

## RESEARCH ARTICLE

# Updated Tables for Career Duration, Worklife Expectancy, and Estimated Lifetime Earnings for Persons With and Without Disability in Australia

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## Abstract

This report updates tables for the worklife and earning capacity of persons aged 20 to 64 years with and without disabilities in Australia. The estimates are derived from the latest official statistics, namely *Life Tables, Australia* and *Disability, ageing and carers, Australia*. Employment rates for males and females with profound-severe, moderate, mild or no disability were applied to estimates of longevity from ages 20-64. Analogous estimates were provided for those with a schooling or employment restriction. Overall the worklife for persons with a schooling or employment restrictions was around one-half to just under two-thirds that of those with no disability and lifetime earnings around one-quarter to one-third of those with no disability. Tables for earning capacity assessments are provided. The assumptions and limitations of this approach were outlined especially in relation to the generalisability of findings. It was concluded that the economic loss suffered through a disability is likely to be quite large.

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## Introduction

In Australia, there is a lower rate of labour force participation and higher rate of unemployment for people with disabilities when compared to people with no disability<sup>[1][2]</sup>. It is not always recognised, however, that such a difference may translate to an overall restriction in the number of working years and earnings. Naturally, the extent of the reduction in worklife will vary according to the nature and extent of a disability, its timing plus many other individual factors such as sex, age, education, region, marital status or occupational background. The purpose of this report is to document the difference in estimated career duration, worklife expectancy and earnings between those without disabilities and those in the official disability classifications in Australia.

The documentation of worklife expectancy is not new. In the UK, the Ogden Tables are actuarial tables for the calculation of damages for a future loss<sup>[3]</sup>. In the USA, work life expectancies were estimated by the Bureau of Labor Statistics and

published as Worklife Tables<sup>[4][5]</sup>. Gamboa<sup>[6]</sup> also determined the worklife expectancy of people with disabilities and a similar estimate of worklife expectancy had been undertaken for Australia<sup>[7][8]</sup>. Sections of this paper will overlap with Athanasou<sup>[8]</sup> but the calculations are updated.

At the outset of this report, the reader is advised that no claim is made that such analyses are perfect. They make numerous assumptions. In particular they are group findings that cannot be generalised to individual cases, since: "...life expectancies and worklife expectancies represent the average of a distribution of all possible actual outcomes and that they will not be accurate for any one individual"<sup>[9]</sup>. Notwithstanding these limitations, there is some benefit in charting the broad outlines of the economic disadvantage of a disability. With the release of the latest official statistics on disability and the labour force in Australia<sup>[10]</sup>, it is again possible to update these general worklife expectancies. The following section defines disability.

## Disability

For the Government Statistician, a person is considered to have disability if they have any limitation, restriction or impairment which restricts everyday activities and has lasted, or is likely to last, for six months or more. Specifically, a disability encompasses:

- 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, seizures, 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 being restricted
- any other long-term conditions resulting in a restriction.

(Source: Australian Bureau of Statistics, *Disability, Ageing and Carers, Australia, Catalogue No. 4430.0, November 2009*).<sup>[11]</sup>

Persons with a disability are classified formally into the four groups outlined in Table 1. The latest worklife estimates are based upon the official categorisations of disability, that is, persons with profound-severe, moderate, mild or no disability as well as age and sex.

**Table 1.** Categorisation of the extent of a disability

Category	Description
<b>Profound</b>	The person is unable to perform a core activity (i.e., communication, mobility or self-care), or is always needing assistance
<b>Severe</b>	The person sometimes needs assistance to perform a core activity (i.e., communication, mobility or self-care) or the person has difficulty understanding or being understood by family or friends, or the person can communicate more easily using sign language or other non-spoken forms of communication
<b>Moderate</b>	The person needs no help, but has difficulty with a core activity task (i.e., communication, mobility or self-care)
<b>Mild</b>	The person needs no help and has no difficulty with any of the core activity tasks, but uses aids or equipment, or has one or more of the following limitations: 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

*Source: Australian Bureau of Statistics*

The Australian Bureau of Statistics<sup>[12]</sup> also defined an additional group called “schooling or employment restriction only”. These are persons who do not have a core activity limitation but are (a) unable to participate in, or (b) are limited in the way they can participate in, or (c) need help, have difficulty or use aids or equipment in their education or employment.

