

Disability Housing Futures Working Group

***People with disability living in inadequate housing: prevalence,
trends, and health and workforce participation outcomes***

Report 1

April 2017



Position Statement

The National Disability Insurance Scheme (NDIS) was established to provide support for people with permanent and significant disability to enable them to participate in the community and live more independent lives. It is one of the most significant social policy reforms in Australian history. However, to fully realise its objectives, new housing solutions for people with disability are needed.

The first Disability Housing Futures (DHF) report (Feb 2016) was focused on the housing needs of people with disability who qualify for an NDIS support funding plan, including funding for Specialist Disability Accommodation (SDA). However, the majority (94%) of people with disability who qualify for NDIS support funding do not qualify for SDA. The first DHF report identified between 35,000 and 55,000 NDIS participants who will not be able to access adequate housing in either the private or social housing sectors. In addition, an even larger number of people with disability do not qualify for NDIS support funding and do not live in appropriate, secure and affordable housing.

The HILDA (Housing, Income and Labour Dynamics) analysis presented in this report highlights the rising incidence of inadequate housing for people with disability in recent years, as well as the negative workforce participation and health outcomes associated with such inadequate housing. The key findings are summarised as follows:

- The number of people with disability living in unaffordable private rental rose by 138% from 2001 to 2014, well above the trend of increased rental affordability stress in the general population.
- The number of people with disability over 25 years old and living with parents increased by 86% over the same time period.
- There is a statistically significant association between inadequate housing and negative health and workforce participation outcomes:
 - People over 25 years old and living with parents are 76% more likely not to participate in the workforce.
 - People living in unaffordable private rental and people over 25 and living with parents experience poorer mental health.
 - People over 25 years old and living with parents report lower self-rated general health.
- While associations between inadequate housing and health are similar for people with and without disability, people with disability are over-represented in each of these groups.



- Failure to meet the gap in affordable housing will see increased financial stress, reduced workforce participation and negative physical and mental health outcomes for people with disability.

New sustainable housing solutions are critical to ensure that positive outcomes for people with disability and their families are maximised. Increasing the supply of affordable housing, designed to meet the needs of people with disability, will require a coordinated effort by Commonwealth, state and local governments, Disabled People's Organisations, community organisations and church groups, developers and builders.

There is a need for innovation in the delivery of housing assistance and funding through the National Affordable Housing Agreement, state social housing provision, Commonwealth Rent Assistance and welfare payments. A more integrated and flexible approach based on social insurance principles is necessary to facilitate co-investment by government, individuals and organisations towards affordable home ownership, as well as affordable secure rental.

The DHF Working Group welcomes the opportunity to discuss with our stakeholders, including the National Disability Insurance Agency, disability groups, housing providers and developers, state agencies, local governments and political leaders, ways to maximise available housing options for people with disability who fall within the identified housing gap.



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1. Introduction

Access to affordable, safe and accessible housing is critical to enable people with disability to enjoy quality of life. However, many Australians with disabilities continue to experience poor housing outcomes. The introduction of the National Disability Insurance Scheme (NDIS) has provided the opportunity to examine the scale of unmet need for people with disability and to determine which gaps may continue to exist once the NDIS is rolled out nationally in 2020.

The Disability Housing Futures (DHF) Working Group was formed in 2015 as an independent expert group to explore the availability of innovative ideas, models and research on housing for people with disability, to contribute new thinking and new modelling and to identify opportunities for a viable disability housing market under the NDIS. DHF does not advocate for any particular interest other than a commitment to the principles of choice and control and social inclusion for people with disability. DHF is not seeking funding or proposing projects.

1.1. Stage 1 Report 2016

In its first report, DHF set out to examine the scale of unmet need in affordable housing for people with disability, including the sufficiency of NDIS user cost of capital funding to meet specialist housing demand. Of 460,000 people that will participate in the NDIS once it is fully rolled out, DHF estimated that approximately 110,000 may be inadequately housed. This includes people who are:

- over 25 and living in their parents' home (50,000)
- in congregate accommodation, including younger people in residential aged care (20,000)
- in unaffordable private rental (35,000)
- experiencing homelessness (5,000).

DHF (2016) estimated that social housing turnover, low-cost private rental in low-value markets and new specialist housing supply funded by the NDIS could potentially deliver housing solutions for 55,000 to 75,000 people in the first decade of the scheme. This leaves a gap of unmet need in affordable housing of an estimated 35,000 to 55,000 eligible NDIS participants¹.

¹ Disability Housing Futures Working Group (2015) Final Report.
http://nahc.org.au/documents/DHF_Final_Report_February_2016.pdf



1.2. Stage 2 Research in 2017

In 2016, DHF reconvened to examine the consequences of failing to address the gap identified in the Stage 1 report. This research will be completed under two research topics in 2017.

This report encompasses the first research topic and presents the results from analysis of the Housing, Income and Labour Dynamics in Australia (HILDA) survey, which includes assessment of the impact of inadequate housing on NDIS participant community participation, independent living, health and employment outcomes.

A case study has been included in the report to illustrate some of the difficulties and costs a person within the gap faces in their everyday life due to a lack of affordable and appropriate housing.

