

DISABILITY PREVALENCE FORECASTING & HOUSING

A Selected Review

Working Paper 1

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1. Introduction

This paper reviews the current commentary on the disability prevalence, trends, and its measurement and forecasting in the context of housing need and housing adjustment. The discussion is structured as follows:

- Section 2 provides a brief commentary on disability prevalence data, trends and projections in New Zealand, particularly as related to restricted mobility arising from severe physical and/or sensory impairment.
- Section 3 then places the New Zealand prevalence data in the context of international prevalence data and trends.
- Section 4 considers the various approaches to disability prevalence analysis and forecasting used internationally and the problem of robustness.
- Section 5 comments on disability and housing in New Zealand.

The last section considers the desirability and utility of more sophisticated and resource intensive prevalence and demand projections in the context of the strategic need to address the housing needs of disabled people. In doing so, it is suggested that a more fruitful approach to ensuring that disabled people can access appropriate housing is to focus on the progressive adaptation of the current housing stock and improved design of the new housing stock and the built environments in which that stock is situated.

2. New Zealand Disability Prevalence

This section provides a review of:

- New Zealand data sources on disability prevalence in the population;
- current estimates of disability prevalence, and
- disability projections and current commentary on the policy implications of disability prevalence and dynamics.

Data Sources on Disability Prevalence in the New Zealand Population

The main data source on disability prevalence in the New Zealand population is the Statistics New Zealand Disability Survey conducted in 2001. An earlier household disability survey was conducted in 1996. In addition, two general questions on disability were included in the 1996, 2001 and 2006 censuses.

New Zealand Census

Statistics New Zealand (2003) in its 2003 country report on disability data to the United Nations noted that New Zealand has a long history of seeking disability related information in the context of the census. Questions on disability were included in both the 1911 and the 1916 censuses. Proposals to reintroduce a question in the 1981 were not proceeded with, but limited disability questions were included in 1996, 2001 and 2006 censuses. In all three of the latter censuses, questions around health and disability were very limited. These simply asked individuals to report on whether a health problem or condition impinged on 'everyday' activities and whether an individual had a disability or handicap that was in existence for six months or more. The data from those questions were designed to identify a population that self-reports disability and could be subsequently sampled for the New Zealand Disability Surveys.

That census data is not robust. It can be used to provide a measure of prevalence of disability in the population, but Statistics New Zealand (2003) reports that such a measure is very crude. Analysis of the 2001 census shows that of those who reported a disability, 38 percent did not report a disability in the post-censal survey. Similarly, 12 percent of those reporting in the 2001 census that they had no disability reported a disability in the post-censal survey. Statistics New Zealand (2003) believes that systematic bias in responses has led to an overall understatement of the level of disability among older people and mildly disabled people. Their concerns about the quality of the data elicited through the census meant that Statistics New Zealand did not publish 2001 census data related to disability. Those concerns also appear to underpin Statistics New Zealand's hesitancy about undertaking a post-censal survey on disability in 2006.

New Zealand Disability Surveys

The first disability survey was undertaken by Statistics New Zealand in 1996/97 and was repeated with some minor enhancements in 2001. One of the principal objectives of the Disability Survey in 2001 was to measure the prevalence of disabilities amongst the population at national and regional levels, and Maori and Pacific peoples respectively at the national level. It was also intended, like the 1996/97 survey, to collect a variety of the data necessary to projection and forecasting including data relating to the:

- type, severity, duration and causes of disability
- socio-demographic and household characteristics of the disabled population
- impacts on expenditure associated with disability and disability types, and
- use of services and the nature of unmet service need among disabled people.

The 2001 survey was undertaken among households and in residential facilities. Results from the Disability Survey were published in tabular form by Statistics New Zealand in *Disability Counts* and in a series of nine short reports that provide snapshots for various disabilities and population groups. A similar survey is about to be conducted, following on from the 2006 census. The survey was started in July 2006. Findings from that survey will not be available until May or June 2007.