## Research questions

This report seeks to address the following questions: (a) based on the typical employment rate, what is the estimated worklife expectancy of males or females aged 15 to 64 years with no disability; (b) how does that worklife expectancy compare with those in the profound-severe, moderate and mild categories of disability as well as for those with a schooling or employment restriction; (c) taking into account the earnings of those persons without and with disabilities, how great is the average loss of earnings from a particular age to age 64? The Method and Results are dealt with together in the following section.

## Method and Results<sup>1</sup>

The three basic calculations are adapted to an Australian context from the work of Gamboa<sup>[6][13]</sup>. They are set out in Table 2 and provide the foundation of this paper.

**Table 2.** Determination of worklife expectancy and earnings

<b>Career duration (CD)</b>	= cumulative proportion of those surviving between two ages (in this case up to 64 years)
<b>Worklife Expectancy (WLE)</b>	= CD x rate of employment for a group (with or without disability or restriction)
<b>Lifetime earnings</b>	= WLE x 52 x average weekly earnings

## Career Duration

The starting point for these calculations is to estimate male and female career duration from ages 20 to 64. The 15-19 years age group has not been included in this paper as its labour force participation in Australia is anomalous due to the fact that many in this age group are still studying. Secondly, although 67 years is the cut-off point for receipt of the age pension, the employment rates provided by the Australian Bureau of Statistics in relation to disabilities are available only for 15-64 years. It was not clear whether the employment rates ought to be extrapolated further.

Male or female life duration is derived from the *Life Tables 2020-2022* produced by the Australian Bureau of Statistics<sup>[14]</sup>. It is the number of persons surviving to age 64 (a reference table is provided in Appendix A). For instance there were 99,307 out of an original 100,000 male babies who had survived to age 20 and of these original 100,000 males some 89,481 survived to age 64. The proportion of males or females surviving at each age from 20 to age 64 is calculated and is shown in Appendix B. The estimated career duration for males and females from 15 to age 64 is provided in Table 3. It is the cumulative sum from age 64 back to a specific age. For example, a female of 25 years would have a potential working life of 38.3 years (column 3, row 7 in Table 3).

The potential working duration from an age to 64 years can then be adjusted for the employment rate of persons with and without disabilities. The employment rate is the proportion of a group that is working full-time or part-time. These employment rates are derived from the biennial *Survey of Disability, Ageing and Carers, 2022* and are listed for each of the groups in Table 4. This gives an estimated employment rate at each year.

The estimated duration for males at a particular age (Table 3) is then multiplied by the employment rate for the disability group (Table 4). It gives an estimated worklife expectancy for each disability category and for those without disabilities. Note that this calculation makes a number of assumptions: (a) it assumes a constant employment rate for each group from 15 to 67; (b) it assumes a constancy in disability categorisation; and (c) it does not separate out the full-time from the part-time employment rates.

Initial estimates of expectancy are provided in Table 5. In essence it shows how long one might be expected to work, given a level of disability. For instance, Table 5A shows that a 25-year-old female without a disability had a worklife duration to age 64 of 29.8 years (7<sup>th</sup> row and last column of Table 5A), compared with only 13.5 years for a female of the same age with a profound-severe disability (7<sup>th</sup> row and 7<sup>th</sup> column of Table 5A), 24.3 years with a moderate disability (7<sup>th</sup> row and 8<sup>th</sup> column of Table 5A) or 24.2 years for a mild disability (7<sup>th</sup> row and 9<sup>th</sup> column of Table 5A).

**Table 3.** Estimated male and female working life expectancy ages 15 to 67

Age	Males	Females	Age	Males	Females
20	41.8	43.1	43	20.9	21.3
21	40.9	42.1	44	19.9	20.4
22	40.0	41.2	45	19.0	19.4
23	39.0	40.2	46	18.1	18.5
24	38.1	39.3	47	17.2	17.5
25	37.2	38.3	48	16.3	16.6
26	36.3	37.4	49	15.3	15.6
27	35.4	36.5	50	14.4	14.6
28	34.5	35.5	51	13.5	13.7
29	33.6	34.6	52	12.5	12.7
30	32.7	33.6	53	11.6	11.8
31	31.8	32.7	54	10.7	10.8
32	30.9	31.7	55	9.7	9.8
33	30.0	30.8	56	8.8	8.9
34	29.1	29.8	57	7.8	7.9
35	28.2	28.9	58	6.9	6.9
36	27.3	28.0	59	5.9	5.9
37	26.4	27.0	60	4.9	5.0
38	25.4	26.1	61	4.0	4.0
39	24.5	25.1	62	3.0	3.0
40	23.6	24.2	63	2.0	2.0
41	22.7	23.2	64	1.0	1.0
42	21.8	22.3			

