for the amount of assistance (cared accommodation for paralysis and 40 or more hours for cerebral palsy, see Table A6.3).

In contrast to models A and/or B, age group, country of birth, marriage and the number of aids used were not statistically significantly associated with the amount of assistance for dementia, whereas the number of conditions was. For age group this was probably because almost all people with severe/profound activity restriction are over 70.

Table 6.14: All persons with disability and arthritis: frequency of need for assistance by amount of assistance received from primary carer (based on all conditions), by sex, 1998

| | Not severe /profound | Cared accommodation | More than 40+ hours/wk | 20-39 hours/wk | Less than 20 hours/wk | Have main provider | No main providers | All with disability |
|----------------------|-------------------------|------------------------|---------------------------|-------------------|--------------------------|-----------------------|----------------------|------------------------|
| Number ('000) | | | | | | | | |
| Male | | | | | | | | |
| Level 3 | — | *4.1 | **1.4 | — | — | — | — | 5.5 |
| Level 2 | — | *3.4 | **1.0 | **0.5 | **0.5 | **2.1 | — | 7.6 |
| Level 1 | — | *3.6 | 17.0 | *5.1 | 14.1 | 58.7 | — | 98.5 |
| Level 0 | 331.1 | **0.2 | — | — | — | — | **0.8 | 332.0 |
| Total | 331.1 | 11.3 | 19.4 | *5.7 | 14.6 | 60.8 | **0.8 | 443.6 |
| Female | | | | | | | | |
| Level 3 | — | 14.4 | *3.0 | — | — | **0.3 | — | 17.7 |
| Level 2 | — | 12.2 | 9.3 | *4.3 | *2.6 | **2.5 | — | 30.9 |
| Level 1 | **0.4 | 11.0 | 12.6 | *8.9 | 20.3 | 148.3 | — | 201.4 |
| Level 0 | 411.2 | **0.5 | — | — | — | — | **2.2 | 413.9 |
| Total | 411.5 | 38.1 | 24.9 | 13.2 | 22.8 | 151.1 | **2.2 | 663.9 |
| Persons | | | | | | | | |
| Level 3 | — | 18.5 | *4.3 | — | — | **0.3 | — | 23.2 |
| Level 2 | — | 15.6 | 10.3 | *4.9 | *3.1 | *4.6 | — | 38.4 |
| Level 1 | **0.4 | 14.6 | 29.6 | 14.1 | 34.3 | 207.0 | — | 299.9 |
| Level 0 | 742.2 | **0.7 | — | — | — | — | *3.0 | 745.9 |
| Total | 742.6 | 49.4 | 44.3 | 18.9 | 37.4 | 211.9 | *3.0 | 1,107.5 |
| Per cent | | | | | | | | |
| Male | | | | | | | | |
| Level 3 | — | *75.4 | **24.6 | — | — | — | — | 100.0 |
| Level 2 | — | *45.2 | **13.6 | **6.9 | **6.6 | **27.7 | — | 100.0 |
| Level 1 | — | *3.7 | 17.3 | *5.2 | 14.3 | 59.6 | — | 100.0 |
| Level 0 | 99.7 | — | — | — | — | — | 0.2 | 100.0 |
| Total | 74.6 | 2.6 | 4.4 | *1.3 | 3.3 | 13.7 | 0.2 | 100.0 |
| Total S/P | | 10.0 | 17.2 | 5.1 | 13.0 | 54.0 | 0.7 | |
| Female | | | | | | | | |
| Level 3 | — | 81.3 | *16.9 | — | — | **1.9 | — | 100.0 |
| Level 2 | — | 39.4 | 30.1 | *14.0 | *8.3 | **8.1 | — | 100.0 |
| Level 1 | **0.2 | 5.5 | 6.3 | *4.4 | 10.1 | 73.6 | — | 100.0 |
| Level 0 | 99.3 | **0.1 | — | — | — | — | 0.5 | 100.0 |
| Total | 62.0 | 5.7 | 3.7 | 2.0 | 3.4 | 22.8 | 0.3 | 100.0 |
| Total S/P | | 15.1 | 9.9 | 5.2 | 9.0 | 59.9 | 0.9 | |
| Persons | | | | | | | | |
| Level 3 | — | 79.8 | *18.7 | — | — | **1.4 | — | 100.0 |
| Level 2 | — | 40.5 | 26.9 | *12.6 | *8.0 | *12.0 | — | 100.0 |
| Level 1 | **0.1 | 4.9 | 9.9 | 4.7 | 11.5 | 69.0 | — | 100.0 |
| Level 0 | 99.5 | **0.1 | — | — | — | — | *0.4 | 100.0 |
| Total | 67.1 | 4.5 | 4.0 | 1.7 | 3.4 | 19.1 | *0.3 | 100.0 |

Notes

1. Estimates marked with ** have an associated relative standard error (RSE) of 50% or more. Estimates marked with * have an associated RSE of between 25% and 50%. These estimates should be used with caution.
2. The symbol '—' means nil or rounded to zero (including null cells).

