

Disability, and social and economic inclusion: who is in and out of the Australian National Disability Insurance Scheme?

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ABSTRACT

A new National Disability Insurance Scheme is being trialled in Australia, following criticism of the fragmented and inequitable nature of existing disability supports (e.g. in the 2009 'Shut Out' report by the National People with Disabilities and Carer Council) and reform recommendations made by the Australian Government's Productivity Commission in 2011. The Insurance Scheme distinguishes between people living with disability who will be eligible for different types of supports: either mainly information about services provided in the community or direct supports and self-managed funding. Analysis of the categories highlights differences in socio-demographics, unmet need for help, and social and labour market inclusion. Unmet need for help was disproportionately prevalent among people with disability when compared to people not living with disability. A higher level of educational capital among people with most severe or profound disability, however, contributed to reduced levels of reported unmet need for some. Overlapping associations between disability, social characteristics and inclusion suggest that nuances in support needs be observed and interventions included that also support people with less severe disability.

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Introduction

In July 2013, the Australian federal government launched a trial of the National Disability Insurance Scheme (NDIS). Just 19 months earlier, following a programme of public consultation, the Australian Productivity Commission¹ had recommended a federal insurance scheme replacing a fractured system of state-level arrangements to finance the supports and services for people with disability (Productivity Commission 2011).

The NDIS is gradually to take the place of a diverse system of disability supports delivered by Australia's six federated states and two self-governing territories (Northern Territory and the Australian Capital Territory (ACT) centred on the federal capital, Canberra). Australia reports a population approaching 24 million, of whom one in five reported living with disability in 2012. Approximately 700,000 Australians are of Aboriginal and/or Torres Strait Islander origin; a population acknowledged as the 'traditional owners' of the country, but today disproportionately experiencing deprivation and disability (Australian Government 2013).

Historically, Australia's disability supports have consisted of federal programmes, notably Home and Community Care (HACC) services for people aged 65 and over (50 years and over for Aboriginal and Torres Strait Islander people) and specialist support programmes for children. State governments have supported regional accommodation, community access and support, and respite services for

people with disability under the age of 65 (under 50 in the case of Aboriginal and Torres Strait Islander people). The size of financial allocations and their distribution, however, tended to vary considerably between states and territories (Productivity Commission 2011, 2.14–2.16). These multiple layers of provision have created an inequitable and not always dependable system of disability supports (NPDC 2009).

In future, a federally funded and coordinated scheme is intended to improve the supports for people with disability in Australia, and to guarantee greater and more equitable access. It is also intended to promote greater personalization of supports through self-managed funding arrangements and, ultimately, greater well-being and enhanced social and economic integration of people with disability.

This paper provides a descriptive and analytical portrait of the population affected by the NDIS, examining employment and social inclusion of people eligible to receive supports through the NDIS. Comparisons are made with people not living with disability or living with a disability that may not qualify them for full inclusion in the insurance scheme.

Official data on this population are not available; reliable administrative data are still being assembled. The Productivity Commission had originally analysed Australia's main survey of people with disability, the Survey of Disability, Ageing and Caring (SDAC), to estimate the size and some characteristics of the eligible population. In this study, we use Australia's main longitudinal survey, the Household, Income and Labour Dynamics in Australia (HILDA) survey.

In the following section, we describe some of the main characteristics of the NDIS, including its aspirations. This is followed by an outline of the aims and objective of the present study, and its methodology, including the data used in the analyses. Before reporting the findings from the analyses, we highlight some of the literature on the social and economic situation of people with disability, especially in Australia. The final section discusses implications for the NDIS.

The National Disability Insurance Scheme

Under the NDIS, anyone under the age of 65 and with a disability that is permanent, or likely to become permanent, and significant will be eligible for the NDIS, provided they are an Australian citizen, have been granted permanent visa to stay in Australia or hold a Special Category Visa that is typically issued to New Zealand citizens on arrival in Australia.