The data from the Disability Survey does provide some ability to disaggregate the disabled population and compare it with the non-disabled population. Not all of the objectives of the Disability Survey have been achieved, however. The concepts of disability which underpin the survey and the reliability of reporting are subject to debate both within and outside the disability sector. There are concerns expressed about both overstatement of disability and limited data relating to the association between particular conditions, impairment and disability. From a forecasting point of view, the ability to undertake regional disaggregation is extremely limited, as is the ability to analyse the characteristics of sub-population groups and their regional distribution.

Current Estimates of Disability Prevalence

The commonly accepted prevalence rate of disability of about 1 in 5 (20 percent of New Zealand's population) is based on the Household Disability Survey conducted by Statistics New Zealand in 2001 after the 2001 census. Around 15 percent of disabled adults are severely affected with 43 percent moderately affected.

The following information is taken from *Disability Counts* (2001) and provides an overview of disability in New Zealand, with some comparison with the earlier 1996 – 1997 survey. Main findings relating to disability are:

- 743,800 people reported some level of disability in 2001, an increase of 41,800 since 1996 – 1997.
- An estimated 96 percent of people with disabilities live in households. The remainder live in residential facilities. Older people make up the large majority of disabled people in residential care.
- One in five Maori people and one in seven Pacific people report a disability. The difference between estimates for Maori, Pacific and the total New Zealand population are not statistically significant.
- Disability increases with age, with 54 percent on people aged 65 years and over reporting a disability.
- Ethnic disability rates by age group are statistically significant. Within each age group, the disability rates for Maori are higher than national rates. For example, 61 percent of Maori aged 65 years and over report a disability. Age-related disability rates for Pacific peoples vary across age groups, although disability rates within the older age groups are similar to those for the total New Zealand population.
- Boys are more likely to have a disability than girls (0 – 14 age group). At other age groups there is no statistically significant difference between the disability rates for males and females.
- Most disabled people have more than one disability (60 percent).
- The most common type of disability is some kind of physical disability (65 percent of adults). Sensory disabilities and ‘other’ disabilities are the next most commonly reported types of disability.
- An estimated 90,000 children have disabilities. Around 30,000 children have a sensory disability. Around 4,600 children (5 percent) having a limitation requiring the use of technical equipment such as a standing frame, wheelchair or artificial limb. Forty-one percent of children have a disability existing from birth.
- The leading cause of disability among adults living in households is a disease or illness (40 percent), followed by accident or injury (34 percent). The ageing process accounts for 18 percent of disabilities.
- In 2001 42 percent of disabled adults were mildly affected, 43 percent were moderately affected and 15 percent were severely affected. The proportion of people with mild disabilities has decreased since 1996 – 1997.
- Disabled people are more likely to live in one-person households. This is nearly 121,000 people (18 percent).
- Disabled people are more likely to have no formal educational qualifications and are less likely to be in the labour force. They also tend to have lower personal incomes.
- Almost 245,000 disabled adults in households receive some assistance with everyday activities. Disabled women are more likely to received assistance than disabled men.
- One third of disabled adults living in households report using some type of special equipment (207,200).

Disability Projections & Policy Commentary on Disability Prevalence

Disability prevalence estimates are derived from single point in time surveys. Trends analysis is undertaken by establishing prevalence data for a time series of such surveys. By definition, however, that data reflects past experience. The challenge for those attempting to respond to changing population demands is to formulate a picture of disability in the future. Future thinking may be undertaken through a variety of methods from qualitative scenario building to quantitative projections and forecasting based on trend analysis of time series data and/or various forms of probabilistic modelling.

The desire for quantitative modelling of future populations and sub-populations is seen in New Zealand, as elsewhere, as a critical input into the rational development, funding, and locational targeting of disability services and workforce development. The reality is, however, that disability prevalence projections are limited to primarily some statements based on extrapolations of historic trends or various cohort-component techniques within a framework of broader population projections generally provided through Statistics New Zealand's prevailing population projection scenarios.

A number of examples of what might be typified as disability projections can be found. Perhaps the most comprehensive is NZIER's (2004) demand projections and analysis of workforce implications for the health and disability sectors of New Zealand's ageing population. The NZIER analysis presents three demand scenarios using different sets of assumptions about: New Zealand's population and its age structure; incidence of disease in the population; and patterns of disease and disability in relation to longevity. Infobox 1 sets out the three scenarios generated by NZIER (2004:22-40). NZIER (2004:28), rightly, is quick to point out that the scenarios were "not intended to be forecasts, as such. Rather, they were intended to show what might happen to the demand for services under certain conditions."