*Note: working life expectancy is the cumulative sum of the proportions in Appendix B; Rounded to one decimal place*

**Table 4.** Employment rates for persons with disabilities (i.e., core activity limitations) and without disabilities

	Profound or severe <sup>1</sup>	Moderate	Mild	No reported disability
Male employment rate	0.313	0.539	0.575	0.868
Female employment rate	0.351	0.634	0.630	0.778

*Source: Australian Bureau of Statistics, Survey of Disability, Ageing and Carers, 2022, Table 8.1 Persons aged 15-64 years living in households, Disability status by sex and labour<sup>[15]</sup>*

Some readers may have subtracted 25 years from 64 years and ended up with 39 years of remaining work-life for a female without a disability and may be wondering how the much lower figure of 29.8 years was calculated. Sadly, some people die. Reference to life tables shows that from an original cohort of 100,000 newborn female babies, only 93,699 will

make it to age 64 years<sup>[14]</sup>. A female aged 25 has a probability of 0.94 of surviving to age 64 and this gives around 38.3 years of potential working life. Next others get sick or do not work for various reasons. They are not in the labour force. So, this 38.3 years needs to be reduced by the probability of employment for females without a disability. This was set at 0.778 (it assumes a constant employment rate which is not correct for everyone but at least it is a starting point).

From where does the 0.778 come? It is the total number of females with no disability who are employed out of the total female population. Unfortunately, this is an average and ideally one would really need the figure for each age group because labour force participation is definitely a function of age, let alone other factors such as education. Although one might want to vary this.778 to suit individual circumstances, it will have implications for working capacity over a lifetime.

A similar table for males and females with a schooling or employment restriction is provided as Table 5B. An abbreviated table at five-year age intervals for males and females with a schooling or employment restriction is listed as Table 6 and illustrated in Figure 1.

**Table 5A.** An initial estimate of worklife expectancy for persons with disabilities (i.e., core activity limitations) and without disabilities for ages 20 to 64

MALES Ages	ProfoundSevere	Moderate	Mild	No disability	FEMALES Ages	ProfoundSevere	Moderate	Mild	No disability
20	13.1	22.5	24.0	36.1	20	15.1	27.3	27.1	33.5
21	12.8	22.0	23.5	35.3	21	14.8	26.7	26.5	32.8
22	12.5	21.5	23.0	34.6	22	14.4	26.1	25.9	32.0
23	12.2	21.0	22.5	33.8	23	14.1	25.5	25.3	31.3
24	11.9	20.6	21.9	33.0	24	13.8	24.9	24.7	30.6
25	11.7	20.1	21.4	32.2	25	13.5	24.3	24.2	29.8
26	11.4	19.6	20.9	31.4	26	13.1	23.7	23.6	29.1
27	11.1	19.1	20.4	30.7	27	12.8	23.1	23.0	28.4
28	10.8	18.6	19.9	29.9	28	12.5	22.5	22.4	27.6
29	10.5	18.1	19.3	29.1	29	12.1	21.9	21.8	26.9
30	10.2	17.6	18.8	28.3	30	11.8	21.3	21.2	26.2
31	10.0	17.1	18.3	27.5	31	11.5	20.7	20.6	25.4
32	9.7	16.7	17.8	26.7	32	11.1	20.1	20.0	24.7
33	9.4	16.2	17.2	25.9	33	10.8	19.5	19.4	24.0
34	9.1	15.7	16.7	25.2	34	10.5	18.9	18.8	23.2
35	8.8	15.2	16.2	24.4	35	10.1	18.3	18.2	22.5
36	8.5	14.7	15.7	23.6	36	9.8	17.7	17.6	21.7
37	8.2	14.2	15.2	22.8	37	9.5	17.1	17.0	21.0
38	8.0	13.7	14.6	22.0	38	9.1	16.5	16.4	20.3
39	7.7	13.2	14.1	21.2	39	8.8	15.9	15.8	19.5
40	7.4	12.7	13.6	20.4	40	8.5	15.3	15.2	18.8
41	7.1	12.2	13.1	19.6	41	8.1	14.7	14.6	18.1
42	6.8	11.7	12.5	18.8	42	7.8	14.1	14.0	17.3

