

1.02 Top reasons for hospitalisation

Hospital admissions for the leading ICD-10-AM (International Classification of Diseases) categories for Aboriginal and Torres Strait Islander people expressed as a rate by age group, age-standardised rate and rate ratio

Data sources

National Hospital Morbidity Database

The National Hospital Morbidity Database is a compilation of episode-level records from admitted patient morbidity data collection systems in Australian hospitals in each state and territory. State and territory health departments provide information annually on the characteristics, diagnoses and care of admitted patients in public and private hospitals to the Australian Institute of Health and Welfare (AIHW).

Data are presented for the six jurisdictions that the AIHW has assessed as having adequate identification of Indigenous hospitalisations in 2006–08 – New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory. These six jurisdictions represent approximately 96% of the Indigenous population of Australia. Data are presented by state/territory of usual residence of the patient.

In the period 2007–08, there were 276,000 hospital separations (episodes of care for admitted patients) for Aboriginal and Torres Strait Islander patients, around 3.5% of all separations. The proportion of separations of Aboriginal and Torres Strait Islander persons was higher in public hospitals (5.4% or 256,425 separations) compared with private hospitals (0.6% or 20,015 separations). Of all Aboriginal and Torres Strait Islander separations, nearly 93% occurred in public hospitals (AIHW 2009).

Hospitalisations for which the Indigenous status of the patient was not reported have been included with hospitalisations data for non-Indigenous people under the 'other' category. This is to enable consistency across jurisdictions, because public hospitals in some states and territories do not have a category for the reporting of 'not stated' or inadequately recorded/reported Indigenous status.

Hospitalisation data are presented for the 2-year period from July 2006 to June 2008. An aggregate of 2 years of data has been used, because the number of hospitalisations for some conditions is likely to be small for a single year.

The principal diagnosis is the diagnosis established to be the problem that was chiefly responsible for the patient's episode of care in hospital. The additional diagnosis is a condition or complaint either coexisting with the principal diagnosis or arising during the episode of care. The term 'hospitalisation' has been used to refer to a separation, which is the episode of admitted patient care. This can include a total hospital stay (from admission to discharge, transfer or death) or a portion of a hospital stay beginning or ending in a change in the type of care (for example, from acute to rehabilitation). 'Separation' also means the process by which an admitted patient completes an episode of care by being discharged, dying, transferring to another hospital or changing type of care.

Analyses

Age-standardised rates and ratios have been used as a measure of hospitalisations in the Indigenous population relative to other Australians. Ratios of this type illustrate differences between the rates of hospital admissions among Indigenous people and those of other Australians, taking into account differences in age distributions.

Hospitalisations

- In the 2-year period July 2006 to June 2008 there were a total of 14,870,686 hospitalisations in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory. Of these, 524,469 or 3.5% were hospitalisations of Indigenous Australians.
- Excluding hospitalisations for dialysis, there were 12,994,945 hospitalisations in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, and 303,651 (2.3%) of these hospitalisations were for Indigenous Australians (Table 1.02.2).
- For all hospitalisations, the average number of diagnoses per separation for Indigenous Australians was 2.9 and for other Australians it was 3.3. Excluding hospitalisations for care involving dialysis, the average number of diagnoses per separation for Indigenous Australians was 4.3 and for other Australians 3.6.

Hospitalisations by age and sex

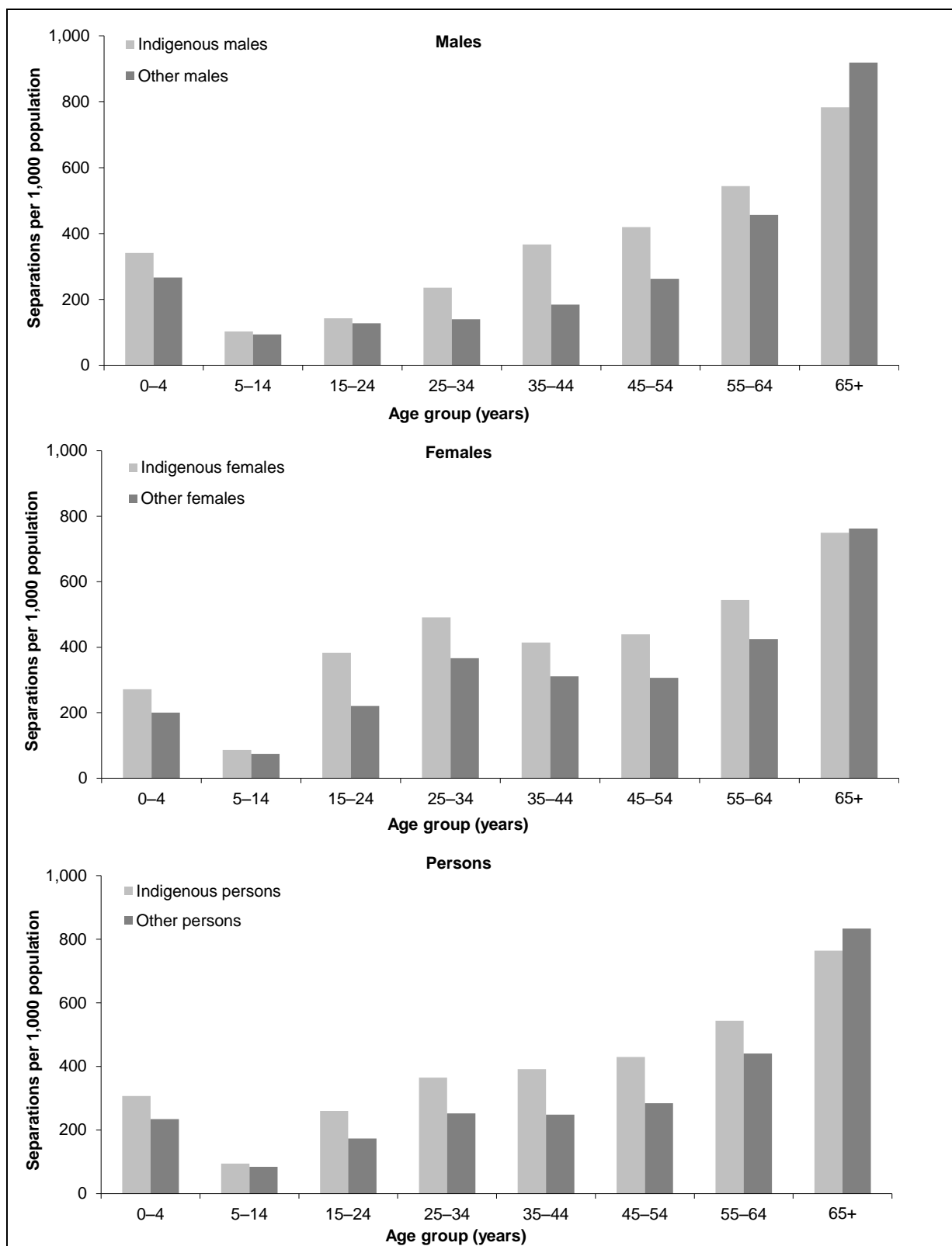
- For the 2-year period July 2006 to June 2008, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, when hospitalisations for dialysis are excluded, Indigenous males had higher hospitalisation rates than other males across all age groups with the exception of those aged 65 years and over. Indigenous females also had higher hospitalisation rates than other females across all age groups except those aged 65 years and over (Table 1.02.1, Figure 1.02.1).
- The greatest difference in hospitalisation rates occurred in the 25–34, 35–44, and 45–54 year age groups for males and in the 15–24 year age group for females. Indigenous males and females were hospitalised at between 1.6 and 2.0 times the rate of other males and females in these age groups.

Table 1.02.1: Age-specific hospitalisation rates (excluding dialysis) (per 1,000 population), by Indigenous status and sex, NSW, Vic, Qld, WA, SA and NT, July 2006 to June 2008

	0-4	5-14	15-24	25-34	35-44	45-54	55-64	65+
Males								
Indigenous	340.7	103.1	142.9	235.3	366.4	419.5	543.7	783.2
Other	266.6	94.0	128.0	139.7	184.2	262.5	456.7	918.2
Females								
Indigenous	272.0	86.2	383.3	490.8	414.1	439.5	543.8	749.7
Other	200.2	74.1	220.6	366.6	311.3	306.4	425.1	762.5
Persons								
Indigenous	307.0	94.9	260.4	364.4	391.3	429.9	543.8	763.9
Other	234.3	84.3	173.2	252.6	248.1	284.7	440.9	833.0

Note: Rates for Indigenous are calculated using population estimates based on the 2006 Census (series B).