Infobox 1: NZIER Scenarios for Impacts of Ageing Population dynamics on Demand for Health and Disability Services

Scenario	Assumptions
Scenario 1 Simple extrapolation	Assumes: <ul style="list-style-type: none"> • Medium population growth • Continuation of 2001 rates of hospitalisation in the main diseases and conditions • A 'receding horizon' of disease and disability with life expectancy increasing, number of years with disability or ill health remains the same.
Scenario 2 Adjustment of disease and condition incidence	<ul style="list-style-type: none"> • Medium population growth • Adjustment of incidence in the main diseases and conditions • A 'receding horizon' of disease and disability with life expectancy increasing, number of years with disability or ill health remains the same.
Scenario 3 Crisis	<ul style="list-style-type: none"> • High population growth • Continuation of 2001 rates of hospitalisation in the main diseases and conditions • Disease and disability onset and progression are prolonged due to increased life expectancy.

Typically, in New Zealand's policy environment, disability projections are tied primarily to the ageing dynamic and only generalised statements are made around the other dynamics that might generate different levels of disability (Infobox 2).

There are attempts to recognise that disability is not consistently spread across sub-populations. However, there are fundamental limitations both analytically and with the data. With regard to the latter, Statistics New Zealand has been careful to point out that the margins of error around the disability data derived from its surveying, make locality analysis inappropriate for anything below what they describe as four 'super-regions'.¹

With regard to analytic limitations, both here and overseas, disability projections tend to be either based on extrapolation of historic trends into the future or cohort-component techniques. Extrapolation techniques do not take into account the interplay of multiple variables, the structure of populations or other structural changes and, consequently, become increasingly divorced from reality as out-years are projected (Sayer, 1984). Cohort-component techniques involve projecting from a specified base population structured by age and sex. The population is calculated by ageing the base population and applying various demographic variables (deaths, births, migration, household formation and dissolution) at projected age/sex projected rates. Compared to extrapolation, this approach takes account of the impacts of the existing population structure on the shape of the future population. It is particularly accurate where the distinction around a variable is clear. There is nothing clearer, for instance, than the categorisation of an individual as dead or alive. However, as Marshall (2006:3) points out, "the state of 'being disabled' is much more contestable... and so this approach is less suitable for direct projections of disability prevalence."

It is notable that Statistics New Zealand does not prepare disability projections. It is equally notable that those disability projections that do exist tend to reflect analysis which focuses on the impacts of ageing. It should be remembered in that regard that those estimates of disability in the future, do themselves incorporate projections about the shape of New Zealand's population as a whole. In general, those population projections are provided by Statistics New Zealand.

Statistics New Zealand generally advises that the most appropriate population projection to use is the medium scenario based on the 2001 population, the same year in which the Disability Survey was conducted (other projections available are based on 2004 population estimates). The 2001 medium scenario (based on series 4: medium fertility, medium mortality and annual net migration of 5,000) provides the following:

- The age structure of New Zealand's population will undergo significant changes.
- Half of the population will be older than 45 years of age by 2051.
- The population aged 65 years and over is projected to increase to 11 percent of the population by 2011 (577,000), 18 percent of the population by 2021 (792,000) and 25 percent of the population by 2051 (1.22 million people).

¹ Unfortunately those 'super-regions' were based on the now defunct Transitional Health Funding Authority regions. Those regions have no relevance to current institutional arrangements in the health and disability sector. They are not useful in relation to the constitution of territorial authorities and have no relation to the production or consumption of housing in New Zealand which tends to have localised housing markets.