43	6.5	11.2	12.0	18.0	43	7.5	13.5	13.4	16.6
44	6.2	10.8	11.5	17.3	44	7.1	12.9	12.8	15.8
45	6.0	10.3	10.9	16.5	45	6.8	12.3	12.2	15.1
46	5.7	9.8	10.4	15.7	46	6.5	11.7	11.6	14.4
47	5.4	9.3	9.9	14.9	47	6.1	11.1	11.0	13.6
48	5.1	8.8	9.3	14.1	48	5.8	10.5	10.4	12.9
49	4.8	8.3	8.8	13.3	49	5.5	9.9	9.8	12.1
50	4.5	7.8	8.3	12.5	50	5.1	9.3	9.2	11.4
51	4.2	7.3	7.7	11.6	51	4.8	8.7	8.6	10.6
52	3.9	6.8	7.2	10.8	52	4.5	8.1	8.0	9.9
53	3.6	6.2	6.7	10.0	53	4.1	7.5	7.4	9.1
54	3.3	5.7	6.1	9.2	54	3.8	6.8	6.8	8.4
55	3.0	5.2	5.6	8.4	55	3.4	6.2	6.2	7.6
56	2.7	4.7	5.0	7.6	56	3.1	5.6	5.6	6.9
57	2.4	4.2	4.5	6.8	57	2.8	5.0	5.0	6.1
58	2.1	3.7	3.9	5.9	58	2.4	4.4	4.4	5.4
59	1.8	3.2	3.4	5.1	59	2.1	3.8	3.7	4.6
60	1.5	2.7	2.8	4.3	60	1.7	3.1	3.1	3.9
61	1.2	2.1	2.3	3.4	61	1.4	2.5		
62	0.9	1.6	1.7	2.6	62	1.0	1.9		
63	0.6	1.1	1.1	1.7	63	0.7	1.3		
64	0.3	0.5	0.6	0.9	64	0.4	0.6		

**Table 5B.** An initial estimate of worklife expectancy for persons with schooling or employment restrictions and without disabilities for ages 20 to 64

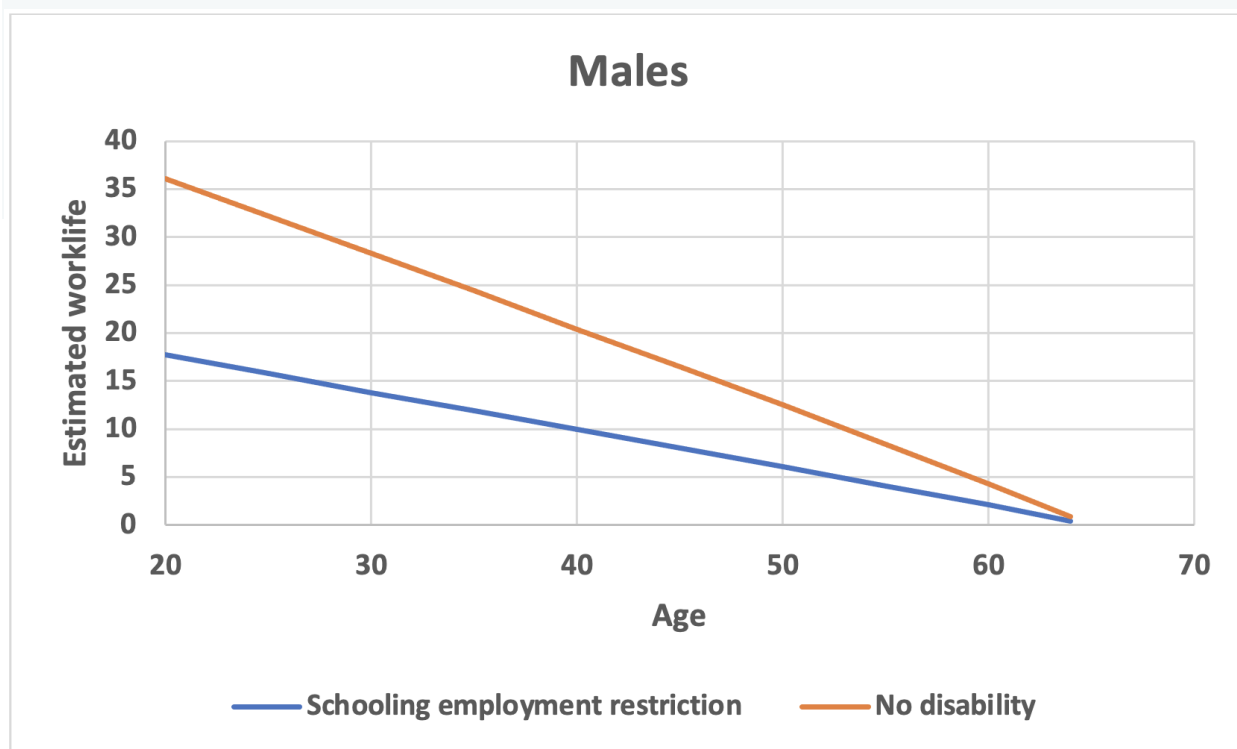
MALES Ages	Schooling employment restriction	No disability	FEMALES Ages	Schooling employment restriction	No disability
20	17.7	36.1	20	21.2	33.5
21	17.3	35.3	21	20.8	32.8
22	16.9	34.6	22	20.3	32.0
23	16.5	33.8	23	19.8	31.3
24	16.1	33.0	24	19.4	30.6
25	15.8	32.2	25	18.9	29.8
26	15.4	31.4	26	18.4	29.1
27	15.0	30.7	27	18.0	28.4
28	14.6	29.9	28	17.5	27.6
29	14.2	29.1	29	17.0	26.9
30	13.8	28.3	30	16.6	26.2
31	13.5	27.5	31	16.1	25.4
32	13.1	26.7	32	15.6	24.7
33	12.7	25.9	33	15.2	24.0