Source: AIHW analysis of ABS 1998 Survey of Disability, Ageing and Carers confidentialised unit record file.

6.6 Discussion

As outlined in Section 6.1, the purpose of these analyses was not to examine all the associations in detail but to give a picture of the complexity of relationships between severity of disability and a number of personal and environmental factors. This complexity is very apparent for all three measures used, in the results for 'total conditions' and a number of the specific conditions considered. Personal and environmental factors were strongly related to severity of disability. Of course, as discussed in Section 6.1, the causal pathways relating the severity of disability to any particular factor may be in either or both directions, and may be modified by other factors.

A number of factors show highly significant and consistent patterns for total conditions and a number of the 10 specific conditions, regardless of the measure of severity used. These include age, survey component (household or cared accommodation), number of conditions, age of onset, number of aids used and house tenure, where applicable. Sex and marital status also showed some strong associations with the severity of disability but had more complex patterns as discussed below. However, as discussed in Section 6.1, because of the exploratory nature of the analyses, no adjustment was made for the large number of statistical tests undertaken and it is possible that for some factors some statistically significant results, particularly at the 5% level, could occur by chance and so not reflect meaningful differences in the population.

For most of the personal and environmental factors, the severity measure chosen does not make a big difference to the associations, with some notable exceptions. Such exceptions may bring out some important patterns, such as were apparent with the differences between the sexes for the three measures. In this case, for five of the specific conditions considered, females were more likely than males to have a severe or profound core activity restriction and had a greater need for assistance on average, yet for people with a severe/profound restriction, males received more assistance than females (see Section 6.5).

Generally for specific conditions, the number of factors with statistically significant associations increased as the scope of the population under analysis was restricted, that is from models A to B to C. However, in some cases, such as paralysis in particular, there were different results for the three measures.

The fact that almost all the factors examined were statistically significant in the analyses for 'total conditions' shows that there is the potential for associations between them and the severity of disability for any particular specific condition. However, for most specific conditions not all associations were apparent. There was considerable variation in the number of factors that did show statistically significant associations. This was partly because some conditions are concentrated in particular age ranges, but also appeared in some cases to be due to other reasons that require further investigation. This shows that there are possible three-way interactions between the severity of disability, the personal and environmental factors that may affect it, and the underlying long-term conditions associated with the disability.

There is a strong relationship between the long-term health condition and the severity of disability experienced by a person, as shown in the analyses in chapters 4 and 5 for many health conditions. The results in this chapter show that this relationship may possibly often be mediated by a number of personal and environmental factors. However, the degree of such mediation varied considerably with the type of condition, although some of this variation may be due to the limitations of the data. For some health conditions for which there were few or no associations apparent between severity of disability and the various

factors, this may be due to the restricted nature of the population and the limited number of factors that were available for analysis.

Some factors had strong associations for 'total conditions' but had few or no strong relationships for the selected specific conditions. These factors may be more important for some of the other 17 conditions, but it may also be that some factors are more related to the severity of disability per se than with individual conditions.

The patterns of many of the associations that were found were as might be expected, for example the severity of disability increased with the number of health conditions. However, the reasons for some associations required considerable interpretation or were not readily apparent from the data. For example, it was not clear why people who were married should have a greater likelihood of a severe disability until the patterns in the distribution of profound and severe activity restriction were examined in more detail (see Section 6.3; this was also a good example of a factor that possibly affects the measurement of the severity of disability in contradictory ways). For some measures and conditions people who lived in capital cities were more likely to have a severe disability than people who did not. This could result from people who most needed assistance often moving to major centres, but such a hypothesis would require further investigation.

Controlling for some factors may change the relationship of other factors with the severity of disability. Also, some factors had different patterns of associations depending upon health condition. Where there are factors that are related to each other and to severity, the statistical significance of any one factor may vary for different individual conditions.

These analyses have been limited to the personal and environmental factors that are available in the Survey of Disability, Ageing and Carers. Most of the factors that could be included are personal rather than environmental, and although these include many of the factors that might in any case have been chosen for investigation, there are other possibly important factors that are not included, for example personal income. Such factors, as well as themselves being related to the severity of disability, may also affect the patterns of association of some of the factors that were included.

The number of long-term conditions a person has is obviously highly correlated with the severity of disability, however measured. This means that co-morbidity is very important in examining the relationships between particular conditions and the severity of disability. As distinct from the number of conditions, there has been no attempt in these analyses to look at the types of co-morbidity and one line of future investigation could be to analyse the relationships between disability and specific combinations of conditions.