A disability is deemed to be significant if it

substantially reduces [a person's] ability to participate effectively in activities, or perform tasks and actions unless:

- They have assistance from other people on most days; or
- They have assistive technology, equipment (other than common items such as glasses); or
- They can't participate effectively even with assistance or aides and equipment; and
- Their impairment affects their capacity for social and economic participation; and
- They are likely to require support under the NDIS (and not another service system such as the health system) for their lifetime. (Adapted from <http://www.ndis.gov.au/my-access-checker-access-requirements>; accessed 8 December 2013)

The NDIS was originally being trialled in five sites between 2013 and 2016. The sites include New South Wales's northern Hunter region, Victoria's Barwon area in the state's south-west, all of South Australia, Tasmania and the ACT. The first four of these trial sites launched in July 2013; the ACT followed in July 2014. Since these sites were first announced in 2012, further trial areas in Australia's Northern Territory, Western Australia and Queensland have been added; the first two of which launched in 2014 and cover the Barkly region (south-east of the Northern Territory) and the Perth Hills area in Western Australia's south-west. Queensland will roll out the NDIS from 2016, as will the remaining regions of New South Wales, Victoria and the Northern Territory.

The operational structure of the NDIS

The implementation of the NDIS trial presents considerable challenges to a federal administration that has had a limited directly operational role in providing access to disability supports. The newly set up National Disability Insurance Agency (NDIA), based in Geelong, in the south-eastern state of Victoria, has been charged with realizing the NDIS in the trial sites and the national roll-out that is expected to follow in 2016. The complex challenge of introducing the insurance scheme is acknowledged by the decision of federal, and state and territory governments to phase in the NDIS in each trial site, gradually extending access to the new scheme over time to different groups of people with disability, either based on age, the type of disability supports currently received, educational status or their current living in residential care.

Aspirations of the NDIS

The NDIS is intended to provide more equitable coverage of supports of higher quality. Self-managed funding allowing people with disability to choose and purchase their own supports based on an NDIS-agreed funding package is to be a key tool for achieving higher quality of provisions through stimulating market mechanisms. On top of this, a person-centred approach to needs assessment (cf. van Dam, Ellis, and Sherwin 2008) that stresses goal setting and goal achievement is expected to give people with disability greater control over their support arrangements in the NDIS, ultimately providing people with the resources and capacity for greater social and economic integration.

A tiered system

In its 2011 report, the Australian Productivity Commission suggested three types of eligibility for the NDIS. Full supports eligibility under the NDIS would be restricted to individuals with known permanent and significant disability. People with disability not diagnosed as permanent and significantly affecting daily functioning would only be eligible for information about supports available in the community, and guidance on identifying and accessing these supports. In the parlance of the Productivity Commission the two categories of eligible populations are referred to a tier 2 (non-permanent and less limiting disability) and tier 3 (permanent and functionally limiting disability), whilst the remaining population of Australians are labelled tier 1. This tiered system is now being trialled, with a focus on transferring those eligible as tier 3 into the new insurance scheme.

Despite its intention to demarcate relevant eligible populations, the Commission was only able to clearly define the third tier, although its substance and interpretation may yet be contested. In the Commission's view tier 3 represents the group of people with disability eligible for the most intensive and comprehensive range of assistance. To be included in tier 3, a person must:

- have a permanent disability, which has been described as 'the irreversible nature of the disability, even though it may be of a chronic episode nature' (Productivity Commission 2011, 174); and
- have 'significantly reduced functioning in self-care, communication, mobility or self-management and require significant ongoing support' (Productivity Commission 2011); or
- be in an 'early intervention group' (Productivity Commission 2011).

The Commission was unable to propose a clearly demarcating definition of the other category of people with disability, tier 2. Its report suggests that tier 2 may include people in an early intervention that is not clinical in nature (Productivity Commission 2011, 607), but calls for further research to identify cases more adequately. In the absence of the clear and unambiguous definition of tier 2, tier 1 also remains under-defined. The latter tier would include all other individuals not already assigned to tier 2 or tier 3, and, hence, would largely cover people without disability. Despite these definitional problems, the focus on disability tiers remains central to the NDIS and, consequently, central to any exploration of the social experiences of people with disability.

Whilst basing its definition of disability tiers on their effect on daily functioning and the duration (i.e. permanency) of this effect, the Productivity Commission used a largely medical model when estimating the number of people with disability in disability tiers 2 and 3, applying this model to the analysis of Australia's principle survey of disability, the SDAC. This cross-sectional survey, conducted in 1998, 2003, 2009 and most recently 2012, covers people with disability and their carers, as well as people aged 60 or older regardless of their disability status, collecting detailed information about participants' disabilities and support needs for daily functioning. With the assistance of health and disability experts, the Commission's analysis identified 71 types of disability reported in the SDAC that were considered to signal potential eligibility for tier 3 of the insurance scheme (cp. Productivity Commission 2011, Appendix H). The analysis concluded that about 2% of the Australian population under the age of 65 may belong to tier 3, 18% to tier 2 and the remaining 80% to tier 1 (Productivity Commission 2011, Vol. 1, 14–15).