The second research topic to be completed in 2017 and published in a forthcoming report will apply an actual investment approach to the issues and will identify how this modelling of lifetime costs can better inform options for governments and others to achieve desirable outcomes.



The following individuals are part of the DHF Working Group:

Chair

Mike Allen—former Chief Executive of Housing NSW

Members

Dr Ilan Wiesel—senior research fellow at UNSW, specialising in housing for people with disability

Dr Tom Alves—former senior adviser with the Office of the Victorian Government Architect, now at The University of Melbourne

Owen Donald—former chair of the National Housing Supply Council with substantial research and senior public sector experience

Mike Myers—managing director of NAHC with over 30 years' experience in social and affordable housing in the UK and Australia

Luke Bo'sher—Fulbright scholar at NYU's Center for Real Estate and Urban Policy, principal consultant (housing) at Disability Services Consulting and previously director of housing at the NDIA

Tim Flowers—audit and consulting principal with community support specialists Saward Dawson Chartered Accountants

Leonie King—chief strategy officer for Evolve Housing, a not-for-profit community housing provider. Leonie also has 18 years experience in the NSW government working on social, affordable and disability housing policy, strategy, programs and service delivery.

Dr Di Winkler—founder and CEO of Summer Foundation Ltd. An occupational therapist who has worked with people with severe brain injury for more than 20 years.

Dean Price—advocacy projects manager for social justice for the national disability rights and representative organisation People with Disability Australia. He has experience in NSW and national housing policy, advocacy and governance.

Dr George Taleporos—disability rights advocate with expertise in access and equity and disability service reform. George has a PhD in Psychology and an Honours degree in Sociology and currently works with the Summer Foundation.

Industry Support and Project Management

Daniela Weatherill—project manager at NAHC with 15 years property experience in the private and not-for-profit sectors in the UK and Australia, respectively

Graham Marshall—business development manager at NAHC with 20 years' experience in property development. Previously, general manager at AV Jennings Qld, Villa World and QM Properties

Anita Peres—project manager at NAHC with 20 years experience in GIS, Construction and property sectors in the UAE and Australia

DHF is sponsored by the National Affordable Housing Consortium (NAHC).



2. HILDA analysis: Methodological notes

This paper analyses trends from the HILDA survey to create a national picture of the unmet housing need experienced by people with disability. Importantly, this analysis demonstrates both the rise of inadequate housing for people with disability and its impact on their health and workforce participation.

2.1. What is HILDA?

HILDA is a national household-based panel study that collects well-being, labour market and family dynamics data. Fourteen waves have been released since 2001. The first wave included 13,969 individuals from 7682 households. All annual waves from 2001 to 2014 were included in our analysis.

The sample included 1,616 people (14%) who reported having a disability for at least two consecutive waves. This was used as an indicator for a more significant and enduring disability. Some analyses use data for all people who reported a disability at any wave to increase the sample size.

2.2. What types of inadequate housing did we look at?

For the purpose of analysis (and determined to an extent by the limitations of HILDA data), two groups of people were identified as living in inadequate housing. These included:

- people with disability experiencing housing affordability stress in private rental (i.e., in the lowest 40% of the income distribution and paying more than 30% of their income on rent)
- people with disability over 25 years old and living with their parents (while living with parents is increasingly prevalent in the general population and reflects, in many cases, the choices of individuals², people with disability are over-represented in this group, primarily due to difficulty in accessing paid support and affordable housing).

This analysis did not cover other forms of inadequate housing due to data limitations. This includes homelessness or precarious housing, institutional or congregate living, mortgage stress, substandard housing and housing inappropriately designed for the needs of residents.

² Easthope, H., Liu, E., Judd, B., & Burnley, I. (2015). Feeling at home in a multigenerational household: The importance of control. *Housing, Theory and Society*, 32(2), 151–170.



2.3. What outcomes did DHF examine?

Analysis included examination of trends in inadequate living arrangements from 2001 to 2014 and assessment of health and workforce participation outcomes.

These outcomes were compared with those for people with disability living in adequate housing and for people without disability living in both adequate and inadequate housing. Analysis of outcomes was based on specific indicators, such as workforce status and both objective and subjective indicators of general and mental health (including mental health standardised score, Body Mass Index [BMI] and self-rated health).

To generalise the sample data to extend to the Australian population, trends were calculated using the HILDA weighted variable “hhwte”, which represents the cross-section population weight for all people who are usual residents of the responding households in the relevant wave (this includes children, non-respondents and respondents).

2.4. What are the limitations of this analysis?

The most significant limitation of HILDA analysis is difficulty in differentiating outcomes by respondent type and level of disability. This is because samples become too small and overlapping disability categories complicate regression analysis. Therefore, the results of this analysis concern the wider population of people with disability in Australia, including both those who are eligible for NDIS funding and those who are not.

It was also not possible to differentiate between adults living with parents by choice or due to a lack of other housing and support options.