Source: AIHW analysis of National Hospital Morbidity Database.



Source: AIHW analysis of National Hospital Morbidity Database.

Figure 1.02.1: Age-specific hospitalisation rates (excluding dialysis), by Indigenous status and sex, NSW, Vic, Qld, WA, SA and NT, July 2006 to June 2008

Hospitalisations by state/territory

Table 1.02.2 presents hospitalisations excluding dialysis for the 2-year period July 2006 to June 2008 for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, as well as rates and ratios for these six jurisdictions. Data for Tasmania and the Australian Capital Territory are also included, along with unadjusted and adjusted national level data. The Australia data are adjusted by applying a weighted correction factor of 1.12, which suggests that the 'true' number of records for Indigenous persons was about 12% higher than indicated in the hospital separations data.

- Over the period July 2006 to June 2008, excluding hospitalisations for dialysis, Indigenous Australians in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined were hospitalised at 1.3 times the rate of other Australians.
- When hospital rates are adjusted at the national level for Indigenous under-identification, Indigenous persons were hospitalised at 1.4 times the rate of other Australians.
- Indigenous Australians were hospitalised (excluding dialysis) at 0.9 times the rate of other Australians in Victoria, 1.2 times the rate of other Australians in New South Wales and Queensland and similar rate to other Australians in Tasmania. In the Australian Capital Territory, Indigenous Australians were hospitalised at 1.5 times the rate of other Australians, in Western Australia and South Australia Indigenous Australians were hospitalised at 1.6 times the rate of other Australians, and at more than twice the rate in the Northern Territory (Table 1.02.2).
- For all hospitalisations, including those with a principal diagnosis of care involving dialysis, Indigenous Australians were hospitalised at 1.3 times the rate of other Australians in Victoria, at 1.6 times the rate of other Australians in New South Wales, and at twice the rate of other Australians in Queensland. In Western Australia and South Australia, Indigenous Australians were hospitalised at three times the rate of other Australians, and at six times the rate in the Northern Territory (Table 3.12.23a).

Table 1.02.2: Hospitalisations (excluding dialysis), by Indigenous status, sex and jurisdiction, July 2006 to June 2008^{(a)(b)(c)(d)(e)}

	Indigenous				Other ^(f)				Ratio ^(j)
	Number	No. per 1,000 ^(g)	LCL 95% ^(h)	UCL 95% ⁽ⁱ⁾	Number	No. per 1,000 ^(g)	LCL 95% ^(h)	UCL 95% ⁽ⁱ⁾	
NSW									
Males	35,052	305.4	301.2	309.6	1,844,989	272.3	271.9	272.7	1.1*
Females	45,051	358.0	354.1	362.0	2,192,140	302.2	301.8	302.6	1.2*
Persons	80,103	331.5	328.6	334.4	4,037,167	286.2	285.9	286.5	1.2*
Vic									
Males	6,461	249.3	241.7	257.0	1,622,650	315.3	314.8	315.8	0.8*
Females	9,456	345.6	337.6	353.5	2,018,106	364.8	364.3	365.3	0.9*
Persons	15,917	298.3	292.8	303.8	3,640,773	338.6	338.2	338.9	0.9*
Qld									
Males	34,901	363.7	358.4	369.1	1,225,357	305.5	304.9	306.0	1.2*
Females	48,794	431.7	426.8	436.5	1,434,670	344.2	343.6	344.7	1.3*
Persons	83,695	397.4	393.8	400.9	2,660,030	323.6	323.2	324.0	1.2*
WA									
Males	23,343	442.3	434.7	450.0	573,703	285.0	284.3	285.7	1.6*
Females	31,396	530.2	523.2	537.2	675,894	326.0	325.2	326.8	1.6*
Persons	54,739	484.1	479.0	489.1	1,249,598	303.7	303.2	304.3	1.6*
SA									
Males	9,050	448.7	437.0	460.5	482,559	297.5	296.7	298.3	1.5*
Females	12,209	521.7	511.0	532.4	569,016	331.7	330.8	332.6	1.6*
Persons	21,259	484.8	477.0	492.7	1,051,592	312.7	312.1	313.3	1.6*
NT									
Males	20,197	414.7	406.9	422.5	26,476	206.7	203.8	209.7	2.0*
Females	27,741	480.2	473.5	486.8	25,657	204.8	202.0	207.7	2.3*
Persons	47,938	445.8	440.9	450.8	52,134	206.8	204.8	208.9	2.2*
NSW, Vic, Qld, WA, SA and NT^(k)									
Males	129,004	358.0	355.4	360.7	5,775,734	293.1	292.8	293.3	1.2*
Females	174,647	427.1	424.7	429.5	6,915,483	331.4	331.2	331.7	1.3*
Persons	303,651	392.3	390.5	394.0	12,691,294	310.9	310.7	311.0	1.3*
Persons Adjusted^(l)	340,089	420.0	418.3	421.8	12,654,856	297.7	297.6	297.9	1.4*

(continued)

Table 1.02.2 (continued): Hospitalisations (excluding dialysis), by Indigenous status, sex and jurisdiction, July 2006 to June 2008 (a)(b)(c)(d)(e)

	Indigenous				Other ^(f)				Ratio ^(j)
	Number	No. per 1,000 ^(g)	LCL 95% ^(h)	UCL 95% ⁽ⁱ⁾	Number	No. per 1,000 ^(g)	LCL 95% ^(h)	UCL 95% ⁽ⁱ⁾	
Tas									
Males	1,708	129.0	121.3	136.8	77,416	157.1	156.0	158.2	0.8*
Females	2,776	185.1	176.9	193.4	86,743	172.8	171.6	174.0	1.1*
Persons	4,484	158.0	152.3	163.7	164,161	164.6	163.8	165.4	1.0*
ACT									
Males	597	205.4	179.0	231.7	42,400	140.2	138.9	141.6	1.5*
Females	715	242.5	215.2	269.8	50,565	152.4	151.0	153.7	1.6*
Persons	1,312	224.5	205.4	243.7	92,965	146.0	145.0	146.9	1.5*
Australia^(m)									
Males	132,522	351.7	349.1	354.2	6,022,754	293.6	293.4	293.8	1.2*
Females	179,413	419.9	417.6	422.2	7,203,197	331.6	331.3	331.8	1.3*
Persons	311,935	385.6	383.9	387.3	13,226,546	311.2	311.1	311.4	1.2*

* Represents results with statistically significant differences in the Indigenous/other comparisons at the $p < 0.05$ level.

(a) Data are from public and most private hospitals. Jurisdictional data excludes private hospitals in the Northern Territory, Tasmania and the Australian Capital Territory.

(b) Categories are based on the ICD-10-AM fifth edition (National Centre for Classification in Health 2006).

(c) Financial year reporting.

(d) Data are reported by state/territory of usual residence of the patient hospitalised.

(e) Age standardised rates for New South Wales, Victoria, Queensland, Western Australia, South Australia, the Northern Territory and Australia have been calculated using the direct method, age standardised by 5 year age groups to 75+. Age standardised rates for Tasmania and the Australian Capital Territory have been calculated using the direct method, age standardised by 5 year age group to 65+.

(f) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.

(g) Directly age-standardised using the Australian 2001 standard population.

(h) LCL = lower confidence limit.

(i) UCL = upper confidence limit.

(j) Rate ratio Indigenous: other.

(k) New South Wales, Victoria, Western Australia, South Australia, the Northern Territory and Queensland are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital. Hospitalisation data for these six jurisdictions should not be assumed to represent the hospitalisation experience in the other jurisdictions

(l) These jurisdictions hospitalisation numbers and rates have been adjusted for Indigenous under-identification using a national adjustment factor of 1.12. This factor was derived from a study undertaken by the AIHW between 2006 and 2008 which assessed the level of Indigenous under-identification in hospital data in all states and territories by comparing information gathered from face-to face interviews in public hospitals with results from hospital records. The national adjustment factor excludes Tasmania and the Australian Capital Territory, as the levels of Indigenous identification in these jurisdictions were not considered acceptable for analysis purposes. By applying this factor, the number of Indigenous hospitalisations was increased by 12% and these additional hospitalisations then subtracted from the number of hospitalisations for Other Australians.