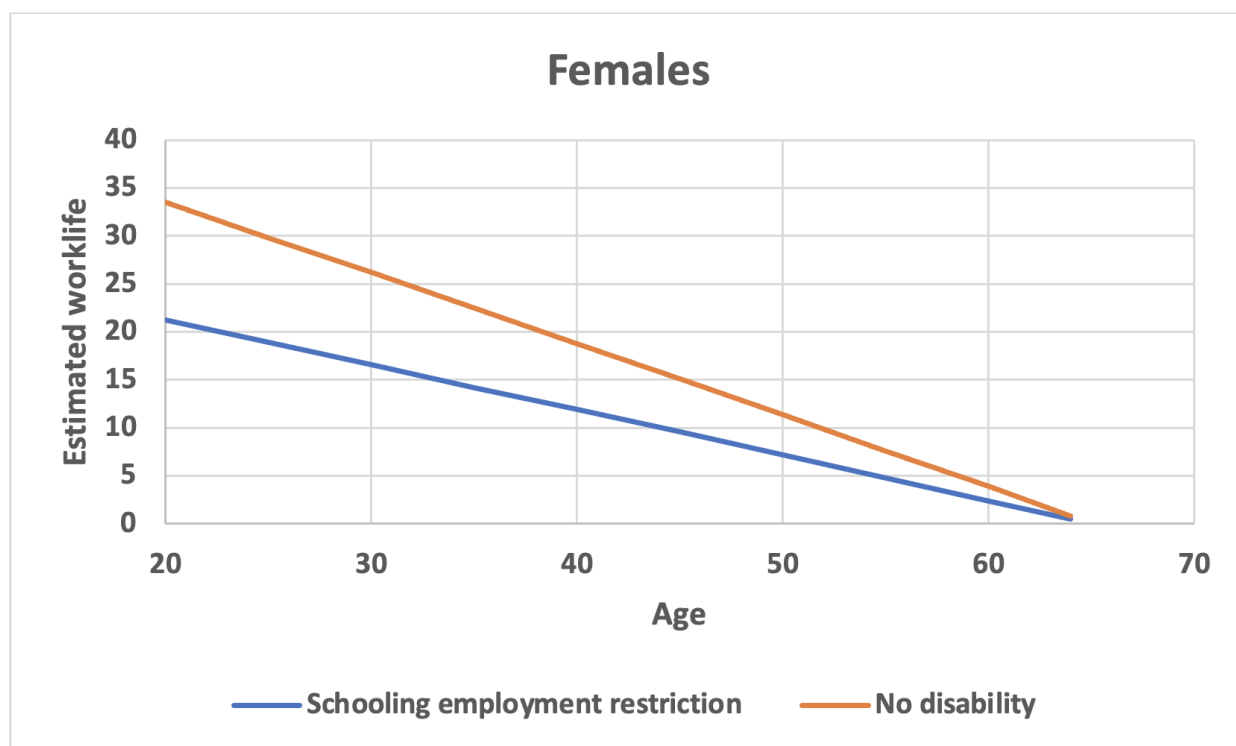
33	12.7	25.9	33	13.2	27.0
34	12.3	25.2	34	14.7	23.2
35	11.9	24.4	35	14.2	22.5
36	11.5	23.6	36	13.8	21.7
37	11.1	22.8	37	13.3	21.0
38	10.8	22.0	38	12.8	20.3
39	10.4	21.2	39	12.4	19.5
40	10.0	20.4	40	11.9	18.8
41	9.6	19.6	41	11.4	18.1
42	9.2	18.8	42	11.0	17.3
43	8.8	18.0	43	10.5	16.6
44	8.4	17.3	44	10.0	15.8
45	8.0	16.5	45	9.6	15.1
46	7.7	15.7	46	9.1	14.4
47	7.3	14.9	47	8.6	13.6
48	6.9	14.1	48	8.2	12.9
49	6.5	13.3	49	7.7	12.1
50	6.1	12.5	50	7.2	11.4
51	5.7	11.6	51	6.7	10.6
52	5.3	10.8	52	6.3	9.9
53	4.9	10.0	53	5.8	9.1
54	4.5	9.2	54	5.3	8.4
55	4.1	8.4	55	4.8	7.6
56	3.7	7.6	56	4.4	6.9
57	3.3	6.8	57	3.9	6.1
58	2.9	5.9	58	3.4	5.4
59	2.5	5.1	59	2.9	4.6
60	2.1	4.3	60	2.4	3.9
61	1.7	3.4	61	2.0	3.1
62	1.3	2.6	62	1.5	2.3
63	0.8	1.7	63	1.0	1.6
64	0.4	0.9	64	0.5	0.8