Infobox 2: Illustrative Citings of Disability Prevalence in Policy and Service Documents

“As the baby boomers move into the retirement age there will be a growing pressure to cater for their needs which is likely to lead to competing demands for resources. For example, governments’ [sic] will be under pressure to divert a greater level of funding into the health sector (which is heavily relied upon by the elderly), quite possibly at the expense of education or other resources required by the younger members of society.” Forces Shaping the 21st Century Working Papers, Demographics, June 2006, p6-29. START

“Older people, particularly those in very old age, are relatively high users of health and disability support services ...access to appropriate health care is paramount if older people are to remain living in their communities ... access to affordable and appropriate housing options for older people is essential to ageing in place”. Office for Senior Citizens Ministry of Social Development (2005) Briefing to the Incoming Minister Taking a Positive Approach to Ageing pp. 20, 21, 22.

“The Ministry of Health has identified challenges to providing support services for older people and people with disabilities. Priorities for action include improving training and career development opportunities, as well as remuneration for the home care and personal support workforce. Residential care workforce issues related to workforce training and retention are also being addressed”. Office for Senior Citizens Ministry of Social Development (2005) Briefing to the Incoming Minister Taking a Positive Approach to Ageing p35.

“Older people experience difficulties when their problems are seen as an inevitable part of ageing. Faced with this attitude, they may miss the opportunity to remain able and independent through rehabilitation, correction of health problems or provision of support services.

For older disabled people, one of the biggest problems can be being denied the opportunity to remain in their familiar surroundings and ‘age in place’. Even in their own homes, some can feel isolated and insecure if they have limited contact with families, friends and their community.” Minister for Disability Issues (2001) The New Zealand Disability Strategy p. 8.

“Older people are substantially more likely than younger people to experience disability. In 2001, 11 percent of children aged 0 to 14 years, 13 percent of adults aged 15 to 44 years and 25 percent of adults aged between 45 and 64 years reported an impairment. This compares with 54 percent of people aged 65 years or over (including 87 percent of people aged 85 and over).” Office for Disability Issues Ministry of Social Development (2005) Briefing for the Incoming Minister Making a World of Difference p. 8.

“The prevalence of multiple impairments increases with age.” Office for Disability Issues Ministry of Social Development (2005) Briefing for the Incoming Minister Making a World of Difference p. 9.

“Given the increasing prevalence of impairment in the population, work to reduce disability must focus on improving support services.” Office for Disability Issues Ministry of Social Development (2005) Briefing for the Incoming Minister Making a World of Difference p. 17.

“Rising numbers of sickness and invalids beneficiaries is an international trend, partly related to the ageing population.” Office for Disability Issues Ministry of Social Development (2005) Briefing for the Incoming Minister Making a World of Difference p. 25.

“Disability rates increase with age, so the number of people with disabilities is expected to grow as the population ages”. Ministry of Women’s Affairs www.mwa.govt.nz

Statistics New Zealand has prepared projections on the number of family and household types between 2001 and 2026 using that medium scenario and concluded that:

- All regions are projected to have more households in 2021 than in 2001.
- Auckland region will account for half of the growth in the number of households, with a 46 percent increase between 2001 – 2021. In 2021 Auckland will have 614,000 households, 33 percent of all households.
- There will be a continued decline in average household size.
- More ‘couple without children’ and one-person households are projected in all territorial authorities. This is driven by the trend of population ageing.

Those projections suggest that irrespective of disability prevalence, there will be more people in New Zealand with a disability and more of those people will be living in smaller households.

3. International Disability Data, Prevalence, Dynamics & Projections

In 1980 the World Health Organisation (WHO) introduced a classificatory system for impairment, disability and handicap designed to ensure that member countries had a standardised means by which they could describe and measure disability. It is on the basis of the *International Classification of Impairments, Disabilities and Handicaps* (ICIDH) and its successor the *International Classification of Impairments, Activities and Participation* (ICIDH-2) that many disability surveys, including in New Zealand have been based. Both the ICIDH and ICIDH-2 presented a promise to disability advocates and those concerned with meeting the demands on the health and other service sectors posed by disabled people of an internationally robust statistical data platform around current and projected demand for disability services. The international literature almost universally agrees that this has not materialised.

It is undoubtedly true that internationally the collection of disability statistics is considerably more widespread than it was. Metts (2000:4), for instance, points out that in the period 1975-1988 only 95 member states of the United Nations collected disability statistics. By 1999, 102 countries provided the United Nations with disability data, although Metts also comments that the United Nations Statistical Division had not been able to analyse or disseminate that comparative data.