(m) Includes all separations in all eight states and territories, including the Australian Capital Territory and Tasmania; Other Territories and Residence State not applicable (e.g. overseas, at sea, no fixed address).

Notes

1. Rates for Indigenous are calculated using population estimates based on the 2006 Census (SERIES B).

2. Care types 7.3, 9 & 10 (Newborn – unqualified days only; organ procurement; hospital boarder) excluded from analysis.

Source: AIHW analysis of National Hospital Morbidity Database.

Hospitalisations by remoteness area

Hospitalisation rates for all conditions excluding dialysis in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory are presented by Australian Standard Geographical Classification (ASGC) in Table 1.02.3, covering the period July 2007 to June 2009.

- Indigenous Australians in all remoteness areas except *Major cities* were more likely to be hospitalised for all conditions excluding dialysis than other Australians. The ratio of hospitalisations of Indigenous people compared to other Australians was higher and the difference was statistically significant for all ASGC areas except *Major cities*.
- Rates of hospitalisations per 1,000 head of population were highest for Indigenous people living in *Remote* areas, at 641 per 1,000. The rate was highest for other Australians who lived in *Inner regional* areas, at 335 per 1,000. The lowest rates were observed in *Major cities* areas for Indigenous people (324 per 1,000) and *Remote areas* for other Australians (310 per 1,000).
- Indigenous people were hospitalised at a rate of 2.1 times that of other Australians in *Remote* areas of Australia. In *Major cities*, where the lowest ratio was observed, Indigenous Australians were hospitalised at a rate similar to that of other Australians. Nationally, the rate was significantly higher, at 1.3 times.

Table 1.02.3: Hospitalisations (excluding dialysis), by Indigenous status and remoteness, NSW, Vic, Qld, WA, SA and NT, July 2007 to June 2009^{(a)(b)(c)(d)(e)(f)}

	Indigenous				Other ^(g)				Ratio ^(k)
	Number	No. per 1,000 ^(h)	LCL 95% ⁽ⁱ⁾	UCL 95% ⁽ⁱ⁾	Number	No. per 1,000 ^(h)	LCL 95% ⁽ⁱ⁾	UCL 95% ⁽ⁱ⁾	
Major cities	75,935	323.6	320.7	326.6	9,120,768	328.5	328.3	328.7	1.0*
Inner regional	58,105	397.7	393.7	401.7	2,622,335	335.2	334.8	335.6	1.2*
Outer regional ^(l)	73,634	468.1	464.0	472.2	1,162,367	326.9	326.3	327.5	1.4*
Remote ^(m)	48,192	641.4	634.5	648.3	152,883	310.3	308.7	311.9	2.1*
Very remote	60,714	461.9	454.5	469.3	50,785	323.6	322.7	324.5	1.4*
Total⁽ⁿ⁾	317,285	424.2	422.4	426.0	13,118,754	328.7	328.5	328.9	1.3*
Total adjusted^(o)	355,359	475.1	473.1	477.0	13,080,680	327.7	327.5	327.9	1.4*

* Represents results with statistically significant differences in the Indigenous/other comparisons at the $p < 0.05$ level.

- (a) Data are from public and most private hospitals. Jurisdictional data excludes private hospitals in the Northern Territory.
- (b) Categories are based on the ICD-10-AM 5th edition (National Centre for Classification in Health 2006).
- (c) Financial year reporting.
- (d) Data are reported by state/territory of usual residence of the patient hospitalised.
- (e) Age standardised rates have been calculated using the direct method, age standardised by 5 year age group to 65+.
- (f) New South Wales, Victoria, Western Australia, South Australia, the Northern Territory and Queensland are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital. Hospitalisation data for these six jurisdictions should not be assumed to represent the hospitalisation experience in the other jurisdictions.
- (g) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.
- (h) Directly age-standardised using the Australian 2001 standard population.
- (i) LCL = lower confidence limit.
- (j) UCL = upper confidence limit.
- (k) Rate ratio Indigenous: other.
- (l) Includes remote Victoria.
- (m) Excludes remote Victoria.
- (n) Total includes hospitalisations where ASGC is missing.
- (o) These jurisdictions hospitalisation numbers and rates have been adjusted for Indigenous under-identification using a national adjustment factor of 1.12. This factor was derived from a study that the AIHW undertook between 2006 and 2008 which assessed the level of Indigenous under-identification in hospital data in all states and territories by comparing the information gathered from face-to-face interviews in public hospitals with the results from hospital records. The national adjustment factor excludes Tasmania and the Australian Capital Territory, as the levels of Indigenous identification in these jurisdictions were not considered acceptable for analysis purposes. By applying this factor, the number of Indigenous hospitalisations increased by 12% and these additional hospitalisations were then subtracted from the number of hospitalisations of Other Australians.

Notes

1. Rates for Indigenous are calculated using the 2006 population estimates based on the 2006 Census (Series B).
2. Care types 7.3, 9 & 10 (Newborn – unqualified days only; organ procurement; hospital boarder) excluded from analysis.

Source: AIHW analysis of National Hospital Morbidity Database.

Hospitalisations by principal diagnosis

Table 1.02.4 presents data on the most common principal diagnoses for hospitalisations involving Aboriginal and Torres Strait Islander peoples for the 2-year period July 2006 to June 2008 in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined.

- In absolute terms the most common principal diagnosis among Indigenous Australians was care involving dialysis (42%), followed by injury and poisoning (8%), pregnancy (7%), diseases of the respiratory system (6%) and diseases of the digestive system (5%). However, when the younger age structure of the Indigenous population is taken into account, circulatory disease becomes a significant cause of hospitalisation among Indigenous people. The most common diagnoses responsible for hospitalisations among other Australians in these six jurisdictions was care involving dialysis (12%) and diseases of the digestive system (11%).
- Overall, in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, Indigenous Australians were hospitalised at over twice the rate of other Australians. Excluding dialysis, Indigenous Australians were hospitalised at 1.3 times the rate of other Australians.
- The greatest differences in rates between Indigenous and other Australians were for care involving dialysis and endocrine, nutritional and metabolic diseases, caused mainly by diabetes. Indigenous Australians were hospitalised at 10.8 times the rate of other Australians for dialysis and at 3 times the rate of other Australians for endocrine, nutritional and metabolic diseases.

Table 1.02.4: Hospitalisations, by principal diagnosis and Indigenous status, NSW, Vic, Qld, WA, SA and NT, July 2006 to June 2008^{(a)(b)(c)(d)}

Principal diagnosis	Number		Per cent		Indigenous			Other ^(e)			Ratio ⁽ⁱ⁾
	Indigenous	Other ^(e)	Indigenous	Other ^(e)	No. per 1,000 ^(f)	95% LCL ^(g)	95% UCL ^(h)	No. per 1,000 ^(f)	95% LCL ^(g)	95% UCL ^(h)	
Injury & poisoning & certain other consequences of external causes	39,574	939,446	7.5	6.5	43.6	43.1	44.1	23.4	23.3	23.4	1.9 [*]
Pregnancy, childbirth and the puerperium ^(j)	38,317	891,607	7.3	6.2	33.7	33.3	34.0	23.4	23.3	23.4	1.4 [*]
Diseases of the respiratory system	31,632	634,425	6.0	4.4	41.0	40.4	41.6	15.8	15.8	15.9	2.6 [*]
Diseases of the digestive system	27,528	1,614,972	5.2	11.3	37.1	36.6	37.7	39.5	39.5	39.6	0.9 [*]
Symptoms, signs and abnormal clinical and laboratory findings	22,873	946,230	4.4	6.6	32.8	32.3	33.3	23.0	22.9	23.0	1.4 [*]
Mental and behavioural disorders	21,778	557,755	4.2	3.9	25.1	24.7	25.5	13.9	13.9	13.9	1.8 [*]
Diseases of the circulatory system	16,530	890,215	3.2	6.2	33.4	32.8	34.0	21.0	21.0	21.1	1.6 [*]
Diseases of the genitourinary system	12,879	692,686	2.5	4.8	18.6	18.2	19.0	17.0	17.0	17.1	1.1 [*]
Diseases of the skin & subcutaneous tissue	12,103	230,295	2.3	1.6	13.3	13.0	13.6	5.7	5.7	5.7	2.3 [*]
Certain infectious and parasitic diseases	10,450	170,252	2.0	1.2	9.5	9.3	9.8	4.3	4.3	4.4	2.2 [*]