DHF sought to analyse social inclusion outcomes for people with disability living in inadequate housing. However, the social connections variable in HILDA does not differentiate between connections within the ‘distinct social space’ of people with disability, their co-residents, families and support workers and connections with the wider community. For example, it was not possible to assess whether a person’s regular interactions reflected institutionalised living arrangements with limited privacy or genuine community participation and engagement. Hence, as a limited indicator of social inclusion outcomes, it was not used in this analysis.



Another important limitation to be noted is that the associations observed do not indicate the direction of causality. For example, inadequate housing – specifically adults living with parents – was found to be associated with lower levels of participation in the workforce. However, the data cannot explain whether being inadequately housed is a cause or the result of non-participation in the workforce.



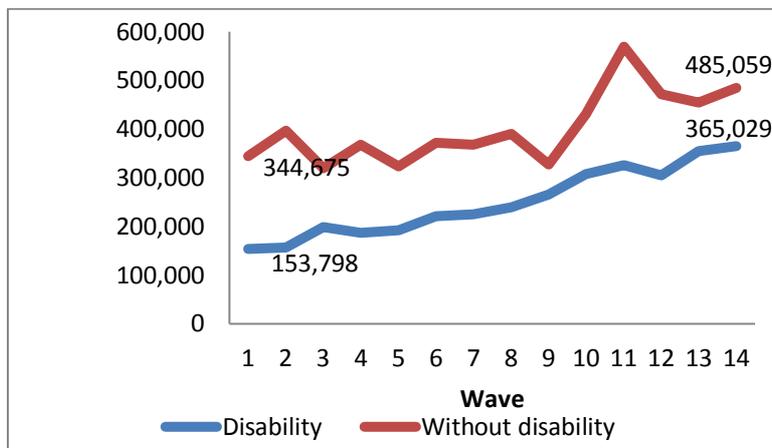
3. HILDA data on housing for people with disability

3.1. From 2001 to 2014, the number of people with disability living in unaffordable private rental has more than doubled

The number of people with disability living in unaffordable private rental³ in the HILDA sample rose by 138% from 2001 to 2014. This is equivalent to a rise from 153,798 in 2001 to 365,029 in 2014 (population weighted). An even higher increase of 168% was recorded for people with a disability for at least two consecutive years living in unaffordable private rental.

The number of people with disability in unaffordable private rental rose more than three times faster than the number of people without disability in unaffordable private rental during the same time period (138% compared with 41%). Consequently, people with disability now represent a larger proportion (42%) of all people living in unaffordable private rental (up from 30% in 2001) (Figure 1). This trend can be partly attributed to a growing proportion of people with disability on low incomes living in private rental (90% increase from 2001 to 2014).

Figure 1: Prevalence of rental affordability stress by disability status (2001–2014)



Data source: HILDA

Nationally, the majority of people with disability living in unaffordable private rental are located in Australia's major cities (61%), with almost 1 in 3 (31%) living in NSW. These patterns generally reflect Australia's population distribution.

³ In the lowest 40% of the national income distribution and paying more than 30% of income on rent



Table 1: Geographic distribution of people with disability living in unaffordable private rental

| State | Rental affordability stress* % | Total population distribution % |
|----------------|--------------------------------|---------------------------------|
| NSW | 31.13 | 32.03 |
| VIC | 21.41 | 24.97 |
| QLD | 21.5 | 20.09 |
| SA | 9.9 | 7.14 |
| WA | 9.9 | 10.89 |
| TAS | 5.31 | 2.17 |
| NT | 0.04 | 1.03 |
| ACT | 0.8 | 1.64 |
| Major City | 60.97 | 68 |
| Inner Regional | 26.23 | 19.7 |
| Outer Regional | 11.28 | 9.5 |
| Remote | 1.52 | 1.5 |
| Very Remote | 0 | 0.8 |
| TOTAL | 100 | 100 |

* People with a disability reported for at least two consecutive waves

Data source: HILDA

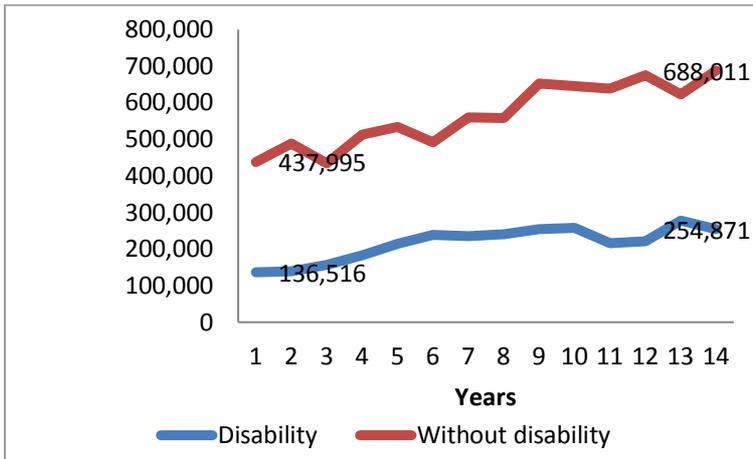
3.2. An additional 120,000 people with disability now live with their parents

The number of people with disability in the HILDA sample who are over 25 years old and are living with parents increased by 86% from 2001 to 2014. Weighted to population, this is equivalent to a rise from 136,516 in 2001 to 254,871 in 2014 (Figure 2). An even higher increase of 121% was recorded for people who had a disability for at least two consecutive years, were over 25 years old and living with parents.