International estimates of the proportion of national populations who are disabled have varied wildly over the last two decades. In the 1970s and 1980s, WHO and the United Nations estimated that 10 percent of any population consisted of disabled people. In the 1990s, those estimates dropped to about 7 percent for ‘developed’ countries and 4 percent for ‘developing’ countries. By way of contrast, however, the United States Agency for International Development (USAID) claimed that disabled people constituted at least 10 percent of the global population while the Roehrer Institute estimated that the proportion of disabled people in a population ranged from 1 percent in ‘Low Human Development’ countries to 3.7 percent in ‘Medium Human Development’ countries and 9.9 percent in ‘High Human Development Countries’.

A more recent review of disability estimates in Great Britain by Bajekal *et al.*, (2004:65) shows both considerably higher disability prevalence than the global prevalence estimates of WHO, the United Nations and the World Bank, with estimates standardised for 2001 ranging from 14.3 percent to 20.1 percent. That prevalence is more akin to the prevalence reported in New Zealand. In the British context, however, Bajekal *et al.*, (2004:99) found that both disability organizations and expert users of disability statistics expressed “some dissatisfaction with the inclusiveness of the overall estimates...”

Certainly, the less exclusive approach of Harwood *et al.*, (2004:253-255) which attempts to focus only on the proportion of populations likely to become dependent because of what they describe as severe disability, generates significantly smaller prevalence estimates. Those estimates vary for the year 2000 from 4.4 percent to 5.1 percent over the analysed country groups (Table 1). In all country groups, however, and in seven selected countries, Harwood *et al.* predict the prevalence of dependency from severe disability to increase (Table 2). In all cases, Harwood *et al.* estimate that severe disability prevalence will increase to 2010 and out years (Table 3).

Table 1: Estimated Prevalence of People Requiring Daily Care by Country Group for Two Most Severe Global Burden of Disease Study Disability Categories 2000

Country Group	Prevalence % of Total Population
People’s Republic of China	5.1
Established Market Economies	4.4
Former Socialist Economies of Europe	5.0
India	5.1
Latin America & Caribbean	4.4
Middle-Eastern Crescent	4.4
Other Asia & Islands	4.6
Sub-Sahara Africa	4.9

Table 2: Estimated Prevalence of People Requiring Daily Care by Country for Two Most Severe Global Burden of Disease Study Disability Categories 2000

Selected Country	Prevalence % of Total Population
Brazil	4.5
Bulgaria	5.3
Japan	4.8
Nigeria	4.9
Syria	4.0
United Kingdom	4.5
USA	4.1

Table 3: Prevalence of People Requiring Daily Care by Country Group and Selected Countries for Two Most Severe Global Burden of Disease Study Disability Categories: Estimates 2010 – 2050

Region	Prevalence % Total Population				
	2010	2020	2030	2040	2050
Country Group					
People's Republic of China	5.6	6.2	6.9	7.3	7.6
Established Market Economies	4.7	5.0	5.2	5.3	5.3
Former Socialist Economies of Europe	5.3	5.5	5.8	6.0	6.2
India	5.5	5.9	6.4	6.8	7.2
Latin America & Caribbean	4.7	5.1	5.5	5.8	6.1
Middle-Eastern Crescent	4.7	4.9	5.2	5.6	6.0
Other Asia & Islands	5.0	5.4	5.8	6.2	6.6
Sub-Sahara Africa	5.0	5.2	5.5	5.9	6.5
Selected Country					
Brazil	4.9	5.2	5.6	5.9	6.2
Bulgaria	5.6	5.7	5.9	6.2	6.3
Japan	5.2	5.5	5.8	6.0	6.0
Nigeria	5.0	5.3	5.7	6.4	7.1
Syria	4.3	4.7	5.3	5.7	6.2
United Kingdom	4.7	5.0	5.3	5.4	5.4
USA	4.3	4.6	4.8	4.8	4.9

4. The Problems of Robustness

That variation between prevalence estimates calculated using data generated by different surveys reviewed by Bajekal *et al.* (2004), provides a very clear indication of the fundamental difficulties in estimating disability prevalence. Contradictory data around prevalence and dependency also emerges from sub-population studies. For example, even in the context of ageing there are very different views about the impacts of ageing dynamics on both impairment and on any resultant disability (Waidmann and Manton, 1998).