(continued)

Table 1.02.4 (continued): Hospitalisations, by principal diagnosis and Indigenous status, NSW, Vic, Qld, WA, SA and NT, July 2006–June 2008^{(a)(b)(c)(d)}

Principal diagnosis	Number		Per cent		Indigenous			Other ^(e)			Ratio ⁽ⁱ⁾
	Indigenous	Other ^(e)	Indigenous	Other ^(e)	No. per 1,000 ^(f)	95% LCL ^(g)	95% UCL ^(h)	No. per 1,000 ^(f)	95% LCL ^(g)	95% UCL ^(h)	
Endocrine, nutritional and metabolic diseases	10,592	269,680	2.0	1.9	19.4	18.9	19.8	6.5	6.5	6.5	3.0*
Other ^(k)	59,395	4,853,731	11.3	33.8	84.8	83.9	85.7	117.3	117.2	117.4	0.7*
<i>Total</i>	<i>303,651</i>	<i>12,691,294</i>	<i>57.9</i>	<i>88.5</i>	<i>392.3</i>	<i>390.5</i>	<i>394.0</i>	<i>310.9</i>	<i>310.7</i>	<i>311.0</i>	<i>1.3*</i>
Care involving dialysis	220,763	1,645,262	42.1	11.5	421.3	419.4	423.3	39.1	39.1	39.2	10.8*
Total^(l)	524,469	14,346,217	100.0	100.0	813.7	811.1	816.4	350.2	350.1	350.4	2.3*

* Represents results with statistically significant differences in the Indigenous/other comparisons at the $p < 0.05$ level.

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.

(b) Categories are based on the ICD-10-AM fifth edition (National Centre for Classification in Health 2006).

(c) Financial year reporting.

(d) Data are reported by state/territory of usual residence of the patient hospitalised and are for New South Wales, Victoria, Western Australia, South Australia, the Northern Territory and Queensland only. These six jurisdictions are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital.

(e) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.

(f) Directly age-standardised using the Australian 2001 standard population.

(g) LCL = lower confidence limit.

(h) UCL = upper confidence limit.

(i) Rate ratio Indigenous: other.

(j) Rates and rate ratios are for females only.

(k) Includes: diseases of the musculoskeletal system and connective tissue; neoplasms; diseases of the nervous system; certain conditions originating in the perinatal period; diseases of the ear and mastoid process; diseases of the eye and adnexa; diseases of the blood and blood-forming organs and certain disorders involving the immune system; congenital malformations, deformations and chromosomal abnormalities; and factors influencing health status and contact with health services (except dialysis).

(l) Includes hospitalisations for which no principal diagnosis was recorded.

Notes

1. Rates for Indigenous are calculated using population estimates based on the 2006 Census (SERIES B).

2. Care types 7.3, 9 & 10 (Newborn – unqualified days only; organ procurement; hospital boarder) excluded from analysis.

Source: AIHW analysis of National Hospital Morbidity Database.

Hospitalisations by additional diagnosis

Table 1.02.5 presents hospitalisations for selected principal diagnoses by additional diagnoses, for Aboriginal and Torres Strait Islander peoples in New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined.

- For the 2-year period July 2006 to June 2008, the majority of hospitalisations with a principal diagnosis of care involving dialysis were reported with an additional diagnosis of diseases of the genitourinary system (77%) followed by endocrine, nutritional and metabolic disorders (20%).
- Almost a quarter (24%) of hospitalisations with a principal diagnosis of injury and poisoning were reported with an additional diagnosis of mental and behavioural disorders, and 11% with an additional diagnosis of endocrine, metabolic and nutritional disorders.
- Hospitalisations with a principal diagnosis of circulatory diseases were most commonly reported with an additional diagnosis of endocrine, nutritional and metabolic diseases (52%).
- Endocrine, nutritional and metabolic disorders were an additional diagnosis in hospitalisations where infectious and parasitic diseases (40%), abnormal findings (25%), respiratory diseases (23%), diseases of the digestive system (21%), and skin diseases (19%) were a principal diagnosis.
- Hospitalisations with a principal diagnosis of endocrine, nutritional and metabolic diseases were commonly reported with an additional diagnosis of diseases of the circulatory system (54%).

Table 1.02.5: Hospitalisations of Indigenous persons: principal diagnosis chapter by additional diagnosis chapter of hospitalisation, NSW, Vic, Qld, WA, SA, and NT, July 2006 to June 2008^{(a)(b)(c)(d)}

Additional diagnosis of hospitalisation	Principal diagnosis													Total (excl. dialysis)	Total ^(f)
	Dialysis (Z49)	Injury & poisoning (S00-Y98)	Pregnancy (O00-O99)	Respiratory (J00-J99)	Digestive (K00-K93)	Abnormal findings (R00-R99)	Mental disorders (F00-F99)	Circulatory (I00-I99)	Genito-urinary (N00-N99)	Skin (L00-L99)	Infectious (A00-B99)	Endocrine (E00-E90)	Other ^(e)		
Per cent															
Genitourinary diseases (N00–N99)	77.3	6.1	4.4	8.1	7.0	8.3	2.2	19.1	26.0	6.4	14.6	42.9	7.2	9.4	38.0
Endocrine, nutritional & metabolic (E00–E90)	20.4	11.4	3.2	22.7	21.2	24.6	10.7	51.6	23.3	19.1	39.7	64.6	14.5	19.8	20.1
Diseases of the circulatory system (I00–I99)	6.0	8.8	1.8	17.7	15.5	21.6	5.6	67.0	17.3	12.7	11.4	54.0	12.4	16.2	11.9
Mental and behavioural disorders (F00–F99)	0.1	23.5	4.6	11.1	17.9	15.3	52.6	11.8	6.6	8.4	6.9	11.3	8.4	14.9	8.7
Symptoms, signs and abnormal findings (R00–R99)	0.2	7.9	6.2	11.3	9.2	16.4	17.9	14.7	10.5	7.0	16.4	16.1	9.4	10.8	6.3
Infectious and parasitic diseases (A00–B99)	0.0	9.0	5.7	13.2	7.6	4.8	2.8	7.2	24.2	44.2	19.6	16.7	6.7	10.3	6.0

(continued)

Table 1.02.5 (continued): Hospitalisations of Indigenous persons: principal diagnosis chapter by additional diagnosis chapter of hospitalisation, NSW, Vic, Qld, WA, SA, and NT, July 2006 to June 2008^{(a)(b)(c)(d)}

Additional diagnosis of hospitalisation	Principal diagnosis													Total (excl. dialysis)	Total ^(f)
	Dialysis (Z49)	Injury & poisoning (S00-Y98)	Pregnancy (O00-O99)	Respiratory (J00-J99)	Digestive (K00-K93)	Abnormal findings (R00-R99)	Mental disorders (F00-F99)	Circulatory (I00-I99)	Genito-urinary (N00-N99)	Skin (L00-L99)	Infectious (A00-B99)	Endocrine (E00-E90)	Other ^(e)		
Per cent															
Injury & poisoning (S00-Y98)	0.2	42.0	0.7	2.2	2.8	2.7	6.8	4.5	3.5	17.4	3.5	6.7	6.1	9.4	5.5
Pregnancy, childbirth (O00-O99)	0.0	0.2	56.0	0.1	0.1	0.2	0.2	0.0	0.3	0.0	0.1	0.1	0.5	7.3	4.2
Digestive diseases (K00-K93)	0.1	3.7	3.0	4.8	25.7	8.3	4.5	7.8	6.3	2.8	7.2	10.4	5.7	7.2	4.2
Respiratory diseases (J00-J99)	0.0	3.5	2.2	20.9	4.6	5.4	3.2	13.9	4.7	3.3	11.8	9.5	5.3	6.8	4.0
Skin diseases (L00-L99)	0.0	3.8	0.6	3.2	2.1	1.6	1.4	3.3	2.9	18.0	10.1	13.0	3.1	3.7	2.2
Care involving dialysis (Z49)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.5	0.0	0.1	0.0
Other ^(e)	7.3	41.8	74.4	46.4	47.6	50.3	60.5	72.8	50.7	48.7	39.3	74.4	60.3	55.9	35.4
Total number^(g)	220,763	39,574	38,317	31,632	27,528	22,873	21,778	16,530	12,879	12,103	10,450	10,592	59,395	303,651	524,414