Again, the amount of people with disability in inadequate housing rose much faster than it did for those without disability. While the number of people with disability living with ageing parents grew by 86%, the growth rate was only 57% among people without a disability in the same time period.



Figure 2: People over 25 years old living with parents (2001–2014)



Data source: HILDA

The proportion of people with disability living with parents is slightly higher in major cities, which could be because it is more difficult to enter and sustain unaffordable private rental in major cities (Table 2).

Table 2: Geographic distribution of people with disability over 25 years old living with parents

| State | Over 25, Living with Parents* % | Total population distribution % |
|----------------|---------------------------------|---------------------------------|
| NSW | 33.52 | 32.03 |
| VIC | 21.03 | 24.97 |
| QLD | 21.41 | 20.09 |
| SA | 10.33 | 7.14 |
| WA | 9.58 | 10.89 |
| TAS | 2.91 | 2.17 |
| NT | 0.19 | 1.03 |
| ACT | 1.03 | 1.64 |
| Major City | 62.44 | 68 |
| Inner Regional | 24.23 | 19.7 |
| Outer Regional | 12.02 | 9.5 |
| Remote | 1.22 | 1.5 |
| Very Remote | 0.09 | 0.8 |
| TOTAL | 100 | 100 |

* People with disability for at least two consecutive waves

Data source: HILDA



The growing number of adults with disability who are living with parents can be attributed to an increasing difficulty in accessing both affordable housing and support services, which undermines their aspirations for more independent living in the community⁴. This finding might also be interpreted as evidence that some people with disability are now better supported when living with parents, rather than moving into institutional accommodation.

3.3. Living at home with parents is associated with low levels of workforce participation

Workforce participation among people with disability is substantially lower than for those without disability. Only 33% of people with a disability for at least two consecutive years in the HILDA sample participated in the workforce (including being unemployed looking for work). This compares to 72% of those without disability or who had a disability for less than two consecutive years.

Inadequate housing (specifically adults living with parents) was associated with lower levels of participation in the workforce. People over 25 years old and living with parents were 76% more likely not to be in the workforce than those not living with parents (OR=1.76, 95% CI: 1.46, 2.12, p<0.001). The interaction with disability status was not significant, suggesting that this negative association was similar for people with and without disability.

There was little evidence of an association between living in unaffordable private rental and workforce status (p=0.23). This could reflect the high cost of living in private rental in major cities, which requires some participation in the workforce (Table 3).

Table 3: Labour force outcomes by housing status, full sample (people with or without a disability)

| Outcome | Exposure | Random effects models* (n = 158491, N = 25026) | | | |
|----------------------|---------------------------------|---|-------------------------------|------|---------|
| | | Coefficient (OR‡) | 95% Confidence Interval | | p-value |
| Labour Force status‡ | Over 25 and living with parents | 1.76 | 1.46 | 2.12 | <0.001 |
| | Unaffordable private rental | 1.07 | 0.96 | 1.18 | 0.23 |

Data source: HILDA

⁴ Wiesel, I., Laragy, C., Gendera, S., Fisher, K.R., Jenkinson, S., Hill, T., Shaw, W., Bridge, C. (2015), 'Moving to my home: Housing aspirations, transitions and outcomes of people with disability', *AHURI Final Report 246*.



3.4. Inadequate housing is associated with poor mental health

Irrespective of their housing circumstances, people with disability experience poor mental health outcomes compared to people without disability. However, inadequate housing is associated with even poorer mental health for people with disability.

The mean standardised mental health score for people with disability for at least two consecutive years was 65. This is 17% lower than those who had no disability or who had disability for less than two years (mean score of 76).

People with disability have poorer mental health even after adjusting for other relevant factors, such as age group, workforce status, household structure, household disposable income, gender and country of birth (Beta -4.46, 95% CI: -4.76, -4.17, $p < 0.001$).

The analysis also found that having access to adequate housing significantly impacts mental health.

- People (with or without disability) over 25 years old and living with parents had a lower adjusted mental health score compared to those not living with their parents (OR=-1.29, 95% CI: -2.00, -0.58, $p < 0.001$).
- Similarly, people living in unaffordable private rental had a slightly lower adjusted mental health score compared to people living in affordable private rental (OR=-0.63, 95% CI:-1.07,-0,20 , $p < 0.001$) (Table 4).

Table 3: Mental health outcomes by housing status full sample (people with or without disability)

| Outcome | Exposure | Random effects models (n = 158491, N = 25026) | | | |
|----------------------------------|---------------------------------|--|-------------------------|-------|---------|
| | | Coefficient | 95% Confidence Interval | | p-value |
| | | (OR‡) | | | |
| Standardised mental health score | Over 25 and living with parents | -1.29 | -2.00 | -0.58 | <0.001 |
| | Unaffordable private rental | -0.63 | -1.07 | -0.20 | <0.001 |

Data source: HILDA

3.5. Inadequate housing is associated with worse self-reported health

People who were over 25 years old and living with parents were more likely to report lower self-rated health compared to those not living with their parents (OR=1.25, 95% CI: 1.05, 1.49, $p = 0.01$) (Table 5). The interaction between disability status and housing situation was not significant,



suggesting that the association with self-rated health was similarly negative for people with and without disability.

