

Appendix 5: Population estimates and indirect age-standardisation

Indirect age-standardisation is the process of applying a set of age-specific rates from a standard population to the population being studied. This publication uses indirect age-standardisation throughout (except where crude rates are indicated) in order to make rates comparable within the publication and to provide a measure that is robust with small cell sizes.

The standard population used for calculation of age-specific rates in this publication was the estimated resident population of Australia for June 1999. Standard rates were derived using the separations, patient days or psychiatric care days for the 1999-00 financial year. Sex was not used as a contributing factor, and the age groups were defined as set out in Table A5.1.

The example below outlines the calculation of the indirectly age-standardised overnight separation rates per 1,000 population for each jurisdiction:

Calculations for indirectly age-standardised rate for overnight separations per 1,000 population

Age-specific separation rates for the standard population are calculated by dividing the number of overnight separations for each age group for Australia by the Australian population for that age category and multiplying by 1,000 (see Table A5.4),

e.g. for 15-19 age category the age-specific standard separation rate would be $(7,168/1,330,972) \times 1,000 = 5.39$ overnight separations per 1,000 population

These rates are then applied to the specific population (e.g. NSW 15-19 years age group) to give the expected number of separations for that age and jurisdiction category (see Table A5.5).

These expected numbers of separations are summed over age categories to give an expected number of separations for each jurisdiction.

Finally, the indirectly age-standardised rate for each jurisdiction is given by dividing the actual number of separations for the jurisdiction (see Table A5.4) by the expected number of separations for the jurisdiction (Table A5.5) and multiplying by the separation rate of the standard population (Table 5.4),

e.g. for NSW rate = $(28,392/33,582.69) \times 5.25$
= 4.44 per 1,000 population (See Table A5.6)

Table A5.1: Estimated resident population by age group, States and Territories, 30 June 1999

Age group (yrs)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia^(a)
0–4	432,457	307,498	241,753	127,176	94,167	31,582	21,159	17,565	1,273,589
5–9	445,762	323,526	255,400	133,223	99,276	34,151	21,797	17,412	1,330,883
10–14	437,248	317,100	251,154	137,028	100,627	34,791	21,918	15,495	1,315,727
15–19	439,958	322,372	258,370	135,854	100,700	34,517	24,396	14,582	1,330,972
20–24	444,561	342,394	254,096	139,690	99,714	29,913	27,308	16,760	1,354,582
25–29	495,711	372,696	274,289	146,196	106,770	31,425	26,161	20,095	1,473,616
30–34	472,718	359,122	256,357	139,992	106,704	31,417	23,939	17,836	1,408,398
35–39	510,109	372,024	276,598	150,338	116,358	36,487	24,905	17,080	1,504,210
40–44	477,010	350,625	260,893	143,826	111,552	35,568	23,941	14,678	1,418,368
45–49	443,135	326,012	247,075	134,272	106,384	33,470	23,747	13,003	1,327,381
50–54	404,560	296,094	226,441	116,886	97,746	30,366	21,142	10,629	1,204,027
55–59	313,003	227,705	169,969	86,859	74,382	23,971	13,908	7,004	916,926
60–64	262,196	191,688	135,599	69,993	63,697	20,137	10,038	4,081	757,490
65–69	238,079	175,120	117,795	60,016	59,414	18,477	7,886	2,628	679,446
70–74	218,905	159,753	106,553	51,929	57,398	16,556	6,759	1,801	619,665
75–79	175,579	127,316	84,177	40,517	46,884	13,410	5,378	1,061	494,330
80–84	103,406	73,625	50,270	23,237	27,605	8,196	2,856	545	289,752
85+	82,306	62,920	40,092	20,554	23,030	6,369	2,057	469	237,804
Total	6,396,703	4,707,590	3,506,881	1,857,586	1,492,408	470,803	309,295	192,724	18,937,166

(a) Includes other Australian territories.

Source: ABS 1999.