Aims and objectives of this paper

This paper aims to add to our understanding of the social and economic living conditions of people with disability in Australia in these two tiers of the NDIS, compared with each other and compared with people not living with disability. In doing so, it seeks to develop some of the early explorations of the Productivity Commission, drawing on a different, longitudinal data set.

Although the Productivity Commission used survey data to estimate the proportion and number of individuals in the disability tiers, it did not use this information to describe or analyse these tiers in any detail. Instead, the Commission cross-tabulated indicators of core activity limitations subjectively assessed by survey respondents with a small number of social and community participation indicators. These showed a pattern of decreasing participation with increasing activity limitations (Productivity Commission 2011, Appendix N).

Furthermore, the Productivity Commission's statistics were derived from cross-sectional analysis, even where longitudinal data were available and, indeed, used in some descriptive analysis. Unlike the Productivity Commission, the current analysis does not rely on medical judgement to identify whether a disability was permanent, but uses panel data to define the duration of NDIS-eligible disability empirically. We also used the physical and mental well-being indicator, the SF-36, to complement this information with a measurement of the lived experience of the severity of, and functional limitations associated with, disability.

The paper focuses on contrasting the experiences of the three tiers because this differentiation forms the foundation of the NDIS. The analysis seeks to explore differences in the experiences of the two tiers, as well as differences to tier 1. It thus examines the extent to which the apparent distinctiveness of the tiers goes beyond their medical definition to include key social phenomena.

Integration of people with disability in Australia – a brief review

Social participation and employment are widely recognized for their beneficial effects on a person's general or financial well-being. These positive outcomes are especially relevant and beneficial for people with disability who are disproportionately likely to live in poverty and to experience social exclusion (ACOSS 2014; Milner et al. 2014). The NDIS seeks to contribute to greater well-being by helping to enhance social activities and employment opportunities for people with disability. For this reason, social participation and employment are at the centre of this study.

Social participation

In Australia, as indeed elsewhere (e.g. Verdonschot et al. 2009; Kessler Foundation 2010), people with disability encounter negative social attitudes, physical barriers to participation in social activities, and public services that have been described as 'unavailable or infrequent, unaffordable or of such poor

quality as to be of little benefit' (NPDCC 2009, 4). Social activities among people with disability, especially outside the home, and the density of friendship networks tend to decrease with the presence and the magnitude of disability. Time use data reported by the Australian Bureau of Statistics (ABS) has also shown that, whereas, people with disability spend more time than people without disability on recreation and leisure activities, they also spend more time on solitary activities, such as reading and writing (ABS 2011). Overall, Australians living with disability spend less time interacting directly with other people through social and community activities, or through direct contact with friends and family. This relative lack of social interaction tends to exacerbate with the duration and magnitude of disability (Gannon and Nolan 2007; ABS 2011). Moreover, social activities of people with disability are often controlled and dictated by service providers or family, which takes personal control over these activities away from the person with disability, which in turn can be experienced as demeaning and disabling (Milner and Kelly 2009; NPDCC 2009). A lack of material resources and practical supports often further impedes the extent to which people with disability can actively engage with and contribute to society and communities (Williams et al. 2008; Commonwealth of Australia 2012).

Employment

Ample international evidence has shown that, compared with the opportunities of people without disability, people with disability typically also experience a greater degree of economic disadvantage (cf. Jones 2008; Kaye 2009; ODI 2011). This is echoed in Australia by the lower employment, in particular full-time employment, lower occupational status and lower pay rates experienced by people with disability (Oguzoglu 2010; Polidano and Vu 2011). Disability in Australia has also been found to lead to progressively lower labour force participation as disability becomes more severe or complex (Wilkins 2004; ABS 2013), with downward occupational movement (Jones et al. 2011) and a reduced propensity to complete vocational education and training qualifications (Polidano and Mavromaras 2011). There is also evidence that disability is associated with over-skilling in the workplace, possibly indicative of downward occupational mobility, and greater risk of unemployment (Jones et al. 2011).

Data provided by the ABS for 2012 show that 53% of people with disability (aged 15–64) were participating in the labour market, decreasing to 44% for people whose disability restricted the kind and hours of work they could do. This compared with 65% of the country's population at large (aged 15 or over). People with disability were also four times more likely to be unemployed (20%) than was typically the case for the economically active population.