BMI was found to be slightly lower in people with disability who were over 25 years old and living with parents. This could suggest that they are in better health than those not living with parents. However, the mean difference in BMI was very small (less than 1 kg/m²).

Table 4: Self-rated health outcomes by housing status, full sample (people with or without a disability)

| Outcome | Exposure | Random effects models (n = 158491, N = 25026) | | | |
|--------------------|---------------------------------|--|-------------------------------|------|---------|
| | | Coefficient | 95% Confidence Interval | | p-value |
| | | (OR‡) | | | |
| Self-rated health‡ | Over 25 and living with parents | 1.25 | 1.05 | 1.49 | 0.01 |
| | Unaffordable private rental | 1.09 | 0.97 | 1.22 | 0.13 |

Data source: HILDA



4. Conclusions from the HILDA report

People with disability have been severely affected by the decline in housing affordability in Australia, with the incidence of housing stress more than doubling. The increase is well above the trend for the general population, which has also been dramatic. This suggests that DHF's (2015) assessment (which was based in part on data from the 2011 census) of 110,000 people with disability experiencing inadequate housing does not account for substantial growth in inadequate housing for people with disability from 2011. An 18% increase since 2011 in the number of adults with disability living with parents, suggests the number of prospective NDIS participants living with parents may have grown from 50,000 (DHF, 2015) to approximately 60,000. Likewise, a 12% increase in the number of people with disability living in unaffordable private rental suggests the number of prospective NDIS participants in these circumstances may have grown from 35,000 (DHF, 2015) to approximately 40,000.

There is an urgent need for policy action to deliver affordable housing for low-income households, with particular attention on people with disability, as they are not only more likely to experience inadequate housing but are also vulnerable to negative health and employment outcomes associated with inadequate housing. Beyond direct impacts in terms of financial stress and poor shelter outcomes, a failure of government to deliver affordable housing will have additional negative social and economic consequences, including reduced workforce participation and poorer physical and mental health outcomes for people with disability.



5. Case study

The statistical work captured in the HILDA research can obscure the human experience of disability. For this reason, the following case study has been provided to highlight the importance of secure, well-located, affordable housing. The table below provides some information about Mary's situation.

Name: Mary **Gender:** Female **Age:** 50 **Status:** Single

Disability: Blind from birth

| | Previous – private rental | Current – social housing |
|-------------------------------------|------------------------------------|------------------------------|
| Dwelling Type | Detached unit, 3 bed, 2 bath | Detached unit, 2 bed, 1 bath |
| Suburb | Smithfield, SA | Northfield, SA |
| Living Arrangement | Shared with 1 male | Living alone |
| Rent | \$142.50 p/w | \$112.50 p/w |
| Distance from City | 45 min drive, over 1 hour by train | 20 min drive, 35 min on bus |
| Distance to Public Transport | 5 min walk | 5 min walk |
| Distance to Shopping Centre | 17 min walk | 30 min walk |

5.1. Mary's story

After the breakdown of Mary's marriage, she moved into a Housing SA unit. She felt uncomfortable and stressed with this because she was placed in a unit in the same street as her ex-partner. Mary gave up the Housing SA unit and relocated to a peripheral suburb across town, where she lived in a private rental with a man who was also blind. Some of the difficulties she experienced included:

- finding suitable flat mates, as her blindness means that normal day-to-day stresses of sharing accommodation are more difficult
- paying approximately 33% of her gross income in rent, which was above an affordable level in this circumstance
- not living close to services, shops and transport, as this is a cost and safety issue for a person with blindness

Approximately one year later, Mary reapplied for a Housing SA property but remained on the waiting list for 5 years. When she was finally offered her own 2-bedroom unit by Housing SA, she was



pleased to be moving out on her own. She moved into a 5-unit disability complex, which was run by Housing SA, and her situation drastically improved.

Her social life has improved, as she is able to offer a spare bedroom where friends can occasionally stay over. However, she does feel isolated at times, which is mainly due to travel limitations and costs. She is the only blind person in the complex and is still getting to know the other tenants. Mary feels that the complex is a good fit for her. She has lived in a community with other blind people, but she would not like to do that again, as she feels there was too much gossip. She doesn't mind living in a complex with people with different types of disabilities and she would be happy to live in a complex with people who do not have disabilities.

The location is closer to the city than her previous rental, which has reduced taxi costs when she visits friends. This can be expensive, even with half-price subsidy vouchers.

Security of tenure is crucial for Mary because it takes time to learn how to navigate her way with her guide dog in a new environment. This includes, for example, learning how to find the bus stop and knowing where to stand so the bus driver notices her and stops in time with the fast moving traffic. Rent affordability in social housing has allowed Mary to save for buying or hiring a treadmill, so she can exercise more and improve her health.

In summary, moving from inadequate housing to something more suitable, in terms of location, affordability and living arrangements, has had an enormous impact on Mary's sense of security, mental health, social life, financial situation and health in everyday living.



