

Explanatory Notes

Survey of Disability, Ageing and Carers, 2012

Modelled Estimates for Small Areas

Prepared by the Regional Statistics National Centre

Australian Bureau of Statistics

Release 3 (Final): May 2015

Referencing

These modelled estimates of disability and carers for small areas have been produced as a consultancy for the NSW Department of Family and Community Services, applying ABS methods and quality standards.

However, this is not published ABS data, and ABS should not be cited as the primary data source. When citing this data source, please reference as shown below:

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1 Introduction

1.1 This report

The Australian Bureau of Statistics (ABS) was initially requested by the Disability Policy and Research Working Group (DPRWG) to provide modelled estimates of disability and associated characteristics at a small area level. Following the dissolution of this working group the consultancy proceeded via an agreement with the New South Wales Department of Family and Community Services, signed in mid-2014. The agreement provides for staggered provision of three releases of modelled estimates based on the 2012 Survey of Disability, Ageing and Carers (Release 1, Release 2 and Release 3). This work is similar to a previous consultancy the ABS undertook for DPRWG based on the 2009 Survey of Disability, Ageing and Carers (SDAC).

These explanatory notes accompany the modelled estimates for small areas, provided as Excel worksheets, and describe the methodology used to produce them, as well as provide information on how to use them. This document is structured such that sections 1 to 5 and Appendices 1, 2 and 3 provide information pertaining to all releases. The following appendices provide information specific to the final version of each release (e.g. Appendix 4 – Release 1B).

These ‘Release 3 (Final): May 2015’ Explanatory Notes constitute the final release for this consultancy and, along with the accompanying tables of modelled estimates, should replace all previous releases.

1.2 Modelled estimates for small areas

A national sample survey, such as the Survey of Disability, Ageing and Carers 2012, collects *detailed* information on disability and carer status, but does not have enough sample in small geographic areas to produce *accurate* estimates at that level. While the Australian Census of Population and Housing 2011 does collect information on ‘need for assistance with core activities’, from which *accurate* estimates can be calculated at the small area level, this single data item does not provide *detailed* information on disability at the small area level. Therefore, to produce *accurate* and *detailed* estimates of disability and carer characteristics at the small area level, models are created using the detailed SDAC data, in conjunction with the Census data, and 2012 Estimated Resident Population (ERP) to produce modelled estimates for small areas. The modelling method assumes that the relationships observed at the higher geographic level (as available in SDAC) between the characteristics of interest and known characteristics also hold at the small area level.

Previous consultancies have referred to ‘small area estimates’ or SAEs. Users should note that for all intent and purposes, in the context of this and past consultancies, the terms ‘modelled estimates for small areas’ and ‘small area estimates’ are synonymous. The terms ‘modelled estimates’, ‘modelled estimates for small areas’ and ‘predictions’ have been adopted here to describe the output provided, in order to avoid confusion with direct survey estimates (i.e. those estimates produced directly from a sample survey).

The level at which modelled estimates are provided for this consultancy varies by jurisdiction, as shown in the table below.

	Small area level* provided for the 2012 SDAC consultancy	Small area level** provided for the 2009 SDAC consultancy
New South Wales	Local Government Area	Local Government Area
Victoria	Statistical Area Level 2	Statistical Local Area
Queensland	Statistical Area Level 2	Statistical Local Area (except Brisbane: aggregated to Statistical Region Sector)
South Australia	Statistical Area Level 2	Statistical Local Area
Western Australia	Local Government Area	Local Government Area
Tasmania	Local Government Area	Statistical Local Area
Northern Territory	Statistical Area Level 2	Statistical Sub-Division
Australian Capital Territory	Statistical Area Level 2	Statistical Sub-Division

* Based on the ASGS, 2011, with 2012 concordance provided for LGA

** Based on the ASGC, 2006

Note that output for the Northern Territory and the Australian Capital Territory is provided at the Statistical Area Level 2 (SA2) (rather than at Statistical Area Level 3), because exclusion of very remote areas, due to scoping requirements, at this level was more manageable. The quality of output at this level on average was equivalent to SA2 output for other jurisdictions.

1.3 Data Sources

Information from three data sources was used in the production of the modelled estimates for small areas.

1. Survey data from SDAC 2012

SDAC 2012 was conducted throughout Australia from 5 August 2012 to 2 March 2013 with its main aims being to measure the prevalence of disability in Australia, to estimate the number of people who provide care to older people and people with disability, and to provide a demographic and socio-economic profile of people with disability, older people and carers.

The survey targeted three main populations – people with disability, older people (aged 65 years and over) and people who care for persons with disability or older people.

The scope of the survey was persons in both urban and rural areas in all states and territories, living in both private and non-private dwellings (including persons in cared-accommodation). Only data collected on persons living in private dwellings were used in the production of the modelled estimates for small areas.

The private dwellings sample provided a total of 67,675 persons on which the production of modelled estimates for small areas was based.

More information about SDAC 2012 can be found on the ABS website, in particular the publication [4430.0 Disability, Ageing and Carers, Australia: Summary of Findings, 2012](#).

2. Data from the Census 2011

The Australian Census of Population and Housing is conducted every five years and aims to measure accurately the number of people and dwellings in Australia on Census night, and a range of their key characteristics. The 2011 Census was held on 9 August 2011.

Census variables that were also collected in SDAC 2012 were considered for use as explanatory variables in the models used to produce the modelled estimates for small areas. Such variables include sex, age, family type, state of usual residence, whether born overseas, labour force status, income, dwelling type and tenure type. The variables ‘whether need assistance with core activities’ (identifying people who report a need for assistance due to a profound or severe core activity limitation) and ‘whether provided unpaid assistance to a person with disability’ (identifying people who provide unpaid assistance to a person with a disability) were also included as explanatory variables in model development. For model selection, the proportions of people with these characteristics calculated from Census 2011 data were not adjusted to reflect the growth and changes in the population over the twelve months to when SDAC 2012 took place. We do not believe this has had a significant effect on the models used to produce the modelled estimates for small areas.

3. Administrative data from the Department of Social Services, 2012

As part of the ‘Data by Region’ statistics available on the ABS website (including the National Regional Profile publication), the Department of Social Services (DSS; previously FaHCSIA) provided the ABS with data on the number of people who have received selected government pensions, allowances and benefits for each small area in 2012. This includes data on the number of people who have received the disability support pension or carer payment.

For the production of these modelled estimates for small areas, the 2012 data on receipt of government pensions, allowances and benefits was sourced from the publication

[1379.0.55.001 – National Regional Profile, 2008 to 2012](#), which is available on the ABS website, along with explanatory notes and other related information.

1.4 Scope

The modelled estimates for small areas are applicable to private dwellings in scope of the SDAC 2012 private dwellings collection. Data for special dwellings, or approximately 14% of the total SDAC sample, was therefore excluded from the analysis. The large majority of the excluded sample comprises persons living in health establishments providing cared accommodation, including:

- residents of hospitals, nursing homes, aged care and disability hostels and other homes such as children's homes; and
- residents of retirement villages that have a care facility onsite.

The remainder of the excluded sample (around 1% of the total SDAC sample) comprises persons residing in the following special dwelling types:

- hostels;
- night shelters;
- refuges;
- hotels and motels;
- religious and educational institutions;
- institutions, including psychiatric institutions and corrective institutions;
- prisons;
- boarding houses;
- boarding schools; and
- caravan parks and camping grounds.

It should be noted that dwellings in retirement villages that have no nursing home or hospital care on site are classified as private dwellings. Also note that group homes in the community for people with disabilities are classified as private dwellings if they have not been listed as a special dwelling.

In addition, the following are out of scope for SDAC 2012 and are therefore not reflected in the modelled estimates for small areas:

- persons living in very remote areas (please see Appendix 1 for excluded small areas);
- households in Indigenous Community Frame collection districts;
- persons whose usual residence was outside Australia; and
- members of non-Australian defence forces (and their dependents) stationed in Australia.

The following, while out of scope for SDAC 2012, were unable to be identified in the Census and have not been excluded from the modelled estimates provided (with negligible expected impact):

- diplomatic personnel of overseas governments.

2 Methodology

The process of producing the modelled estimates for small areas on characteristics of SDAC 2012 consisted of the following steps:

1. confirm and validate outcome variables;
2. identify and prepare explanatory variables;
3. prepare data;
4. model selection;
5. creation of modelled estimates for small areas; and
6. assessment of modelled estimates for small areas.

2.1 Confirm and validate outcome variables

Characteristics of interest are often referred to as outcome variables, dependent variables or response variables. The SDAC is a national sample survey undertaken by the ABS, currently on a triennial basis. The aims of the survey are to:

- measure the prevalence of disability in Australia
- measure the need for support of those with disability and older people
- provide a demographic and socio-economic profile of people with disability, older people and carers compared with the general population
- estimate the number of, and provide information about, people who provide care to people with disability, long-term health conditions and older people.

The following outcome variables, for the population living in private dwellings, were the focus of this consultancy.

Release 1:

for persons with disability,

- Table 1: degree of restriction
- Table 2: degree of restriction by age and sex.

for carers,

- Table 3: carer status by age and sex.

Release 2: for persons with disability,

- Table 4: area of restriction by age
- Table 7: area of help by age
- Table 8: area of restriction by degree of restriction, by age

- Table 10: extent to which need for assistance with core activities is met
- Table 11: demand for formal assistance with core activities.

Release 3: for persons with disability,

- Table 5: type of condition by age
- Table 6: type of condition by sex
- Table 9: type of condition by degree of restriction, by age.

A more detailed description of each outcome variable is provided in Appendix 3 – Glossary.

Investigation and validation of the outcome variables of interest resulted in some small definitional differences between output for this SDAC 2012 consultancy and the consultancy undertaken for SDAC 2009. Where relevant, these differences will be described in the release-specific appendices.

2.2 Identify and prepare explanatory variables

In order to model outcome variables, explanatory variables are required. Explanatory variables are also referred to as predictor variables or independent variables. Explanatory variables that were used for this modelling consultancy can be placed in two categories:

- relating to a person, dwelling or household, including geographical variables, available on both SDAC and Census; and
- area variables that can be created when a variable is considered explanatory, but not available on both datasets.

Explanatory variables related to a person, dwelling or household were considered suitable for modelling if they met the following conditions:

- an expectation that they may be related to the outcome variables;
- collected in the SDAC and the Census; and/or
- reliable estimates were available at the geography of interest (SA2 and LGA).

This includes variables that could be merged on to both datasets (such as the Socio-Economic Indexes for Areas (SEIFA) variables and the 'design area type' variable that was the basis for designing the SDAC sample).

Variables that were available on the Census or the National Regional Profile (NRP) datasets, but not collected on the SDAC, were converted to area explanatory variables where a characteristic is represented as proportions within a given area. This included the Census data for 'whether need assistance with core activities' and 'whether provided unpaid

assistance to a person with disability' and the NRP data on government pensions, allowances and benefits.

A summary list of explanatory variables used in the modelling process is provided in Appendix 2.

Some of the explanatory variables available on Census differ from the SDAC variables by definition, output categories, populations and/or collection methodology. Where this is the case, appropriate adjustments were made to align the variables, using information obtained through investigating counts, proportions and distributions of the common variables.

2.3 Prepare data

Several steps were required to prepare the data for modelling, as follows.

The level of geography required for output at the small area level was not available on the original datasets. Local government area (LGA) geography needed to be added to both the SDAC and Census files. This was done through a concordance of SA1 (ASGS 2011) to LGA 2012. SA2 (ASGS 2011) was also created on both files, using SA1 as the building block. (Note that there was no change to SA2 classifications between 2011 and 2012.) In addition, other area variables required as explanatory variables (e.g. SEIFA, section of state, remoteness, design area type etc.) were added to both datasets.

The outcome variables and explanatory variables were recreated as binary variables (or binomialised) prior to use in modelling. In the case of outcome variables, a binary variable is required for the type of modelling undertaken (logistic regression). An observation took the value of 1 if an individual had a characteristic of interest and 0 otherwise. For example, the 'degree of restriction' variable was separated into variables for each output category ('any disability', 'profound or severe core activity restriction' 'moderate core activity restriction' and 'mild core activity restriction'), which were then binomialised to allow modelling of each outcome. Thus, the category for 'any disability' was binomialised to 'has any disability' (value=1) and 'does not have any disability' (value=0). Binomialisation of the datasets also allowed aggregation of like records, which decreased the size of the files and increased efficiency of the modelling process.

The data files used for modelling needed to be comparable in scope and so required adjustment. The population of interest for this consultancy was persons living in private dwellings only, so the SDAC file was adjusted to exclude persons living in special dwellings. In addition, the scope of the SDAC excluded areas that were classified as very remote and collection districts that contained Indigenous communities (according to the 2006 sample frame used). Therefore, the Census file was adjusted to match the adjusted scope of SDAC. As part of this adjustment, persons who were not at home on Census night were deleted

from the Census file. Persons away from home on Census night were excluded because information was not collected to determine if the dwelling that they usually reside in was a private or non-private dwelling. This means that it has been assumed that the people who were away from home on Census night and live in private dwellings have the same disability and carer characteristics as the people who were at home in a private dwelling. Persons residing in SA2s that had more than 50% of their population in SA1s classified as very remote or in Indigenous communities were deleted from the Census file.

The Census population data was adjusted for under-count by calculating the ratio of people living in private to non-private dwellings at the small area level and applying it to the ABS' estimated resident population (ERP) data at 30 June 2012. These private dwelling populations for small areas were then adjusted to ensure they summed to the SDAC population estimates.

Pension data from the 2012 NRP were merged onto the Census file.

2.4 Model selection

The relationships between the outcome and explanatory variables were modelled using data at the national and state or territory level. Each outcome variable category was modelled independently, resulting in several separate models for each table.

The models used to produce the predicted estimates were random effects logistic regression models. A random effects model produces predicted estimates for each small area that reflect the best trade-off between the accuracy of the direct survey weighted estimate and the error associated with the modelled prediction. So for a small area that happens to have a low sampling error (because of a large sample size within that small area, for example), the random effects model will give more weight to the direct estimate when calculating an estimate for that small area. On the other hand, for a small area with high sampling error, the random effects model will give more weight to the model based prediction as this will be more reliable in calculating the estimate for that small area.

As part of any model selection process an appropriate significance level must be chosen for determining which explanatory variables to include in the models. The 0.05 (95%) level is most commonly used; here we used the Bayesian Information Criterion (BIC) to reduce the risk of over-fitting. Some explanatory variables were included to ensure the predictions would only require minor adjustments to add to direct survey estimates at state and territory level. Interactions between variables were considered in the model selection process. The hierarchical principle was applied for interaction variables whereby if one was significant then the variables representing the main effects were also included.

Diagnostics were assessed to ensure best-fit final models. This included assessment of predictive power and the 'goodness of fit'. Additivity of the predicted outcomes, at the national and/or state and territory level, was compared to direct survey results to ensure the model was behaving well at the small area level.

2.5 Creation of modelled estimates for small areas

Modelled estimates for each small area required (SA2 or LGA) were created by taking what was known from the survey about the small area and then estimating values for the remainder using the chosen model. For example, suppose for a specific SA2 the sample survey delivered an unweighted estimate that represented 5% of the population of interest. The model would be used to create a prediction for the remaining 95% that weren't represented and the two values would then be added together to create the modelled estimate for that SA2. This takes advantage of what is known about SA2s to improve the predictions. A pro rata adjustment (using an iterative proportional fitting technique) was applied to the predictions to ensure that they aggregate to direct survey estimates (at national level for age and sex groupings and/or state and territory level).

While outcome variable categories were modelled independently, resulting in several separate models for each table, a single model provides output for each variable category and for the sex and age groups output for that category. For example, Table 1 uses four models, one for each 'degree of restriction' category (profound/severe limitation, moderate limitation, mild limitation, any disability), and the same models are used to produce the 'degree of restriction' categories by sex and age output provided in Table 2.

The modelled estimates provided in each release are in the form of counts (number of people) and proportions of the population living in private dwellings in the small areas in scope of the SDAC. Prevalence proportions have been calculated using population figures that won't align with official ABS statistics. The population figures provided in the release tables were created by adjusting estimated resident population data to closely match the scope of the SDAC for the sole purpose of creating the modelled estimates and their prevalence proportions.

2.6 Assessment of modelled estimates for small areas

To assess the accuracy of the modelled estimates for small areas, we examined the relative root mean squared errors of the estimates (see Section 3), compared the results to direct survey estimates and to previous work that provided modelled estimates of disability (i.e. for SDAC 2009) using a number of methods. These methods included:

- checking that the sum of modelled estimates were comparable to direct survey estimates of the characteristics of interest (at national level for age and sex groupings and/or state and territory level);
- plotting the modelled estimates against the direct survey estimates of sampled small areas to check that the majority were within direct survey estimate confidence intervals; and
- plotting the RRMSEs of the modelled estimates to ensure that the majority were of reasonable quality.

3 Accuracy of results

3.1 Error associated with modelled estimates for small areas

The process undertaken in providing modelled estimates overcomes much of the volatility caused by sampling error. However, it should be remembered that the figures provided are still subject to errors.

The errors associated with the modelled estimates for small areas fall into four categories, as follows.

1. Sampling Error

Sampling error is introduced into estimates by the fact that disability data was collected for only a sample of dwellings. They are therefore subject to sampling variability; that is, modelled estimates may differ from those that would have been produced if all dwellings had been included in SDAC. Furthermore, the smaller the sample obtained within a small area, the greater the sampling error associated with that small area's modelled estimates will be.

2. Non-Sampling Error

The imprecision due to sampling error should not be confused with inaccuracies that may occur because of imperfections in reporting by respondents and recording by interviewers, and errors made in coding and processing data. Inaccuracies of this kind are referred to as non-sampling error, and they occur in any enumeration, whether it be a full count (census) or a sample. Every effort is made to reduce non-sampling error to a minimum by careful design of questionnaires, intensive training and supervision of interviewers, and efficient procedures.

3. Modelling Error

Modelling error is introduced by model misspecification. This can occur when the choice of model is incorrect, a key explanatory variable is left out or an inappropriate explanatory variable is included. In practice, it is rarely the case that all determinants of disability or carer status will be available as good quality auxiliary data to be able to be included as explanatory variables in our models. Therefore, the variables chosen in the models may result in incorrect modelled estimates for certain small areas, particularly those unusual small areas that do not follow the typical associations between the available explanatory variables and disability/carer status. The models we have chosen have been tested against a range of possible alternative models; however, they are only the most preferred models subject to available explanatory variables.

4. Prediction Error

A strong model does not guarantee statistically accurate modelled estimates. Prediction error is a measure of the statistical accuracy of the model predictions. Measures of prediction error can be used to construct a confidence interval around each modelled estimate for a small area. For the chosen models, several prediction assessment tools have been used to assess and validate the accuracy of the small area predictions (see Section 3.2).

3.2 Measure of Prediction Error - RRMSE

The relative root mean squared error (RRMSE) provides an indication of the deviation of the modelled estimate from the true value. The RRMSE is primarily a measure of prediction error, but in its calculation it also inherits some aspects of modelling and sampling error. The RRMSE generally decreases as the population of people with the given characteristic of interest increases, and is used to assess the statistical error associated with each modelled estimate. The smaller the RRMSE, the more accurate the modelled estimate.

