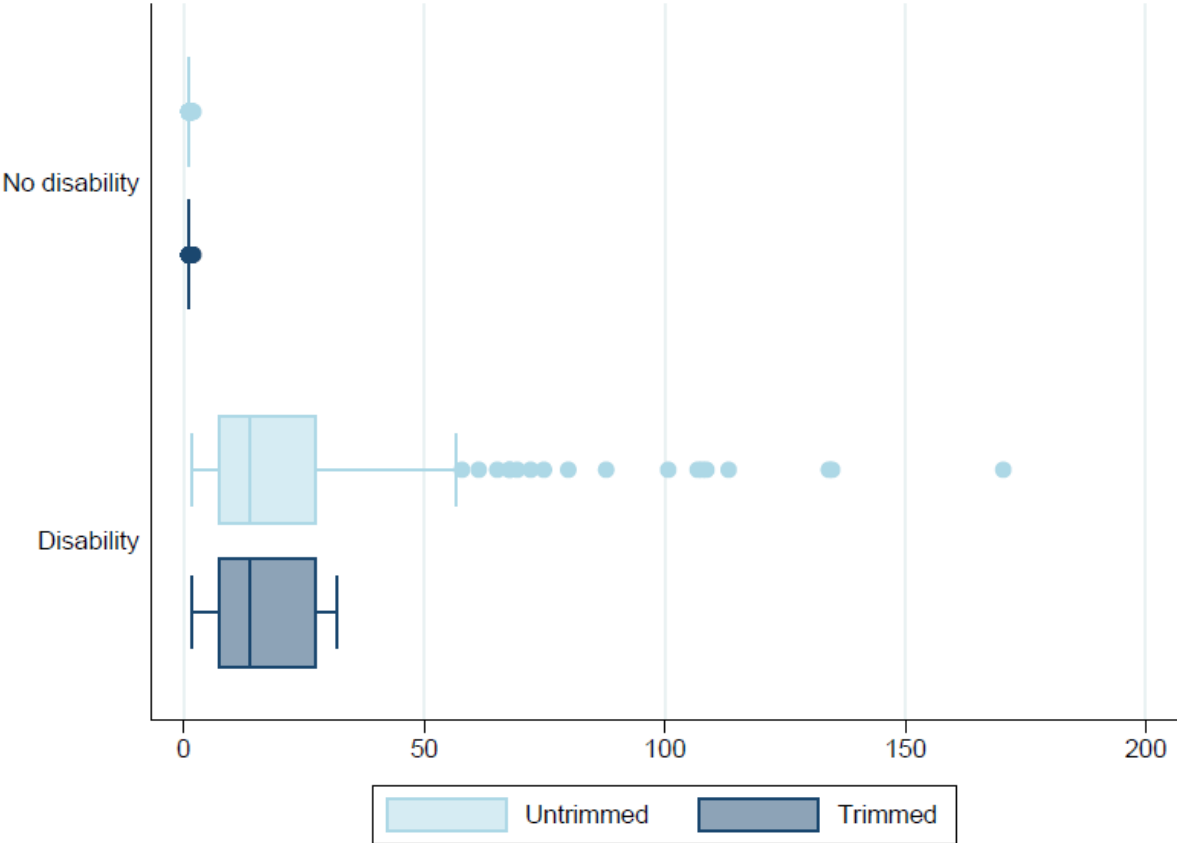


SUPPLEMENTARY FILES

Supplementary file 1.

Figure S1. Box plot displaying the distribution of non-trimmed and trimmed inverse probability of treatment weights, for people with and without disabilities, displaying the median (vertical line), the 25<sup>th</sup> and 75<sup>th</sup> percentiles (box), and outliers (dots).



Supplementary file 2. Description of missing data and multiple imputation

**Missing data**

There were missing observations for mental health in 2014 and at baseline, financial hardship, housing tenure, housing affordability, relationship status, social support, alcohol consumption, smoking, physical activity and BMI (see Table S2.1).