**Table 6.** Abbreviated table of estimated worklife expectancy for persons with schooling or employment restrictions and without disabilities for ages 20 to 64 at five-year age intervals



MALES Ages	Schooling employment restriction	No disability	FEMALES Ages	Schooling employment restriction	No disability
20	17.7	36.1	20	21.2	33.5
25	15.8	32.2	25	18.9	29.8
30	13.8	28.3	30	16.6	26.2
35	11.9	24.4	35	14.2	22.5
40	10.0	20.4	40	11.9	18.8
45	8.0	16.5	45	9.6	15.1
50	6.1	12.5	50	7.2	11.4
55	4.1	8.4	55	4.8	7.6
60	2.1	4.3	60	2.4	3.9
64	0.4	0.9	64	0.5	0.8





**Figure 1.** Estimated worklife expectancy for males-females with schooling or employment restrictions and without disabilities for ages 20 to 64 at five-year age intervals

## Reduced income and earning capacity over a lifetime

The net effect of restricted educational and vocational potential is highlighted in reduced income and earning capacity over a lifetime. For those aged 15-64 years without a disability, the median gross personal income per week was \$1055 compared with \$374 per week for those with a profound disability (see Table 7).

**Table 7.** Median gross personal income per week for persons 15-64 years with disabilities and without disabilities

	Profound e <sup>1</sup>	Severe	Moderate	Mild	No reported disability
Median gross personal incomes (\$)	374	490	726	650	1055

Source: Australian Bureau of Statistics, *Survey of Disability, Ageing and Carers, 2022, Table 7 Persons aged 15-64 years living in households, Disability status by age and selected economic characteristics*

The median gross personal income per week is largely a direct function of the extent of disability limitation. It is least for the profound-severe group (see Table 7) for whom the estimated average of the two medians in Table 7 is \$393 per week. Overall, disability results in lower median gross personal income per week. Almost assuredly this means that many persons with a disability will suffer substantial if not massive economic disadvantage. This is highlighted by calculating lifetime earnings.

If the reader recalls the earlier example of our female aged 25 years without a disability, it is possible to estimate her available lifetime earnings and then this can be compared to a female of the same age with say, a mild disability. The only available income figures are for males and females combined and here are my calculations:

*Female 25 years, no reported disability.* Median gross income = \$1055 multiplied by 29.8 years multiplied by 52 weeks = \$1,634,828.

*Female 25 years, mild disability.* Median gross income = \$650 multiplied by 24.2 years multiplied by 52 weeks = \$817,960.

An overall summary of theoretical lifetime earning capacity for five-year interval age groups for those with disabilities as well as for those with a schooling or employment restriction (but no disability) is provided in Table 8.

Any comparisons need to take into account other factors (e.g., after tax income, other vicissitudes of life, longevity differences in the groups, difference in male-female earnings, effect of part-time and full-time employment) but the general message is that the economic loss suffered through a disability is likely to be quite large. Of course, the disparities increase as the level of disability increases and the age of onset is younger. Needless to say, one should not extrapolate from general findings to a particular case, but it is a starting point to describe the overall background against which an individual might live, learn, work and earn.