For many people with disability disadvantage begins in education. Statistics for 2009 show that only 25% of people with profound or severe disability living in private households in Australia had received at least 12 years of formal education (ABS 2015). This compared with 55% of people without disability.

Data and data analysis

For this study, we analysed the HILDA survey to shed further light on the employment and social situation of people with disability most likely to be affected by the impending disability policy change in Australia. HILDA is a panel study of households that annually re-interviews the same households and individuals in those households. This makes it possible to study the dynamics of disability, social activities and labour market participation. The HILDA sample was first drawn from households living in private dwellings in Australia in 2001 and included 7682 households and 19,914 individuals, of whom 15,127 were aged 15 or over. In 2011, the sample was topped up with an additional 2117 households and 5477 individuals. By 2012, the last year of HILDA data used in this study, the effective sample of those participants in the study had fallen to 6727 households and 8543 individuals (Summerfield et al. 2013).

As the reader will have gauged, the vagueness of the definition of disability tiers 1 and 2 makes it difficult to apply it empirically. Especially the tier 3 definition remains difficult to operationalize using survey data that lack the detailed and reliable information about the types, severity and duration of disabilities that the definition implies. The Productivity Commission report includes an annex of 'NDIS-eligible' disabilities, which the Commission used to estimate the size of the population in each tier. The Commission was able to do so because it had access to confidential, unpublished survey data that were not available to this study.

Defining and measuring disability

In the absence of more detailed data, we defined the Productivity Commission's disability tiers using information in the HILDA about survey respondents' long-term illnesses, impairments or disabilities that had already lasted, or were expected to last, at least six months, and restricted the person in his or her everyday activities. The survey identifies 17 broad categories of impairments and disabilities, which, using information from the Productivity Commission's reports, were assigned to disability tier 2 or tier 3 (Table 1).

It is important to acknowledge that assigning broad categories of disability to the NDIS tiers inevitably is an act of approximation. The 17 HILDA categories compared with 71 disabilities out of a total of 167 listed from the Commission's special SDAC analysis. The 71 disabilities were 'aggregated up' to the 17 HILDA categories, based either on matching identical categories or on examining and incorporated SDAC disability types into one of the higher level HILDA groupings. An agreed and verified cross-classification of disabilities referred to in the HILDA and SDAC surveys does not exist. In assigning the HILDA's broad disability categories to NDIS tiers, a conservative approach was adopted. Categories were only assigned where there was reasonable certainty that a disability category would be considered as eligible for NDIS inclusion. This meant, for instance, that the final impairment category in Table 1 ('any other long-term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc.') was not included in tier 3 (but in tier 2), even though, arthritis, Alzheimer's disease and dementia would typically qualify for tier 3. However, because asthma and heart disease would typically not be considered eligible conditions for tier 3 (other than as secondary conditions to an otherwise 'qualifying' disability), the cautionary principle adopted required the entire category to be assigned to tier 2 rather than tier 3.

Individuals not reporting any long-term disability or impairment were included in tier 1.

Table 1. Disability types by disability tiers.

Impairment or disability	Tier 3	Tier 2
Sight problems not corrected by glasses/lenses	✓	
Hearing problems	✓	
Speech problems	✓	
Blackouts, fits or loss of consciousness	✓	
Difficulty learning or understanding things	✓	
Limited use of arms or fingers	✓	
Difficulty gripping things		✓
Limited use of feet or legs	✓	
A nervous or emotional condition which requires treatment		✓
Any condition that restricts physical activity or physical work (e.g. back problems and migraines)		✓
Any disfigurement or deformity	✓	
Any mental illness which requires help or supervision	✓	
Shortness of breath or difficulty breathing		✓
Chronic or recurring pain		✓
Long term effects as a result of a head injury, stroke or other brain damage	✓	
A long-term condition or ailment which is still restrictive even though it is being treated or medication being taken for it		✓
Any other long-term condition such as arthritis, asthma, heart disease, Alzheimer's disease, dementia etc.		✓

Permanency

The identification of people in tier 3 of the NDIS also required defining when a disability was permanent, as the medical descriptors used in the HILDA could not be taken to indicate duration beyond the six months queried in the survey question. Using panel survey data, it was possible to identify those respondents who reported a 'long-term' impairment or disability in successive years. Using 8 waves of data, from wave 3 to 12 covering the years 2003 to 2012, someone was defined as having a permanent disability if he or she reported an eligible impairment or disability in at least 6 out of the 8 available waves of data. This did not need to be the same disability in each year, although in most cases it was.