Table S2.1 Missing observations for each variable in the analysis

	Wave	Missing	
		n	%
Mental health	2014	805	8.5%
Mental health	2011	847	9.0%
Disability acquisition	2011-2014	0	0.0%
Age	2011	0	0.0%
Sex	2011	0	0.0%
Country of birth	2011	0	0.0%
Education	2011	0	0.0%
Employment	2011	0	0.0%
Income	2011	0	0.0%
Wealth	2014	0	0.0%
Financial hardship	2011	875	9.3%
Housing tenure	2011	11	0.1%
Housing affordability	2011	81	0.9%
Relationship status	2011	8	0.1%
Children	2011	0	0.0%
Social support	2011	959	10.2%
Alcohol consumption	2011	869	9.2%
Smoking	2011	858	9.1%
Physical activity	2011	843	8.9%
BMI	2011	1,136	12.0%

There was evidence that people with missing observations were systematically different from those without disabilities (see Table S2.2). They had poorer mental health and experienced greater socioeconomic disadvantage across every covariate examined, but had similar demographic characteristics. Therefore we concluded that the data were not missing completely at random, but that it was plausible that the data may be missing at random (that the probability of missingness was conditional on the observed data but not the missing data).

Table S2.2. Comparison of fully observed variables between people with complete (n=6461) and incomplete data (n=1862), Australia, 2011-2014.

Covariate	Complete data		Incomplete data		p value
	n	mean (SD)	n <sup>a</sup>	mean (SD)	
<b>Mental health (2014)</b>	6461	77.3 (15.2)	1057	74.9 (16.4)	p<0.001
<b>Mental health (2011)</b>	6461	77.7 (14.5)	1015	75.2 (15.5)	p<0.001
<b>Social support</b>	6461	5.6 (1.0)	903	5.5 (1.0)	p=0.004
<b>BMI</b>	6461	25.9 (5.0)	726	25.6 (5.2)	p=0.078
	n	%	n	%	p value
<b>Disability acquisition</b>					
Disability	311	4.8	76	4.1	
No disability	6150	95.2	1786	95.9	p=0.186
<b>Age</b>					
<30	1944	30.1	885	47.5	

30-44	2023	31.3	522	28.0	
45-69	1669	25.8	332	17.8	
60+	825	12.8	123	6.6	p=0.327
<b>Sex</b>					
Men	3088	47.8	922	49.5	
Women	3373	52.2	940	50.5	p=0.190
<b>Country of birth</b>					
Australia	5103	79.0	1451	77.9	
Other	1358	21.0	411	22.1	p=0.327
<b>Education</b>					
Bachelor or higher	1876	29.0	374	20.1	
Secondary, certificate, diploma	3051	47.2	917	49.3	
Did not complete secondary	1534	23.7	571	30.7	p<0.001
<b>Employment</b>					
Employed	5003	77.4	1371	73.6	
Unemployed	185	2.9	97	5.2	
Not in the labour force	1273	19.7	394	21.2	p<0.001
<b>Income</b>					
Q5 (highest)	634	26.6	339	18.6	
Q4	1232	24.1	405	21.6	
Q3	1320	20.4	369	19.8	
Q2	1557	19.1	402	21.8	
Q1 (lowest)	1718	9.8	347	18.2	p<0.001
<b>Wealth</b>					
High	2611	40.4	479	25.7	
Medium	2158	33.4	588	31.6	
Low	1692	26.2	795	42.7	p<0.001
<b>Financial hardship</b>					
Prosperous/very comfortable	1317	20.4	169	17.1	
Reasonably comfortable	3556	55.0	506	51.3	
Just getting by/very poor	1588	24.6	312	31.6	p<0.001
<b>Housing tenure</b>					
Outright owner	1893	29.3	362	19.6	
Mortgager	2790	43.2	729	39.4	
Private renter	1550	24.0	654	35.3	
Public renter	87	1.4	61	3.3	
Other	141	2.2	45	2.4	p<0.001
<b>Housing affordability</b>					
Affordable	6020	93.2	1591	89.3	
Unaffordable	441	6.8	190	10.7	p<0.001
<b>Relationship</b>					
Yes	4433	68.6	1016	54.8	
No	2028	31.4	838	45.2	p<0.001
<b>Children</b>					
Yes	3983	61.7	1011	54.3	
No	2478	38.4	851	45.7	p<0.001
<b>Alcohol consumption</b>					
Never	973	15.1	194	19.5	
Rarely	2286	35.4	383	38.6	
1-2 times/week	1392	21.5	217	21.9	
≥3 times/week	1810	28.0	199	20.0	p<0.001
<b>Smoking</b>					
Never smoked	3822	59.2	552	55.0	
Ex-smoker	1585	24.5	210	20.9	
Current	1054	16.3	242	24.1	p<0.001
<b>Physical activity</b>					
≥4 times/week	2404	37.2	354	34.7	
1-3 times/week	2734	42.3	401	39.4	
<1 time/week	1323	20.5	264	25.9	p<0.001