The RRMSE is the ratio of the root mean squared error (RMSE) of the modelled estimate to the modelled estimate itself. That is,

$$RRMSE(\hat{p}) = \frac{\sqrt{MSE(\hat{p})}}{\hat{p}}$$

In other words, the RRMSE expresses the error as a percentage of the size of the estimate. This is a more interpretable quantity than the RMSE as it removes the effect of the size of the estimate. For example, an RMSE of 10 for an estimate of 1000, is clearly more acceptable than an RMSE of 10 for an estimate of 100. While the RMSE is the same in both cases, the first case is an RRMSE of 1% while the second case is an RRMSE of 10%.

3.3 Measure of Prediction Error – Confidence Intervals

A confidence interval (CI) provides a range of values, within which it is estimated that the true population value lies. A 95% confidence interval for the modelled proportions for each small area has been provided alongside the RRMSEs in the release tables. The CI has been calculated using the RMSE, which is obtained by multiplying the RRMSE by the modelled proportion (or count). A 95% CI provides a range of two RMSEs either side of the modelled estimate.

The interpretation of a 95% CI is that there are approximately 19 chances in 20 (95%) that the modelled proportion will differ by less than two RMSEs from the true proportion, assuming that the model is correct.

4 Using modelled estimates for small areas

4.1 Interpreting the modelled estimates for small areas

The modelled estimates for small areas can be interpreted as the expected value for a typical area in Australia with the same characteristics. For some small areas there will be differences between the prediction of the disability or carer characteristic and the actual number of people with that characteristic. One explanation for this is that significant local information about particular small areas exists, but has not been included in the model as it is not available to the ABS.

An example of local area knowledge that could contribute to the interpretation of modelled estimates is the knowledge of disability specific facilities or businesses within an area that contribute to a larger population of disabled persons in that area. For instance, an employer of persons with disability may contribute to a larger than predicted population of persons with disability within commutable distance of the workplace.

Modelled estimates for small areas should be viewed as a tool that when used in conjunction with local area knowledge, as well as the consideration of the prediction reliability, can provide useful information to assist with decision making for small geographic regions.

As a general rule of thumb, estimates with RRMSEs less than 25% are considered reliable for most purposes, estimates with RRMSEs greater than 25% should be used with caution and estimates with RRMSEs greater than 50% are considered too unreliable for general use. Using the same conventions as ABS publications, asterisks indicate RRMSEs that are large and outside of those bounds. One asterisk (*) indicates the RRMSE of the estimate is between 25% and 50%, hence it should be used with caution. Two asterisks (**) indicates the RRMSE of the estimate is greater than 50%, meaning that the estimate is considered too unreliable for general use.

An 'NP' notation on the release tables indicates the estimate is not available for publication. This is generally due to the population for the associated geographic area being less than 25 people.

Estimates have also been confidentialised to ensure they meet ABS requirements for confidentiality. Estimated counts, proportions, and confidence interval boundaries are adjusted and prefixed with a '<' or '>' to indicate that the unconfidentialised estimate is less than or greater than the value shown. For example, an estimated count of <5 means that the estimated value is either 0, 1, 2, 3, or 4. An estimated proportion of <0.072 means that the estimated proportion is somewhere between 0 and 0.072.

Users should note however, that the inclusion of an 'NP' or confidentialised small area in an aggregation of several small areas for which modelled estimates are provided will still provide a useable aggregated region estimate. This is because the 'NP' or confidentialised small area would not be expected to contribute to the aggregated estimate or RRMSE beyond the range of the confidence interval for the aggregated region.

For an aggregation of several small areas that includes 'NP' or confidentialised small areas it is recommended that in calculation of aggregated values:

- 'NP' values be replaced with 0;
- Confidentialised counts '<5' be replaced with 5;
- Confidentialised counts '>value' be replaced with *value*;
- Confidentialised proportions be recalculated from aggregated count and population values;
- Confidentialised confidence intervals be recalculated from aggregated proportions or counts and their aggregated RRMSEs.

These replacements should only be done for the purposes of calculating aggregated estimates and not when referring to the estimates of 'NP' or confidentialised small areas individually.

Aggregation of small areas should be done taking into account local knowledge about these areas. This is particularly true if a number of small, confidentialised, areas are to be aggregated. The reliability of the resulting aggregated estimate should be assessed in terms of the error values, confidence intervals, and what is known about the 'new' small area.

4.2 RRMSEs for very small modelled estimates

When the modelled proportion (or count) is very small, the interpretation of the RRMSE can be problematic. This is because even a small error in absolute terms can be large relative to a very small estimate. This can result in large RRMSEs even if the modelled estimate is of comparable accuracy to other larger modelled estimates.

Consequently, for very small modelled proportions, the user is encouraged to also look at the 95% CI in addition to the RRMSE when judging the suitability of the modelled estimates for small areas. It is important to recognise that for very small estimated proportions, the RRMSEs may be large. This is the case for many of the modelled estimates, particularly for the younger age groups where disability and carer prevalence rates are low. Where this is the case we recommend also using the CIs to judge the accuracy of the modelled estimates.

The following is an example of using RRMSEs and 95% CIs to interpret the accuracy of the modelled estimates.

Example – Interpreting the accuracy of the modelled estimates

Consider three small areas, their modelled counts and proportions of people with *any disability*, their associated RRMSEs and 95% CIs

State	Small Area	Age-Sex Group	Modelled Count	Modelled Proportion	RRMSE (%)	95% CI		
						Lower	Upper	CI width
WA	Trayning (S)	Males 6-12	<5	<0.192	51.10	0.000	0.365	0.365
VIC	Wangaratta	Females 35-54	457	0.192	20.22	0.116	0.269	0.153
QLD	Hawthorne	Males 0-5	6	0.027	53.28	0.000	0.065	0.065

The modelled estimates for Wangaratta have an associated RRMSE of 20.22%. As the RRMSE is below 25%, the modelled estimate is considered reliable for general use. If we look at the confidence interval we can say that there is a 95% chance that the true prevalence for females aged 35-54 in Wangaratta lies between 12% and 27%.

The RRMSE of the modelled proportion associated with Hawthorne is 53.28%. It is greater than 50%; ABS guidelines would flag this as too unreliable for general use. However, if we look at the confidence interval we can say that there is a 95% chance that the true prevalence for males aged 0-5 in Hawthorne lies between 0% and 7%. The confidence interval width is small and therefore the modelled estimates are suitable for general use, despite the RRMSE being over 50%.

Finally, the RRMSE of the modelled proportion associated with Trayning (S) is 51.10%. It is greater than 50% and would also be flagged as too unreliable for general use. If we look at the confidence interval we can say that there is a 95% chance that the true prevalence for males aged 6-12 in Trayning (S) lies between 0% and 37%. The confidence interval width is large and therefore the modelled estimate for Trayning (S) is too unreliable for general use.

The width of the confidence interval for Hawthorne is 6 times shorter than the width of the confidence interval for Trayning (S), even though their RRMSE values are quite similar. This illustrates the importance of considering both the RRMSEs and the width of the confidence intervals when deciding on the reliability of the modelled estimates.

In cases where poor accuracy is still a concern, we recommend aggregating the modelled estimates for small areas to broader groups. These aggregated predictions will generally have lower RRMSEs. It is possible to aggregate by small area, by age and by sex. The following section discusses how to do this.

4.3 Aggregation of modelled estimates

There are two reasons why users may wish to aggregate modelled estimates for small areas to broader groups. One reason is to obtain estimates with better accuracy. Additionally, the user may simply require estimates at a broader level. In either case, it is possible to aggregate by small area, by age and by sex, or by any combination of the three. There are two calculations that need to be performed to do this – one to aggregate the estimates, and another to aggregate the RRMSEs.

The method for aggregating the proportions or counts is the same regardless of whether the aggregation is by sex, age group, or small area. The method for aggregating the RRMSEs changes slightly depending on whether the estimates being aggregated are independent or not. Estimates from different small areas can be treated as independent; however different age-sex group estimates from the same small area cannot (because the estimate for one age-sex group cannot be derived in isolation from the rest, given they add to the overall estimate for that area). Dependence is any statistical relationship between two sets of data. Covariance can be calculated to indicate how two variables are related. A positive covariance means the variables are positively related, while a negative covariance means the variables are inversely related. Correlation standardises the measure of interdependence between two variables. In addition to providing a measure of whether variables are positively or inversely related, correlation also provides a measure of the degree to which the variables tend to move together.

As a rule of thumb for making these calculations, users should treat any estimates from the same area as having a correlation of 0.85. In investigations, this assumption has produced aggregated RRMSEs very close to the true value that can be calculated when the correlation is known. Since it is not feasible to publish the correlations between every possible pair of estimates, it is necessary for users to use this assumption in practice. The method for aggregation is covered in more detail below.

Due to the independence of estimates from different small areas, greater improvements in RRMSE will be achieved from aggregating by small area rather than aggregating by sex or by age group.

Method for aggregating modelled estimates for small areas

To calculate an aggregated estimate, users should aggregate the modelled populations (or counts) of persons with the characteristic of interest and divide by the total population for the entire area being aggregated (population counts based on adjusted ERP are included on the release tables) to get the overall proportion of persons with the characteristic of interest in an aggregated area.

- Step 1: Aggregate the modelled counts (provided in release tables) of the characteristic of interest for all the small areas in the region of interest.
- Step 2: Aggregate the population counts for all the small areas in the region of interest.
- Step 3: Divide the aggregated estimate of the number of people with the characteristic of interest (calculated in Step 1) by the aggregated population count (calculated in Step 2) to obtain the estimated proportion of people with the characteristic of interest for the region of interest.
- Step 4: Calculate the RRMSE for the aggregated proportion (see the following method).

Method for aggregating RRMSEs of modelled estimates for small areas

Because the modelled estimates for different small areas are independent of each other (and the correlation of estimates is equal to 0), the aggregation of RRMSEs can be done simply, as follows.

- Step 1: Square the modelled counts and multiply them by the square of the RRMSEs for the associated modelled proportions for the small area.
- Step 2: Take the square root of the sum of values calculated in Step 1.
- Step 3: Divide the result of Step 2 by the total count for the aggregated small areas to get the aggregated RRMSE.

Method for aggregating RRMSEs of modelled estimates within small areas

When aggregating RRMSEs for modelled estimates within a small area (such as by sex or by age group) the calculation must account for the covariance of the estimates. Since we cannot calculate covariance values directly from the output provided, we use instead the prediction errors and a correlation value of 0.85, as discussed above. The calculation of the prediction error for an aggregated estimate requires us to calculate the variance-covariance matrix for the estimates going into the aggregation. For row i and column j of this matrix the covariance is:

$$COV(\hat{p}_i, \hat{p}_j) = corr(\hat{p}_i, \hat{p}_j) \sqrt{MSE(\hat{p}_i)MSE(\hat{p}_j)}$$

$$\text{where } MSE(\hat{p}_i) = RRMSE(\hat{p}_i)^2 \hat{p}_i^2$$

Utilising this, the following method must be used to aggregate RRMSEs for modelled estimates within a small area.

- Step 1: Square the estimated counts and multiply them by the square of the RRMSEs for the associated modelled proportions of the characteristic of interest.
- Step 2: Construct the estimated covariance matrix. If n cells are being aggregated the covariance matrix will have n rows and n columns. The diagonal terms of the matrix are equal to the squared product column calculated in step 1. The remaining terms for the i th column and the j th row are given by:

$$\text{Cell}[i,j] = \text{Cell}[j,i] = \text{correlation}[i,j] \times \text{sqrt}(\text{cell}[i,i] \times \text{cell}[j,j])$$

$\text{Cell}[i,i]$ is the i th diagonal element of the matrix, and is equal to the i th squared product calculated in step 1. $\text{Correlation}[i,j]$ is equal to 0.85 when i and j are cells within the same small area ($\text{correlation}[i,j]$ is equal to 0 if i and j are cells within different small areas). Note that the matrix is symmetric, that is the $[i,j]$ entry is equal to the $[j,i]$ entry.

- Step 3: Sum the terms in the estimated covariance matrix calculated in Step 2.
- Step 4: Take the square root of the total calculated in Step 3.
- Step 5: Divide the result of Step 4 by the total count for the aggregated characteristic of interest to get the aggregated RRMSE.

Worked examples

Provided are three examples that illustrate the use of these aggregation methods. Example 1 illustrates how to aggregate by small area, Example 2 illustrates how to aggregate within a small area (by age or by sex), Example 3 illustrates how to aggregate both by small area and within a small area at the same time. Note that these methods are only applicable for aggregating whole age/sex groups or whole small areas.

Previously we discussed using confidence intervals to assess the accuracy of the estimates. Confidence intervals for modelled proportions are provided on the release tables; however, they will need to be recalculated for aggregated estimates. Example 4 illustrates how to calculate a confidence interval.

Example 1: Aggregating by small area.

Let's say you are interested in the overall estimate for males aged 0-5 years with profound/severe disability in Albury - East, Albury - North, Albury - South and Albury Region.

1a. Aggregating the modelled estimates

You can aggregate the modelled estimates for the four small areas by:

Steps 1 and 2 - summing the four small area's modelled counts and summing their population counts to give a total count for the aggregated area.

Step 3 - divide the total aggregated count by the total of the small area populations to calculate the proportion for the aggregated area.

1b. Calculating the RRMSE of the aggregated proportion

You also need to aggregate the small area RRMSEs to provide a measure of error around the count and proportion for the aggregated area you just calculated.

The modelled estimates for the different small areas can be considered independent.

To aggregate RRMSEs of different small areas:

Step 1 - square the modelled counts and multiply them by the square of the RRMSEs of their proportion.

Steps 2 and 3- take the square root of the sum of values calculated in Step 1 and divide by the total count for the aggregated area.

Small area	Private dwelling population	Profound/Severe disability; males aged 0 - 5 years			Calculations	
		Modelled proportion	Modelled count	RRMSE (%)	Step 1: squared count x squared RRMSE	Steps 2 & 3: RRMSE of aggregated area estimate
Albury - East	586	0.028	16	39.22%	39.4	
Albury - North	353	0.038	13	41.12%	28.6	
Albury - South	302	0.034	10	44.84%	20.1	
Albury Region	421	0.024	10	47.00%	22.1	
Aggregated Albury area total	1,662	0.029	49		110.2	21.42%

1c. Interpretation of results

The overall modelled count of males aged 0 - 5 years with profound/severe disability in the aggregated area of Albury - East, Albury - North, Albury - South and Albury Region is 49 and the proportion is 0.029.

The associated RRMSE for the aggregated modelled estimates is 21.42%.

Example 2: Aggregating within a small area.

You may also be interested in aggregating modelled estimates within a small area.

For example, you may be interested in the overall proportion of people aged 0-5 years with any disability in the small area of Albury Region, in which case you need to aggregate males and females. Or you may be interested in the overall proportion of males aged 0 - 17 years with moderate disability in Albury Region, in which case you will need to aggregate age groups.

Aggregating by sex or by age groups within a small area can be achieved by following the principles of the example below.

2a. Aggregating the modelled estimates

Say you are interested in the overall proportion of people aged 0-5 years with any disability in Albury Region, regardless of their sex. The method of aggregation of the modelled estimates is the same as per example 1, aggregating by small area. You can aggregate the modelled estimates for males and females aged 0-5 years by:

Steps 1 and 2 - summing the estimated counts and summing their population counts to give total counts for the groups of interest.

Step 3 - divide the total aggregated estimates by the total of the small area populations to calculate the estimated proportion for combined groups.

2b. Calculating the RRMSE of the aggregated proportion

You also need to aggregate the small area RRMSEs to provide a measure of error around the aggregated estimated count and proportion you just calculated. Unlike in example 1, the modelled estimates within a small area cannot be considered independent and the calculation of the aggregated RRMSE must account for covariance of the estimates. Because you do not have the correlation of all modelled estimates, a correlation of 0.85 is assumed.

To aggregate RRMSEs within a small area:

Step 1 - square the modelled counts and multiply them by the square of the RRMSEs of their proportion.

Group	Private dwelling population	Any disability; Albury Region			Calculation
		Modelled proportion	Modelled count	RRMSE (%)	
males 0-5 years	421	0.046	20	39.53%	62.5
females 0-5 years	419	0.036	15	39.74%	35.5
Aggregated sex total	840	0.042	35		

Step 2 - construct the covariance matrix.

For this example, you are aggregating 2 cells, so the covariance matrix will have 2 rows and 2 columns.

The diagonal terms of the matrix are equal to the squared product column calculated in Step 1. The remaining term is given by:

$$\begin{aligned}
 \text{Cell}[1,2] &= \text{Cell}[2,1] = \text{correlation}[1,2] \times \sqrt{\text{Cell}[1,1] \times \text{Cell}[2,2]} \\
 &= 0.85 \times \sqrt{(62.5 \times 35.5)} \\
 &= 40.0
 \end{aligned}$$

So the estimated covariance matrix is:

	column 1	column 2
row 1	62.5	40.0
row 2	40.0	35.6

Step 3 - sum the values in the estimated covariance matrix.

$$62.5 + 40.0 + 40.0 + 35.6 = 178.1$$

Step 4 - take the square root of the sum of values of the estimated covariance matrix (from Step 3).

$$= \sqrt{178.1}$$

$$= 13.3$$

Step 5 - divide by the total count for the groups of interest that you've aggregated to get the aggregated RRMSE.

$$\text{aggregated RRMSE} = 13.3 / 35$$

$$= 0.381$$

$$= 38.1\%$$

2c. Interpretation of results

The overall modelled count of persons aged 0 - 5 years with any disability in Albury Region is 35 and the proportion is 0.042.

The associated RRMSE for the aggregated modelled estimates is 38.1%.

Example 3: Aggregating within a small area and by small area in combination.

This example details how to aggregate by more than one class of variable at once.

Suppose you are interested in the total number of people in Armidale, Armidale Region - North and Armidale Region - South, aged 0 - 5 years with profound/severe disability.

3a. Aggregating the modelled estimates

Aggregation of the modelled estimates is the same as for the previous examples. The relevant data is displayed in the table below.

3b. Calculating the RRMSE of the aggregated proportion

Start by calculating the squared product of the modelled counts, as per [Step 1](#) in the previous examples.

Small area	Age-Sex group	Private dwelling population	Profound/Severe disability			Calculation
			Modelled proportion	Modelled count	RRMSE (%)	Step 1: squared count x squared RRMSE
Armidale	m, 0 - 5y	777	0.057	44	30.98%	185.8
Armidale	f, 0 - 5y	889	0.036	32	40.46%	167.6
Armidale Region - North	m, 0 - 5y	176	<0.028	<5	57.76%	8.3
Armidale Region - North	f, 0 - 5y	184	<0.027	<5	78.12%	15.3
Armidale Region - South	m, 0 - 5y	222	0.031	7	50.97%	12.7
Armidale Region - South	f, 0 - 5y	230	0.020	5	65.97%	10.9
Aggregated area & sex total		2478	0.040	98		

note: the confidentialised values ('<value') can be replaced by *value* for these calculations

Step 2 - construct the covariance matrix.

For this example, you are aggregating 6 cells, so the covariance matrix will have 6 rows and 6 columns.

The diagonal terms of the matrix are equal to the squared product column calculated in [Step 1](#).

The remaining terms are calculated following the procedure described in [Example 2](#).