6. Acknowledgements

DHF is grateful to University of Melbourne researchers Bec Bentley, Elena Swift, Su Mon Latt and Lay San Too for undertaking the statistical analysis for this report.



7. Appendices: Detailed results

Table 5: HILDA variables used

| | Definition | Type | Values |
|---|---|---|---|
| Outcomes | Mental health, standardised, from SF 36 | Continuous | 0–100 (increasing score indicates better mental health) |
| | Labour force status | Binary categorical | 0 = currently in the labour force, including unemployed |
| | | | 1 = not in the Labour force |
| | Self-rated health, based on first question of SF 36 | Binary categorical | 1 = Fair/poor 0 = Excellent/very good/good |
| | Body Mass Index | Continuous | Increasing score indicates higher BMI |
| Number of GP visits | Continuous | | |
| Exposures | Over 25 and living with parents | Binary | 0 = over 25 and NOT living with parents |
| | | | 1 = over 25 and living with parents |
| | In unaffordable private rental, based on rental payments >30% of income | Binary | 0 = not in unaffordable housing |
| 1 = in unaffordable private rental | | | |
| Renting and with household income in lowest 40% of national income distribution (equalised) | Binary | 0 = income in upper 60%, any housing | |
| | | 1 = renting, income in lowest 40% of national income distribution | |
| Interaction | Indicator of disability present for two consecutive years | Binary | 0 = no disability, or disability for only 1 year |
| | | | 1 = disability for two consecutive years |
| Other covariates (Potential confounders) | Age in years, divided into 10 year age categories | Categorical (Indicator) | 0 = under 15 |
| | | | 1 = 15–24 |
| | | | 2 = 25–34 |
| | | | 3 = 35–44 |



| | | | |
|-----------|--|-------------------------|--|
| | | | 4 = 45–54 |
| | | | 5 = 55–64 |
| | | | 6 = 64+ |
| | Quintiles of household disposable income | Categorical (Indicator) | 0–5 |
| | | | 0–lowest quintile/ lowest income category |
| | | | 5–highest quintile group/ highest income category |
| | Household structure | Categorical | 1 = couple no children |
| | | | 2 = couple with children |
| | | | 3 = lone parent with children |
| | | | 4 = lone person |
| | | | 5 = other |
| | Gender | Categorical (Binary) | 1 = male |
| | | | 2 = female |
| | Country of birth | Categorical (Indicator) | 1 = Australia |
| | | | 2 = main English speaking |
| 3 = other | | | |



Table 6: Baseline characteristics of study participants (wave 2)

| | All participants (n = 11507) | | No disability or disability < two years (n = 9891, 86%) | | Disability for two consecutive years (n = 1616, 14%) | |
|--|---------------------------------|-------|--|-------|---|-------|
| | Mean (s.d/%) | | Mean (s.d/%) | | Mean (s.d/%) | |
| Standardised mental health score from SF 36 (0–100) | 74 | (17) | 76 | (16) | 65 | (20) |
| Standardised social connections indicator (0–10) | 3 | (1) | 3 | (1) | 4 | (2) |
| Self-rated health, based on first question of SF 36 | | | | | | |
| 0 = Good (Excellent/Good/Very Good) | 9596 | (83%) | 8929 | (90%) | 667 | (41%) |
| 1 = Poor (Fair/Poor) | 1911 | (17%) | 962 | (10%) | 949 | (59%) |
| BMI* | 26 | (5) | 26 | (5) | 27 | (6) |
| GP visit** (n = 10883) | 5 | (7) | 4 | (5) | 10 | (10) |
| Affordability indicator | | | | | | |
| not in unaffordable private rental | 11049 | (96%) | 9529 | (96%) | 1520 | (94%) |
| in unaffordable private rental | 458 | (4%) | 362 | (4%) | 96 | (6%) |
| Over 25 years and living with parents (n = 9563) | | | | | | |
| >25 and not living with parents | 9244 | (97%) | 7759 | (97%) | 1485 | (97%) |
| >25 and living with parents | 319 | (3%) | 269 | (3%) | 50 | (3%) |
| Age groups (years) | | | | | | |
| 15–24 | 1794 | (16%) | 1723 | (17%) | 71 | (4%) |
| 25–34 | 2053 | (18%) | 1930 | (20%) | 123 | (8%) |
| 35–44 | 2485 | (22%) | 2237 | (23%) | 248 | (15%) |
| 45–54 | 2045 | (18%) | 1740 | (18%) | 305 | (19%) |
| 55–64 | 1455 | (13%) | 1099 | (11%) | 356 | (22%) |
| 65+ | 1675 | (15%) | 1162 | (12%) | 513 | (32%) |
| Labour force status | | | | | | |
| In Labour force (including unemployment) | 7684 | (67%) | 7149 | (72%) | 535 | (33%) |
| not in Labour force | 3823 | (33%) | 2742 | (28%) | 1081 | (67%) |
| Renting and in lowest 40% income versus all other income/housing | | | | | | |
| Upper 60% income | 7872 | (68%) | 7119 | (72%) | 753 | (47%) |
| Lowest 40% income and renting | 3635 | (32%) | 2772 | (28%) | 863 | (53%) |
| Household disposable income (in quintiles) (AUD\$) | | | | | | |
| 20–35216 | 3855 | (34%) | 2901 | (29%) | 954 | (59%) |
| 35217–55599 | 3077 | (27%) | 2718 | (27%) | 359 | (22%) |
| 76765–55600 | 2399 | (21%) | 2237 | (23%) | 162 | (10%) |
| 76766–107468 | 1493 | (13%) | 1390 | (14%) | 103 | (6%) |
| 107475–930841 | 683 | (6%) | 645 | (7%) | 38 | (2%) |
| Household structure | | | | | | |
| couple no children | 3363 | (29%) | 2772 | (28%) | 591 | (37%) |
| couple with children | 4973 | (43%) | 4554 | (46%) | 419 | (26%) |
| lone parent with children | 999 | (9%) | 856 | (9%) | 143 | (9%) |
| lone person | 1686 | (15%) | 1272 | (13%) | 414 | (26%) |
| other | 486 | (4%) | 437 | (4%) | 49 | (3%) |
| Gender | | | | | | |
| male | 5437 | (47%) | 4604 | (47%) | 833 | (52%) |
| female | 6070 | (53%) | 5287 | (53%) | 783 | (48%) |
| Country of birth | | | | | | |
| Australia | 8888 | (77%) | 7659 | (77%) | 1229 | (76%) |
| main English speaking | 1223 | (11%) | 1029 | (10%) | 194 | (12%) |
| other | 1393 | (12%) | 1200 | (12%) | 193 | (12%) |
| Poor derelict housing (n = 11380) | | | | | | |
| [0] not in poor derelict housing | 10839 | (95%) | 9344 | (96%) | 1495 | (93%) |
| [1] poor derelict housing | 541 | (5%) | 430 | (4%) | 111 | (7%) |