<sup>a</sup>the number of observations for each covariate for people with incomplete data (i.e. participants with missing

observations for at least one variable in the analysis for whom data were available for each specific covariate)

## Multiple imputation

Missing data may lead to biased estimates of effect if participants with complete data differ from those with missing data and excluding participants with any missing data from the analysis reduces the statistical power<sup>26</sup>. Therefore, we conducted multiple imputation to reduce bias and potentially increase the power and precision of the analysis.

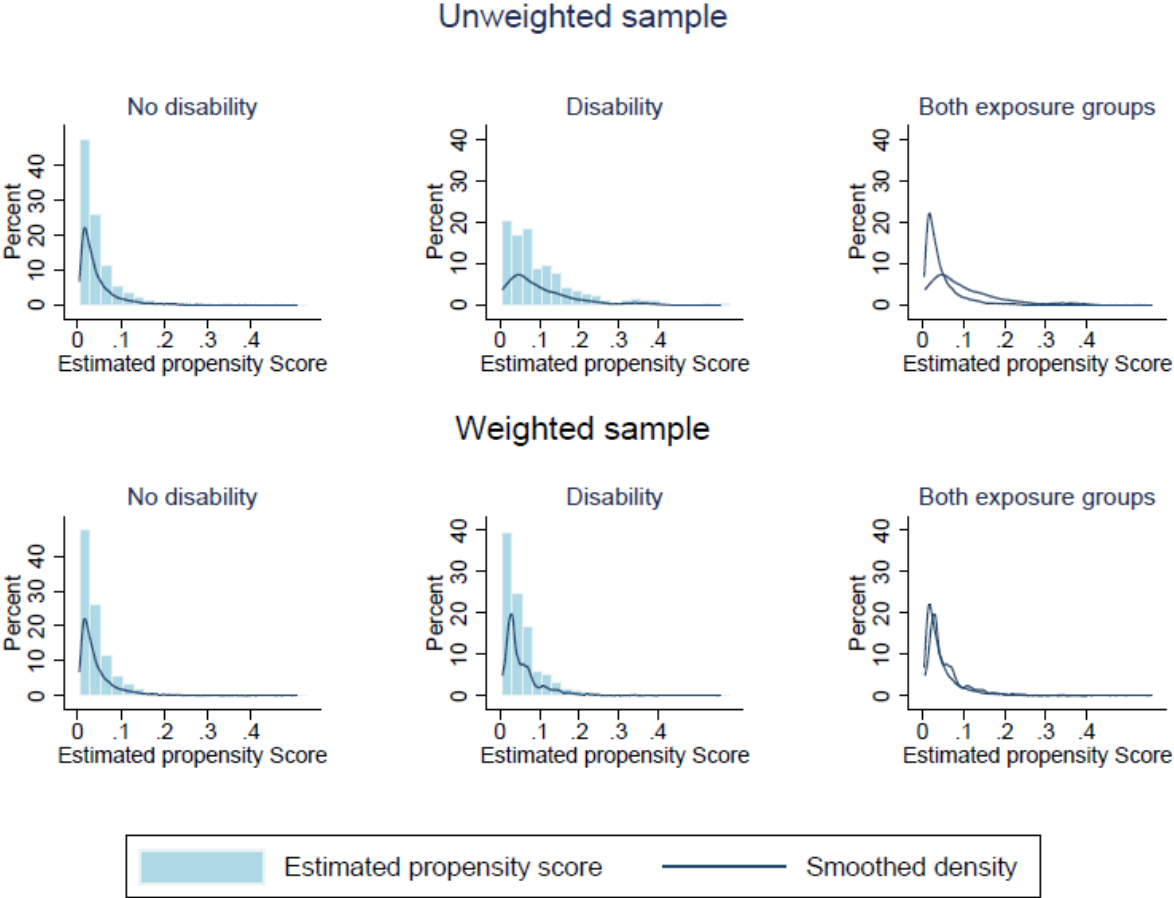
We created 50 imputed datasets using chained equations, in which univariate imputation models were specified for each variable with missing data, and the model cycled through each variable with missing data in turn (*mi impute chained* command in Stata). All variables included in the epidemiological analysis were included in the imputation model, as well as auxiliary variables, additional variables which were associated with the variable with missing data or predicted missingness of that variable. For each variable with missing data, the auxiliary variables included in the imputation model are listed in Table S2.3. The target analysis was conducted on each of the 50 imputed datasets, and the estimates were combined using Rubin’s rules to provide an overall estimate with a standard error, which takes into account the variability between the estimates from the imputed datasets<sup>27</sup>.