Note that here we are aggregating both within and across small areas, and so correlation[*i,j*] will be 0 in some cases and 0.85 in others. For example, row 1 column 2 is both for the small area of Armidale, so a correlation of 0.85 is used, and the cell is equal to:

$$\begin{aligned}
 \text{Cell}[1,2] &= \text{Cell}[2,1] = \text{correlation}[1,2] \times \sqrt{\text{Cell}[1,1] \times \text{Cell}[2,2]} \\
 &= 0.85 \times \sqrt{185.8 \times 167.6} \\
 &= 150.0
 \end{aligned}$$

However, row 1 and column 3 are for different small areas (row 1 is Armidale, and column 3 is Armidale Region - North). So, a correlation of 0 is used and the cell is equal to:

$$\begin{aligned} \text{Cell}[1,3] &= \text{Cell}[3,1] = \text{correlation}[1,3] \times \text{sqrt}(\text{Cell}[1,1] \times \text{Cell}[3,3]) \\ &= 0 \times \sqrt{185.8 \times 8.3} \\ &= 0 \end{aligned}$$

So the estimated covariance matrix is:

	column 1	column 2	column 3	column 4	column 5	column 6
row 1	185.8	150.0	0	0	0	0
row 2	150.0	167.6	0	0	0	0
row 3	0	0	8.3	9.6	0	0
row 4	0	0	9.6	15.3	0	0
row 5	0	0	0	0	12.7	10.0
row 6	0	0	0	0	10.0	10.9

Step 3 - sum the values in the estimated covariance matrix.

$$185.8 + 150.0 + 150.0 + 167.6 + 8.3 + 9.6 + 9.6 + 15.3 + 12.7 + 10.0 + 10.0 + 10.9 = 739.8$$

Step 4 - take the square root of the sum of values of the estimated covariance matrix (from Step 3).

$$\begin{aligned} &= \sqrt{739.8} \\ &= 27.2 \end{aligned}$$

Step 5 - divide by the total count for the groups of interest that you've aggregated to get the aggregated RRMSE.

$$\begin{aligned} \text{aggregated RRMSE} &= 27.2 / 98 \\ &= 0.278 \\ &= 27.8\% \end{aligned}$$

3c. Interpretation of results

The overall modelled count of persons aged 0 - 5 years with profound/severe disability in Armidale, Armidale Region - North and Armidale Region - South is 98 and the proportion is 0.040.

The associated RRMSE for the aggregated modelled estimates is 27.8%.

Example 4 - Calculating confidence intervals for aggregated estimates.

Suppose you want to construct a C.I. for Example 1, the proportion of males aged 0-5 years with profound/severe disability in the aggregated Albury area (Albury - East, Albury - North, Albury - South and Albury Region).

4a. Calculating a confidence interval for an aggregated proportion.

Step 1 - convert the RRMSE to a RMSE by multiplying by the proportion.

Step 2 - calculate the confidence limits by adding and subtracting 1.96 times the RMSE to the proportion*.

Profound/Severe disability; males aged 0 - 5 years				Calculations		
Aggregated region	Modelled proportion	Modelled count	RRMSE (%)	Step 2		
				Step 1: convert RRMSE to RMSE	C.I. lower limit	C.I. upper limit
Aggregated Albury area	0.029	49	21.42%	0.006	0.017	0.041

Step 3 - interpret the confidence interval.

There are approximately 19 chances in 20 that the confidence interval (0.017, 0.041) covers the true proportion. In other words, you can be 95% confident that the true proportion lies between 1.7% and 4.1% of the total population for the aggregated region.

4b. Calculating a confidence interval for an aggregated count.

The same method can be applied to calculate a confidence interval around the aggregated count, as follows.

Step 1 - convert the RRMSE to a RMSE by multiplying by the count.

Step 2 - calculate the confidence limits by adding and subtracting 1.96 times the RMSE to the count*.

Moderate disability; males aged 0 - 5 years				Calculations		
Aggregated region	Modelled proportion	Modelled count	RRMSE (%)	Step 2		
				Step 1: convert RRMSE to RMSE	C.I. lower limit	C.I. upper limit
Aggregated Albury area	0.029	49	21.42%	10.5	28	70

Step 3 - interpret the confidence interval.

There are approximately 19 chances in 20 that the confidence interval (28, 70) covers the true count. In other words, you can be 95% confident that the true count lies between 28 and 70 people for the Albury aggregated region.

* Note: For proportions or counts close to 0 or 1, the lower limit may be negative and the upper limit may be greater than 1. In these cases an asymmetric confidence interval should be used. Contact the ABS for more information.

4.4 Adjustment of survey estimates by perturbation

The 2012 SDAC Summary of Findings (cat. no. 4430.0) and TableBuilder (cat. no. 4430.0.30.002) products provide data that has been confidentialised through perturbation. Perturbation involves small random adjustment of the statistics and is considered the most satisfactory technique for avoiding the release of identifiable statistics while maximising the range of information that can be released. Because SDAC population benchmarks have been used in the modelling process, the modelled estimates provided here can also be considered perturbed.

Users should note that due to perturbation, the summing, or aggregation, of the modelled estimates to derive a total (e.g. at state level) will not necessarily give the same result as the published total. In these cases, the difference between the sum of modelled estimates for small areas and the published total will be small and will not impact the overall information value of the aggregate total or any individual component.

Aggregation of the modelled estimates of small areas to capital city or state/territory level is not recommended. If you require capital city or state/territory level data for the characteristics of disability and carers provided herewith, then use of published data (or use of the TableBuilder product) is suggested.

For further information on perturbation refer to the Technical Note of the 2012 SDAC Summary of Findings publication (cat. no. 4430.0).

4.5 Comparability with modelled estimates from 2009 SDAC

When comparing the modelled estimates from this analysis (based on the 2012 SDAC) with the modelled estimates produced from the 2009 SDAC, users should note the following factors.

Changes to the SDAC in 2012 methodology included:

- The age defining older persons was raised to 65 years or more, from 60 years or more in 2009. This change is not expected to have had any impact on the collection of information related to disability or carers.
- Households in Indigenous Community Frame collection districts were excluded from scope. This may have impacted on the survey estimates for the Northern Territory, as around 10% of Northern Territory households that were previously included were excluded in 2012.

Further information on differences between 2009 and 2012 surveys can be found in the Explanatory Notes of the 2012 SDAC Summary of Findings publication (catalogue no. 4430.0).

The private dwelling survey sample size was slightly larger in 2012 compared to 2009 (67,675 compared to 63,457, respectively). This difference is not expected to have had any significant impact on the modelling process or outcomes.

The final models achieved for this SDAC 2012 modelling may differ from those achieved for 2009 data. Model differences may be due to real world differences in the outcome variables and their explanatory variables, or to differences in the sample available by age and sex, especially for younger age groups. Modelled estimates for 2012 are produced using models that best fit 2012 data and may not provide modelled estimates at the same level of detail (by age and sex) achieved with 2009 data.

There are differences in the geographical classifications used, and in the level of geography provided, for this 2012 SDAC consultancy compared to the 2009 SDAC consultancy. In order to compare modelled estimates from the 2012 SDAC with those from the 2009 SDAC, a geographical correspondence would first need to be applied to the 2009 data to convert it to the same small areas provided for 2012. Information regarding correspondences is available on the ABS [Geography](#) web-page. In addition, any comparison of differences needs to include appropriate statistical testing that accounts for the magnitude of error around the modelled estimates. Because of the large RRMSEs (and confidence intervals) around many of the modelled estimates provided, large differences would need to be observed before significant differences between the surveys would be detected.

5 Summary

Modelled estimates for small areas accompanying these Explanatory Notes are based on random effects logistic regression models fitted to data from the 2012 SDAC, the 2011 Census, 2012 NRP and the 2012 ERP, adjusted to match SDAC scope. Measures of prediction accuracy (RRMSEs) are also included.

The modelled estimates for small areas can be interpreted as the expected value for a typical area in Australia with the same characteristics. For some small areas there will be differences between the disability or carer characteristic prediction and the actual number of people with that characteristic. One explanation for this is that significant local information about particular small areas exists, but has not been included in the model as it is not available to the ABS. It is important to consider local area knowledge, such as information on disability or carer related facilities and businesses in the area, when interpreting the modelled estimates for that region.

The modelled estimates for small areas are a useful tool. Used in conjunction with an understanding of local area characteristics and their reliability limitations, they can assist in making decisions on issues, such as the requirement for services, relevant to disability and carer populations at the small area level. Care needs to be taken to ensure decisions are not based on inaccurate estimates. It is recommended that the provided modelled estimates for small areas are aggregated to larger regions (such as regional planning regions) as this will improve the accuracy of the estimates upon which decisions may be based.

Additional supporting material

This concludes the main body of the Explanatory Notes. The remainder of this document provides several appendices. Appendix 1 provides a list of the small areas excluded from the modelling process. Appendix 2 provides a list of explanatory variables used in the development of models. Appendix 3 provides a glossary of terms and definitions of the variables used for all releases, adapted from the SDAC 2012 publication (catalogue number 4430.0). The remaining appendices provide information specific to final versions of each release.

Enquiries relating to information provided in this document or to data provided in the release tables can be directed to the Regional Statistics National Centre, ABS, via the following email: regional.statistics@abs.gov.au

Appendix 1 - Excluded small areas

Collection districts (CDs) that were classified as very remote in 2006 and as Indigenous communities were not included in SDAC 2012. Therefore, modelled estimates have not been produced for small areas that have all or the majority of their populations residing in private dwellings in very remote areas or Indigenous communities. As CDs were not created for the 2011 Census, SA1s were the geographic unit used for determining which small areas were excluded.

State or Territory		Small area (LGAs in WA and Tas., LGA and SA2 for NSW, SA2s elsewhere)	
<i>Name</i>	<i>Code</i>	<i>Name</i>	<i>Code</i>
New South Wales	1	Bourke (A)	11150
New South Wales	1	Brewarrina (A)	11200
New South Wales	1	Central Darling (A)	11700
New South Wales	1	Unincorporated NSW	19399
New South Wales	1	Wollangambe - Wollemi	103031075
New South Wales	1	Bourke - Brewarrina	105011092
New South Wales	1	Far West	105021098
New South Wales	1	Lord Howe Island	108031161
New South Wales	1	Port Botany Industrial	117011324
New South Wales	1	Centennial Park	118011342
New South Wales	1	Holsworthy Military Area	123021439
New South Wales	1	Migratory - Offshore - Shipping (NSW)	197979799
Victoria	2	Alps - East	205021080
Victoria	2	Lake King	205021083
Victoria	2	West Melbourne	206041127
Victoria	2	Moorabbin Airport	208031192
Victoria	2	Essendon Airport	210011227
Victoria	2	Migratory - Offshore - Shipping (Vic.)	297979799
Queensland	3	Mount Coot-tha	304041102
Queensland	3	Lamb Range	306021150
Queensland	3	Yarrabah	306031163
Queensland	3	South Trees	308021202
Queensland	3	Lake Manchester - England Creek	310021279
Queensland	3	New Chum	310041301
Queensland	3	Greenbank Military Camp	311031315
Queensland	3	Cape Conway	312031360
Queensland	3	Aurukun	315011395
Queensland	3	Cape York	315011396
Queensland	3	Croydon - Etheridge	315011397
Queensland	3	Kowanyama - Pormpuraaw	315011398

State or Territory		Small area	
		(LGAs in WA and Tas., LGA and SA2 for NSW, SA2s elsewhere)	
Name	Code	Name	Code
Queensland	3	Northern Peninsula	315011399
Queensland	3	Torres	315011401
Queensland	3	Torres Strait Islands	315011402
Queensland	3	Weipa	315011403
Queensland	3	Carpentaria	315021404
Queensland	3	Northern Highlands	315021407
Queensland	3	Barcaldine - Blackall	315031408
Queensland	3	Charleville	315031409
Queensland	3	Far Central West	315031410
Queensland	3	Far South West	315031411
Queensland	3	Longreach	315031412
Queensland	3	Palm Island	318011466
Queensland	3	Migratory - Offshore - Shipping (Qld)	397979799
South Australia	4	Dry Creek - North	402041039
South Australia	4	Parafield	402041042
South Australia	4	Happy Valley Reservoir	403041081
South Australia	4	Ceduna	406011129
South Australia	4	Le Hunte - Elliston	406011132
South Australia	4	West Coast (SA)	406011134
South Australia	4	Western	406011135
South Australia	4	Whyalla - North	406011137
South Australia	4	APY Lands	406021138
South Australia	4	Coober Pedy	406021139
South Australia	4	Outback	406021141
South Australia	4	Migratory - Offshore - Shipping (SA)	497979799
Western Australia	5	Ashburton (S)	50250
Western Australia	5	Cue (S)	52380
Western Australia	5	Derby-West Kimberley (S)	52800
Western Australia	5	Dundas (S)	53080
Western Australia	5	East Pilbara (S)	53220
Western Australia	5	Exmouth (S)	53360
Western Australia	5	Halls Creek (S)	53920
Western Australia	5	Laverton (S)	54970
Western Australia	5	Leonora (S)	55040
Western Australia	5	Meekatharra (S)	55250
Western Australia	5	Menzies (S)	55390
Western Australia	5	Mount Magnet (S)	55810
Western Australia	5	Murchison (S)	56160
Western Australia	5	Ngaanyatjarraku (S)	56620
Western Australia	5	Ravensthorpe (S)	57420
Western Australia	5	Sandstone (S)	57630

State or Territory	Small area (LGAs in WA and Tas., LGA and SA2 for NSW, SA2s elsewhere)		
	Name	Code	Name
Western Australia	5	Shark Bay (S)	57770
Western Australia	5	Upper Gascoyne (S)	58470
Western Australia	5	Wiluna (S)	59250
Western Australia	5	Wyndham-East Kimberley (S)	59340
Western Australia	5	Yalgoo (S)	59350
Western Australia	5	Unincorporated WA	59399
Tasmania	6	Flinders (M)	62010
Tasmania	6	King Island (M)	63410
Tasmania	6	Unincorporated Tas	69399
Northern Territory	7	Koolpinyah	701031033
Northern Territory	7	Petermann - Simpson	702011050
Northern Territory	7	Sandover - Plenty	702011052
Northern Territory	7	Tanami	702011053
Northern Territory	7	Yuendumu - Anmatjere	702011054
Northern Territory	7	Barkly	702021055
Northern Territory	7	Tennant Creek	702021056
Northern Territory	7	Alligator	702031057
Northern Territory	7	Daly	702031058
Northern Territory	7	Thamarrurr	702031059
Northern Territory	7	Tiwi Islands	702031060
Northern Territory	7	West Arnhem	702031061
Northern Territory	7	Anindilyakwa	702041062
Northern Territory	7	East Arnhem	702041063
Northern Territory	7	Nhulunbuy	702041064
Northern Territory	7	Elsey	702051065
Northern Territory	7	Gulf	702051066
Northern Territory	7	Victoria River	702051068
Northern Territory	7	Migratory - Offshore - Shipping (NT)	797979799
Australian Capital Territory	8	Lawson	801011018
Australian Capital Territory	8	Lake Burley Griffin	801061066
Australian Capital Territory	8	Mount Taylor	801071085
Australian Capital Territory	8	Migratory - Offshore - Shipping (ACT)	897979799

Appendix 2 – Explanatory variables used in model selection

Variable label / description

Variables relating to people

Age
Country of birth
Hours usually worked each week
Indigenous status
Industry of employment
Labour force status
Level of highest educational attainment
Main field of highest non-school qualification
Occupation
Registered marital status
Sex
Social marital status
Total weekly cash income
Whether attends a university, TAFE, technical college or other higher education institution
Whether in accommodation for the retired or aged (self-care)
Year of arrival

Variables relating to family or household

Family type
Household type
Indigenous status – household
Labour force status of family members
Number of persons in household
Private dwelling structure
Whether household has internet

Geography variables

Design area type (SDAC sample design variable)
Greater capital city statistical area (ASGS, 2011)
Remoteness area (ASGS, 2011)
Section of state (ASGC, 2006)
State or territory of usual residence

Other area variables

Family income
Household income (equivalised)
Landlord type (real estate agent, state/territory housing authority, person not in same dwelling)
SEIFA Index of Economic Resources
SEIFA Index of Education and Occupation
SEIFA Index of Relative Socio-economic Advantage and Disadvantage
SEIFA Index of Relative Socio-economic Disadvantage
Tenure type (being rented, owned outright, owned with a mortgage)
Type of government pension, allowance or benefit received (NRP)
Whether need for assistance with core activities (Census)
Whether provided unpaid assistance to a person with disability (Census)

Appendix 3 – Glossary

The terms and definitions in the following glossary are adapted from the 2012 SDAC Summary of Findings publication (catalogue no. 4430.0).

Area of help

The term 'area of help' in this consultancy comprises three categories, as described below:

- accommodation support; includes persons who need assistance with, or have difficulty with, household chores, meal preparation or property maintenance.
- personal/health care; includes persons who need assistance with, or have difficulty with, communication, mobility, self-care or health care (including foot care).
- transport: includes persons who need assistance with, or have difficulty with, private transport.

Area of restriction

The term 'area of restriction' in this consultancy comprises of the following activities where restriction may occur:

- self-care
- mobility
- communication
- schooling
- employment

Users should note that the categories included in 'area of restriction' have changed, compared to the 2009 consultancy, to now include the use of aids, where relevant (as well as needing help with, or having difficulty with, the associated tasks).

Carer

A carer is a person of any age who provides any informal assistance, in terms of help or supervision, to persons with disabilities or long-term conditions or persons who are elderly (i.e. aged 65 years and over). This assistance has to be ongoing, or likely to be ongoing, for at least six months. Assistance to a person in a different household relates to 'everyday activities', without specific information on the activities. Where the care recipient lives in the same household, the assistance is for one or more of the following activities:

- cognition or emotion
- communication
- health care
- household chores
- meal preparation
- mobility
- property maintenance
- reading or writing

- self-care
- transport (private).

Core activities

Core activities are communication, mobility and self-care.

Communication comprises the following tasks:

- understanding family or friends
- being understood by family or friends
- understanding strangers
- being understood by strangers.

Communication restriction

A communication restriction is determined for persons with one or more disabilities if, because of their disability, they:

- sometimes or always need help, or have difficulty with, one or more of the communication tasks
- communicate more easily with sign language or other non-spoken communication
- have no difficulty understanding or being understood by someone else, but use a communication aid.

Core-activity limitation

Four levels of core-activity limitation are determined based on whether a person needs help, has difficulty, or uses aids or equipment with any of the core activities (communication, mobility or self-care). A person's overall level of core-activity limitation is determined by their highest level of limitation in these activities.

The four levels of limitation are:

- **profound:** the person is unable to do, or always needs help with, a core-activity task
- **severe:** the person
 - sometimes needs help with a core-activity task,
 - has difficulty understanding or being understood by family or friends,
 - can communicate more easily using sign language or other non-spoken forms of communication.
- **moderate:** the person needs no help, but has difficulty with a core-activity task
- **mild:** the person needs no help and has no difficulty with any of the core-activity tasks, but
 - uses aids and equipment
 - cannot easily walk 200 metres

- cannot walk up and down stairs without a handrail
- cannot easily bend to pick up an object from the floor
- cannot use public transport
- can use public transport, but needs help or supervision
- needs no help or supervision, but has difficulty using public transport.

Degree of restriction

Persons with disability are classified to one of the following six categories of limitation or restriction:

- Profound core activity limitation
- Severe core activity limitation
- Moderate core activity limitation
- Mild core activity limitation
- With schooling or employment restrictions only
- Without specific limitations or restrictions.