**Table 8.** Estimated theoretical lifetime incomes for different levels of disability and for schooling or employment restriction at five-year age intervals

Males					
Age	Profound/Severe	Moderate	Mild	Schooling or employment restriction only	No disability
20	\$267,073	\$849,607	\$811,473	\$459,201	\$1,981,351
25	\$238,222	\$757,826	\$723,811	\$409,595	\$1,767,310
30	\$209,279	\$665,756	\$635,874	\$359,832	\$1,552,595
35	\$180,231	\$573,347	\$547,613	\$309,887	\$1,337,091
40	\$151,052	\$480,524	\$458,956	\$259,717	\$1,120,619
45	\$121,700	\$387,149	\$369,772	\$209,249	\$902,862
50	\$92,091	\$292,959	\$279,809	\$158,340	\$683,202
55	\$62,095	\$197,534	\$188,668	\$106,765	\$460,666
60	\$31,507	\$100,230	\$95,731	\$54,173	\$233,745
64	\$6,396	\$20,348	\$19,435	\$10,998	\$47,454
Females					
Age	Profound/Severe	Moderate	Mild	Schooling or employment restriction only	No disability
20	\$308,811	\$1,030,432	\$916,742	\$551,836	\$1,837,492
25	\$275,017	\$917,669	\$816,421	\$491,447	\$1,636,410
30	\$241,181	\$804,765	\$715,974	\$430,983	\$1,435,077
35	\$207,294	\$691,691	\$615,375	\$370,427	\$1,233,440
40	\$173,333	\$578,371	\$514,558	\$309,740	\$1,031,366
45	\$139,259	\$464,676	\$413,408	\$248,852	\$828,622
50	\$105,008	\$350,389	\$311,730	\$187,647	\$624,822
55	\$70,484	\$235,190	\$209,241	\$125,953	\$419,396
60	\$35,551	\$118,625	\$105,536	\$63,528	\$211,534
64	\$7,173	\$23,935	\$21,294	\$12,818	\$42,681

## Concluding Comments<sup>2</sup>

This paper has shown that even with some very basic (if not lenient) assumptions there is likely to be a reduced worklife expectancy and substantial lifetime economic disadvantage for those with (a) a disability, that is, for those with a restriction in communication, self-care or mobility as well as (b) for those with a schooling or employment restriction but no core activity limitation.

The estimated worklife expectancies point to the real-life impact of disabilities on employment. The reader should note again that these are approximations. They made assumptions about employment rates at each age level. They should be interpreted with caution as they do not consider individual circumstances. Nevertheless, they provide a realistic backdrop for considering the likely extent of one's future career, especially in relation to disability. Taking into account the extent of employment and one's workforce survival rate means that there is a somewhat clearer perception of the overall vocational disadvantage suffered by people with disabilities in Australia. The disadvantage and its extent are quantified and these tables may be of some assistance in some medico-legal or forensic vocational contexts.

In addition to the assumption mentioned earlier, namely: a constant employment rate for each group from 15 to 67; and that the employment rate does not separate out the full-time from the part-time employment rates, there are some additional limitations in the findings. Firstly, one of the assumptions made in this paper is that worklife ends at the normative retirement age of 67. It shortens the worklife estimate of those who could have continued to work beyond age 64 and on the other hand it lengthens the worklife estimate of those who while being able to work have decided to retire earlier<sup>[16]</sup>. Secondly, there is the issue of inflation and its impact on earnings over a lifetime. A third limitation is that disability status may change for the better or worse. For this reason some individualised predictions or variations need to be considered rather than a blind application of these tables. Fourthly, the impact on employability of educational achievement has not been considered in part due to the fact that the numbers in some cells would be quite small and the estimates unreliable. Finally, a factor for consideration is the increase in the age standardised disability rate in Australia from 16.1% in 2018 to 19.2% in 2022. Several factors to account for this have been suggested but discussion of these is well beyond the remit of this paper (see <https://www.abs.gov.au/statistics/health/disability/disability-ageing-and-carers-australia-summary-findings/2022> Accessed September 2024). Overall, the conclusions in 2018 and 2022 are consistent, similar in scope and vary little in extent to those on disability and earnings reported earlier by the author<sup>[7][17][18][8]</sup>. Comments and criticisms of the approach adopted are welcomed.

As mentioned, the calculations are based on the average rate of employment. The problem with averages is that they can hide as much as they reveal. A margin of error must be factored into these calculations. In the absence of any other information to the contrary, the average might well be a reasonable basis on which to commence or even proceed in the determination of economic loss. For this reason, Skoog and Toppino<sup>[19]</sup> added a sentence to their later published online abstract posted in September 2000 which is worthy of consideration, namely: "Worklife for the disabled, to the extent that it differs from the overall population, is best determined professionally on a case-by-case basis." (Source: Abstract SSRN: <https://ssrn.com/abstract=224311>).