Table S2.3 Variables included in the imputation model for each covariate with missing data

Covariate	Wave	Variables in the imputation model
Mental health	2014	All variables in the epidemiological analysis; mental health (2010, 2012, 2013), self-rated health (2011, 2014); prior socioeconomic characteristics (2010): education, employment, financial hardship, housing tenure, housing affordability, relationship status; parental occupation (2011); lifestyle factors (2014): alcohol consumption, smoking, physical activity, BMI; Socio-Economic Indexes For Areas (SEIFA) index of relative socio-economic disadvantage score (2011)
Alcohol consumption	2011	
Smoking	2011	
Physical activity	2011	
BMI	2011	
Financial hardship	2011	All variables in the epidemiological analysis; mental health (2010, 2012, 2013), self-rated health (2011, 2014); prior socioeconomic characteristics (2010): education, employment, financial hardship, housing tenure, housing affordability, relationship status; parental occupation (2011); SEIFA index of relative socio-economic disadvantage score (2011)
Housing tenure	2011	
Housing affordability	2011	
Relationship status	2011	
Social support	2011	
Mental health	2011	

Supplementary file 3

Figure S3. Propensity score distribution in the whole sample and the weighted sample



## Supplementary file 4

Table S4. Standardised differences between people with and without disabilities in the unweighted and weighted samples, for each covariate