(continued)

Table 1.02.5 (continued): Hospitalisations of Indigenous persons: principal diagnosis chapter by additional diagnosis chapter of hospitalisation, NSW, Vic, Qld, WA, SA, and NT, July 2006 to June 2008^{(a)(b)(c)(d)}

- (a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
- (b) Categories are based on the ICD-10-AM fifth edition (National Centre for Classification in Health 2006).
- (c) Financial year reporting.
- (d) Indigenous data are reported by state/territory of usual residence of the patient hospitalised and are for New South Wales, Victoria, Western Australia, South Australia, the Northern Territory and Queensland only. These six jurisdictions are considered to have adequate levels of Indigenous identification, although the level of accuracy varies by jurisdiction and hospital. Hospitalisation data for these six jurisdictions should not be assumed to represent the hospitalisation experience in the other jurisdictions.
- (e) Includes: diseases of the musculoskeletal system and connective tissue; neoplasms; diseases of the nervous system; certain conditions originating in the perinatal period; diseases of the ear and mastoid process; diseases of the eye and adnexa; diseases of the blood and blood-forming organs and certain disorders involving the immune system; congenital malformations, deformations and chromosomal abnormalities; and factors influencing health status and contact with health services (except dialysis).
- (f) Includes hospitalisations for which no principal diagnosis was recorded.
- (g) Total number of hospitalisations for each principal diagnosis.

Notes

1. Sum of components may exceed 100% as more than one additional diagnosis can be reported for each hospitalisation.
2. Care types 7.3, 9 & 10 (Newborn – unqualified days only; organ procurement; hospital boarder) excluded from analysis.

Source: AIHW analysis of National Hospital Morbidity Database.

Time series analysis

Longer term morbidity trend data are limited to four jurisdictions – Queensland, Western Australia, South Australia and the Northern Territory – which have over 10 years of adequate identification of Indigenous hospitalisations. These four jurisdictions represent approximately 60% of the Indigenous Australian population. This analysis is presented in Tables 1.02.6 and 1.02.8 and Figures 1.02.2 and 1.02.4.

Additional trend analysis has been presented for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined from 2004–05 to 2007–08 for Indigenous and Other Australians in Tables 1.02.7 and 1.02.9 and Figures 1.02.3 and 1.02.5. New South Wales and Victoria have been assessed as having adequate identification of Indigenous hospitalisations from 2004–05. These six jurisdictions represent approximately 96% of the Indigenous population of Australia.

All hospitalisations 2001–02 to 2007–08

Hospitalisation rates, rate ratios and rate differences between Indigenous and other Australians over the period for Queensland, Western Australia, South Australia and the Northern Territory combined are presented in Table 1.02.6 and Figure 1.02.2.

- In Queensland, Western Australia, South Australia and the Northern Territory combined, there were significant increases in hospitalisation rates among Indigenous males and females during the 7-year period 2001–02 to 2007–08. The fitted trend implies an average yearly increase in the rate of around 37 per 1,000 for Indigenous persons, which is equivalent to a 27% increase in the rate over the period.
- There were also significant increases in hospitalisation rates among other Australian males and females during the same period, with an average yearly increase of 3 per 1,000 for other Australians. This is equivalent to a 5% increase in the rate over the period.
- There were significant increases in the hospitalisation rate ratios and rate differences between Indigenous and other Australians. The fitted trend implies an average yearly increase of 0.1 in the rate ratio (21% increase over the period) and 34 per 1,000 in the hospitalisation rate differences between Indigenous and other Australians in the 7-year period 2001–02 to 2007–08 (42% increase). This indicates a relative and absolute increase in the gap between hospitalisation rates for Indigenous and other Australians.

Note that changes in the level of accuracy of Indigenous identification in hospital records will result in changes in the level of reported hospital separations for Indigenous Australians, as will changes in access, hospital policies and practices over time. Caution should be used in interpreting changes over time, as it is not possible to ascertain whether a change in reported hospitalisation is due to changes in the accuracy of Indigenous identification or real changes in the rates at which Indigenous people are hospitalised. An increase in hospitalisation rates may also reflect increased use of admitted patient hospital services rather than a worsening of health.

Table 1.02.6: Age-standardised hospitalisation rates, rate ratios and rate differences, Qld, WA, SA and NT, 2001-02 to 2007-08^(a)

	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	Annual change ^(b)	Per cent change over period ^(c)
Indigenous separations									
Males	60,906	63,080	68,518	73,301	78,545	81,020	88,596	4,606.3*	45.4*
Females	82,575	87,378	93,217	97,800	104,969	108,518	114,840	5,386.7*	39.1*
Persons	143,537	150,555	161,735	171,102	183,514	189,538	203,436	9,980.1*	41.7*
Other Australian^(d) separations									
Males	1,100,777	1,127,245	1,163,519	1,203,304	1,250,684	1,302,509	1,365,399	43,984.3*	24.0*
Females	1,256,330	1,277,365	1,312,839	1,346,718	1,390,651	1,447,583	1,493,209	40,317.3*	19.3*
Persons	2,357,129	2,404,634	2,476,359	2,550,026	2,641,338	2,750,101	2,858,621	84,299.6*	21.5*
Indigenous rate (separations per 1,000)									
Males	728.5	748.6	814.2	857.3	902.2	937.0	1,000.8	45.8*	37.7*
Females	895.8	943.6	980.7	998.0	1,057.8	1,051.1	1,086.7	30.9*	20.*7
Persons	817.1	852.8	900.8	929.8	983.0	991.5	1,039.8	36.7*	27.0*
Other Australian^(d) rate (separations per 1,000)									
Males	326.7	326.6	329.2	331.8	335.6	339.8	346.4	3.3*	6.0*
Females	349.1	347.6	349.6	351.3	355.0	360.7	363.4	2.7*	4.6*
Persons	336.0	335.1	337.3	339.4	343.1	348.1	352.5	2.9*	5.2*
Rate ratio^(e)									
Males	2.2	2.3	2.5	2.6	2.7	2.8	2.9	0.1*	30.0*
Females	2.6	2.7	2.8	2.8	3.0	2.9	3.0	0.1*	15.4*
Persons	2.4	2.5	2.7	2.7	2.9	2.8	2.9	0.1*	20.7*

(continued)

Table 1.02.6 (continued): Age-standardised hospitalisation rates, rate ratios and rate differences, Qld, WA, SA and NT, 2001–02 to 2007–08^(a)

	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	Annual change ^(b)	Per cent change over period ^(c)
Rate difference^(f)									
Males	401.8	422.0	485.0	525.5	566.6	597.2	654.4	42.5*	63.5*
Females	546.7	596.1	631.0	646.7	702.9	690.4	723.4	28.2*	31.0*
Persons	481.1	517.8	563.5	590.3	640.0	643.4	687.3	33.8*	42.1*