Note

For this work, the 'degree of restriction' variable was collapsed to the following categories:

1. Profound/Severe core activity limitation
 2. Moderate core activity limitation
 3. Mild core activity limitation
 4. Any disability (all six categories)
-

Demand for formal assistance

'Demand for formal assistance' in this consultancy comprises of the following categories:

- Receiving formal assistance and do not need more
- Receiving formal assistance and need more
- Not receiving any formal assistance and need some
- Not receiving any formal assistance and do not need any

Note that the population for this item is persons who need assistance with core activity tasks. This is different to the 2009 consultancy, in which the population was limited to persons with a profound or severe core activity limitation only.

Disability

In the context of health experience, the International Classification of Functioning, Disability and Health defines disability as an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an

individual (with a health condition) and that individual's contextual factors (environment and personal factors).

In SDAC, a person has a disability if they report that they have a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and restricts everyday activities. This includes:

- loss of sight (not corrected by glasses or contact lenses)
- loss of hearing where communication is restricted, or an aid to assist with, or substitute for, hearing is used
- speech difficulties
- shortness of breath or breathing difficulties causing restriction
- chronic or recurrent pain or discomfort causing restriction
- blackouts, fits, or loss of consciousness
- difficulty learning or understanding
- incomplete use of arms or fingers
- difficulty gripping or holding things
- incomplete use of feet or legs
- nervous or emotional condition causing restriction
- restriction in physical activities or in doing physical work
- disfigurement or deformity
- mental illness or condition requiring help or supervision
- long-term effects of head injury, stroke or other brain damage causing restriction
- receiving treatment or medication for any other long-term conditions or ailments and still restricted
- any other long-term conditions resulting in a restriction.

Employment restriction

An employment restriction is determined for persons aged 15–64 years with one or more disabilities if, because of their disability, they:

- are permanently unable to work
- are restricted in the type of work they can, or could, do
- need, or would need, at least one day a week off work on average
- are restricted in the number of hours they can, or could, work
- require, or would require, an employer to provide special equipment, modify the work environment or make special arrangements
- require assistance from a disability job placement program or agency
- need, or would need, to be given ongoing assistance or supervision
- would find it difficult to change jobs or get a preferred job.

Formal assistance/providers

Formal assistance is help provided to persons with one or more disabilities or persons aged 65 years and over. It only includes assistance that is provided because of a person's disability or because they are older, by:

- organisations or individuals representing organisations (whether profit making or non-profit making, government or private); or
- other persons (excluding family, friends or neighbours as described in Informal assistance/providers), on a regular, paid basis, who are not associated with any organisation.

Informal assistance/providers

Informal assistance is unpaid help or supervision that is provided to persons with disability or persons aged 65 years and over. It only includes assistance that is provided because of a person's disability and/or older age. Informal assistance may be provided by family, friends or neighbours. For SDAC, any assistance received from family or friends was considered to be informal assistance regardless of whether or not the provider was paid, such as through Carer Payment or other allowances. It does not include providers whose care is privately organised (see Formal assistance/providers).

Mobility comprises the following tasks:

- getting into or out of a bed or chair
- moving about the usual place of residence
- going to or getting around a place away from the usual residence
- walking 200 metres
- walking up and down stairs without a handrail
- bending and picking up an object from the floor
- using public transport.

Mobility restriction

A mobility restriction is determined for persons with one or more disabilities if, because of their disability, they:

- do not get out of bed
- do not move around the residence
- do not leave home

Sometimes or always need help, or have difficulty with,

- getting into or out of a bed or chair
- moving about the usual place of residence
- going to or getting around a place away from the usual residence

Doesn't have need any help and doesn't have any difficulty moving around, but

- uses a mobility aid
- cannot easily walk 200 metres
- cannot walk up and down stairs without a handrail
- cannot easily bend and pick up an object from the floor
- cannot use all forms of public transport without experiencing some difficulty.

Need for assistance

A person with one or more disabilities, or aged 65 years and over, is identified as having a need for assistance with an activity if, because of their disability or long-term health condition or age, they report that they need help or supervision with at least one of the specified tasks constituting that activity. Need is not identified if the help or supervision is required because the person has not learned or has not been accustomed to performing that activity. The person is considered to need assistance whether or not assistance is actually received.

Non-primary carer

Non-primary carers can include persons aged below 15 years and so modelled estimates for small areas have been provided for all age groups.

Primary carer

A primary carer is a person who provides the most informal assistance, in terms of help or supervision, to a person with one or more disabilities. The assistance has to be ongoing, or likely to be ongoing, for at least six months and be provided for one or more of the core activities (communication, mobility and self-care). In SDAC, primary carers only include persons aged 15 years and over. Persons aged 15 to 17 years were only interviewed personally if parental permission was granted. Modelled estimates for small areas of primary carers are not provided for persons aged less than 15 years due to this definition.

Schooling restriction

A schooling restriction is determined for persons aged 5–20 years who have one or more disabilities if, because of their disability, they:

- are unable to attend school
- attend a special school
- attend special classes at an ordinary school
- need at least one day a week off school on average
- have difficulty at school.

Self-care comprises the following tasks:

- showering or bathing

- dressing
- eating
- toileting
- bladder or bowel control.

Self-care restriction

A self-care restriction is determined for persons with one or more disabilities if, because of their disability, they:

- sometimes or always need help, or have difficulty with, one or more of the self-care tasks
- do not need any help or have any difficulty with self-care but use an aid/s.

Type of condition

‘Type of condition’ in this consultancy equates to the SDAC data item ‘Disability groups’. Disabilities can be broadly grouped depending on whether they relate to functioning of the mind or senses, or to anatomy or physiology. Each disability group may refer to a single disability or be composed of a number of broadly similar disabilities. SDAC identifies five groups based on the particular type of disability identified. These groups are:

- physical
 - shortness of breath or breathing difficulties that restrict everyday activities
 - blackouts, seizures or loss of consciousness
 - chronic or recurrent pain or discomfort that restricts everyday activities
 - incomplete use of arms or fingers
 - difficulty gripping or holding things
 - incomplete use of feet or legs
 - restriction in physical activities or in doing physical work
 - disfigurement or deformity.
- sensory
 - loss of sight (not corrected by glasses or contact lenses)
 - loss of hearing where communication is restricted, or an aid used
 - speech difficulties, including loss.
- acquired brain injury
 - head injury, stroke or other brain damage, with long-term effects that restrict everyday activities.
- Intellectual
 - difficulty learning or understanding things.
- Psychological
 - nervous or emotional condition that restricts everyday activities
 - mental illness or condition requiring help or supervision.

A person may be counted more than once if they had multiple disabilities that belong to more than one disability group. For example, a person with a hearing loss and speech difficulties would be counted once in the sensory disability group. However, a person with a hearing loss and a physical deformity would be counted once in the sensory disability group and once in the physical disability group. As a result, the sum of the components of data from the disability groups (or 'type of condition') does not add to the total persons with disabilities.

Appendix 4 – Release 1B

Release 1B provides three tables of modelled estimates for small areas, presented as proportions and counts of people living in private dwellings who:

- have a disability, degree of restriction by small areas (Table 1);
- have a disability, degree of restriction by small areas by age by sex (Table 2);
- are a carer, carer status by small areas by age by sex (Table 3).

Estimates for Table 1 and Table 2 are based on the same models for any disability and profound/severe categories (i.e. two models).

An amendment to Release 1 was the provision of NSW estimates at the LGA level (rather than at SA2 level). The following procedures were undertaken to produce modelled estimates for NSW by LGA:

1. LGA level benchmarks for NSW (by age and sex where applicable) were created.
2. The statistical models used previously (in Release 1) were used to recreate NSW modelled estimates, using LGA level benchmarks.
3. Pro rata adjustment (using the iterative proportional fitting technique) was rerun to ensure modelled estimates sum to published totals.
4. Validation of output was done to ensure the NSW LGA level estimates align with expectations (and in comparison with SA2 level estimates).

Effectively, this means that LGA level geography has been applied at the output stage for NSW, rather than at the input stage, as was the case for WA and Tasmania LGA estimates produced for Release 1. While it would be most accurate to generate modelled estimates by including the small area specification at the input stage, it is expected that producing modelled estimates by LGA for NSW using the above approach has resulted in estimates that are not significantly different from those that would be generated by rerunning all stages.

Because the same models were used to provide modelled estimates at LGA (based on SA2 level geography), the assessment of model quality was unchanged. Note that the summary tables provided have therefore not been recreated to reflect NSW average RRMSEs and average modelled prevalence at the LGA level.

A further amendment to Release 1 provided modelled estimates for the combined categories moderate/mild for Table 2 (instead of separate moderate and mild categories), as well as alignment of age groups (at a smaller breakdown) across all Table 2 categories (any disability, profound/severe, moderate/mild). Note that the model selection program was rerun to determine a model for the combined 'moderate/mild' category, rather than aggregating separate model estimates.

Measures of prediction accuracy (RRMSEs and CIs) are also included in this release. Summary tables are provided below for the models used to create Table 1, Table 2 and Table 3.

- Average RRMSE values by state (and by state by age and sex) show the pattern of reliability measures and the variation between the subgroups as a means of assessing against expected patterns for these reliability measures.
- Average modelled prevalence values by state (and by state by age and sex) show the pattern of modelled estimates and their variation between the subgroups, providing an indication of the consistency of modelled estimates for each model and allowing for the observation of expected patterns across subgroups.

Consideration of these tables and the confidence interval width to modelled proportion ratios were utilized for an overall assessment of the performance of each model used in the creation of the small area estimates. The ratio of confidence interval width to modelled proportion provides an indication of how big the range of confidence at the 95% level is relative to the size of the modelled proportion.

When determining the overall reliability of each model, average RRMSEs between 0 and 25% have been summarised as 'reliable'. Average RRMSEs greater than 25% but less than 50% have been summarised as 'use with caution', or 'use with high caution' depending on how close to 50% they are. Models with average RRMSEs greater than 50% have been summarised as 'unreliable for general use'.

Table 1 – degree of restriction

		Table: Average RRMSE and Average modelled prevalence by State								
		State								Total [#]
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	
RRMSE* average (%)	Disabled	19.27	18.48	20.61	17.10	20.45	12.87	23.96	19.41	19.37
	Profound/Severe	30.66	32.13	32.96	29.67	37.57	23.71	39.67	30.96	32.09
	Moderate	44.60	42.67	48.95	39.30	47.08	32.39	46.49	52.19	45.29
	Mild	22.36	21.79	22.39	19.91	22.47	17.39	28.17	22.91	22.15
Average modelled prevalence* (%)	Disabled	18.27	19.43	17.06	20.40	16.61	24.00	12.08	15.75	18.08
	Profound/Severe	5.64	5.64	4.98	5.50	3.79	6.57	3.58	4.77	5.26
	Moderate	2.85	3.25	2.54	3.55	2.51	4.19	2.17	1.99	2.86
	Mild	6.28	6.02	6.06	7.19	6.30	8.44	3.89	4.97	6.15

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

1 Any disability (Table 1)

Average RRMSE of predictions: 19.4%

Overall Assessment: *Reliable*

An average modelled prevalence of just over 18% is reasonable when compared with the prevalence published in SDAC 2012, taking account of scope differences. RRMSE averages vary between the states as expected and the average modelled prevalence pattern is also consistent with expectations. The ratio of confidence interval width to modelled proportion ranges from 0.2 to 2.1 (0.75 on average), which is small when compared with the other models.

2 Profound/severe disability (Table 1)

Average RRMSE of predictions: 32.1%

Overall Assessment: *Use with caution*

An average modelled prevalence of 5.3% is reasonable when compared with the prevalence published in SDAC 2012. RRMSE averages vary between the states as expected; average prevalence varies more than for the 'any disability' model. The ratio of confidence interval width to modelled proportion ranges from 0.5 to 2.5 (1.25 on average). Error values in general are higher – estimates should be considered with caution, taking into account relevant additional information where available.

3 Moderate (Table 1)

Average RRMSE of predictions: 45.3%

Overall Assessment: *Use with high caution*

An average modelled prevalence of just over 2.9% is reasonable when compared with the prevalence published in SDAC 2012. RRMSE averages vary between the states and are higher on average than the other models for table 1. The average modelled prevalence ranges from 1.99 to 4.19; the model performance for this disability category is affected by

the relatively small size of this group and modelled estimates should be used with high caution, taking into account relevant additional information where available. The ratio of confidence interval width to modelled proportion ranges from 0.8 to 3.1 (1.8 on average), also the largest for any of the four models for table 1.

4 Mild (Table 1)

Average RRMSE of predictions: 22.2%

Overall Assessment: *Reliable*

An average modelled prevalence of just over 6.2% is reasonable when compared with the prevalence published in SDAC 2012. RRMSE averages vary between the states consistent with the other models for table 1. The average modelled prevalence is also consistent with the pattern observed for the other models. The ratio of confidence interval width to modelled proportion ranges from 0.4 to 2.0 (0.9 on average).

Table 2 – degree of restriction by age and sex

1 Any disability (Table 2)

		Table: Any Disability - Average RRMSE and Average modelled prevalence by state by age and sex								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males 0-5 years	37.92	37.78	40.41	38.41	50.09	31.23	57.77	51.70	40.34
	Males 6-12 years	28.37	28.34	30.28	27.84	35.71	22.51	39.41	36.56	29.85
	Males 13-17 years	29.49	29.18	32.22	29.33	33.33	23.89	43.26	39.17	31.03
	Males 18-24 years	31.84	31.47	33.44	31.13	38.75	25.80	43.30	41.49	33.15
	Males 25-34 years	27.77	27.45	29.04	26.92	34.57	21.94	34.87	33.27	28.73
	Males 35-54 years	23.95	23.76	24.89	22.00	26.79	16.87	26.77	27.01	24.29
	Males 55-64 years	20.15	20.03	21.15	18.42	23.42	13.22	25.33	23.97	20.66
	Males 65+ years	14.22	13.82	14.88	12.39	16.36	9.69	20.84	16.71	14.49
	Females 0-5 years	38.00	38.47	42.21	40.49	52.13	33.31	64.52	57.78	41.76
	Females 6-12 years	32.90	32.75	35.15	32.68	43.21	26.59	48.31	45.54	34.95
	Females 13-17 years	34.71	34.49	38.30	35.42	38.98	28.72	50.48	48.56	36.84
	Females 18-24 years	31.58	31.45	33.57	31.58	38.57	25.74	45.93	40.57	33.14
	Females 25-34 years	27.95	27.62	29.36	27.34	34.12	21.38	35.67	34.39	28.97
	Females 35-54 years	23.71	23.33	24.77	21.99	27.26	17.01	27.11	27.08	24.14
	Females 55-64 years	20.98	20.46	22.24	19.42	25.18	14.41	27.18	25.02	21.57
	Females 65+ years	13.76	13.39	14.52	12.39	16.88	9.92	20.02	15.86	14.14
Total	27.33	27.11	29.15	26.73	33.46	21.39	38.17	35.29	28.63	

Average modelled prevalence* (%)	Males 0-5 years	4.5	4.8	4.7	5.1	4.3	5.6	4.0	4.6	4.7
	Males 6-12 years	11.1	11.8	11.3	12.0	10.8	13.2	9.5	10.6	11.4
	Males 13-17 years	9.8	10.8	9.4	10.7	8.9	11.6	8.0	9.6	9.9
	Males 18-24 years	7.2	7.6	7.4	8.2	7.0	9.5	5.9	6.0	7.4
	Males 25-34 years	9.0	9.4	9.1	10.1	8.8	11.7	7.0	7.3	9.1
	Males 35-54 years	14.7	15.2	14.8	16.6	14.1	19.7	11.7	12.0	14.8
	Males 55-64 years	29.1	29.6	29.2	31.6	26.7	37.9	22.1	24.9	29.1
	Males 65+ years	47.7	49.5	48.5	51.8	45.5	54.0	36.4	43.7	48.1
	Females 0-5 years	3.6	3.8	3.7	3.9	3.4	4.4	3.3	3.9	3.7
	Females 6-12 years	6.4	6.8	6.5	6.8	6.0	7.5	5.6	6.2	6.5
	Females 13-17 years	7.7	8.4	7.4	8.2	6.8	9.2	6.6	7.7	7.8
	Females 18-24 years	8.2	8.5	8.1	8.9	7.7	11.1	6.6	6.6	8.2
	Females 25-34 years	9.5	9.9	9.4	10.4	9.8	13.0	6.9	6.9	9.5
	Females 35-54 years	15.2	16.4	15.0	16.7	14.2	19.3	11.0	11.6	15.3
	Females 55-64 years	28.5	30.1	28.0	30.2	25.2	34.6	20.3	24.2	28.4
	Females 65+ years	48.5	50.6	48.8	51.4	44.0	52.7	38.7	45.4	48.7
Total	16.3	17.1	16.3	17.7	15.2	19.7	12.7	14.4	16.4	

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Average RRMSE of predictions: 28.6%

Overall Assessment: Use with caution

RRMSE averages vary between the states, age groups and gender in a consistent pattern that is as expected (e.g. in general RRMSE averages for the smallest subgroups are larger than for the larger subgroups). The average modelled prevalence shows a consistent pattern for each state, with values increasing for the higher age groups (as expected). The ratio of confidence interval width to modelled proportion ranges from 0.2 to 2.6 (1.1 on average).

2 Profound/Severe (Table 2)

		Table: Profound/Severe - Average RRMSE and Average modelled prevalence by state by age and sex								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males 0-5 years	42.83	42.58	45.42	44.96	59.54	35.48	61.43	60.72	45.81
	Males 6-12 years	38.17	38.29	40.70	39.20	52.16	31.46	50.83	50.44	40.61
	Males 13-17 years	40.95	40.92	44.56	43.56	49.06	34.96	58.84	58.83	43.71
	Males 18-24 years	53.17	52.05	56.82	57.25	77.94	48.99	76.22	73.94	57.03
	Males 25-34 years	53.93	52.49	57.06	57.63	83.72	48.58	74.06	70.27	57.74
	Males 35-54 years	36.58	36.41	38.57	36.34	49.12	29.55	42.48	45.57	38.33
	Males 55-64 years	35.63	35.60	38.16	35.41	48.01	28.02	44.87	45.52	37.65
	Males 65+ years	30.25	30.15	32.63	29.18	37.68	24.12	42.28	35.70	31.68
	Females 0-5 years	55.36	55.75	60.50	60.70	79.25	47.67	86.06	83.64	60.61
	Females 6-12 years	44.24	44.17	47.27	46.14	63.63	36.69	63.70	64.35	47.67
	Females 13-17 years	59.56	59.77	65.60	65.11	70.66	51.34	86.05	90.00	64.20
	Females 18-24 years	60.53	60.11	64.88	66.17	88.27	57.72	93.67	83.21	65.35
	Females 25-34 years	39.91	39.25	42.15	42.92	61.88	35.03	53.93	53.19	42.83
	Females 35-54 years	35.57	35.48	37.38	35.10	48.02	28.47	40.75	42.94	37.17
	Females 55-64 years	35.75	35.61	38.17	35.36	48.39	28.23	44.62	44.20	37.62
	Females 65+ years	28.51	28.59	30.46	27.75	36.49	22.85	38.54	33.47	29.85
	Total	43.18	42.95	46.27	45.17	59.61	36.82	59.89	58.50	46.12

Average modelled prevalence* (%)	Males 0-5 years	3.3	3.6	3.4	3.5	3.0	4.0	3.3	3.1	3.4
	Males 6-12 years	6.5	7.0	6.4	6.2	5.7	7.3	6.1	5.6	6.5
	Males 13-17 years	4.2	4.6	4.1	4.2	3.6	4.7	4.5	4.0	4.3
	Males 18-24 years	1.8	1.9	1.7	1.8	1.5	1.9	2.0	1.9	1.8
	Males 25-34 years	1.6	1.8	1.6	1.7	1.4	1.8	1.5	1.6	1.6
	Males 35-54 years	3.1	3.3	2.9	3.0	2.6	3.5	2.6	2.5	3.0
	Males 55-64 years	6.3	6.7	6.0	6.1	5.1	7.2	5.2	5.4	6.2
	Males 65+ years	13.9	14.8	13.1	14.0	11.0	14.5	9.5	12.8	13.6
	Females 0-5 years	2.3	2.4	2.3	2.4	2.0	2.7	2.3	2.1	2.3
	Females 6-12 years	3.4	3.7	3.4	3.4	2.9	3.9	3.4	3.2	3.5
	Females 13-17 years	2.6	2.7	2.6	2.7	2.2	2.8	2.9	2.5	2.6
	Females 18-24 years	1.7	1.8	1.7	1.8	1.5	2.0	1.4	1.8	1.8
	Females 25-34 years	2.4	2.5	2.3	2.4	2.0	2.7	2.1	2.1	2.4
	Females 35-54 years	4.1	4.4	3.9	3.9	3.3	4.7	3.4	3.3	4.0
	Females 55-64 years	7.8	8.3	7.4	7.5	6.3	8.8	6.2	6.7	7.6
	Females 65+ years	17.2	17.8	16.6	16.8	13.3	17.7	12.6	15.5	16.7
	Total	5.1	5.5	5.0	5.1	4.2	5.6	4.3	4.6	5.1

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 46.1%

Overall Assessment: Use with high caution

There is variation in the RRMSE averages between the states, age groups and gender, but these are very high for many of the age/sex groups. The prevalence levels are very low in some cases, reducing the reliability of the modelled estimates when trying to distinguish between very small groups. The ratio of confidence interval width to modelled proportion ranges from 0.4 to 3.2 (1.8 on average).