Table A5.2: Projected Aboriginal and Torres Strait Islander population by age group, States and Territories, 30 June 1999

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0-4	16,669	3,366	16,248	7,765	3,092	2,181	476	7,022	56,828
5-9	15,850	3,126	15,572	7,808	3,140	2,022	392	6,976	54,911
10-14	14,090	2,688	13,437	7,494	2,846	2,020	403	6,096	49,087
15-19	12,300	2,306	11,867	6,164	2,450	1,913	377	5,836	43,239
20-24	9,680	1,992	10,075	5,275	1,987	1,451	324	5,376	36,178
25-29	9,796	2,063	9,811	5,192	2,112	1,207	372	5,276	35,848
30-34	8,261	1,902	8,407	4,659	1,849	1,062	261	4,367	30,785
35-39	7,622	1,658	7,226	4,075	1,603	1,106	268	3,470	27,037
40-44	6,187	1,346	5,808	3,218	1,232	945	217	2,847	21,818
45-49	5,017	995	4,604	2,351	946	763	128	2,153	16,969
50-54	3,715	752	3,360	1,725	682	536	76	1,679	12,539
55-59	2,730	526	2,201	1,202	522	315	37	1,156	8,697
60-64	1,821	360	1,615	827	356	228	11	943	6,163
65-69	1,320	292	1,241	714	242	166	12	568	4,559
70-74	775	187	727	404	153	83	12	385	2,727
75+	819	242	912	509	193	108	6	437	3,230
Total	116,652	23,801	113,111	59,382	23,405	16,106	3,372	54,587	410,615

Source: ABS 1998c.

Table A5.3: Estimated resident population by age group and metropolitan, rural and remote area, States and Territories, 30 June 1999

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
Metropolitan									
0-4	325,554	229,248	138,126	87,976	66,535	12,216	21,138	7,490	888,283
5-9	324,465	235,287	142,670	91,414	68,491	13,505	21,764	6,825	904,421
10-14	314,998	227,962	139,730	96,494	69,875	14,332	21,903	6,455	891,749
15-19	329,377	240,555	155,242	103,056	74,562	14,835	24,378	6,532	948,537
20-24	362,565	279,795	167,173	108,259	79,365	13,603	27,290	7,420	1,045,470
25-29	405,903	304,924	173,178	107,965	82,041	13,338	26,116	9,516	1,122,981
30-34	377,817	286,326	154,665	100,637	78,957	12,832	23,916	8,299	1,043,449
35-39	392,743	286,199	161,507	108,061	84,464	15,023	24,878	8,050	1,080,925
40-44	360,886	264,619	152,470	105,052	81,098	14,981	23,919	6,790	1,009,815
45-49	335,185	244,776	147,456	100,832	78,149	14,161	23,723	6,494	950,776
50-54	306,656	224,560	135,226	88,546	71,900	12,360	21,120	5,270	865,638
55-59	230,892	170,139	97,342	64,407	53,460	9,474	13,896	3,520	643,130
60-64	187,493	140,799	75,375	51,255	45,406	7,712	10,027	2,027	520,094
65-69	169,059	127,214	65,894	44,170	42,750	7,364	7,867	1,355	465,673
70-74	156,402	115,284	61,735	38,857	42,315	6,764	6,753	954	429,064
75-79	128,403	92,913	50,958	31,208	35,411	5,703	5,377	556	350,529
80-84	75,442	53,450	30,649	17,719	20,540	3,485	2,851	266	204,402
85+	60,384	45,834	24,354	15,767	17,050	2,701	2,057	233	168,380
<i>Total</i>	<i>4,844,224</i>	<i>3,569,884</i>	<i>2,073,750</i>	<i>1,361,675</i>	<i>1,092,369</i>	<i>194,389</i>	<i>308,973</i>	<i>88,052</i>	<i>13,533,316</i>
Rural									
0-4	102,282	77,467	86,360	22,781	25,225	19,159	21	1,436	334,731
5-9	116,473	87,304	95,057	25,496	28,297	20,416	33	1,434	374,510
10-14	118,009	88,111	96,217	26,521	28,580	20,261	15	1,228	378,942
15-19	107,228	80,934	90,978	22,057	24,530	19,571	18	1,154	346,470
20-24	78,870	62,134	74,205	17,204	18,564	16,153	18	1,232	268,380
25-29	85,745	67,091	84,810	20,079	22,407	17,945	45	1,405	299,527
30-34	90,840	72,085	86,043	21,986	25,275	18,369	23	1,544	316,165
35-39	112,796	84,833	98,397	25,447	29,531	21,261	27	1,786	374,078
40-44	112,039	84,907	93,748	24,819	28,299	20,359	22	1,607	365,800
45-49	104,252	80,273	86,387	22,007	26,385	19,098	24	1,327	339,753
50-54	94,459	70,612	79,309	18,973	24,275	17,815	22	1,160	306,625
55-59	79,144	56,804	63,482	15,924	19,636	14,331	12	690	250,023
60-64	72,113	50,164	53,571	14,221	17,377	12,279	11	276	220,012
65-69	66,861	47,249	46,621	12,656	15,959	11,037	19	191	200,593
70-74	60,781	43,893	40,698	10,654	14,506	9,706	6	130	180,374
75-79	46,100	34,019	30,428	7,682	11,060	7,613	1	76	136,979
80-84	27,246	19,968	17,745	4,387	6,834	4,663	5	29	80,877
85+	21,322	16,895	14,294	3,556	5,682	3,628	0	27	65,404
<i>Total</i>	<i>1,496,560</i>	<i>1,124,743</i>	<i>1,238,350</i>	<i>316,450</i>	<i>372,422</i>	<i>273,664</i>	<i>322</i>	<i>16,732</i>	<i>4,839,243</i>