The inclusion criteria were, in part, driven by the need to ensure sufficient cases were available to be analysed. However, in the case of the measurement of 'permanency', the more flexible definition also allowed for cases of apparent coding or response errors to be retained in the analysis where they would otherwise have been excluded. Typically this included cases that reported the same limiting disability in successive years but one.

Reduced daily functioning

As a final step, we conditioned the case in the tiers on the disability's effect on daily functioning. The Productivity Commission required a person's ability to participate in everyday activities, or to perform tasks and actions unaided, to be 'substantially' reduced for this person to be eligible for accessing in the NDIS in tier 3. Unlike the SDAC, which asks about the extent to which a disability limited daily activities, the HILDA survey lacks a probe of the functional impact of a disability other than with respect to the type or amount of work a person can do.

The HILDA does, however, contain a set of 36 questions from the Short Form Health Survey or SF-36. The SF-36 is a tried and tested tool for measuring the physical and mental well-being of respondents, and comparing the relative burden of diseases (Ware et al. 1993; Hemingway et al. 1997). Whilst not directly measuring daily functioning capacity, the SF-36 is recognized as a reasonably robust instrument for measuring differences in health and well-being, and has repeatedly been used to monitor the stages of recovery from ill health (Davidson and Keating 2002; Syddall et al. 2009; White, Wilson, and Keysor 2011). Moreover, it has been shown to work reasonably well as a predictor of future functioning support needs (Hill et al. 2010). Our own sensitivity testing of the measure revealed a good correspondence between disability status as measured by the receipt (or not) of the Disability Support Pension and reported limitations of the type or hours of work. We thus chose the SF-36 as a proxy measure for the daily functioning capacity of people with disability in our sample.

The HILDA merges the 36 items of the SF-36 into 8 distinct and standardized scales, with lower values indicating poorer respondent health. We further aggregated the eight scales into a physical and a mental health scale, and a combined physical-and-mental health scale. Only individuals allocated to tier 3 under the original measure, that is, applying the disability and permanency conditions, who also recorded a combined SF-36 score of 20 or lower (on a scale from 0–100) remained in tier 3; those with higher scores were assigned to tier 2. Similarly, individuals in tier 2 under the original definition only remained in that tier if they reported a combined score of 20 or less. These cut-off points achieved a distribution of tiers that resembled that estimated by the Productivity Commission: some 2.8% of the sample was assigned to tier 3, 19% to tier 2 and the remaining 78% to tier 1.²

Indicators of economic and social inclusion

The central focus of the present study was to estimate the association of disability, defined by the tiers, with labour force participation and social integration, two of the key areas that the NDIS seeks to increase in the medium to long term. To measure the former, we established whether a

respondent was in paid employment or looking for work. To measure the latter, responses to two questions capturing the person's sense of social integration were used, namely:

- Question 1: 'I often need help from other people but can't get it'
- Question 2: 'In general, about how often do you get together socially with friends or relatives not living with you?'

Both questions indicate areas of great concern to the NDIS as the scheme seeks to improve the quality and responsiveness of supports available to people with disability, and, through better supports, capacity of people with disability to socialize. Question 1 is also indicative of the service needs and deficiencies under the disability system that is to be replaced.

Responses to the two questions were re-coded so they represented positive statements. Thus, the recoded Question 1, measured on a Likert scale from 1 to 7, recorded that people disagreed (scale points 1–3) with this essentially negative statement. The recoded Question 2 established that people socialized more rather than less frequently, selecting 'every day', 'several times a week', 'about once a week', but not selecting 'two or three times a month', 'about once a month', 'once or twice every 3 months' and 'less often than once every 3 months'.

Descriptive statistics

Table 2 shows descriptive statistics for the three tiers. To illustrate the effect of applying the SF-36 qualifier, the table depicts the characteristics of the tiers before and after the condition was applied.

The statistics reveal differences between the tiers, and between both definitions of tiers. In the table, we indicate statistically significant differences of tiers 2 and 3, when compared to tier 1. Whereas there were no statistically significant differences between tiers with respect to sex distribution, mean ages, Aboriginal background and, with the exception of tier 2, marital status, people in disability tiers 2 and 3 typically displayed fewer years of schooling and lower levels of completed

Table 2. Descriptive statistics of disability tiers 1, 2 and 3, before and after application of SF-36 condition, 2009 (in %).