3 Moderate/Mild (Table 2)

		Table: Moderate/Mild - Average RRMSE and Average modelled prevalence by state by age and sex								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males 0-5 years	87.21	105.58	107.97	104.52	174.82	81.76	200.50	175.66	115.99
	Males 6-12 years	31.87	40.52	43.35	42.07	62.00	34.26	69.32	67.07	44.73
	Males 13-17 years	35.72	45.18	49.54	47.45	56.30	38.97	78.96	73.60	49.17
	Males 18-24 years	38.51	45.61	48.48	47.61	65.84	41.24	73.29	68.94	49.56
	Males 25-34 years	25.55	31.19	32.63	32.18	46.59	27.42	44.08	43.03	33.39
	Males 35-54 years	18.97	25.98	26.70	24.88	32.42	20.29	31.72	33.93	26.48
	Males 55-64 years	16.37	22.85	23.55	21.53	27.97	16.78	30.01	29.96	23.23
	Males 65+ years	13.33	18.56	19.07	17.02	21.66	13.72	25.79	23.02	18.68
	Females 0-5 years	83.71	109.93	127.82	120.54	180.55	100.24	270.16	247.74	132.28
	Females 6-12 years	40.51	49.81	53.36	51.99	77.41	41.52	90.16	84.57	55.47
	Females 13-17 years	31.97	40.36	44.47	43.25	49.10	34.78	69.72	71.37	44.36
	Females 18-24 years	28.40	34.18	36.19	35.99	48.48	30.33	59.77	52.92	37.22
	Females 25-34 years	26.01	32.51	34.11	33.61	46.33	27.38	47.60	47.18	34.79
	Females 35-54 years	17.35	23.52	24.34	22.72	30.04	18.63	30.29	31.43	24.21
	Females 55-64 years	16.62	22.69	23.67	21.61	28.46	17.12	31.56	30.11	23.35
	Females 65+ years	13.52	18.80	19.44	17.34	22.29	14.17	26.95	23.08	19.00
	Total	32.85	41.70	44.67	42.77	60.64	34.91	73.74	68.98	45.74

Average modelled prevalence* (%)	Males 0-5 years	0.3	0.3	0.5	0.6	0.3	0.6	0.0	0.0	0.4
	Males 6-12 years	2.6	2.6	2.8	2.9	2.5	3.3	3.7	2.7	2.7
	Males 13-17 years	2.7	2.8	2.8	3.2	2.6	3.5	3.9	2.8	2.8
	Males 18-24 years	2.4	2.3	2.4	2.7	2.2	3.1	3.1	2.1	2.4
	Males 25-34 years	3.9	3.7	3.9	4.3	3.7	5.2	3.7	3.2	3.9
	Males 35-54 years	7.1	6.5	7.0	7.8	6.6	9.5	6.4	5.3	6.8
	Males 55-64 years	16.5	15.5	16.7	17.9	15.3	22.3	13.9	13.4	16.2
	Males 65+ years	28.7	28.8	30.0	32.0	27.7	35.1	24.7	25.9	29.2
	Females 0-5 years	0.3	0.3	0.4	0.6	0.3	0.3	0.0	0.0	0.3
	Females 6-12 years	1.5	1.5	1.6	1.7	1.5	2.0	2.3	1.8	1.6
	Females 13-17 years	2.8	2.8	2.9	3.2	2.6	3.5	4.1	2.9	2.9
	Females 18-24 years	3.3	3.0	3.1	3.6	3.0	4.5	3.4	2.6	3.2
	Females 25-34 years	4.1	3.8	3.9	4.3	3.9	5.5	3.2	2.9	3.9
	Females 35-54 years	7.7	7.4	7.6	8.5	7.5	10.3	6.0	5.5	7.5
	Females 55-64 years	16.6	16.3	16.8	18.2	15.7	21.9	12.7	13.5	16.5
	Females 65+ years	28.0	27.7	28.5	30.5	26.7	33.4	23.9	25.2	28.1
	Total	8.0	7.8	8.2	8.9	7.6	10.3	7.2	6.9	8.0

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Average RRMSE of predictions: 45.74%

Overall Assessment: Use with high caution

There is variation in the RRMSE averages between the states, age groups and gender, with higher RRMSEs for the younger age/sex groups as expected. The prevalence levels are very low in some cases, reducing the reliability of the modelled estimates when trying to distinguish between very small groups. The ratio of confidence interval width to modelled proportion ranges from 0.2 to 3.1 (1.3 on average).

Table 3 – carer status by age and sex

1 Non-primary carer (Table 3)

		Table: Non-primary carer - Average RRMSE and Average modelled prevalence by state by age and sex								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males 0-12 years	59.64	57.40	67.89	56.61	87.87	46.47	98.49	84.94	64.81
	Males 13-17 years	45.53	43.26	50.56	41.88	49.22	34.41	66.08	54.91	47.00
	Males 18-24 years	42.65	40.33	46.54	38.64	49.43	32.03	55.31	46.99	43.53
	Males 25-34 years	42.78	40.45	46.40	38.75	51.49	31.68	52.14	45.26	43.58
	Males 35-54 years	38.69	36.55	41.83	33.69	43.20	26.17	41.68	38.49	38.78
	Males 55-64 years	37.43	35.15	41.04	32.60	42.85	25.20	44.31	38.67	37.85
	Males 65+ years	35.86	33.70	39.62	30.98	41.32	24.16	47.04	37.17	36.45
	Females 0-12 years	53.31	50.96	59.86	49.94	76.44	41.04	88.20	75.28	57.39
	Females 13-17 years	46.63	44.33	51.85	43.26	48.39	35.03	64.48	56.14	48.02
	Females 18-24 years	42.40	40.25	46.36	38.91	49.44	32.95	56.87	46.50	43.44
	Females 25-34 years	45.15	42.77	48.92	41.08	55.11	33.09	54.85	48.15	46.06
	Females 35-54 years	37.45	35.35	40.56	32.53	42.16	25.20	40.45	37.29	37.57
	Females 55-64 years	37.13	34.79	40.79	32.30	42.54	24.90	44.10	38.23	37.54
	Females 65+ years	37.17	35.19	41.16	32.42	43.80	25.42	50.80	39.14	38.03
	Total	42.99	40.75	47.38	38.83	51.66	31.27	57.48	49.08	44.29

Average modelled prevalence* (%)	Males 0-12 years	1.1	1.3	1.0	1.4	1.1	1.4	1.2	1.3	1.2
	Males 13-17 years	5.7	7.0	5.1	7.0	5.4	7.1	4.8	6.4	6.0
	Males 18-24 years	6.5	7.7	5.6	7.7	6.1	8.0	4.5	6.6	6.6
	Males 25-34 years	5.9	7.0	5.1	7.0	5.6	7.2	3.9	5.7	6.0
	Males 35-54 years	10.1	12.1	8.9	12.0	9.7	12.1	6.7	10.1	10.3
	Males 55-64 years	13.8	16.3	12.2	16.2	13.0	16.4	8.8	14.1	14.0
	Males 65+ years	13.9	16.6	12.2	16.6	12.7	16.3	8.4	14.5	14.2
	Females 0-12 years	1.3	1.6	1.2	1.6	1.3	1.7	1.4	1.6	1.4
	Females 13-17 years	6.4	7.7	5.7	7.6	6.0	7.8	4.9	7.1	6.6
	Females 18-24 years	6.7	8.0	5.8	8.0	6.3	8.2	5.0	6.8	6.9
	Females 25-34 years	5.4	6.4	4.7	6.4	5.1	6.5	3.6	5.4	5.5
	Females 35-54 years	11.4	13.5	10.0	13.5	10.8	13.6	7.5	11.3	11.6
	Females 55-64 years	15.0	17.6	13.2	17.4	14.1	17.7	9.6	15.0	15.2
	Females 65+ years	10.4	12.5	9.3	12.5	10.3	12.4	7.4	11.0	10.8
	Total	8.1	9.7	7.1	9.6	7.7	9.7	5.5	8.4	8.3

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

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Average RRMSE of predictions: 44.3%

Overall Assessment: Use with high caution

There is variation in the RRMSE averages between the states, age groups and gender, but these values are high for the youngest age/sex groups. The prevalence levels are also low in these cases, reducing the reliability of the modelled estimates when trying to distinguish between very small groups. The pattern of modelled estimates for each state for the middle age groups (35-64 years) is as expected; i.e. prevalence is higher for these age groups. The ratio of confidence interval width to modelled proportion ranges from 0.4 to 3.7 (1.8 on average), high when compared with other models.

2 Primary carer (Table 3)

		Table: Primary carer - Average RRMSE and Average modelled prevalence by state by age and sex								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males 15-24 years	66.77	67.89	74.87	75.23	119.95	65.77	154.04	112.01	77.14
	Males 25-34 years	55.31	55.25	60.34	63.02	95.18	56.35	115.36	82.43	62.46
	Males 35-54 years	31.11	31.43	33.48	32.43	47.65	28.65	56.70	45.26	34.25
	Males 55-64 years	29.36	29.68	32.23	30.20	42.97	26.01	59.48	44.98	32.55
	Males 65+ years	29.11	29.58	32.74	29.63	40.80	25.71	66.56	43.47	32.47
	Females 15-24 years	45.64	46.69	51.03	52.34	79.14	45.87	110.78	77.33	52.80
	Females 25-34 years	32.88	33.13	34.85	35.83	49.47	31.10	60.60	44.91	35.93
	Females 35-54 years	24.48	24.66	25.43	24.73	32.30	22.27	38.78	30.13	25.88
	Females 55-64 years	24.81	24.98	26.62	25.11	33.40	22.15	45.31	33.32	26.75
	Females 65+ years	26.52	27.01	29.61	27.06	37.35	23.83	61.66	38.04	29.49
	Total	36.60	37.03	40.12	39.56	57.82	34.77	76.93	55.19	40.97

Average modelled prevalence* (%)	Males 15-24 years	0.6	0.6	0.6	0.6	0.4	0.6	0.0	0.6	0.6
	Males 25-34 years	0.8	0.9	0.9	0.9	0.7	1.0	0.7	0.8	0.9
	Males 35-54 years	2.2	2.3	2.2	2.2	2.1	2.5	1.3	1.9	2.2
	Males 55-64 years	4.7	4.9	4.7	4.9	4.4	5.4	2.9	4.2	4.7
	Males 65+ years	5.5	5.8	5.5	5.7	5.4	6.2	3.6	4.9	5.6
	Females 15-24 years	1.0	1.0	1.0	1.0	0.8	1.1	0.0	1.0	1.0
	Females 25-34 years	3.8	3.9	3.8	3.9	3.4	4.5	2.2	3.3	3.8
	Females 35-54 years	7.4	7.7	7.4	7.5	7.0	8.4	3.9	6.3	7.3
	Females 55-64 years	9.6	10.0	9.5	9.9	9.1	10.8	5.5	8.4	9.5
	Females 65+ years	6.9	7.4	6.9	7.2	6.9	7.8	4.8	6.1	7.0
	Total	4.2	4.5	4.2	4.4	4.0	4.8	2.5	3.7	4.2

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

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Average RRMSE of predictions: 41.0%

Overall Assessment: Use with high caution

There is variation in the RRMSE averages between the states, age groups and gender, but these values are high for the youngest age/sex groups. The prevalence levels are also low in these cases, reducing the reliability of the modelled estimates when trying to distinguish between very small groups. The pattern of modelled estimates for each state for the middle age groups (35 to 64 years) is as expected; i.e. prevalence is larger for females than males in this group. The model performance for this category is affected by the relatively small size of this group and modelled estimates should be used with high caution, taking into account relevant additional information where available. The ratio of confidence interval width to modelled proportion ranges from 0.6 to 3.0 (1.4 on average).

Appendix 5 – Release 2

Release 2 provides five tables of modelled estimates for small areas, presented as proportions and counts of people living in private dwellings who:

- have a disability, area of restriction by age, by small area (Table 4);
- have a disability, area of help by age, by small area (Table 7);
- have a disability, area of restriction by degree of restriction by age, by small area (Table 8);
- have a disability and aged 0-64 years, extent to which need for assistance with core activities is met, by small area (Table 10);
- have a disability and aged 0-64 years, demand for formal assistance with core activities, by small area (Table 11).

Measures of prediction accuracy (RRMSEs and CIs) are also included in this release. Summary tables are provided below for the models used to create each of the outcome categories for the tables. Refer to descriptions and how to interpret these tables in Appendix 4.

Table 4 – area of restriction by age

1 Self-care restriction (Table 4)

		Table: Self-care - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-5 years	44.65	48.08	51.85	47.52	68.40	42.14	57.56	57.17	51.30
	Persons 6-12 years	39.81	43.56	46.57	41.96	55.68	36.35	46.87	45.93	45.08
	Persons 13-17 years	48.77	52.90	58.31	52.78	63.81	46.38	61.50	63.75	56.00
	Persons 18-24 years	44.83	46.59	51.32	47.08	70.74	43.42	56.62	55.00	50.70
	Persons 25-34 years	41.36	44.49	47.54	43.85	61.63	37.97	49.24	52.53	47.02
	Persons 35-54 years	33.99	37.73	39.03	34.91	42.54	28.86	36.06	37.29	37.63
	Persons 55-64 years	31.80	34.87	36.78	32.29	40.44	26.20	33.76	34.84	35.16
	Persons 65+ years	28.18	30.62	32.63	28.00	35.19	23.55	31.29	29.08	30.90
	Total	39.17	42.35	45.50	41.05	54.80	35.61	46.61	46.95	44.22

Average modelled prevalence* (%)	Persons 0-5 years	1.17	1.41	1.16	1.54	0.68	1.46	0.53	0.73	1.19
	Persons 6-12 years	2.70	3.01	2.57	3.26	1.71	3.06	2.28	2.30	2.69
	Persons 13-17 years	1.51	1.83	1.36	1.76	0.81	1.75	0.72	0.53	1.43
	Persons 18-24 years	1.02	1.17	0.92	1.15	0.51	1.23	0.38	0.46	0.95
	Persons 25-34 years	1.28	1.42	1.21	1.55	0.74	1.69	1.04	0.78	1.24
	Persons 35-54 years	3.41	3.64	3.06	4.12	3.09	4.25	2.96	2.55	3.36
	Persons 55-64 years	7.96	8.70	7.47	9.69	6.48	10.70	6.46	6.46	7.97
	Persons 65+ years	10.61	18.13	16.12	19.81	14.39	19.73	12.35	14.46	18.80
	Total	4.46	4.91	4.23	5.36	3.55	5.48	3.34	3.53	4.45

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 44.22%

Overall Assessment: Use with high caution

The model contains a good and varied selection of explanatory variables. There is good variation in modelled proportions within the age groups, as well as between groups. The spread of modelled proportions at the upper end is larger for the smaller groups/those with lower prevalence. The pattern of modelled proportions across the age groups is consistent with expectations; that is, the modelled proportion of people who have a self-care restriction is comparable for the younger age groups, rising as age increases from 55 onwards. The ratio of confidence interval width to modelled proportion ranges from 0.44 to 3.27 (1.79 on average).

2 Mobility restriction (Table 4)

		Table: Mobility - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-5 years	36.57	39.93	42.92	39.75	59.13	34.29	52.67	50.52	43.07
	Persons 6-12 years	28.60	31.52	33.58	30.36	39.75	25.23	34.32	33.33	32.52
	Persons 13-17 years	33.36	36.43	39.31	35.62	41.56	29.77	41.05	40.94	37.73
	Persons 18-24 years	33.03	35.17	37.67	34.55	48.48	29.67	40.48	38.49	37.03
	Persons 25-34 years	28.45	31.19	32.80	29.89	38.89	24.24	32.17	33.83	32.00
	Persons 35-54 years	25.23	28.19	29.34	25.98	30.85	20.42	26.13	27.42	27.99
	Persons 55-64 years	22.86	25.16	26.63	23.20	29.12	17.58	24.46	25.28	25.37
	Persons 65+ years	17.24	18.68	19.89	17.06	22.68	13.72	20.07	18.43	19.01
Total	28.17	30.78	32.77	29.55	38.81	24.36	33.92	33.53	31.84	

Average modelled prevalence* (%)	Persons 0-5 years	1.67	1.88	1.79	2.03	0.93	2.04	0.55	0.96	1.67
	Persons 6-12 years	5.83	6.12	5.77	6.33	4.57	6.49	4.92	4.84	5.76
	Persons 13-17 years	5.26	5.66	5.05	5.83	2.89	6.09	4.08	3.94	5.06
	Persons 18-24 years	3.80	4.02	3.67	4.21	2.00	4.54	2.40	2.74	3.62
	Persons 25-34 years	5.48	5.39	5.23	5.81	4.44	6.97	4.21	3.54	5.18
	Persons 35-54 years	10.08	10.16	9.57	10.86	9.15	12.43	8.38	6.97	9.72
	Persons 55-64 years	20.49	20.87	19.97	21.88	17.54	25.96	14.99	15.38	19.91
	Persons 65+ years	35.37	36.41	35.51	37.96	30.79	39.68	25.96	28.86	34.94
Total	11.00	11.31	10.82	11.86	9.04	13.03	8.19	8.41	10.73	

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 31.84%

Overall Assessment: Use with caution

The model contains a good and varied selection of explanatory variables. There is good variation in modelled proportions within the age groups, as well as between groups. The spread of modelled proportions at the upper end is larger for the smaller groups/those with lower prevalence. The pattern of modelled proportions across the age groups is consistent with expectations; that is, the modelled proportion of people who have a mobility restriction is comparable for the younger age groups, rising as age increases from 55 onwards. The ratio of confidence interval width to modelled proportion ranges from 0.22 to 2.61 (1.3 on average).