*measured at wave 6

**measured at wave 9

Note: All estimates were measured at baseline (i.e., wave 2) except for the measurements of BMI (wave 6) and GP visits (wave 9).



Summary of study participants

- Age of study participants was recorded in five categories, and there was relatively equal proportion of participants in each age group for all participants.
- People with disability in the sample are relatively older than those without disability
- At baseline, 47% of all participants were male and 53% were female.
- 77% of all participants were born in Australia, 11% were born in English speaking countries and 12% were born in other countries.

Summary of outcomes

- At baseline, the average mental health score, average social connection indicator, BMI and GP visits of all participants were 74, 3, 26 kg/m² and 5 visits, respectively. Self-rated health was categorised into (i) Good (Excellent/Good/Very Good) and (ii) Poor (Fair/Poor), where 83% were in good self-rated health.
- Overall, the people with disability (i.e., disability for two consecutive years) have a relatively lower mental health score, slightly higher social connection indicator, similar BMI, doubled number of GP visits and a higher proportion of poor self-rated health compared to people without disability or people with disability for less than two years.

Summary of exposures

- At baseline, 86% (n = 9891) of participants had no disability or disability for less than one year and 14% (n = 1616) had disability for two consecutive years.
- Only 4% of all participants were living in unaffordable private rental. Only 3% of all participants were over 25 years old and living with parents.
- Of all participants, 67% were in the workforce (i.e., inclusive of people who are unemployed but are able to work). A higher proportion of people with disability were not in the workforce compared to people without disability.



Table 7: Health and labour outcomes in various effects models (n = 160642, N = 25103)

| Outcome | Random effects models (association between disability and outcomes)* (n = 158491, N = 25026) | | | | Fixed effects models (association between disability acquisition and outcomes)** (n = 158536, N = 25034) | | | |
|---|--|-------------------------------|-------|---------|---|-------------------------------|-------|---------|
| | Coefficient (Beta or OR [‡]) | 95% Confidence Interval | | p-value | Coefficient (Beta or OR [‡]) | 95% Confidence Interval | | p-value |
| Standardised Mental Health Score | -4.46 | -4.76 | -4.17 | <0.001 | -2.66 | -2.98 | -2.35 | <0.001 |
| Labour force Status[‡] | 4.01 | 3.72 | 4.31 | <0.001 | 2.17 | 1.99 | 2.36 | <0.001 |
| Social Connection Indicator | 0.17 | 0.14 | 0.19 | <0.001 | 0.10 | 0.07 | 0.12 | <0.001 |
| Self-rated Health[‡] | 6.49 | 6.10 | 6.91 | <0.001 | 2.71 | 2.53 | 2.89 | <0.001 |

*Adjusted for age group, labour force status, household structure, household disposable income, gender and country of birth

**Adjusted for age group, household structure and household disposable income

n = number of observations, N = number of people

Note: the logistic regression fixed effects models indicate the effect of disability acquisition for people who also change on the outcome variable

- Table 8 shows the association between disability and mental health, workforce status, social connection and self-rated health outcomes.
- Estimates were adjusted for age group, labour force status, household structure, household disposable income, gender and country of birth in random effects models and adjusted for age group, household structure and household disposable income in fixed effects models.
- People with disability for more than two consecutive years had a lower adjusted mental health score compared to people without disability or disability for less than one year
- (-4.46, 95% CI: -4.76, -4.17, p<0.001). They were less likely to be in the workforce and had more social connections and poorer self-rated health.