(continued)

Table A5.3 (continued): Estimated resident population by age group and metropolitan, rural and remote area, States and Territories, 30 June 1999

Age group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
	Remote								
0-4	4,621	783	17,267	16,419	2,407	207	0	8,639	50,343
5-9	4,824	935	17,673	16,313	2,488	230	0	9,153	51,616
10-14	4,241	1,027	15,207	14,013	2,172	198	0	7,812	44,670
15-19	3,353	883	12,150	10,741	1,608	111	0	6,896	35,742
20-24	3,126	465	12,718	14,227	1,785	157	0	8,108	40,586
25-29	4,063	681	16,301	18,152	2,322	142	0	9,174	50,835
30-34	4,061	711	15,649	17,369	2,472	216	0	7,993	48,471
35-39	4,570	992	16,694	16,830	2,363	203	0	7,244	48,896
40-44	4,085	1,099	14,675	13,955	2,155	228	0	6,281	42,478
45-49	3,698	963	13,232	11,433	1,850	211	0	5,182	36,569
50-54	3,445	922	11,906	9,367	1,571	191	0	4,199	31,601
55-59	2,967	762	9,145	6,528	1,286	166	0	2,794	23,648
60-64	2,590	725	6,653	4,517	914	146	0	1,778	17,323
65-69	2,159	657	5,280	3,190	705	76	0	1,082	13,149
70-74	1,722	576	4,120	2,418	577	86	0	717	10,216
75-79	1,076	384	2,791	1,627	413	94	0	429	6,814
80-84	718	207	1,876	1,131	231	48	0	250	4,461
85+	600	191	1,444	1,231	298	40	0	209	4,013
<i>Total</i>	<i>55,919</i>	<i>12,963</i>	<i>194,781</i>	<i>179,461</i>	<i>27,617</i>	<i>2,750</i>	<i>0</i>	<i>87,940</i>	<i>561,431</i>

Source: ABS 1999.