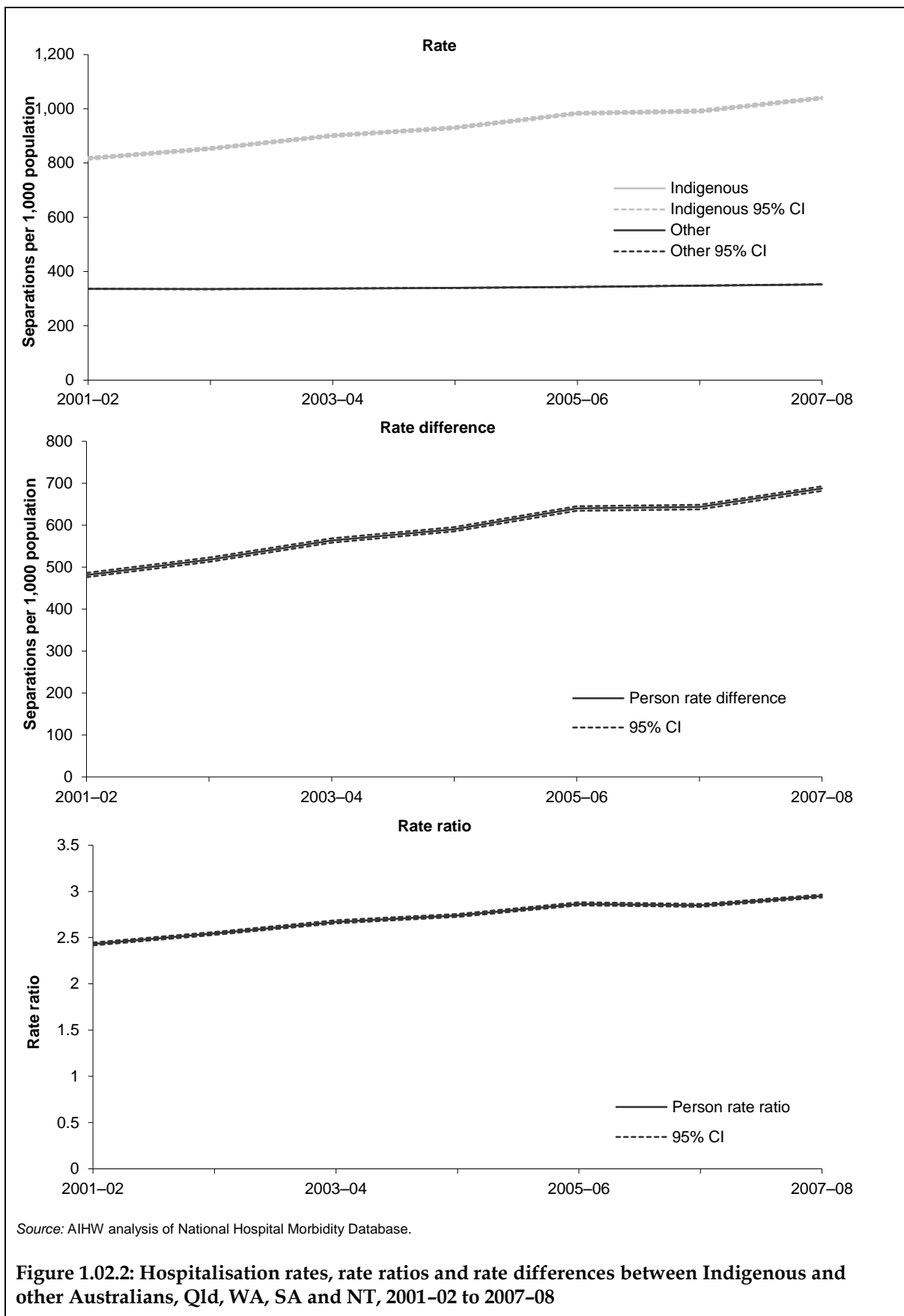
* Represents results with statistically significant increases or declines at the $p < 0.05$ level over the period 2001–02 to 2007–08.

- (a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
- (b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.
- (c) Per cent change between 2001–02 and 2007–08 based on the average annual change over the period.
- (d) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.
- (e) Hospitalisation rates for Indigenous Australians divided by the hospitalisation rates for other Australians.
- (f) Hospitalisation rates for Indigenous Australians minus the hospitalisation rates for other Australians.

Notes

1. Rates have been directly age-standardised using the 2001 Australian standard population.
2. Population estimates are based on 2006 Census.
3. Care types 7.3, 9 & 10 (Newborn – unqualified days only; organ procurement; hospital boarder) excluded in analysis.

Source: AIHW analysis of National Hospital Morbidity Database.



All hospitalisations 2004–05 to 2007–08

Hospitalisation rates, rate ratios and rate differences between Indigenous and other Australians over the period 2004–05 to 2007–08 for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined are presented in Table 1.02.7 and Figure 1.02.3.

- In New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, there were significant increases in hospitalisation rates among Indigenous males and females during the 4-year period 2004–05 to 2007–08. The fitted trend implies an average yearly increase in the rate of around 32 per 1,000 for Indigenous persons which is equivalent to a 13% increase in the rate over the period.
- There were also significant increases in hospitalisation rates among other Australian males and females during the same period, with an average yearly increase of 6 per 1,000 for other Australians. This is equivalent to a 5% increase in the rate over the period.
- There were significant increases in the hospitalisation rate ratios and rate differences between Indigenous and other Australians. The fitted trend implies an average yearly increase of 0.1 in the rate ratio (8% increase over the period) and 27 per 1,000 in the hospitalisation rate differences between Indigenous and other Australians in the 4-year period 2004–05 to 2007–08 (20% increase). This indicates a relative and absolute increase in the gap between hospitalisation rates for Indigenous and other Australians.

Note that changes in the level of accuracy of Indigenous identification in hospital records will result in changes in the level of reported hospital separations for Indigenous Australians. Also, changes in access, hospital policies and practices all affect the level of hospitalisation over time. Caution should be used in interpreting changes over time, as it is not possible to ascertain whether a change in reported hospitalisation rates is due to changes in the accuracy of Indigenous identification or real changes in the rates at which Indigenous people are hospitalised. An increase in hospitalisation rates may also reflect increased use of admitted patient hospital services rather than a worsening of health.

Table 1.02.7: Age-standardised hospitalisation rates, rate ratios and rate differences, NSW, Vic, Qld, WA, SA and NT, 2004–05 to 2007–08^(a)

	2004–05	2005–06	2006–07	2007–08	Annual change ^(b)	Per cent change over period ^(c)
Indigenous rate separations						
Males	97,641	105,446	109,577	119,154	6,867.0*	21.1*
Females	127,070	137,659	143,598	152,140	8,114.9*	19.2*
Persons	224,716	243,106	253,175	271,294	14,980.3*	20.0*
Other Australian separations						
Males	3,071,021	3,197,077	3,329,348	3,458,975	129,613.3*	12.7*
Females	3,462,271	3,585,240	3,720,681	3,837,130	126,001.8*	10.9*
Persons	6,533,363	6,782,353	7,050,063	7,296,153	255,608.3*	11.7*
Indigenous rate (separations per 1,000)						
Males	678.3	719.1	748.6	798.8	39.1*	17.3*
Females	779.9	835.4	845.0	870.4	28.1*	10.8*
Persons	729.7	778.4	795.4	831.5	32.2*	13.2*
Other Australian^(d) rate (separations per 1,000)						
Males	329.8	336.2	342.1	347.0	5.7*	5.2*
Females	346.0	352.3	358.6	362.4	5.5*	4.8*
Persons	335.7	342.0	348.1	352.4	5.6*	5.0*
Rate ratio^(e)						
Males	2.1	2.1	2.2	2.3	0.1*	11.5*
Females	2.3	2.4	2.4	2.4	0.04*	5.7*
Persons	2.2	2.3	2.3	2.4	0.1*	7.8*
Rate difference^(f)						
Males	348.5	382.9	406.6	451.8	33.3*	28.7*
Females	433.9	483.0	486.3	508.0	22.6*	15.6*
Persons	394.0	436.3	447.3	479.1	26.6*	20.3*

* Represents results with statistically significant increases or declines at the $p < 0.05$ level over the period 2004–05 to 2007–08.

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.

(b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(c) Per cent change between 2004–05 and 2007–08 based on the average annual change over the period.

(d) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.

(e) Hospitalisation rates for Indigenous Australians divided by the hospitalisation rates for other Australians.

(f) Hospitalisation rates for Indigenous Australians minus the hospitalisation rates for other Australians.