In an ageing society one can assume that if rates of disability are higher in older age cohorts, as those cohorts begin to dominate the population both the incidence of disability and the prevalence of disability will increase each succeeding year, depending to some extent on death rates. The ability to forecast this is eased if the prevalence and indeed the incidence of disability in older age cohorts remain constant. Under those conditions, the problem of projection is relatively straightforward. Ordinary demographic modelling of population ageing will allow relatively reliable projections of age related disability, always assuming that the population structure is not significantly impacted upon by migration dynamics. Those conditions do not hold, however.

The body of research and analytic literature pertaining to disability and ageing is characterised by longstanding debates about the direction of disability trends among older age cohorts. In the 1980s, Fries (1981) and a number of others (Fries and Crapo, 1981; Bjorksten, 1987) argued that the rate of disability among older age cohorts would reduce and that impairments associated with disability would be increasingly compressed into later years of life. That process, combined with increased life expectancies, would result in older age cohorts being active, less impaired and less disabled longer. By way of contrast, Vebrugge argued in the 1980s that the future

older population would be marked certainly by extended active life, but also more 'disabled' days. Vebrugge (1984:515) argued that longer life expectancies resulted in higher prevalence rates of serious diseases and "future new survivors will be even more ill and susceptible than those in earlier decades." A number of other researchers in the 1980s suggested that the disability patterns for older people would remain relatively stable. For those researchers (Brody, 1985; Chapman *et al.*, 1986; Manton, 1986; Feldman, 1983), the prevalence of disability in societal populations as a whole is connected to changes in the age-population structure rather than in changing prevalence of disability among older people.²

It would be incautious to believe that the prospects of resolving these significant debates around prevalence and their determining dynamics are high in the short term. The reality is that the very foundations of disability prevalence projections are fragile. The definitions and measurement of disability are contested and, by extension, so must be any disability data. The dynamics around impairment and disability are complex and strongly mediated by environmental and cultural conditions. Even if the data relating to disability was not contested, great care is needed in generalising data to smaller area units and/or sub-populations. The problems around doing so preoccupy international thinkers. The Ministry of Health claims that the Disability Survey "data could be used for modelling the prevalence of disability at a smaller regional level..." To do so, however, would require significant assumptions around locality dynamics simply because the margin of error for regional analysis is so high. In addition, disability prevalence projections are dependent on population projections and those, in themselves, have limitations.

In the desire for the assurance that is associated with quantification, it is easy to forget that population projections are neither forecasts nor predictions. They are simply calculations of the impact of particular assumptions around change on the population. Even at the aggregate level, the simplest projection of population, that is population size in the future, there is considerable uncertainty. Population growth is determined by two variables – natural increase and net migration. Under usual conditions - that is, excluding external shocks such as epidemics, natural disasters or war – natural increase can be relatively well projected using cohort-component techniques. The impact of migration rates can be very volatile, however, and may have significant impacts on population growth. Uncertainty is inherent in all population projections (Cohen, 2001), and population projections for small communities, populations or population sub-sets are even more uncertain. This is in part because datasets collected at the national level have significant margins of errors when generalised to sub-national populations. But it is also because small populations are relatively more significantly impacted on by such activities as migration.

Overall, then, Bajekal *et al.*, summarise widespread views around the limitations of prevalence estimates and projections (2004:2) when they state that there "is no single 'gold standard' measure of disability. The multi-dimensional and dynamic nature of disability makes it inherently difficult to measure. As a result, there are multiple reasons for the observed differences in survey estimates. Therefore, it is critical that users of disability estimates understand how certain differences are generated and what criteria they can use to judge which estimate is the most useful in meeting their objectives."

² Those differences are captured in the assumptions used by NZIER (2004) in its scenario building.