	Unweighted sample			Weighted sample <sup>a</sup>		
	Disability n=311 %	No disability n=6150 %	Standardised difference %	Disability n=311 %	No disability n=6150 %	Standardised difference %
<b>Age</b>						
<30	13.8	30.9	-41.9	22.7	30.1	-16.9
30-44	21.2	31.8	-24.2	29.6	31.3	-3.8
45-69	32.5	25.5	15.4	31.2	25.8	11.9
60+	32.5	11.8	51.5	16.6	12.8	10.8
<b>Sex</b>						
Men	51.4	47.6	7.7	47.7	47.8	-0.2
Women	48.6	52.4	-7.7	52.3	52.2	0.2
<b>Country of birth</b>						
Australia	77.5	79.1	-3.8	76.5	79	-5.9
Other	22.5	20.9	3.8	23.5	21	5.9
<b>Education</b>						
Bachelor or higher	18	29.6	-27.5	24.8	29	-9.6
Secondary, certificate, diploma	47.9	47.2	1.4	47.6	47.2	0.8
Did not complete secondary	34.1	23.2	24.2	27.6	23.8	8.8
<b>Employment</b>						
Employed	62.1	78.2	-35.9	76.4	77.4	-2.6
Unemployed	2.9	2.9	0.2	2.9	2.9	-0.1
Not in the labour force	35	18.9	36.9	20.8	19.7	2.7
<b>Income</b>						
Q5 (highest)	20.3	9.3	31.3	10.9	9.8	3.7
Q4	19.9	19	2.3	18.1	19.1	-2.6
Q3	21.9	20.4	3.7	22.9	20.4	5.9
Q2	19.9	24.3	-10.6	23.3	24.1	-1.9
Q1 (lowest)	18	27	-21.7	24.9	26.6	-3.9
<b>Wealth</b>						
High	36.7	40.6	-8.1	40.9	40.4	0.9
Medium	34.1	33.4	1.5	30.8	33.4	-5.6
Low	29.3	26	7.2	28.3	26.2	4.9
<b>Financial hardship</b>						
Prosperous/very comfortable	12.5	20.8	-22.3	16.8	20.4	-9.3
Reasonably comfortable	54.7	55.1	-0.8	56.2	55.1	2.3
Just getting by/very poor	32.8	24.2	19.2	27	24.6	5.6
<b>Housing tenure</b>						
Outright owner	38.6	28.8	20.7	32.6	29.3	7.1
Mortgager	34.4	43.6	-19	38.3	43.2	-9.9
Private renter	21.5	24.1	-6.1	24.6	24	1.5
Public renter	2.3	1.3	7.2	1.6	1.4	1.9
Other	3.2	2.1	6.7	2.9	2.2	4.4
<b>Housing affordability</b>						
Affordable	92.9	93.2	-1	94.5	93.2	5.3
Unaffordable	7.1	6.8	1	5.5	6.8	-5.3
<b>Relationship</b>						
Yes	73.6	68.4	11.6	73	68.6	9.7
No	26.4	31.6	-11.6	27	31.4	-9.7
<b>Children</b>						
No	26.4	39	-27.1	33	38.4	-11.2
Yes	73.6	61	27.1	67	61.6	11.2
<b>Alcohol consumption</b>						
Never	17	15	5.7	13.8	15	-3.6

Rarely	37	35.3	3.5	37.1	35.4	3.4
1-2 times/week	16.7	21.8	-12.9	21.4	21.6	-0.4
≥3 times/week	29.3	28	2.9	27.8	28	-0.5
<b>Smoking</b>						
Never smoked	46.9	59.8	-25.9	53.7	59.1	-11
Ex-smoker	32.8	24.1	19.3	28.4	24.5	8.8
Current	20.3	16.1	10.8	17.9	16.3	4.2
<b>Physical activity</b>						
≥4 times/week	35.4	37.3	-4	40.2	37.2	6.1
1-3 times/week	39.2	42.5	-6.6	38.2	42.3	-8.4
<1 time/week	25.4	20.2	12.4	21.6	20.5	2.8
	Mean (SD)	Mean (SD)	%	Mean (SD)	Mean (SD)	%
<b>Mental health</b>	70.9 (19.2)	77.6 (14.9)	-39	73.5 (5.9)	77.5 (19.5)	-23.4
<b>Mental health at baseline</b>	73.8 (18.4)	77.9 (14.3)	-25	77.0 (5.3)	77.7 (18.8)	-4.3
<b>BMI</b>	27.4 (5.3)	25.8 (5.0)	30.6	26.8 (1.7)	25.9 (6.6)	16.8
<b>Social support</b>	5.3 (1.1)	5.6 (1.0)	-29.7	5.6 (1.2)	5.6 (0.3)	-5.5

<sup>a</sup>The estimated propensity scores were used to create inverse probability of treatment weights for each individual in the sample. Some very large weights resulted from people with disabilities with very low propensity scores, therefore weights were trimmed at the 99<sup>th</sup> percentile of the distribution.