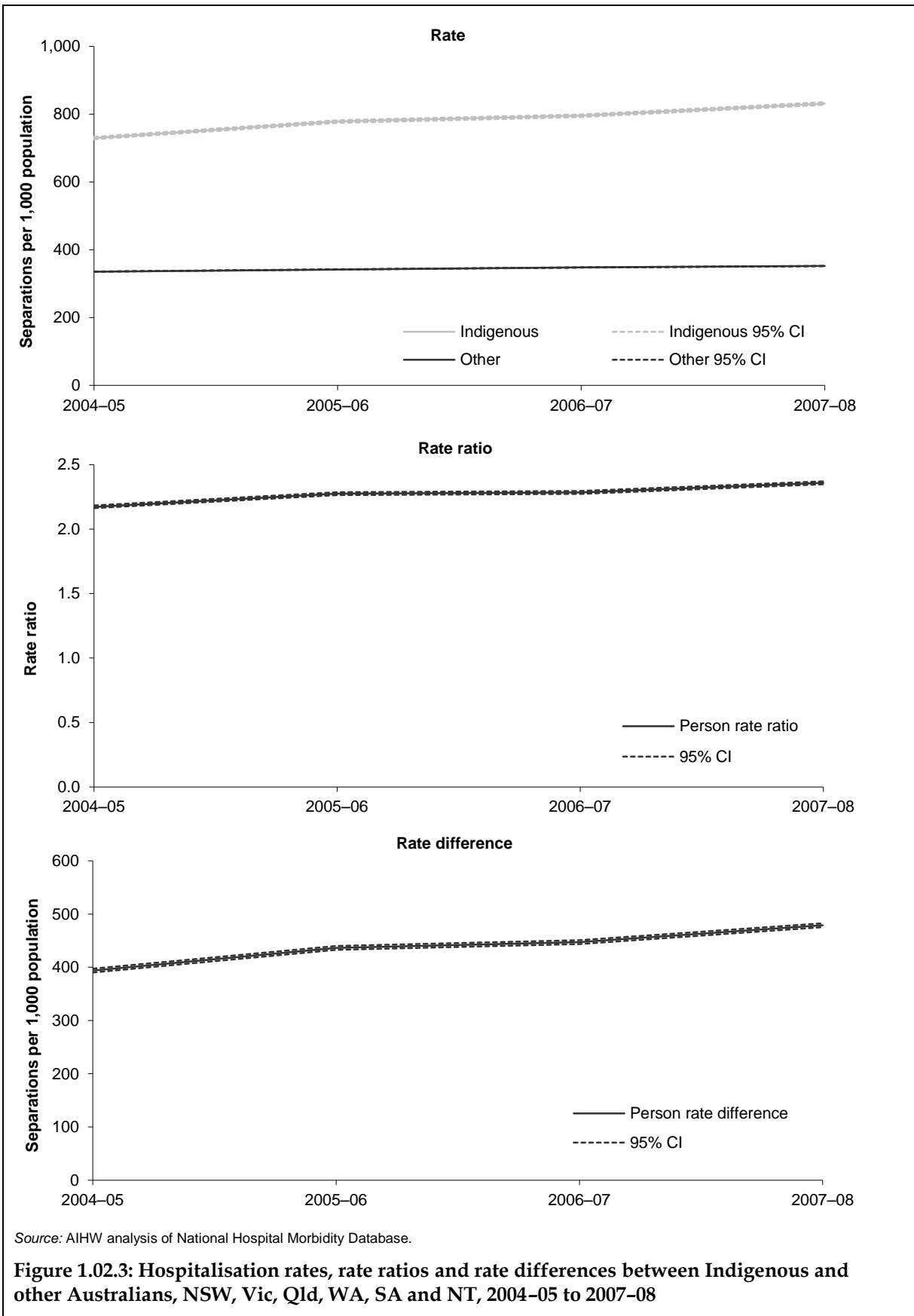
Notes

1. Rates have been directly age-standardised using the 2001 Australian standard population.

2. Population estimates are based on 2006 Census.

3. Care types 7.3, 9 & 10 (Newborn – unqualified days only; organ procurement; hospital boarder) excluded from analysis.

Source: AIHW analysis of National Hospital Morbidity Database.



All hospitalisations excluding dialysis – 2001-02 to 2007-08

Hospitalisation rates, rate ratios and rate differences (excluding dialysis) between Indigenous and other Australians over the period 2001-02 to 2007-08 for Queensland, Western Australia, South Australia and the Northern Territory combined are presented in Table 1.02.8 and Figure 1.02.4.

- In Queensland, Western Australia, South Australia and the Northern Territory combined, there were significant increases in hospitalisation rates among Indigenous persons during the 7-year period 2001-02 to 2007-08. The fitted trend implies an average yearly increase in the rate of around 3 per 1,000 for Indigenous persons. This is equivalent to a 4% increase in the rate over the period.
- There were also significant increases in hospitalisation rates among other Australians during the same period, with an average yearly increase in the rate of 1 per 1,000 for other Australian persons. This is equivalent to a 3% increase in the rate over the period.
- There were non-significant increases in the hospitalisation rate ratios between Indigenous and other Australians – the fitted trend implies an average yearly increase of 0.003 per 1,000 in the 7-year period 2001-02 to 2007-08 (a 2% increase). Over the same period, there were non-significant changes in the rate ratios for females and males.
- There were non-significant increases in the hospitalisation rate differences between Indigenous and other Australians. The fitted trend implies an average yearly increase of 2 per 1,000 in the hospitalisation rate differences between Indigenous and other Australians in the 7-year period 2001-02 to 2007-08 (9% increase over the period).

Table 1.02.8: Age-standardised hospitalisation rates, rate ratios and rate differences (excluding dialysis), Qld, WA, SA and NT, 2001–02 to 2007–08^(a)

	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	Annual change ^(b)	Per cent change over period ^(c)
Indigenous separations									
Males	38,518	38,346	39,819	39,715	42,018	41,986	45,505	1,087.1*	16.9*
Females	51,881	51,998	53,440	54,416	56,916	58,946	61,194	1,618.3*	18.7*
Persons	90,406	90,347	93,259	94,132	98,934	100,932	106,699	2,704.4*	17.9*
Other Australian separations									
Males	984,723	994,267	1,017,973	1,043,619	1,078,353	1,129,385	1,178,723	32,593.4*	19.9*
Females	1,173,327	1,191,640	1,216,907	1,243,299	1,280,091	1,331,528	1,373,731	33,720.4*	17.2*
Persons	2,158,072	2,185,931	2,234,881	2,286,922	2,358,447	2,460,922	2,552,467	66,311.9*	18.4*
Indigenous rate (separations per 1,000)									
Males	387.4	384.3	401.3	384.8	402.8	385.6	415.2	3.1	4.8
Females	457.3	453.0	456.7	448.2	461.3	465.4	478.0	3.3*	4.3*
Persons	422.3	418.3	427.5	415.4	430.6	425.1	445.3	3.1*	4.3*
Other Australian^(d) rate (separations per 1,000)									
Males	292.1	287.9	287.7	287.4	289.0	294.3	298.5	1.2	2.4
Females	326.3	324.7	324.8	325.1	327.7	333.0	335.6	1.7*	3.1*
Persons	307.7	304.8	304.7	304.8	306.8	312.1	315.5	1.4*	2.8*
Rate ratio^(e)									
Males	1.3	1.3	1.4	1.3	1.4	1.3	1.4	0.0	2.3
Females	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0.0	1.1
Persons	1.4	1.4	1.4	1.4	1.4	1.4	1.4	0.0	1.5

(continued)

Table 1.02.8 (continued): Age-standardised hospitalisation rates, rate ratios and rate differences (excluding dialysis), Qld, WA, SA and NT, 2001–02 to 2007–08^(a)

	2001–02	2002–03	2003–04	2004–05	2005–06	2006–07	2007–08	Annual change ^(b)	Per cent change over period ^(c)
Rate difference^(f)									
Males	95.3	96.4	113.6	97.4	113.8	91.4	116.7	1.9	12.2
Females	131.0	128.3	131.9	123.1	133.6	132.4	142.4	1.6	7.2
Persons	114.7	113.6	122.8	110.6	123.8	113.0	129.8	1.6	8.5