3 Communication restriction (Table 4)

		Table: Communication - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-5 years	28.35	31.15	33.13	33.09	48.87	28.59	46.61	44.97	34.49
	Persons 6-12 years	23.00	24.75	26.46	25.69	36.86	23.01	35.08	32.79	27.02
	Persons 13-17 years	28.10	30.49	33.27	32.40	40.46	28.73	44.90	44.45	33.53
	Persons 18-24 years	35.78	37.12	39.94	40.05	63.99	37.60	55.40	50.92	41.82
	Persons 25-34 years	30.69	31.92	34.14	34.92	56.37	31.88	44.28	45.22	36.02
	Persons 35-54 years	22.71	24.54	25.62	24.59	35.87	22.31	34.09	33.24	26.46
	Persons 55-64 years	21.46	22.81	24.50	22.90	32.92	20.69	29.55	30.79	24.75
	Persons 65+ years	15.01	15.85	16.74	15.83	20.60	14.69	21.83	18.96	16.81
	Total	25.64	27.33	29.23	28.68	41.99	25.94	38.97	37.67	30.11

Average modelled prevalence* (%)	Persons 0-5 years	2.35	2.19	2.22	2.21	1.27	2.62	0.82	1.16	2.04
	Persons 6-12 years	4.29	4.06	4.02	4.13	3.00	4.87	2.90	2.85	3.89
	Persons 13-17 years	2.98	2.93	2.85	2.98	1.55	3.17	1.44	1.38	2.66
	Persons 18-24 years	1.13	1.12	1.13	1.04	0.51	1.35	0.24	0.42	1.00
	Persons 25-34 years	0.98	1.00	1.02	0.97	0.51	1.20	0.51	0.54	0.92
	Persons 35-54 years	1.46	1.35	1.34	1.42	1.19	1.75	1.00	0.97	1.32
	Persons 55-64 years	4.49	4.22	4.23	4.33	3.84	5.05	3.27	3.18	4.14
	Persons 65+ years	17.84	16.65	16.43	17.07	16.60	18.56	11.00	12.76	16.31
	Total	4.44	4.19	4.16	4.27	3.56	4.82	2.65	2.91	4.04

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 30.11%

Overall Assessment: Use with caution

The model contains a good selection of explanatory variables. There is some variation in modelled proportions within the age groups, with less to distinguish between groups. The spread of modelled proportions at the upper end is larger for all but the oldest group. The pattern of modelled proportions across the age groups suggests that the model has only small differentiation between all age groups, aside from the oldest group. That is, modelled proportions for those who have a communication restriction are similar for the younger age groups, rising as age increases from 65 onwards. The ratio of confidence interval width to modelled proportion ranges from 0.42 to 2.44 (1.18 on average).

4 Schooling restriction (Table 4)

		Table: Schooling - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 5-9 years	36.63	38.45	39.86	39.01	46.01	35.50	46.00	42.18	39.80
	Persons 10-14 years	33.10	34.83	35.82	34.91	39.26	32.01	38.90	38.44	35.65
	Persons 15-20 years	39.18	40.53	43.58	41.79	47.23	37.82	50.30	49.17	42.87
	Total	36.30	37.94	39.75	38.57	44.16	35.11	45.06	43.26	39.44

Average modelled prevalence* (%)	Persons 5-9 years	5.97	5.55	5.76	5.60	4.09	6.63	4.14	4.42	5.45
	Persons 10-14 years	7.24	6.63	6.96	6.81	5.36	8.00	5.60	5.33	6.62
	Persons 15-20 years	4.07	3.97	3.24	3.70	2.00	4.90	2.21	2.55	3.43
	Total	5.76	5.38	5.32	5.37	3.82	6.51	3.99	4.10	5.17

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The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 39.44%

Overall Assessment: Use with caution

The model contains a smaller selection of explanatory variables than most of the models in Release 2. There is a good pattern of variation in modelled proportions within the age groups, with less to distinguish between groups. The pattern of modelled proportions across the age groups suggests that the model has only small differentiation between the two youngest age groups. That is, modelled proportions for those who have a schooling restriction are similar for the two younger age groups, reducing at the oldest age group, i.e. from 15 onwards. The ratio of confidence interval width to modelled proportion ranges from 0.84 to 2.64 (1.64 on average).

Note that there are fewer small areas for the schooling restriction category due to some small areas having zero population for the 5-20 years age category. Modelled estimates for these small areas could therefore not be provided.

5 Employment restriction (Table 4)

		Table: Employment - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 15-24 years	31.51	33.84	35.63	33.26	44.76	28.23	38.30	34.91	35.09
	Persons 25-34 years	29.99	32.90	33.88	31.90	39.07	26.25	35.91	34.86	33.42
	Persons 35-54 years	27.24	30.20	30.83	28.43	32.08	22.77	30.14	29.18	29.88
	Persons 55-64 years	24.85	27.34	28.28	25.76	30.57	19.82	29.14	27.48	27.43
	Total	28.40	31.07	32.16	29.84	36.62	24.27	33.37	31.61	31.45

Average modelled prevalence* (%)	Persons 15-24 years	4.91	4.96	4.42	5.12	3.17	5.73	2.80	3.65	4.51
	Persons 25-34 years	6.22	5.72	5.57	6.32	5.36	7.79	3.57	3.75	5.58
	Persons 35-54 years	11.19	10.78	10.13	11.68	10.30	13.86	7.07	7.27	10.36
	Persons 55-64 years	20.00	19.51	18.75	20.73	17.33	25.69	10.99	13.64	18.69
	Total	10.58	10.24	9.72	10.96	9.04	13.27	6.10	7.08	9.79

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 31.45%

Overall Assessment: Use with caution

The model contains a good and varied selection of explanatory variables. There is good variation in modelled proportions within the age groups, as well as between groups. The spread of modelled proportions at the upper end is larger for the youngest age group than for the other three groups. The pattern of modelled proportions across the age groups seems reasonable; the modelled proportion of people who have an employment restriction gradually rises as age increases, rising more from 35 onwards. The ratio of confidence interval width to modelled proportion ranges from 0.4 to 2.6 (1.27 on average).

Table 7 – area of help by age

1 Accommodation support (Table 7)

		Table: Accommodation support - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 15-24 years	33.04	32.70	36.19	33.20	62.01	30.44	47.43	43.83	37.36
	Persons 25-34 years	31.11	31.84	33.37	31.52	48.50	27.77	41.40	41.17	34.39
	Persons 35-54 years	24.96	26.16	26.81	25.05	31.91	21.19	29.43	28.14	26.73
	Persons 55-64 years	22.83	23.44	24.61	22.41	30.20	18.48	27.97	25.98	24.41
	Persons 65+ years	17.48	17.73	18.75	16.74	23.29	14.65	23.66	18.79	18.57
	Total	25.88	26.37	27.95	25.78	39.18	22.51	33.98	31.58	28.29

Average modelled prevalence* (%)	Persons 15-24 years	1.55	1.97	1.65	2.19	0.83	2.16	0.74	1.25	1.68
	Persons 25-34 years	2.50	2.84	2.65	3.33	1.51	3.74	1.68	1.69	2.59
	Persons 35-54 years	5.56	6.49	5.92	7.58	5.06	8.04	4.55	4.25	6.03
	Persons 55-64 years	12.24	14.35	13.22	16.16	10.36	18.14	8.54	10.19	13.25
	Persons 65+ years	24.91	28.54	26.92	31.04	21.16	30.88	16.54	21.67	26.53
	Total	9.35	10.84	10.07	12.06	7.78	12.59	6.41	7.81	10.01

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Average RRMSE of predictions: 28.29%

Overall Assessment: *Use with caution*

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups (less so for the youngest groups), with less to distinguish between groups. The spread of modelled proportions at the upper end is larger for the younger age group than for the other three groups. The pattern of modelled proportions across the age groups suggests that the model has only small differentiation between the three youngest age groups. That is, modelled proportions for those who need accommodation support are similar for the three younger age groups, rising for the oldest age groups, i.e. from 55 onwards. The ratio of confidence interval width to modelled proportion ranges from 0.31 to 2.57 (1.12 on average).

2 Personal / health care (Table 7)

		Table: Personal / health care - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-5 years	36.31	40.15	43.03	39.38	52.96	31.54	47.20	46.57	42.13
	Persons 6-12 years	32.12	35.66	38.28	34.21	43.81	27.14	38.24	37.61	36.71
	Persons 13-17 years	35.35	39.00	42.32	38.17	43.62	30.64	43.99	44.42	40.39
	Persons 18-24 years	39.05	42.13	45.49	41.30	56.75	34.59	48.49	46.45	44.33
	Persons 25-34 years	33.71	37.14	39.53	35.86	47.83	28.64	38.71	41.06	38.44
	Persons 35-54 years	30.08	33.81	35.50	31.10	37.04	24.07	31.70	33.07	33.67
	Persons 55-64 years	28.25	31.31	33.62	29.01	35.06	22.02	29.79	31.87	31.64
	Persons 65+ years	21.25	23.40	25.59	21.84	27.43	16.68	25.05	24.19	24.04
	Total	32.02	35.32	37.92	33.86	43.06	26.91	37.90	38.16	36.42

Average modelled prevalence* (%)	Persons 0-5 years	2.93	3.18	2.82	3.23	1.65	3.76	1.60	1.86	2.79
	Persons 6-12 years	5.60	5.98	5.20	5.89	4.29	6.70	4.26	4.17	5.38
	Persons 13-17 years	4.27	4.69	3.98	4.68	2.25	5.33	2.94	2.88	4.06
	Persons 18-24 years	2.73	2.92	2.52	2.94	1.30	3.43	1.57	1.77	2.54
	Persons 25-34 years	3.39	3.52	3.09	3.60	2.28	4.51	2.53	2.19	3.18
	Persons 35-54 years	7.12	7.37	6.44	7.66	6.45	9.13	5.18	4.80	6.78
	Persons 55-64 years	15.14	15.91	14.17	16.07	13.96	18.78	11.20	10.38	14.65
	Persons 65+ years	30.38	31.19	28.57	31.09	26.77	34.18	20.57	21.39	28.94
	Total	8.94	9.34	8.35	9.40	7.37	10.73	6.23	6.18	8.54

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Average RRMSE of predictions: 36.42%

Overall Assessment: Use with caution

The model contains a good selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups (less so for the younger groups), with less to distinguish between groups. The pattern of modelled proportions across the age groups suggests that the model has only small differentiation between the five youngest age groups. That is, modelled proportions for those who need personal/health care support are similar for first five age groups, rising as age increases from 35 onwards. The ratio of confidence interval width to modelled proportion ranges from 0.26 to 2.89 (1.51 on average).

3 Transport (Table 7)

		Table: Transport - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 16-24 years	34.19	34.80	38.21	37.40	65.73	35.21	47.99	49.01	39.90
	Persons 25-34 years	30.70	31.87	33.40	33.36	51.50	30.33	39.83	44.05	34.98
	Persons 35-54 years	24.41	25.70	26.21	25.13	34.69	23.03	28.24	30.71	26.75
	Persons 55-64 years	22.64	23.66	25.01	23.48	34.59	20.76	28.98	30.60	25.42
	Persons 65+ years	17.33	18.14	18.96	17.96	25.64	16.82	24.84	20.88	19.27
	Total	25.86	26.83	28.36	27.46	42.43	25.23	33.98	35.05	29.26

Average modelled prevalence* (%)	Persons 16-24 years	1.64	1.76	1.55	1.66	0.74	1.67	0.78	0.92	1.50
	Persons 25-34 years	2.07	2.07	1.99	2.05	1.11	2.40	1.42	1.10	1.88
	Persons 35-54 years	3.38	3.46	3.25	3.57	2.59	3.91	2.84	2.12	3.22
	Persons 55-64 years	6.26	6.49	6.03	6.53	4.18	7.73	4.10	4.17	5.93
	Persons 65+ years	15.47	16.10	15.35	16.37	11.56	15.84	8.83	11.27	14.90
	Total	5.76	5.98	5.63	6.04	4.04	6.31	3.59	3.92	5.49

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Average RRMSE of predictions: 29.26%

Overall Assessment: Use with caution

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups, with less to distinguish between groups. The spread of modelled proportions at the upper end is larger for the younger age groups than for the oldest group. The pattern of modelled proportions across the age groups suggests that the model has only small differentiation between the first four age groups. That is, modelled proportions for those who need transport support are similar for the all age groups, rising only for the oldest age group, i.e. for 65 onwards. The ratio of confidence interval width to modelled proportion ranges from 0.41 to 2.5 (1.15 on average).

Table 8 – area of restriction by degree of restriction by age

1 Self-care by Profound/Severe (Table 8)

		Table: Self-care by Profound/Severe - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	30.90	33.84	34.36	31.72	36.74	28.03	36.51	35.25	33.81
	Persons 65+ years	27.92	29.93	31.20	29.03	36.36	25.55	33.90	30.73	30.65
	Total	29.41	31.89	32.78	30.38	36.55	26.79	35.21	32.99	32.23

Average modelled prevalence* (%)	Persons 0-64 years	2.33	2.29	2.14	2.37	2.09	2.81	1.69	1.62	2.18
	Persons 65+ years	11.66	11.96	11.29	11.98	9.26	12.67	7.42	8.30	11.12
	Total	7.00	7.12	6.72	7.18	5.68	7.74	4.56	4.96	6.65

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The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 32.23%

Overall Assessment: Use with caution

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups, as well as between groups. The spread of modelled proportions at the upper end is larger for the younger age group than for the older group. Modelled proportions for those with a profound/severe disability who have a self-care restriction are larger for 65+ than for the younger group, which seems reasonable. The ratio of confidence interval width to modelled proportion ranges from 0.51 to 2.57 (1.29 on average).

2 Self-care by Moderate/Mild (Table 8)

		Table: Self-care by Moderate/Mild - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	48.68	52.74	53.45	49.00	58.13	42.23	52.45	60.69	52.96
	Persons 65+ years	39.74	42.07	44.17	40.11	49.48	34.06	46.00	45.29	43.10
	Total	44.21	47.41	48.81	44.56	53.80	38.14	49.22	52.99	48.03
Average modelled prevalence* (%)	Persons 0-64 years	0.96	0.96	0.87	1.27	0.79	1.64	0.71	0.60	0.93
	Persons 65+ years	5.64	6.08	5.44	7.66	4.61	8.84	4.27	4.01	5.73
	Total	3.30	3.52	3.16	4.47	2.70	5.24	2.49	2.31	3.33

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 48.03%

Overall Assessment: Use with high caution

The model contains a good selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups, as well as between groups. The spread of modelled proportions at the upper end is larger for the younger age group than for the older group. Modelled proportions for those with a mild or moderate disability who have a self-care restriction are somewhat larger for 65+ than for the younger group, which seems reasonable. The ratio of confidence interval width to modelled proportion ranges from 0.82 to 3.05 (2.06 on average, larger than many of the other models).

3 Mobility by Profound/Severe (Table 8)

		Table: Mobility by Profound/Severe - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	26.73	29.10	29.61	27.56	31.74	23.99	30.02	29.65	29.06
	Persons 65+ years	23.22	24.94	25.84	24.28	31.49	21.28	28.45	25.16	25.56
	Total	24.98	27.02	27.73	25.92	31.61	22.64	29.23	27.40	27.31

Average modelled prevalence* (%)	Persons 0-64 years	3.42	3.20	3.20	3.28	3.08	4.04	3.05	2.42	3.18
	Persons 65+ years	14.76	14.70	14.66	14.81	11.40	15.64	9.65	12.01	14.12
	Total	9.09	8.95	8.93	9.04	7.24	9.84	6.35	7.22	8.65

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 27.31%

Overall Assessment: Use with caution

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups, as well as between groups. The modelled proportions at the upper end have a bigger spread for the younger age group than for the older group. Modelled proportions for those with a profound/severe disability who have a mobility restriction are larger for 65+ than for the younger group, which seems reasonable. The ratio of confidence interval width to modelled proportion ranges from 0.39 to 2.32 (1.09 on average).

4 Mobility by Moderate/Mild (Table 8)

		Table: Mobility by Moderate/Mild - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	21.16	23.26	23.32	21.32	24.78	18.04	25.70	25.68	23.15
	Persons 65+ years	18.55	19.98	20.58	18.76	24.02	15.75	24.91	21.81	20.43
	Total	19.86	21.62	21.95	20.04	24.40	16.90	25.31	23.74	21.79
Average modelled prevalence* (%)	Persons 0-64 years	5.60	5.20	5.30	6.08	5.20	7.70	3.89	3.49	5.25
	Persons 65+ years	20.92	20.68	21.09	22.79	18.96	25.40	13.68	15.67	20.43
	Total	13.26	12.94	13.20	14.43	12.08	16.55	8.79	9.58	12.84

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 21.79%

Overall Assessment: *Reliable*

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups, as well as between groups. Modelled proportions for those with a mild or moderate disability who have a mobility restriction are larger for 65+ than for the younger group, which seems reasonable. The ratio of confidence interval width to modelled proportion ranges from 0.37 to 2.24 (0.87 on average, smaller than many of the models).

5 Communication by Profound/Severe (Table 8)

		Table: Communication by Profound/Severe - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	29.20	31.28	31.24	29.90	35.66	28.36	39.50	35.07	31.73
	Persons 65+ years	27.66	29.25	30.67	29.56	39.40	27.48	40.27	35.28	31.11
	Total	28.43	30.27	30.95	29.73	37.53	27.92	39.88	35.18	31.42

Average modelled prevalence* (%)	Persons 0-64 years	1.45	1.47	1.35	1.34	1.39	1.57	0.95	0.87	1.35
	Persons 65+ years	5.96	5.98	5.54	5.53	4.38	5.64	2.97	3.67	5.40
	Total	3.71	3.72	3.45	3.44	2.88	3.61	1.96	2.27	3.38

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 31.42%

Overall Assessment: Use with caution

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups, as well as between groups. The modelled proportions at the upper end have a bigger spread for the younger age group than for the older group. Modelled proportions for those with a profound/severe disability who have a communication restriction are larger for 65+ than for the younger group, which seems reasonable. The ratio of confidence interval width to modelled proportion ranges from 0.66 to 2.43 (1.25 on average).

6 Communication by Moderate/Mild (Table 8)

		Table: Communication by Moderate/Mild - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	11.22	13.98	16.87	13.75	24.07	11.31	22.64	25.83	16.46
	Persons 65+ years	7.09	9.25	12.05	9.24	17.02	7.42	18.98	16.00	11.30
	Total	9.15	11.62	14.46	11.49	20.54	9.37	20.81	20.92	13.88

Average modelled prevalence* (%)	Persons 0-64 years	0.90	0.85	0.70	0.84	0.77	1.11	0.67	0.55	0.78
	Persons 65+ years	11.62	11.69	10.16	11.06	10.51	12.64	8.31	8.40	10.71
	Total	6.26	6.27	5.43	5.95	5.64	6.87	4.49	4.48	5.74

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 13.88%

Overall Assessment: *Reliable*

The model contains a good selection of explanatory variables. There is a good pattern of variation in modelled proportions within the age groups, as well as between groups. The modelled proportions at the upper end have a bigger spread for the younger age group than for the older group. Modelled proportions for those with a mild or moderate disability who have a communication restriction are larger for 65+ than for the younger group, which seems reasonable. The ratio of confidence interval width to modelled proportion ranges from 0.14 to 2.18 (0.54 on average, the smallest of all the models for Release 2).