Table A5.4: Overnight separations by age group, Australia, 1999–00

Age group	Overnight separations									Australian population	Age-specific separation rate
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total		
0–4	58	14	28	1	0	0	0	3	104	1,273,589	0.08
5–9	128	45	49	39	19	0	0	1	281	1,330,883	0.21
10–14	334	309	367	157	120	10	10	2	1,309	1,315,727	0.99
15–19	1,893	1,603	1,658	807	801	106	235	65	7,168	1,330,972	5.39
20–24	3,374	2,761	2,523	1,342	1,145	252	341	131	11,869	1,354,582	8.76
25–29	3,924	3,145	2,857	1,470	1,235	385	400	132	13,548	1,473,616	9.19
30–34	3,500	2,697	2,414	1,362	1,258	271	279	116	11,897	1,408,398	8.45
35–39	3,403	2,577	2,448	1,341	1,100	295	320	89	11,573	1,504,210	7.69
40–44	2,654	2,030	2,048	1,066	998	254	282	79	9,411	1,418,368	6.64
45–49	2,215	1,855	1,618	900	823	217	298	39	7,965	1,327,381	6.00
50–54	1,936	1,508	1,471	622	726	195	266	36	6,760	1,204,027	5.61
55–59	1,196	869	803	375	420	147	101	14	3,925	916,926	4.28
60–64	834	733	564	256	254	51	79	11	2,782	757,490	3.67
65–69	670	772	458	261	248	68	54	3	2,534	679,446	3.73
70–74	773	724	456	293	270	87	45	2	2,650	619,665	4.28
75–79	632	813	505	291	305	51	36	6	2,639	494,330	5.34
80–84	392	538	249	198	209	41	42	1	1,670	289,752	5.76
85+	256	356	155	219	177	75	4	0	1,242	237,804	5.22
Not specified	0	2	0	0	0	0	0	0	2		
Total	28,392	23,014	20,105	10,885	9,830	2,528	2,554	734	99,329	18,937,166	5.25

Table A5.5: Expected number of separations

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Australia
0–4	34.60	24.60	19.34	10.17	7.53	2.53	1.69	1.41	101.89
5–9	93.61	67.94	53.63	27.98	20.85	7.17	4.58	3.66	279.49
10–14	432.88	313.93	248.64	135.66	99.62	34.44	21.70	15.34	1,302.57
15–19	2,371.37	1,737.59	1,392.61	732.25	542.77	186.05	131.49	78.60	7,173.94
20–24	3,894.35	2,999.37	2,225.88	1,223.68	873.49	262.04	239.22	146.82	11,866.14
25–29	4,555.58	3,425.08	2,520.72	1,343.54	981.22	288.80	240.42	184.67	13,542.53
30–34	3,994.47	3,034.58	2,166.22	1,182.93	901.65	265.47	202.28	150.71	11,900.96
35–39	3,922.74	2,860.86	2,127.04	1,156.10	894.79	280.59	191.52	131.35	11,567.37
40–44	3,167.35	2,328.15	1,732.33	955.00	740.71	236.17	158.97	97.46	9,417.96
45–49	2,658.81	1,956.07	1,482.45	805.63	638.30	200.82	142.48	78.02	7,964.29
50–54	2,269.58	1,661.09	1,270.33	655.73	548.36	170.35	118.61	59.63	6,754.59
55–59	1,339.65	974.58	727.47	371.76	318.35	102.60	59.53	29.98	3,924.44
60–64	962.26	703.49	497.65	256.87	233.77	73.90	36.84	14.98	2,779.99
65–69	888.03	653.20	439.38	223.86	221.61	68.92	29.41	9.80	2,534.33
70–74	936.91	683.74	456.05	222.26	245.66	70.86	28.93	7.71	2,652.17
75–79	937.59	679.87	449.51	216.36	250.36	71.61	28.72	5.67	2,639.72
80–84	595.62	424.08	289.56	133.85	159.00	47.21	16.45	3.14	1,668.97
85+	429.64	328.44	209.28	107.29	120.22	33.25	10.74	2.45	1,241.34
Total	33,582.69	24,714.85	18,411.13	9,752.33	7,835.14	2,471.72	1,623.80	1,011.80	99,420.12

Table A5.6: Indirectly age-standardised rates for overnight separations per 1,000 population

NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
4.44	4.89	5.73	5.86	6.59	5.37	8.26	3.81	5.25