Table 8: Association between housing conditions and outcomes (mental health, labour force status, social connection and self-rated health (random effects and fixed effects models)

| Outcome | Exposure | Random effects models* (n = 158491, N = 25026) | | | Fixed effects models** (n = 158536, N = 25034) | | | | |
|----------------------------------|---|---|-------------------------|-------|---|---|-------------------------|---------|--------|
| | | Coefficient (Beta or OR [†]) | 95% Confidence Interval | | p-value | Coefficient (Beta or OR [†]) | 95% Confidence Interval | p-value | |
| Standardised Mental Health Score | Over 25 and living with parents | -1.29 | -2.00 | -0.58 | <0.001 | -0.44 | -1.32 | 0.44 | 0.33 |
| | Unaffordable private rental | -0.63 | -1.07 | -0.20 | <0.001 | -0.11 | -0.57 | 0.35 | 0.63 |
| | Renting, income in lowest 40% of national income distribution | 0.00 | -0.21 | 0.21 | 1.00 | 0.30 | 0.07 | 0.52 | 0.01 |
| Labour force Status‡ | Over 25 and living with parents | 1.76 | 1.46 | 2.12 | <0.001 | 1.39 | 1.10 | 1.77 | 0.01 |
| | Unaffordable private rental | 1.07 | 0.96 | 1.18 | 0.23 | 1.11 | 0.99 | 1.23 | 0.06 |
| | Renting, income in lowest 40% of national income distribution | 1.98 | 1.86 | 2.11 | <0.001 | 1.57 | 1.47 | 1.68 | <0.001 |
| Social Connection Indicator | Over 25 and living with parents | 0.08 | 0.02 | 0.14 | 0.01 | 0.02 | -0.06 | 0.09 | 0.67 |
| | Unaffordable private rental | 0.09 | 0.05 | 0.13 | <0.001 | 0.05 | 0.01 | 0.09 | 0.01 |
| | Renting, income in lowest 40% of national income distribution | 0.00 | -0.02 | 0.02 | 0.93 | -0.01 | -0.01 | -0.01 | 0.25 |
| Self-rated Health‡ | Over 25 and living with parents | 1.25 | 1.05 | 1.49 | 0.01 | 0.96 | 0.77 | 1.20 | 0.73 |
| | Unaffordable private rental | 1.09 | 0.97 | 1.22 | 0.13 | 1.05 | 0.93 | 1.18 | 0.47 |
| | Renting, income in lowest 40% of national income distribution | 1.04 | 0.98 | 1.11 | 0.19 | 0.97 | 0.97 | 0.97 | 0.43 |

*Adjusted for age group, labour force status, household structure, household disposable income, gender and country of birth

**Adjusted for age group, household structure and household disposable income

n = number of observations, N = number of people

Note: Number of observation for over 25 and living with parents lower than other models (RE: n = 128449, N = 19248, FE: n = 128491, N = 19255)

Note: The logistic regression fixed effects models indicate the effect of disability acquisition for people who also change on the outcome variable



Table 9: Association between housing conditions and physical health outcomes (BMI, GP visit) after adjusting for age, gender, weekly gross income, workforce status and occupation

| Outcome | Exposures | Coefficient | 95% Confidence Interval | | p-value |
|-------------------------------|---|-------------|-------------------------|-------|---------|
| | | | | | |
| BMI (kg/m²) | Over 25 and living with parents | -0.29 | -0.44 | -0.14 | <0.001 |
| | Unaffordable private rental | 0.06 | -0.03 | 0.14 | 0.19 |
| | Renting, income in lowest 40% of national income distribution | 0.01 | -0.04 | 0.05 | 0.73 |
| | Disability for > 2 consecutive years | 0.15 | 0.09 | 0.21 | <0.001 |
| GP visit | Over 25 and living with parents | 0.03 | -0.41 | 0.47 | 0.88 |
| | Unaffordable private rental | 0.58 | 0.26 | 0.91 | <0.001 |
| | Renting, income in lowest 40% of national income distribution | 0.46 | 0.28 | 0.64 | <0.001 |
| | Disability for > 2 consecutive years | 4.45 | 4.23 | 4.66 | <0.001 |

- The association between housing conditions and the outcomes (BMI and GP visits) were assessed by using population-averaged random effects models. Estimates were after adjusting for age, gender, weekly gross income, workforce status and occupation.
- The results are summarised in Table 10.

BMI

- There was no evidence of association between living in unaffordable private rental and BMI nor between renting with income in lowest 40% and BMI. BMI was found to be slightly lower in people who were over 25 years and living with parents compared to people over 25 and not living with parents, and BMI was found to be slightly higher in people with disability compared to people without disability. However, the mean difference in BMI was less likely to be clinically significant (mean difference was less than 1 kg/m²).

GP visits

- The adjusted number of GP visits among people with disability for more than 2 consecutive years was approximately five times higher compared to people without disability or with disability for one year (95% CI: 4.23, 4.66, p<0.001).