7 Schooling by Profound/Severe (Table 8)

		Table: Schooling by Profound/Severe - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 5-20 years	35.43	34.24	40.23	37.43	44.36	31.60	35.50	36.21	37.54

Average modelled prevalence* (%)	Persons 5-20 years	3.47	3.44	2.85	3.16	2.94	4.11	2.95	2.92	3.15
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* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 37.54%

Overall Assessment: *Use with caution*

The model contains a smaller but varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions for this group, with a large spread at the upper end. The ratio of confidence interval width to modelled proportion ranges from 1.05 to 2.56 (1.51 on average).

Note that there are fewer small areas for the schooling restriction category due to some small areas having zero population for the 5-20 years age category. Modelled estimates for these small areas could therefore not be provided.

8 Schooling by Moderate/Mild (Table 8)

		Table: Schooling by Moderate/Mild - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 5-20 years	47.56	49.38	43.64	40.70	59.59	39.72	56.46	58.68	47.89
Average modelled prevalence* (%)	Persons 5-20 years	1.22	1.04	1.27	1.36	0.81	1.62	0.52	0.46	1.11

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The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 47.89%

Overall Assessment: Use with high caution

The model contains a small selection of explanatory variables (less than most models for Release 2). There is a reasonable pattern of variation in modelled proportions for this group, with a large spread at the upper end. The ratio of confidence interval width to modelled proportion ranges from 1.33 to 3.4 (1.99 on average).

Note that there are fewer small areas for the schooling restriction category due to some small areas having zero population for the 5-20 years age category. Modelled estimates for these small areas could therefore not be provided.

9 Employment by Profound/Severe (Table 8)

		Table: Employment by Profound/Severe - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 15-64 years	30.32	30.55	31.41	30.77	47.92	26.53	35.96	31.66	32.33

Average modelled prevalence* (%)	Persons 15-64 years	3.30	3.49	3.14	4.09	1.91	4.59	1.93	2.60	3.21
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* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 32.33%

Overall Assessment: *Use with caution*

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions for this group. The ratio of confidence interval width to modelled proportion ranges from 0.68 to 2.92 (1.29 on average).

10 Employment by Moderate (Table 8)

		Table: Employment by Moderate - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 15-64 years	45.28	45.52	49.42	41.44	54.03	35.23	51.48	46.27	47.06
Average modelled prevalence* (%)	Persons 15-64 years	2.06	2.38	1.93	2.94	1.66	3.20	1.34	1.39	2.12

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 47.06%

Overall Assessment: Use with high caution

The model contains a small selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions for this group. The ratio of confidence interval width to modelled proportion ranges from 0.94 to 3.07 (1.99 on average).

11 Employment by Mild (Table 8)

		Table: Employment by Mild - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 15-64 years	22.87	22.83	25.22	23.14	29.88	18.50	35.05	26.15	24.73
Average modelled prevalence* (%)	Persons 15-64 years	3.27	2.79	2.83	3.21	2.74	4.84	2.04	2.02	2.85

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. The total rows are calculated by averaging the values over the states. These figures do not align with published estimates of prevalence and should not be used for this purpose or any other purpose.

Average RRMSE of predictions: 24.73%

Overall Assessment: *Reliable*

The model contains a good and varied selection of explanatory variables. There is a good pattern of variation in modelled proportions for this group. The ratio of confidence interval width to modelled proportion ranges from 0.60 to 2.75 (0.98 on average).

Table 10 – extent to which need for assistance with core activities met, 0-64 years

1 Fully met (Table 10)

		Table: Fully met - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	38.66	37.32	42.14	37.06	50.01	30.78	41.82	33.94	39.75

Average modelled prevalence* (%)	Persons 0-64 years	2.81	2.84	2.51	2.93	2.22	3.78	1.94	2.22	2.64
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* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 39.75%

Overall Assessment: *Use with caution*

The model contains a good selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within this group. The ratio of confidence interval width to modelled proportion ranges from 0.67 to 2.96 (1.59 on average).

2 Partly met (Table 10)

		Table: Partly met - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	38.16	42.65	40.38	34.71	46.21	38.98	52.25	51.43	41.78

Average modelled prevalence* (%)	Persons 0-64 years	0.94	0.79	0.82	0.94	0.79	1.00	0.56	0.42	0.80
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* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 41.78%

Overall Assessment: Use with high caution

The model contains only a small selection of explanatory variables. Variation in modelled proportions within this group is flat, aside from at the high end, where the spread is large. The ratio of confidence interval width to modelled proportion ranges from 0.94 to 3.5 (1.67 on average).

3 Not met at all (Table 10)

		Table: Not met at all - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	77.28	79.24	80.41	78.99	107.92	77.26	103.71	99.91	83.78

Average modelled prevalence* (%)	Persons 0-64 years	0.08	0.08	0.08	0.06	0.04	0.09	0.00	0.01	0.07
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* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 83.78%

Overall Assessment: *Unreliable for general use*

The model contains only a few explanatory variables. There is very little discernible pattern of variation in modelled proportions within this group, aside for the highest modelled proportions where the spread is large. The ratio of confidence interval width to modelled proportion ranges from 2.0 to 5.0 (3.09 on average, the largest of all the models for Release 2).

Table 11 – demand for formal assistance with core activities, 0-64 years

1 Receiving formal assistance and do not need more (Table 11)

		Table: Receiving formal assistance and do not need more - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	55.88	66.19	61.36	58.83	62.51	51.04	60.98	59.64	61.69
Average modelled prevalence* (%)	Persons 0-64 years	0.61	0.47	0.52	0.53	0.45	0.81	0.48	0.42	0.51

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 61.69%

Overall Assessment: *Unreliable for general use*

The model contains a smaller selection of explanatory variables than most Release 2 models. There is very little discernible pattern of variation in modelled proportions within this group, aside for the highest modelled proportions where the spread is large. The ratio of confidence interval width to modelled proportion ranges from 1.06 to 3.67 (2.76 on average, larger than most models for Release 2).

2 Receiving formal assistance and need more (Table 11)

		Table: Receiving formal assistance and need more - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	55.26	57.94	58.94	56.79	66.94	54.34	69.76	64.19	59.33

Average modelled prevalence* (%)	Persons 0-64 years	0.37	0.33	0.33	0.34	0.22	0.42	0.23	0.24	0.32
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* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 59.33%

Overall Assessment: *Unreliable for general use*

The model contains only a few explanatory variables. There is very little discernible pattern of variation in modelled proportions within this group, aside for the highest modelled proportions where the spread is large. The ratio of confidence interval width to modelled proportion ranges from 1.4 to 4.0 (2.6 on average, larger than most models for Release 2).

3 Not receiving any formal assistance and need some (Table 11)

Modelled estimates are not available for this outcome as a model could not be achieved. In general this can be due to the variation in the data item of interest and the capacity of available explanatory variables to explain it, as well as to attempting to achieve models for small/low prevalence groups.

4 Not receiving any formal assistance and do not need any (Table 11)

		Table: Not receiving formal assistance and do not need any - Average RRMSE and Average modelled prevalence by state by age								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	30.44	29.15	30.86	32.27	42.37	26.95	26.69	27.54	30.93

Average modelled prevalence* (%)	Persons 0-64 years	2.19	2.55	2.08	2.61	1.38	3.43	1.58	1.37	2.18
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The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 30.93%

Overall Assessment: *Use with caution*

The model contains a good selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within this group. The ratio of confidence interval width to modelled proportion ranges from 0.74 to 2.67 (1.22 on average).

Appendix 6 – Release 3

Release 3 provides three tables of modelled estimates for small areas, presented as proportions and counts of people living in private dwellings who:

- have a disability, type of condition by small areas by age (Table 5);
- have a disability, type of condition by small areas by sex (Table 6);
- have a disability, type of condition by degree of restriction by small areas by age (Table 9).

Measures of prediction accuracy (RRMSEs and CIs) are also included in this release. Summary tables are provided below for the models used to create each of the outcome categories for the tables. Refer to descriptions and how to interpret these tables in Appendix 4.

Table 5 – type of condition by age

1 Physical (Table 5)

		Table: Physical - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-5 years	34.15	37.80	41.00	39.87	60.79	33.97	58.54	55.74	42.31
	Persons 6-17 years	25.34	28.04	30.09	28.36	43.69	24.11	37.19	37.80	30.58
	Persons 18-24 years	27.32	28.65	30.66	29.38	44.43	26.27	39.73	35.34	31.24
	Persons 25-34 years	23.07	24.81	25.76	24.72	34.02	21.03	29.48	29.96	26.08
	Persons 35-54 years	18.88	20.78	21.07	19.72	23.66	16.26	21.85	21.72	20.82
	Persons 55-64 years	16.73	18.16	18.86	17.27	21.80	13.63	20.54	19.86	18.55
	Persons 65+ years	13.15	14.04	14.69	13.29	17.49	10.95	17.71	15.13	14.49
	Total	22.66	24.61	26.02	24.66	35.13	20.89	32.15	30.79	26.30

Average modelled prevalence* (%)	Persons 0-5 years	1.38	1.47	1.38	1.44	0.70	1.81	0.37	0.54	1.27
	Persons 6-17 years	2.42	2.45	2.26	2.53	1.41	3.01	1.51	1.67	2.24
	Persons 18-24 years	3.57	3.56	3.32	3.75	1.78	4.50	1.82	2.33	3.24
	Persons 25-34 years	5.51	5.37	5.18	5.79	4.45	7.39	3.59	3.50	5.14
	Persons 35-54 years	10.81	10.75	10.19	11.53	9.85	14.15	7.81	7.07	10.29
	Persons 55-64 years	22.29	22.58	21.55	23.63	19.81	28.89	14.35	16.01	21.50
	Persons 65+ years	34.55	35.87	34.77	37.47	31.04	40.94	23.02	27.19	34.25
	Total	11.50	11.72	11.24	12.31	9.86	14.38	7.49	8.33	11.13

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The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 26.30%

Overall Assessment: Use with caution

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups, with less to distinguish between groups, particularly between the younger age groups where the level of error is highest. The pattern of modelled proportions across the age groups seems reasonable: modelled estimates increase gradually with age, particularly from age group 25-34 years and older. The ratio of confidence interval width to modelled proportion ranges from 0.24 to 2.50 (1.03 on average).

2 Sensory and/or speech (Table 5)

		Table: Sensory and/or speech - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-5 years	27.33	28.88	31.09	32.41	51.68	28.84	42.16	43.30	32.98
	Persons 6-17 years	20.46	21.63	22.99	23.27	39.05	21.34	29.73	32.21	24.45
	Persons 18-24 years	34.71	35.20	38.81	40.49	69.40	38.45	51.94	51.88	41.24
	Persons 25-34 years	27.72	28.55	30.60	32.39	55.89	29.98	38.99	44.12	33.06
	Persons 35-54 years	17.77	18.59	18.70	18.59	30.00	17.44	23.06	25.13	19.99
	Persons 55-64 years	16.67	17.55	18.09	17.39	27.90	15.76	21.70	23.71	18.94
	Persons 65+ years	11.36	11.79	12.02	11.58	17.07	11.08	16.37	14.36	12.52
	Total	22.29	23.17	24.61	25.16	41.57	23.27	31.99	33.53	26.17

Average modelled prevalence* (%)	Persons 0-5 years	2.38	2.53	2.38	2.21	1.29	2.34	1.18	1.29	2.21
	Persons 6-17 years	2.73	2.81	2.62	2.52	1.65	2.67	2.20	1.95	2.54
	Persons 18-24 years	1.12	1.18	1.07	0.93	0.49	1.14	0.34	0.36	0.98
	Persons 25-34 years	1.37	1.42	1.36	1.21	0.71	1.36	0.93	0.64	1.25
	Persons 35-54 years	2.97	3.00	2.83	2.82	2.15	3.15	2.42	1.89	2.76
	Persons 55-64 years	7.36	7.36	7.20	7.00	5.56	8.08	5.88	5.00	6.93
	Persons 65+ years	21.84	21.88	21.74	21.53	18.65	21.80	15.71	16.81	21.00
	Total	5.68	5.74	5.60	5.46	4.36	5.79	4.09	3.99	5.38

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 26.17%

Overall Assessment: Use with caution

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups. Variation in the pattern of estimates between the groups is only evident for the two largest age groups; there is less to distinguish between the younger age groups where the level of error is highest. The spread of modelled proportions at the upper end (i.e. the length of the tail in a plot of estimates for all areas by age groups) is larger for the younger age groups than for the oldest group. The pattern of modelled proportions across the age groups seems reasonable: estimates increase with age from age group 35-54 years and older. The ratio of confidence interval width to modelled proportion ranges from 0.34 to 2.40 (0.99 on average).

3 Acquired brain injury (Table 5)

		Table: Acquired brain injury - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-5 years	93.72	108.19	112.70	124.01	180.23	90.68	186.22	188.85	123.21
	Persons 6-17 years	59.68	67.44	72.76	78.73	136.98	62.08	114.23	125.36	80.33
	Persons 18-24 years	81.15	83.46	89.37	97.09	152.36	80.10	145.51	136.10	97.43
	Persons 25-34 years	45.15	47.20	47.72	53.47	81.96	44.59	69.74	74.85	53.07
	Persons 35-54 years	33.77	34.31	34.28	36.93	55.23	33.25	48.81	48.70	37.56
	Persons 55-64 years	35.09	36.06	37.77	39.22	60.05	33.59	57.54	56.08	40.72
	Persons 65+ years	30.14	30.61	32.28	33.78	52.21	30.18	53.66	46.19	34.90
	Total	54.10	58.18	60.98	66.18	102.72	53.50	96.53	96.59	66.75

Average modelled prevalence* (%)	Persons 0-5 years	0.11	0.02	0.02	0.00	0.04	0.14	0.00	0.00	0.03
	Persons 6-17 years	0.29	0.18	0.19	0.09	0.09	0.38	0.06	0.00	0.17
	Persons 18-24 years	0.20	0.13	0.08	0.04	0.08	0.25	0.00	0.00	0.10
	Persons 25-34 years	0.62	0.49	0.67	0.38	0.28	0.99	0.26	0.11	0.51
	Persons 35-54 years	1.46	1.18	1.46	1.17	1.04	2.16	1.08	0.71	1.27
	Persons 55-64 years	2.13	1.80	2.16	1.70	1.26	3.32	1.20	0.84	1.84
	Persons 65+ years	3.17	2.81	3.29	2.62	2.22	4.61	2.08	1.82	2.88
	Total	1.14	0.94	1.12	0.86	0.72	1.69	0.67	0.50	0.97

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 66.75%

Overall Assessment: *Unreliable for general use*

The model contains only a few statistically significant explanatory variables and the low overall prevalence has resulted in modelled estimates with associated very high levels of error, particularly across the younger age groups. There is some variation in modelled proportions within age groups, but no discernible pattern of variation between age groups (as evidenced in plots of estimates for all areas by age groups). The ratio of confidence interval width to modelled proportion ranges from 0.81 to 10.20 (1.77 on average, the largest of all the models for Table 5).

4 Intellectual (Table 5)

		Table: Intellectual - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-5 years	50.94	54.25	56.16	55.35	85.85	50.45	71.97	69.22	58.62
	Persons 6-17 years	35.68	37.53	38.05	36.41	46.89	33.00	39.07	37.86	38.11
	Persons 18-24 years	40.34	42.47	42.92	42.05	56.48	38.11	47.92	48.21	43.93
	Persons 25-34 years	35.43	37.66	37.80	37.37	53.91	33.55	42.23	46.84	39.41
	Persons 35-54 years	34.62	37.12	37.51	35.70	49.45	31.55	41.81	45.95	38.46
	Persons 55-64 years	34.33	37.03	38.62	35.89	55.65	30.85	46.18	50.17	39.69
	Persons 65+ years	37.57	40.33	42.51	39.79	63.14	35.01	58.63	49.70	43.61
	Total	38.41	40.91	41.94	40.36	58.77	36.08	49.69	49.71	43.12

Average modelled prevalence* (%)	Persons 0-5 years	1.02	0.99	1.03	1.00	0.55	1.07	0.14	0.30	0.90
	Persons 6-17 years	4.98	4.94	5.04	5.27	4.17	5.22	3.90	4.15	4.87
	Persons 18-24 years	2.78	2.43	2.86	2.98	1.70	3.23	1.91	1.34	2.53
	Persons 25-34 years	2.11	1.88	2.21	2.22	1.34	2.48	1.55	0.87	1.93
	Persons 35-54 years	1.45	1.32	1.49	1.63	0.99	1.80	1.10	0.65	1.35
	Persons 55-64 years	1.93	1.88	2.01	2.16	1.10	2.48	0.98	0.69	1.79
	Persons 65+ years	2.49	2.44	2.53	2.73	1.45	2.71	0.73	1.58	2.32
	Total	2.40	2.27	2.45	2.57	1.61	2.71	1.47	1.37	2.24

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The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 43.12%

Overall Assessment: Use with high caution

The model contains a good selection of explanatory variables, but the low overall prevalence has resulted in modelled estimates with high levels of error, particularly across the youngest age group. There is a reasonable pattern of variation in modelled proportions within the age groups but not across the groups. There is a recognised age effect for the 5-14 year age group in the underlying disability data, with disability dropping for following age groups as status changes with diagnosis and access to appropriate services after this age group. This is reflected in the modelled estimates for the age group 6-17 years, which has a larger average modelled proportion than all other age groups. The spread of modelled proportions at the upper end is large across all age groups. The ratio of confidence interval width to modelled proportion ranges from 0.69 to 3.00 (1.73 on average).

5 Psychological (Table 5)

		Table: Psychological - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-5 years	54.21	58.82	62.54	59.24	95.65	53.18	90.51	87.38	65.35
	Persons 6-17 years	35.78	38.30	39.55	37.82	52.77	33.56	42.98	45.79	40.10
	Persons 18-24 years	41.61	41.90	44.55	42.38	63.38	39.46	55.35	49.24	45.32
	Persons 25-34 years	35.80	37.40	38.71	37.13	52.00	33.24	42.22	44.67	39.34
	Persons 35-54 years	31.34	33.62	34.07	32.52	38.95	28.33	33.89	36.07	33.92
	Persons 55-64 years	33.71	35.97	37.46	35.04	44.76	30.09	40.62	43.11	37.35
	Persons 65+ years	33.49	35.80	37.73	35.11	48.04	30.56	46.87	43.95	37.90
	Total	37.99	40.26	42.09	39.89	56.51	35.49	50.35	50.03	42.76

Average modelled prevalence* (%)	Persons 0-5 years	0.42	0.38	0.34	0.44	0.21	0.51	0.01	0.02	0.33
	Persons 6-17 years	2.15	2.24	2.22	2.59	1.30	2.71	1.47	1.51	2.12
	Persons 18-24 years	1.88	2.19	2.00	2.41	0.90	2.45	0.62	1.21	1.91
	Persons 25-34 years	2.29	2.40	2.28	2.80	1.29	3.16	1.47	1.26	2.21
	Persons 35-54 years	3.28	3.38	3.25	4.13	2.78	4.80	2.20	1.95	3.25
	Persons 55-64 years	4.19	4.40	4.23	5.15	3.05	6.25	2.49	2.47	4.13
	Persons 65+ years	3.43	3.73	3.71	4.40	2.36	4.76	1.84	2.09	3.50
	Total	2.52	2.67	2.58	3.13	1.70	3.52	1.44	1.50	2.49

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 42.76%

Overall Assessment: Use with high caution

The model contains a good selection of explanatory variables, but the moderately low overall prevalence has resulted in modelled estimates with high levels of error, particularly across the youngest age group. There is a reasonable pattern of variation in modelled proportions within the age groups, but little to distinguish between groups. The spread of modelled proportions at the upper end is large across all age groups (as evidenced in plots of estimates for all areas by age groups). The ratio of confidence interval width to modelled proportion ranges from 0.58 to 3.00 (1.64 on average).