		Before application of SF-36 condition			After application of SF-36 condition		
		Tier 1 a	Tier 2 b	Tier 3 c	Tier 1 d	Tier 2 e	Tier 3 f
<i>Socio-demographics</i>							
Sex	Female	52.3	53.5	44.6	52.8	49.0	51.0
	Male	47.6	46.5	55.4	47.2	51.0	49.0
Age	(mean)	46.4	48.8	47.8	48.3	47.0	52.8
Aboriginal origin	Aboriginal	1.7	2.7	0.1	2.3	1.7	0
Marital status	Married	61.0	55.4	51.0	58.0	48.0**	57.9
	Separated	8.1	14.1**	11.3	12.4	11.5	18.5
Education	Year 12 or below	42.1	47.4	52.7*	44.6	57.7***	33.5
	Bachelor's degree or higher	24.8	13.9***	12.1**	17.4	9.4**	19.6
	Diploma	9.0	8.1	7.3	8.5	7.4	3.9
Location	Certificate	24.1	30.5*	27.9	29.1	25.3	43.0
	Major city	66.9	59.2*	57.9	62.6	53.9***	54.7
Employment/work capacity	Inner regional	20.6	28.9**	27.0	26.0	28.9	34.7*
	Restrictions to work	58.2	81.4***	91.2***	72.8	93.5***	100***
	Working full-time	45.5	24.6***	10.2***	32.4	10.4***	2.4**
	Working part-time	22.3	25.3	20.8	25.7	18.9*	8.2*
	Inactive	28.5	47.8***	67.5***	39.2	69.3***	89.4***
<i>Inclusion statements</i>							
	Labour force participation rate	71.5	52.2***	32.5***	60.8	30.7***	10.6***
	Getting help as needed	77.5	67.5***	70.9	73.4	58.4***	50.9***
	Socializing with friends and relatives	52.1	51.8	49.0	53.3	46.8	25.2***
	N	186	547	101	660	153	21

*Statistical significance in comparison to Tier 1 at the 10% level.

**Statistical significance in comparison to Tier 1 at the 5% level.

***Statistical significance in comparison to Tier 1 at the 1% level.

education than people in tier 1. For instance, 43% of people in tier 3 had achieved the senior secondary schooling qualification in Australia, the Certificate (Table 2, clm. f). This compared with 29% and 25% of people in tiers 1 and 2, respectively (Table 2, clm. d, e). However, people in tier 3 also included a highly qualified group with bachelor's degree, demonstrating the socio-demographic diversity of this tier.

Individuals in tier 2 were somewhat more likely than others to live outside major cities, while people in tier 3 were a little more likely than others to live in the regional areas surrounding the major cities. Unsurprisingly, both tier 2 and tier 3 were more likely than tier 1 to report impairments that restricted the type or amount of work they were able to do. Correspondingly, they were less likely to be working full-time or part-time and more likely to be economically inactive. For the majority of these characteristics, differences were apparent for the disability tiers before and after the SF-36 condition had been applied; the scale of differences, however, was typically greater for the SF-36 conditioned tiers.

Table 2 also shows the frequency counts of the inclusion indicator and statements by disability tiers. People in disability tier 3 were less likely to report labour force participation and the desired ease of access to help, and also socialized less frequently than people without disability. People in disability tier 2 reported lower labour market participation and less access to help, but similar frequency of socializing as people not living with disability. Differences between tiers 2 and 3 were statistically significant in the case of labour force participation and socializing, but not for reported access to help.

Findings from multivariate analysis

We used a random effects probit panel model to estimate associations between disability, and labour force participation and social integration, utilizing all available data points. That is, rather than analysing individual respondents, we analysed individual responses after determining whether these were of individuals in tiers 1, 2 or 3. This approach increases the number of data points available to the study to 6242, markedly enhancing the robustness of the analysis.

The analytical model was constructed around the same socio-demographic variables described in Table 2, which allowed us to focus on the effects of gender, Aboriginality and education on labour market and broader social participation. These variables capture otherwise not reported and unobservable social and human capital factors known to be strongly associated with participation (Caliendo, Mahlstedt, and Mitnik 2014).

At any point in time, labour market and social participation behaviours are known to be strongly influenced by past behaviours. For this reason, the analyses included a variable recording – and thus controlling for – a person's labour market and social activities in the previous year. The inclusion typically has the effect of reducing the measured association between dependent and independent variables, but it increases the accuracy of the measurement.