To summarise, disability is a complex phenomenon to define and measure. There is variation in **what** is being measured, **who** is being measured and **how** disability is measured (Tibble 2004; Bajekal *et al* 2004). In particular:

- Public understanding of the concept of disability varies widely, with the boundaries between health, impairment and disability not well understood³.
- People vary in their response when asked whether they are disabled. Responses may vary over time if the nature of the disability is episodic or severity of disability fluctuates. A perception that ‘disabled’ is a stigmatising label can also affect the individual’s responses to a survey.
- Age-related disability may be perceived as simply the effects of ageing and not counted as disability. For example, a key finding from the review by Bajekal *et al* (2004:102) was that disability estimates for those post-retirement were found to be unstable between different surveys and more sensitive to the definition of disability used.
- The way a survey is administered can be less accessible for some people with certain types of disability, and consequently result in underestimations in the population with those types of disability. Visual impairment has been identified as a group that is under-estimated.
- Measurements of the number and type of activity limitations that make up the definition of ‘disability’ vary from survey to survey, as do definitions of severity of disability.

5. Disability & Housing

On the basis of existing disability prevalence data, McDermott Miller (2005) has presented a preliminary size and segmentation analysis of disabled people’s demand for housing. The key statistical data that they present as critical to understanding the housing demand of disabled people are:

- People with a moderate or severe level of disability make up 13 percent of the adult population (379,000), and constitute 12.4 percent of the adult population living in households (352,000).
- 431,000 (66 percent of those with a disability) have a physical (mobility or agility) disability.
- 291,000 adults living in households have a physical disability as their main type.
- 127,000 have a sensory (hearing or seeing) disability as their main type.
- The most common form of main disability is Physical – mobility. This consists of 351,000 people (34 percent of disabled people in households). 126,000 of these people have a moderate or severe level of disability.
- The second most common form of main disability is Sensory – hearing (98,000 or 16 percent of disabled people). 58 percent of these have a moderate or severe level of disability.
- The estimated number of private dwellings with a disabled person/people resident is 400,000 – 717,000 households (30 – 53 percent of all households).
- An estimated 186,000 – 352,000 of private dwellings accommodate a moderately or severely disabled adult member (14 – 26 percent of all households).

³ Disabled Peoples International has made a clear distinction: ‘impairment’ is the functional limitation within the individual caused by physical, sensory or mental impairment. ‘Disability’ is loss or limitation of opportunities to participate in everyday life on an equal level with others, because of physical and social barriers (Oliver 1998).

- 53 – 65 percent of households with a moderately or severely disabled member contain one family.
- 21 – 39 percent of households with a moderately or severely disabled member are one-person households.
- The majority of dwellings with moderately or severely disabled residents are owned (with or without a mortgage); this is in the range of 104,000 – 197,000 dwellings. Around 36,000 – 69,000 dwellings with moderately or severely disabled residents are owned outright.
- 36,000 – 69,000 dwellings with moderately or severely disabled residents are rented.
- Tenure is unknown for 20 percent of dwellings with moderately or severely disabled residents.

Focusing on the housing situation of people with moderate/severe level of disability living in households, McDermott Miller (2005) present the following segmentation analysis, based on the Disability Survey 2001 and Census 2001:

- Sex – in most main types of disability women outnumber men. There are nearly 80,000 women with mobility disability, and for 63 percent of those, mobility is their main type of disability. Men are more likely to have hearing disabilities (72 percent of the total) and intellectual disability (66 percent).
- Age – 35 percent of the total population living in households aged 65 years and over has a moderate or severe disability, compared to 13 percent of the population aged 45 – 64 and 6 percent of the population aged 15 – 44 years. About 42 percent of adults with moderate/severe disability are aged 65 and over, compared to 29 percent of adults without disability.
- Ethnicity – Maori are represented among the moderate/severe disabled adults in the same proportion as in the population without disability (12 percent). This is the same for Pacific peoples (around 5 percent). Europeans are slightly over-represented (81 percent compared to 76 percent). Asians and Other ethnic groups are under-represented in the group with disabilities at 3 percent, compared to 7 percent of the population without disability. This may be related to the age structures of the European and Asian age groups.
- Marital status – the partnered make up a slightly lower proportion of those with moderate/severe disability (54 percent) compared to non-disabled (58 percent).
- Labour force status – 31 percent of adults with moderate/severe disability are employed compared to 66 percent of adults without disability. 65 percent of adults with moderate/severe disability are not in the labour force, compared to 24 percent of non-disabled adults.
- Housing composition – 21 percent of adults with moderate/severe disability live in one-person households compared to 9 percent of those without disability.
- Household income – 42 percent of adults with moderate/severe disability live in low income households (annual income of \$30,000 or less), compared to 20 percent of non-disabled adults.
- NZ Deprivation Index – those with mobility disabilities are under-represented in the least deprived areas. 45 percent of adults with moderate/severe disability live in mesh block with deprivation index 8 – 10, compared to 36 percent of non-disabled adults.
- Tenure – the proportion owning their home is higher among moderately/severely disabled adults (53 percent) compared to 47 percent of non-disabled adults.