Table 6 – type of condition by sex

1 Physical (Table 6)

		Table: Physical - Average RRMSE and Average modelled prevalence by sex, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males	16.19	18.14	18.34	16.58	19.77	13.53	22.35	18.28	18.04
	Females	15.53	17.36	17.52	15.93	19.46	13.19	20.54	17.44	17.29
	Total	15.86	17.75	17.93	16.26	19.62	13.36	21.45	17.86	17.67

Average modelled prevalence* (%)	Males	11.98	11.45	10.63	12.83	10.54	15.84	6.78	7.57	10.96
	Females	13.60	13.28	12.09	14.54	11.77	17.24	7.06	8.86	12.50
	Total	12.79	12.37	11.36	13.68	11.16	16.54	6.92	8.21	11.73

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 17.67%

Overall Assessment: *Reliable*

The model is the same as that used for Table 5, physical, with a good selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within each group, but no clear distinction between groups. This is expected given the small difference in disability proportions between males and females (18% for males compared with 19% for females). The average modelled proportion for females is slightly higher than for males. The ratio of confidence interval width to modelled proportion ranges from 0.32 to 1.80 (0.70 on average).

2 Sensory and/or speech (Table 6)

		Table: Sensory and/or speech - Average RRMSE and Average modelled prevalence by sex, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males	12.76	13.68	13.20	12.51	17.38	12.23	16.80	14.80	13.75
	Females	13.25	14.49	13.81	13.31	20.62	13.05	21.01	16.60	14.83
	Total	13.01	14.09	13.51	12.91	19.00	12.64	18.91	15.70	14.29
Average modelled prevalence* (%)	Males	7.28	6.83	6.28	6.94	5.84	7.84	4.34	4.57	6.41
	Females	5.14	4.75	4.40	4.88	3.74	5.14	2.61	3.18	4.44
	Total	6.21	5.79	5.34	5.91	4.79	6.49	3.47	3.88	5.42

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 14.29%

Overall Assessment: *Reliable*

The model is the same as that used for Table 5, sensory and/or speech, with a good selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions, but no clear distinction between groups, as expected. The ratio of confidence interval width to modelled proportion ranges from 0.38 to 2.17 (0.56 on average, the smallest of all the models for Table 6).

3 Acquired brain injury (Table 6)

		Table: Acquired brain injury - Average RRMSE and Average modelled prevalence by sex, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males	31.61	32.36	31.44	33.76	49.57	31.52	50.67	40.30	34.57
	Females	31.90	33.07	32.37	34.59	52.78	32.05	51.38	44.61	35.76
	Total	31.75	32.72	31.90	34.17	51.18	31.78	51.03	42.46	35.17

Average modelled prevalence* (%)	Males	1.69	1.34	1.61	1.37	1.35	2.57	1.16	0.87	1.45
	Females	1.10	0.90	1.04	0.87	0.80	1.61	0.66	0.55	0.93
	Total	1.39	1.12	1.32	1.12	1.08	2.09	0.91	0.71	1.19

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 35.17%

Overall Assessment: Use with caution

The model is the same as that used for Table 5, acquired brain injury, with only a small selection of explanatory variables. The average RRMSEs are above 25% for all states, with the low overall prevalence impacting the quality of modelled estimates, particularly for NT, ACT and WA. The pattern of variation in modelled proportions within the groups shows a relatively large spread of modelled estimates at the upper end (as evidenced in plots of estimates for all areas by gender groups) with no clear distinction between groups, as expected. The ratio of confidence interval width to modelled proportion ranges from 0.80 to 5.63 (1.40 on average).

4 Intellectual (Table 6)

		Table: Intellectual - Average RRMSE and Average modelled prevalence by sex, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males	33.80	36.27	36.09	34.20	40.86	30.86	40.33	34.95	36.05
	Females	32.94	35.39	35.21	33.56	43.49	30.20	40.20	35.91	35.62
	Total	33.37	35.83	35.65	33.88	42.17	30.53	40.26	35.43	35.84

Average modelled prevalence* (%)	Males	2.94	2.76	3.02	3.16	2.53	3.31	2.21	2.03	2.83
	Females	1.91	1.78	1.91	2.02	1.55	2.19	1.31	1.25	1.80
	Total	2.43	2.27	2.46	2.59	2.04	2.75	1.76	1.64	2.31

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 35.84%

Overall Assessment: Use with caution

The model is the same as that used for Table 5, intellectual, with a good and varied selection of explanatory variables. There is variation in the RRMSE averages between the states, but all are above 25%, with the moderately low overall prevalence impacting the quality of modelled estimates. There is a reasonable pattern of variation in modelled proportions within the groups. The pattern of variation in modelled proportions within the groups shows a relatively large spread of modelled estimates at the upper end (as evidenced in plots of estimates for all areas by gender groups) with no clear distinction between groups, as expected. The ratio of confidence interval width to modelled proportion ranges from 0.66 to 2.60 (1.43 on average, the largest of all the models for Table 6).

5 Psychological (Table 6)

		Table: Psychological - Average RRMSE and Average modelled prevalence by sex, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Males	30.84	33.48	33.48	31.97	36.34	28.03	35.88	33.01	33.24
	Females	32.34	34.88	34.88	33.41	38.78	29.40	36.40	35.19	34.75
	Total	31.59	34.18	34.18	32.69	37.56	28.72	36.14	34.10	34.00
Average modelled prevalence* (%)	Males	2.98	3.06	2.92	3.68	2.68	4.25	2.03	1.91	2.95
	Females	2.66	2.82	2.67	3.32	2.39	3.83	1.68	1.64	2.68
	Total	2.82	2.94	2.79	3.50	2.54	4.04	1.86	1.77	2.81

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions 34.00%

Overall Assessment: *Use with caution*

The model is the same as that used for Table 5, psychological, with a good and varied selection of explanatory variables. RRMSE averages are relatively consistent across states, but all are above 25%, with the moderately low overall prevalence impacting the quality of modelled estimates. There is a reasonable pattern of variation in modelled proportions within the groups. The pattern of variation in modelled proportions within the groups shows a relatively large spread of modelled estimates at the upper end (as evidenced in plots of estimates for all areas by gender groups) with no clear distinction between groups, as expected. The ratio of confidence interval width to modelled proportion ranges from 0.57 to 2.55 (1.36 on average).

Table 9 – type of condition by degree of restriction by age

1 Physical by profound/severe (Table 9)

		Table: Physical by profound/severe - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	27.02	29.32	29.57	27.70	32.84	24.64	30.17	31.49	29.38
	Persons 65+ years	22.20	23.89	24.69	23.11	30.89	20.57	28.39	25.39	24.63
	Total	24.61	26.60	27.13	25.40	31.87	22.60	29.28	28.44	27.00
Average modelled prevalence* (%)	Persons 0-64 years	2.58	2.36	2.32	2.56	2.22	3.48	2.10	1.48	2.33
	Persons 65+ years	14.03	13.60	13.56	14.25	10.43	15.87	8.55	9.81	13.07
	Total	8.31	7.98	7.94	8.40	6.32	9.68	5.33	5.65	7.70

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 27.00%

Overall Assessment: Use with caution

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups, more so within the older age group (65+ years). Consistent with expectations, the average modelled proportion of people who have a physical disability and a profound or severe core activity limitation is much higher for the older age group. The ratio of confidence interval width to modelled proportion ranges from 0.44 to 2.39 (1.08 on average).

2 Physical by moderate/mild (Table 9)

		Table: Physical by moderate/mild - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	20.54	22.11	22.22	20.80	24.22	18.00	24.14	25.50	22.25
	Persons 65+ years	18.64	19.61	20.40	18.89	24.16	16.24	22.91	22.15	20.27
	Total	19.59	20.86	21.31	19.84	24.19	17.12	23.52	23.83	21.26
Average modelled prevalence* (%)	Persons 0-64 years	4.32	4.03	4.06	4.83	4.17	6.10	3.27	2.77	4.08
	Persons 65+ years	18.06	18.03	18.21	20.41	16.68	22.66	13.06	13.89	17.86
	Total	11.19	11.03	11.13	12.62	10.42	14.38	8.17	8.33	10.97

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 21.26%

Overall Assessment: *Reliable*

The model contains a good and varied selection of explanatory variables. There is a reasonable pattern of variation in modelled proportions within the age groups, more so within the older age group (65+ years). Consistent with expectations, the modelled proportion of people who have a physical disability and a moderate or mild core activity limitation is much higher for the older age group. This is also consistent with the pattern seen for Table 9, physical by profound/severe. The ratio of confidence interval width to modelled proportion ranges from 0.43 to 2.27 (0.85 on average).

3 Sensory and/or speech by profound/severe (Table 9)

		Table: Sensory by profound/severe - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	21.29	22.37	22.65	21.81	29.71	20.93	31.74	28.45	23.56
	Persons 65+ years	20.43	21.17	22.68	21.54	33.97	20.37	33.85	26.87	23.40
	Total	20.86	21.77	22.67	21.67	31.84	20.65	32.80	27.66	23.48

Average modelled prevalence* (%)	Persons 0-64 years	1.24	1.14	1.18	1.25	1.02	1.43	0.88	0.81	1.14
	Persons 65+ years	6.72	6.65	6.85	7.29	4.84	6.86	3.57	5.33	6.46
	Total	3.98	3.89	4.01	4.27	2.93	4.15	2.22	3.07	3.80

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 23.48%

Overall Assessment: *Reliable*

The model contains a good and varied selection of explanatory variables. There is a good pattern of variation in modelled proportions for the older age group. Within the younger age group the pattern of variation in modelled proportions shows a relatively large spread of modelled estimates at the upper end (as evidenced in plots of estimates for all areas by age groups) with the bulk of areas having very small modelled estimates (in line with low prevalence for this group). Consistent with expectations, there is an age effect, with the older age group having a higher average modelled proportion of people with a sensory disability and a profound or severe core activity limitation than the younger age group. The ratio of confidence interval width to modelled proportion ranges from 0.63 to 2.23 (0.91 on average).

4 Sensory and/or speech by moderate/mild (Table 9)

		Table: Sensory by moderate/mild - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	9.70	12.22	12.81	11.67	20.72	9.56	20.01	22.03	13.65
	Persons 65+ years	6.45	8.53	9.39	8.35	15.70	6.58	17.84	14.61	9.83
	Total	8.08	10.38	11.10	10.01	18.21	8.07	18.93	18.32	11.74

Average modelled prevalence* (%)	Persons 0-64 years	1.20	1.16	1.08	1.19	1.08	1.47	0.87	0.78	1.10
	Persons 65+ years	13.36	13.56	13.05	13.28	12.22	14.37	9.35	10.01	12.88
	Total	7.28	7.36	7.06	7.24	6.65	7.92	5.11	5.39	6.99

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 11.74%

Overall Assessment: *Reliable*

The model contains a good selection of explanatory variables. There is a good pattern of variation in modelled proportions for the older age group. Within the younger age group the pattern of variation in modelled proportions shows a relatively large spread of modelled estimates at the upper end (as evidenced in plots of estimates for all areas by age groups) with the bulk of areas having very small modelled estimates (in line with low prevalence for this group). Consistent with expectations, there is an age effect, with the older age group having a higher average modelled proportion of people with a sensory disability and a profound or severe core activity limitation than the younger age group. The ratio of confidence interval width to modelled proportion ranges from 0.10 to 2.22 (0.45 on average, the smallest of all the models for Release 3).

5 Acquired brain injury by profound/severe (Table 9)

		Table: Acquired brain injury by profound/severe - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	32.09	31.80	32.86	38.66	47.10	31.76	50.83	51.76	36.05
	Persons 65+ years	28.33	28.40	32.65	35.53	49.38	28.49	55.53	46.47	34.25
	Total	30.21	30.10	32.75	37.10	48.24	30.13	53.18	49.12	35.15

Average modelled prevalence* (%)	Persons 0-64 years	0.53	0.41	0.45	0.34	0.27	0.62	0.37	0.27	0.41
	Persons 65+ years	2.33	1.86	1.92	1.49	1.06	2.41	0.93	1.10	1.75
	Total	1.43	1.13	1.19	0.92	0.67	1.51	0.65	0.69	1.08

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 35.15%

Overall Assessment: *Use with caution*

The model contains only a small number of statistically significant explanatory variables. In addition, the overall low prevalence of acquired brain injury in the population has impacted the quality of the modelled estimates, with average RRMSEs across all states higher than 25%. The higher average RRMSEs for NT, ACT and WA indicate that estimates for small areas in these jurisdictions are less reliable than the other states. The pattern of modelled proportions suggests that the model has only small differentiation between the age groups. The ratio of confidence interval width to modelled proportion ranges from 0.75 to 5.00 (1.35 on average).

6 Acquired brain injury by moderate/mild (Table 9)

		Table: Acquired brain injury by moderate/mild - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	16.90	21.08	23.13	20.92	36.58	16.56	44.90	42.55	24.69
	Persons 65+ years	20.54	27.26	32.48	27.68	53.42	21.05	62.45	57.46	33.48
	Total	18.72	24.17	27.80	24.30	45.00	18.80	53.68	50.01	29.09

Average modelled prevalence* (%)	Persons 0-64 years	0.42	0.35	0.34	0.39	0.25	0.52	0.26	0.22	0.34
	Persons 65+ years	1.10	0.92	0.88	0.99	0.49	1.31	0.04	0.08	0.82
	Total	0.76	0.63	0.61	0.69	0.37	0.91	0.15	0.15	0.58

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 29.09%

Overall Assessment: Use with caution

Similar to the model for Table 9, acquired brain injury by profound/severe, this model contains only a small number of explanatory variables, and the overall very low prevalence of acquired brain injury in the population has impacted the quality of the modelled estimates. The pattern of modelled proportions suggests that the model has only small differentiation between the age groups. As well as having higher average RRMSEs for NT, ACT and WA, there are higher average RRMSEs across the older age group, indicating less reliable modelled estimates for these groups. The ratio of confidence interval width to modelled proportion ranges from 0.20 to 3.00 (1.03 on average).

7 Intellectual by profound/severe (Table 9)

		Table: Intellectual by profound/severe - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	37.61	39.92	40.30	38.44	44.56	35.59	43.91	43.06	40.29
	Persons 65+ years	41.96	44.68	47.40	45.25	69.68	40.39	66.11	57.95	48.81
	Total	39.78	42.30	43.85	41.85	57.12	37.99	55.01	50.51	44.55

Average modelled prevalence* (%)	Persons 0-64 years	1.29	1.19	1.37	1.27	1.08	1.38	0.93	0.83	1.23
	Persons 65+ years	1.69	1.64	1.79	1.76	0.82	1.74	0.22	0.93	1.55
	Total	1.49	1.41	1.58	1.51	0.95	1.56	0.57	0.88	1.39

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 44.55%

Overall Assessment: Use with high caution

While the model contains a good and varied selection of explanatory variables, the overall low prevalence of intellectual disability in the population has impacted the quality of the modelled estimates. The pattern of modelled proportions suggests that the model has only small differentiation between the age groups. There is variation in the RRMSE averages between the states and age groups, but these are fairly high across all states and for the older age group in particular. The ratio of confidence interval width to modelled proportion ranges from 0.86 to 2.88 (1.78 on average).

8 Intellectual by moderate/mild (Table 9)

		Table: Intellectual by moderate/mild - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	36.01	37.66	37.77	36.41	45.16	34.96	45.01	42.20	38.48
	Persons 65+ years	50.14	57.66	60.83	56.48	85.87	48.51	93.94	87.49	63.08
	Total	43.07	47.66	49.30	46.45	65.51	41.73	69.47	64.84	50.78

Average modelled prevalence* (%)	Persons 0-64 years	0.74	0.63	0.68	0.71	0.55	0.89	0.63	0.48	0.65
	Persons 65+ years	0.75	0.53	0.59	0.67	0.36	0.99	0.21	0.02	0.53
	Total	0.75	0.58	0.63	0.69	0.45	0.94	0.42	0.25	0.59

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 50.78%

Overall Assessment: *Unreliable for general use*

The model contains a reasonable selection of explanatory variables. However, the very low prevalence of this category in the population has impacted on the quality of modelled estimates. The pattern of modelled proportions suggests no differentiation between the age groups. There is variation in the average RRMSEs between the states and age groups, but they are high for most states and particularly so for the older age group. The ratio of confidence interval width to modelled proportion ranges from 1.00 to 3.96 (1.91 on average, the largest of all the models for Table 9).

9 Psychological by profound/severe (Table 9)

		Table: Psychological by profound/severe - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	34.90	37.40	37.24	35.70	41.76	33.01	38.27	44.19	37.69
	Persons 65+ years	35.70	37.70	40.19	38.63	55.58	34.04	53.82	48.34	40.97
	Total	35.30	37.55	38.72	37.17	48.67	33.52	46.05	46.27	39.33

Average modelled prevalence* (%)	Persons 0-64 years	1.47	1.40	1.35	1.38	1.26	1.63	1.39	0.91	1.35
	Persons 65+ years	2.62	2.69	2.61	2.64	1.48	2.82	1.22	1.86	2.46
	Total	2.04	2.05	1.98	2.01	1.37	2.23	1.31	1.38	1.90

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 39.33%

Overall Assessment: Use with caution

The model contains a good selection of explanatory variables. However, the overall low prevalence of this category in the population has impacted the quality of the modelled estimates. The pattern of modelled proportions suggests that the model has only small differentiation between the age groups. The ratio of confidence interval width to modelled proportion ranges from 0.70 to 3.00 (1.56 on average).

10 Psychological by moderate/mild (Table 9)

		Table: Psychological by moderate/mild - Average RRMSE and Average modelled prevalence by age, by state								
		NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
Average RRMSE* (%)	Persons 0-64 years	23.53	24.06	24.65	24.40	32.74	23.89	33.74	35.07	25.97
	Persons 65+ years	33.29	36.56	43.08	36.20	73.73	32.41	77.55	68.93	44.67
	Total	28.41	30.31	33.86	30.30	53.24	28.15	55.64	52.00	35.32

Average modelled prevalence* (%)	Persons 0-64 years	0.97	0.91	0.91	1.21	0.78	1.43	0.62	0.49	0.91
	Persons 65+ years	0.73	0.74	0.67	1.03	0.38	1.19	0.02	0.05	0.65
	Total	0.85	0.82	0.79	1.12	0.58	1.31	0.32	0.27	0.78

* The figures provided in this table are averages constructed from modelled output for the purpose of assessing the reliability of the model. They should not be separately quoted nor used for any other purpose.

The total column is calculated by averaging the modelled estimates over all areas. These figures do not align with published estimates of prevalence for Australia and should not be used for that purpose or any other purpose.

Average RRMSE of predictions: 35.32%

Overall Assessment: Use with caution

The model contains a reasonable selection of explanatory variables. However, the very low prevalence of this category in the population has impacted on the quality of modelled estimates. The pattern of modelled proportions suggests no differentiation between the age groups. There is variation in the average RRMSEs between the states and age groups, with the higher levels of error seen across the older age group in general, and for NT, ACT and WA in particular, indicating less reliable modelled estimates for these groups. The ratio of confidence interval width to modelled proportion ranges from 0.70 to 2.67 (1.25 on average).