Analysis results are reported as marginal effects (ME). Their interpretation runs as follows. An ME of 0.735 (as shown in Table 3) means that 'other things equal' the person who was in the labour force in the last period was 73.5% points more likely to be also in the labour force in the next period than a person who was not in the labour force. Likewise, a person who reported he or she had the desired access to help or met frequently with friends or relatives in one year was, respectively, 36 (ME: 0.364) and 43 (ME: 0.425) percentage points more likely to say so in the subsequent period.

A range of socio-demographic factors affected inclusion. Labour market participation decreased with age, if only slowly; it was higher among males and married individuals, and among those with higher qualifications or living in major cities (as opposed to regional or remote areas). The extent to which someone received help when needed increased with age, if again only slowly, and was also higher among married individuals, possibly reflecting access to help in the home. It was also associated with having higher educational qualifications and, if only statistically marginally significantly, Aboriginal background. Finally, socializing with friends or relatives was less common among males, people of Aboriginal background and people who were married.

Table 3. Multivariate panel analysis results of labour force participation, access to help and socializing.

	Labour force participation		Get help		Socializing	
	Marginal effect	Standard deviation	Marginal effect	Standard deviation	Marginal effect	Standard deviation
Lagged dependent variable	.735	.009***	.364	.013***	.425	.012***
Age	-.008	.001***	.001	.000***	-.000	.000
Male	.060	.017***	.008	.013	-.060	.014***
Aboriginality	-.031	.055	.067	.037*	-.095	.045**
Married	.064	.018***	.064	.013***	-.084	.014***
Bachelor's degree or higher	.145	.023***	.052	.017***	-.031	.020
Diploma Certificate	.116	.029***	.017	.023	-.035	.025
Year 12 and below (reference)	.065	.020***	-.016	.015	-.020	.017
Major city Tier 1 (reference)	.047	.017***	-.007	.013	.012	.014
Tier 2	-.175	.022***	-.11	.016***	-.009	.018
Tier 3	-.322	.051***	-.21	.042***	-.101	.041**
Sample size	6242		6242		6242	

*Statistical significance in comparison to Tier 1 at the 10% level.

**Statistical significance in comparison to Tier 1 at the 5% level.

***Statistical significance in comparison to Tier 1 at the 1% level.

The tier effects

Taking prior status and socio-demographics into account, the analysis demonstrated the strong additional effect of tier status on labour market and social inclusion. Thus, a person who transitioned from tier 1 to tier 2 (with an ME of -0.175) was, all else equal, 17.5% points less likely to be in the labour force than a person who stayed in tier 1. For people transitioning from tier 1 to tier 3, this increased to 32.3% points; whilst a transition from tier 2 to tier 3 reduced the likelihood of labour market participation by $(32.2-17.5=)$ 14.7% points.³

The analysis also revealed lower and lowest inclusion rates for people in disability tier 3 on the other two measures. People in disability tier 3 were about 21% points less likely than people in tier 2 to report receiving the help they needed, despite, arguably, a greater need for this help. People in disability tier 2 were 11% points less likely to report desired access to help than people in tier 1. Socializing was also inversely associated with disability, if only for those in tier 3 who reported a 10% point lower likelihood of meeting frequently with friends or relatives compared with people in tier 1.

Sensitivity analysis

Conscious that the choice of the SF-36 threshold for defining disabilities tiers may have inadvertently affected the analysis results just reported, we repeated the above analyses using the different SF-36 cut-off points of 15 (more restricted daily functioning) and 30 (less restricted). Although this changed the magnitude of some of the measured associations, it did not affect their direction or significance. We therefore consider the reported findings as robust.

Summary

The objective of the study was to anticipate the scale of the challenges that the new disability insurance scheme currently trialled in Australia, the NDIS, may face in achieving its higher level of objectives for the integration of people with disability into society and the labour market. We were able to demonstrate strong, statistically significant associations between social and economic inclusion indicators, on the one hand, and disability tiers that define eligibility to the insurance scheme, on the

other. Using panel data to capture the duration of living with disability as an indicator of the permanency of disability (which, in turn, is one of the key eligibility criteria for accessing the NDIS), the study demonstrated significant independent associations between disability status and inclusion. In this concluding section, we want to highlight four findings from the analysis of immediate relevance to the NDIS.