For this reason, there is scope to vary the framework of the three equations and to adapt them to individual cases. For instance, the employment rate for a group with or without a disability might be varied in determining worklife expectancy. Then the employment rate might be adjusted, or even modified to take into account part-time or full-time employment. Finally, the median earnings might be adjusted as required for an individual case.

As an example, the lifetime earnings of a 25-year-old female professional with no disability and with a marginally higher lifetime employment rate of around 80% might be determined as follows:

<b>Career duration (CD)</b>	= cumulative proportion of those surviving between two ages (in this case up to 64 years) = 29.8 years
<b>Worklife Expectancy (WLE)</b>	= CD x rate of employment for a group = 29.8 x .8 = 23.84 years
<b>Lifetime earnings</b>	= WLE x 52 x average weekly earnings = 23.84 x 52 x \$2,313.60 p.w. ≈ \$2,868,123 (compared to \$1,634,828 for females in general)

Overall, it seems too easy to underestimate the economic consequences of disability. It is especially the case when one

outcome of disability is a reduced worklife. This has a flow-on effect to earnings. Disability can be a lifetime sentence to financial poverty, especially for previously marginalised groups. All that this paper suggests is that there are some initial estimates of disadvantage that are based on (a) the extent of disability, (b) its impact on the employment rate and (c) the likely earnings associated with levels of disability. The impact of disability on worklife expectancy and lifetime earnings are a major source of personal disadvantage that is worthy of further research and investigation.

## Appendix A: Abridged life tables - exact number of persons surviving to exact age

Age	Males number	Females number	Age	Males number	Females number
0	100,000	100,000	42	97,510	98,634
20	99,307	99,490	43	97,367	98,551
21	99,251	99,466	44	97,213	98,459
22	99,194	99,442	45	97,046	98,357
23	99,134	99,417	46	96,866	98,246
24	99,074	99,392	47	96,672	98,126
25	99,011	99,368	48	96,461	97,995
26	98,948	99,343	49	96,233	97,853
27	98,883	99,318	50	95,986	97,699
28	98,816	99,292	51	95,719	97,533
29	98,746	99,265	52	95,430	97,354
30	98,674	99,236	53	95,118	97,160
31	98,599	99,204	54	94,781	96,951
32	98,521	99,170	55	94,419	96,725
33	98,441	99,134	56	94,027	96,482
34	98,357	99,096	57	93,602	96,221
35	98,270	99,054	58	93,141	95,937
36	98,178	99,008	59	92,641	95,632
37	98,083	98,957	60	92,100	95,302
38	97,983	98,903	61	91,517	94,946
39	97,877	98,843	62	90,889	94,562
40	97,764	98,779	63	90,212	94,147
41	97,642	98,710	64	89,481	93,699

Source: Australian Bureau of Statistics, *Life expectancy 2020-2022, Table 1.9 Life Tables, Australia, 2020-2022*<sup>[14]</sup>

## Appendix B: Proportion surviving to age 64

Age	Males proportion	Females proportion	Age	Males proportion	Females proportion
20	0.90	0.94	43	0.92	0.95
21	0.90	0.94	44	0.92	0.95
22	0.90	0.94	45	0.92	0.95
23	0.90	0.94	46	0.92	0.95
24	0.90	0.94	47	0.93	0.95
25	0.90	0.94	48	0.93	0.96
26	0.90	0.94	49	0.93	0.96
27	0.90	0.94	50	0.93	0.96
28	0.91	0.94	51	0.93	0.96
29	0.91	0.94	52	0.94	0.96
30	0.91	0.94	53	0.94	0.96
31	0.91	0.94	54	0.94	0.97
32	0.91	0.94	55	0.95	0.97
33	0.91	0.95	56	0.95	0.97
34	0.91	0.95	57	0.96	0.97
35	0.91	0.95	58	0.96	0.98
36	0.91	0.95	59	0.97	0.98
37	0.91	0.95	60	0.97	0.98
38	0.91	0.95	61	0.98	0.99
39	0.91	0.95	62	0.98	0.99
40	0.92	0.95	63	0.99	1.00
41	0.92	0.95	64	0.92	1.00
42	0.92	0.95		0.92	0.95

## Footnotes

<sup>1</sup> This section overlaps with Athanasou<sup>[8]</sup>. Specific sections of the earlier report are being re-used verbatim.

<sup>2</sup> Some sections of the conclusion are re-used verbatim from Athanasou<sup>[8]</sup>.

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