- Weekly rent – 32 percent of adults with moderate/severe disability pay under \$100 per week rental compared to 17 percent of non-disabled adults.

McDermott Miller (2005) estimate that:

- The number of modified dwellings is in the range of 52,000 – 97,000.
- 39,000 – 74,000 dwellings have modifications inside.
- 29,000 – 56,000 dwellings have modifications to assist people enter and exit.
- HNZC supplies only a small percentage of modified dwellings. These numbers were given to McDermott Miller in confidence.
- An estimated 28 – 53 percent of dwellings in which moderately or severely disabled adults live have been modified.
- The number of dwellings with an unmet need for inside home modification is estimated to be in the range 14,000 – 27,000.
- The unmet need for modification for access to the dwelling is estimated in the range of 10,000 – 19,000.
- The total number of dwellings with unmet modification needs cannot be estimated with available data.
- The estimates suggest that perhaps 45 – 50 percent of moderately or severely disabled adults live in unmodified homes and do not perceive a need for modification.

In coming to those estimates, McDermott Miller (2005) acknowledge that the total number of dwellings with unmet modification needs cannot be estimated with available data. By implication, however they suggest that data deficiencies can be addressed and, if they are, current and future unmet housing demand among disabled people will be able to be met through targeted stock investment and redevelopment. As the discussion of disability prevalence estimates and projections has already demonstrated this is unlikely. Disability prevalence data is unlikely to be robust enough for anything but broad trend analysis at the national level. Moreover, housing markets in New Zealand are extremely localised. It is difficult to see how, under those conditions, that refining national disability prevalence estimates are likely to allow for localised prevalence estimates that would generate closely targeted housing interventions.

This is not to suggest that disability prevalence data is unimportant. Both New Zealand and international disability prevalence data identify some significant characteristics of disability distribution in the housing stock that must be taken into account if the housing needs of disabled people are to be met. Those are:

- Most disabled people live in private dwellings.
- Most disabled people live in houses with their partners and/or their families.

The implications of those key characteristics are that disabled people live in dwellings that are built as part of the mainstream housing stock. It is in that context that we need to take account of the following points:

- The proportion of the population with some impairment to mobility is likely to increase with the ageing population combined with higher survival rates for those with congenital impairment or impairment acquired through injury or illness.
- Impairment through injury or disease or congenital condition may happen to individuals or families in a wide variety of situations, localities, neighbourhoods or dwellings.

- The extent to which impairment is disabling to an individual will in part depend on the social and physical environment in which that individual is situated.
- Everyone lives in a dwelling, and dwellings and the performance of dwellings are a crucial part of any individual's well-being.
- Dwellings last a long time and some dwellings are more adaptable to change than others and will be able to accommodate the changes that individuals need from them.

Under those conditions, it is questionable whether it is desirable or useful to expend considerable resources on attempts to forecast housing demand by disabled people on the basis of increasingly refined disability data. Indeed, it could be argued that an undue focus on demand forecasting risks placing disabled people into a limited, potentially ghettoized, segment of the housing market. The alternative is to focus on the supply side of the housing stock and the way in which the mainstream stock can be developed, either through retrofit of existing stock, or improved design of new stock, that will make it more cost-effectively adaptable for the dynamic needs of disabled people and their families.

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