First, the study found that the disability tiers were not homogenous in their social composition. Notably, once daily functioning as measured by the SF-36 was taken into account, the statistics showed a lower level of educational achievement among people with tier 2 and tier 3 disability compared with people in tier 1. Educational achievement was lowest in tier 2, but polarized between people with high and low level of educational outcomes in tier 3, who included a sizeable proportion of individuals with bachelor's degrees or higher.

Second, variations in social and economic participation were associated with different 'drivers'. Both labour market participation and the reported ability of a person with disability to obtain support when needed were strongly associated with educational qualifications. This was likely indicative of people with disability utilizing social capital to negotiate better supports from disability service administrations and through informal personal networks. The same was not found for patterns of socializing, which was most strongly associated with sex and marital status. Unlike labour market participation or needs support, the frequency of socializing was not associated with more limited reductions in daily functioning (tier 2).

Third, Aboriginality was positively associated with a person's ability to have support needs met, but negatively associated with the frequency of socializing. Whilst the latter is an oft-reported effect of the 'shame' associated with disability in Aboriginal communities (Ariotti 1999), the former may reflect increased state and federal government and NGO efforts to improve services for and in these communities. However, from the perspective of the individual, it may also indicate a lowering of expectations as a result of adaptation to historically lower service quality and access (Oswald and Powdthavee 2008). Neither, however, may fully capture the 'disabling effects of racism and the historical treatment of Indigenous Australians' (Hollinsworth 2012, 3) that shape current perceptions of self and otherness among Aboriginal communities.

Finally, the analyses also revealed differences in the experiences of unmet need for supports among people with disability. Whereas people with tier 3 disability reported the lowest rates of labour market participation and socializing, and the highest rate of unmet need for support, a statistically significantly increased rate of unmet support needs (when compared to tier 1) was also reported by people with tier 2 disability, – a group that currently appears not in central focus of disability policy reform in Australia.

Conclusions: implications for the NDIS

The heterogeneity of associations encountered in this study calls for nuanced analysis and granular understanding of the experiences of people living with disability, with attention paid to the variable needs of different populations. The evidence also suggests that, as it seeks to enhance societal integration, disability policy may benefit from taking explicit account of social as well as disability related differences between those transferring into the NDIS. Specifically, much may be gained from promoting and helping to raise educational outcomes for people with disability, because of their association with higher levels of social and economic activities, and inverse relationship with unmet need. Whilst education is typically advocated as a means for correcting social gradients in the labour market, it may also contribute to building capacity among disability support users, giving their voices greater strength and helping people with disability gain a fairer and more adequate level of supports.

At the core of the NDIS is a person-centred approach to support planning. This new emphasis opens up opportunities for identifying and funding supports that not only address the symptoms and manifestations of disability, but also compensate for its social and economic costs. The latter, as this analysis has demonstrated, differ significantly between socio-economic groups. To be

successful, a person-centred approach thus requires a flexible and, in comparison to past provisions, *more* flexible understanding of sources and resources, and their roles in integrating socially diverse populations into Australian society and economy. This capacity to understand diversity will also be a critical skill for those charged with implementing the scheme on the ground. As the NDIS settles in with time, public conversations, which already engage advocacy groups, the NDIA and the research community, will continue about these issues.

The option available to people in the NDIS to self-manage their funding will likely contribute to this debate, in particular, with respect to the scope and scale of the NDIS as it searches for an acceptable balance between funding sources and resources designed primarily to manage disability and those extending beyond meeting these immediate needs. The NDIA will face critical decisions as to the costs that can be carried by the organization (and, effectively, Australian society) in the spirit of a legislation that wants to promote social and economic participation as part of greater well-being for people with disability. The crucial task for those engaged in this process will be to determine how a newly gained 'consumer power' of people with disability can be steered towards broader societal change that integrates people regardless of disability.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes

1. The Productivity Commission is Australia's independent review and advisory body "on a range of economic, social and environmental issues affecting the welfare of Australians" (<http://www.pc.gov.au/>).
2. The Commission's estimate described the entire NDIS-eligible population from age 0 to 64. In contrast, our analysis was limited to those aged 15–64. Unfortunately, there are no estimates of the expected relative size of tiers by age groups.
3. The precision of the estimates is indicated by the size of the standard error (SE). Roughly, one can construct a 5% confidence interval by doubling the SE, but an easier rough statistic can be obtained by dividing the ME/SE. If the outcome is higher than 2 we can say that the estimate is sufficiently precise (strictly speaking, it is 1.96 and the precision is at the 5% level).

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