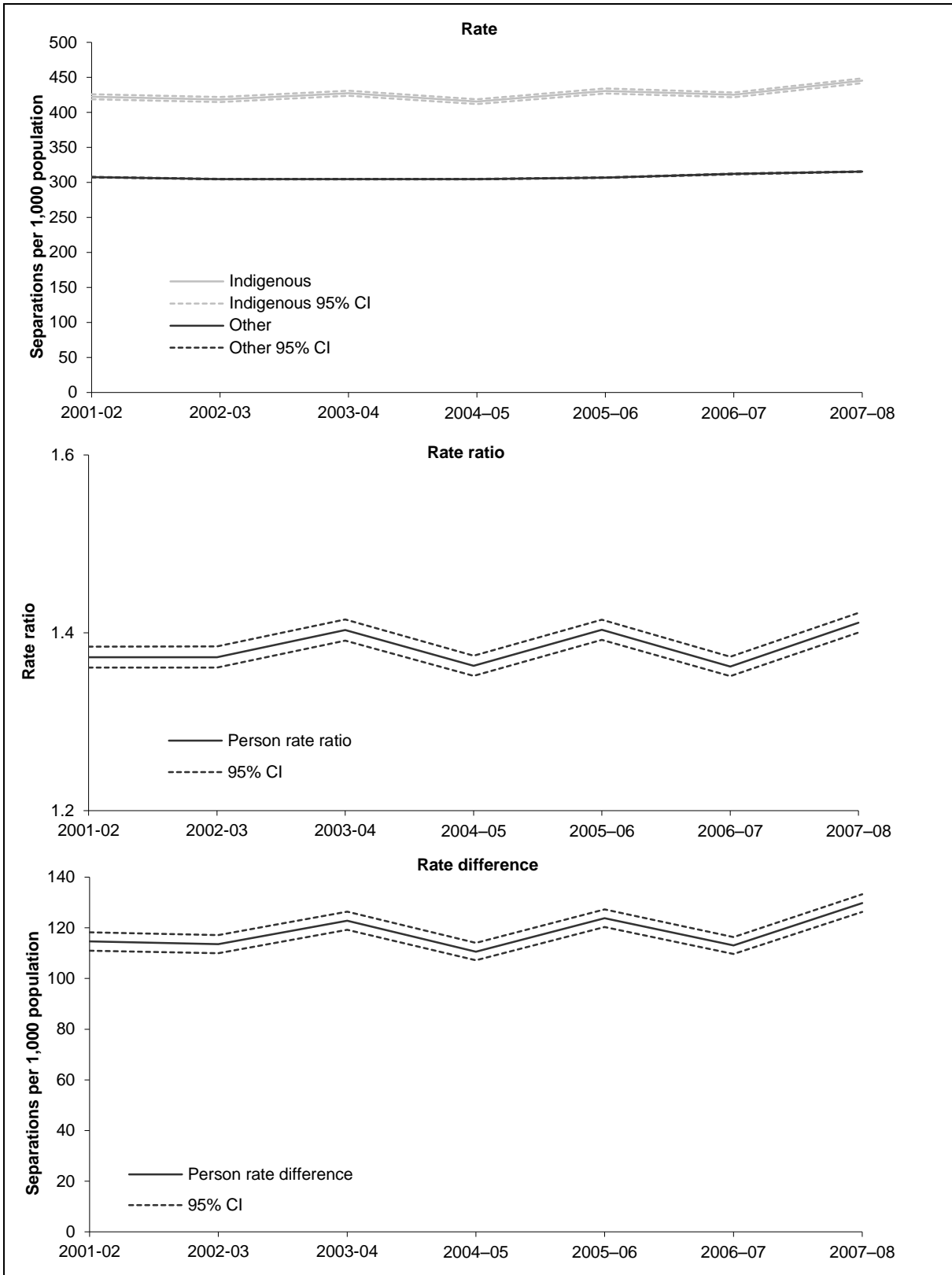
* Represents results with statistically significant increases or declines at the $p < 0.05$ level over the period 2001–02 to 2007–08.

- (a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.
- (b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.
- (c) Per cent change between 1998–99 and 2007–08 based on the average annual change over the period.
- (d) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.
- (e) Hospitalisation rates for Indigenous Australians divided by the hospitalisation rates for other Australians.
- (f) Hospitalisation rates for Indigenous Australians minus the hospitalisation rates for other Australians.

Notes

1. Rates have been directly age-standardised using the 2001 Australian standard population.
2. Population estimates are based on 2006 Census.
3. Care types 7.3, 9 & 10 (Newborn – unqualified days only; organ procurement; hospital boarder) included in analysis because of changes in coding since earlier years.

Source: AIHW analysis of National Hospital Morbidity Database.



Source: AIHW analysis of National Hospital Morbidity Database.

Figure 1.02.4: Hospitalisation rates, rate ratios and rate differences (excluding dialysis) between Indigenous and other Australians, Qld, WA, SA and NT, 1998-99 to 2007-08

All hospitalisations excluding dialysis – 2004–05 to 2007–08

Hospitalisation rates, rate ratios and rate differences (excluding dialysis) between Indigenous and other Australians over the period 2004–05 to 2007–08 for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined are presented in Table 1.02.9 and Figure 1.02.5.

- In New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory combined, there were significant increases in hospitalisation rates among Indigenous males and females during the 4-year period 2004–05 to 2007–08. The fitted trend implies an average yearly increase in the rate of around 11 per 1,000 for Indigenous persons. This is equivalent to a 9% increase in the rate over the period.
- There were also significant increases in hospitalisation rates among other Australian males and females during the same period, with an average yearly increase in the rate of 4 per 1,000 for other Australian persons. This is equivalent to a 4% increase in the rate over the period.
- There were non-significant increases in the hospitalisation rate ratios between Indigenous males and other males. Over the same period, there were significant increases in the rate ratios for females and persons overall.
- There were significant increases in the hospitalisation rate differences between Indigenous and other Australians. The fitted trend implies an average yearly increase of 6 per 1,000 in the hospitalisation rate differences between Indigenous and other Australians in the 4-year period 2004–05 to 2007–08 (29% increase over the period).

Table 1.02.9: Age-standardised hospitalisation rates, rate ratios and rate differences (excluding dialysis), NSW, Vic, Qld, WA, SA and NT, 2004–05 to 2007–08^(a)

	2004–05	2005–06	2006–07	2007–08	Annual change ^(b)	Per cent change over period ^(c)
Indigenous separations						
Males	57,176	61,420	62,297	66,723	2,951.8*	15.5*
Females	77,199	81,532	85,579	89,107	3,977.1*	15.5*
Persons	134,380	142,953	147,876	155,830	6,927.3*	15.5*
Other Australian separations						
Males	2,645,049	2,729,689	2,838,632	2,941,553	99,845.5*	11.3*
Females	3,188,201	3,290,753	3,409,432	3,511,254	108,783.8*	10.2*
Persons	5,833,321	6,020,478	6,248,098	6,452,856	208,622.5*	10.7*
Indigenous rate (separations per 1,000)						
Males	337.4	355.2	347.5	368.4	8.5*	7.6*
Females	395.9	409.6	421.0	433.2	12.4*	9.4*
Persons	366.0	381.5	384.2	400.4	10.6*	8.7*
Other Australian^(d) rate (separations per 1,000)						
Males	283.9	287.0	291.5	295.0	3.8*	4.0*
Females	319.6	324.6	330.1	333.2	4.6*	4.3*
Persons	300.4	304.4	309.4	312.7	4.2*	4.2*
Rate ratio^(e)						
Males	1.2	1.2	1.2	1.2	0.0	3.4
Females	1.2	1.3	1.3	1.3	0.02*	4.8*
Persons	1.2	1.3	1.2	1.3	0.02*	4.3*
Rate difference^(f)						
Males	53.5	68.2	56.0	73.4	4.7	26.6
Females	76.2	85.0	90.9	100.0	7.7*	30.5*
Persons	65.6	77.1	74.8	87.6	6.4*	29.1*

* Represents results with statistically significant increases or declines at the $p < 0.05$ level over the period 2004–05 to 2007–08.

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.

(b) Average annual change in rates, rate ratios and rate differences determined using linear regression analysis.

(c) Per cent change between 2004–05 and 2007–08 based on the average annual change over the period.

(d) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.

(e) Hospitalisation rates for Indigenous Australians divided by the hospitalisation rates for other Australians.

(f) Hospitalisation rates for Indigenous Australians minus the hospitalisation rates for other Australians.

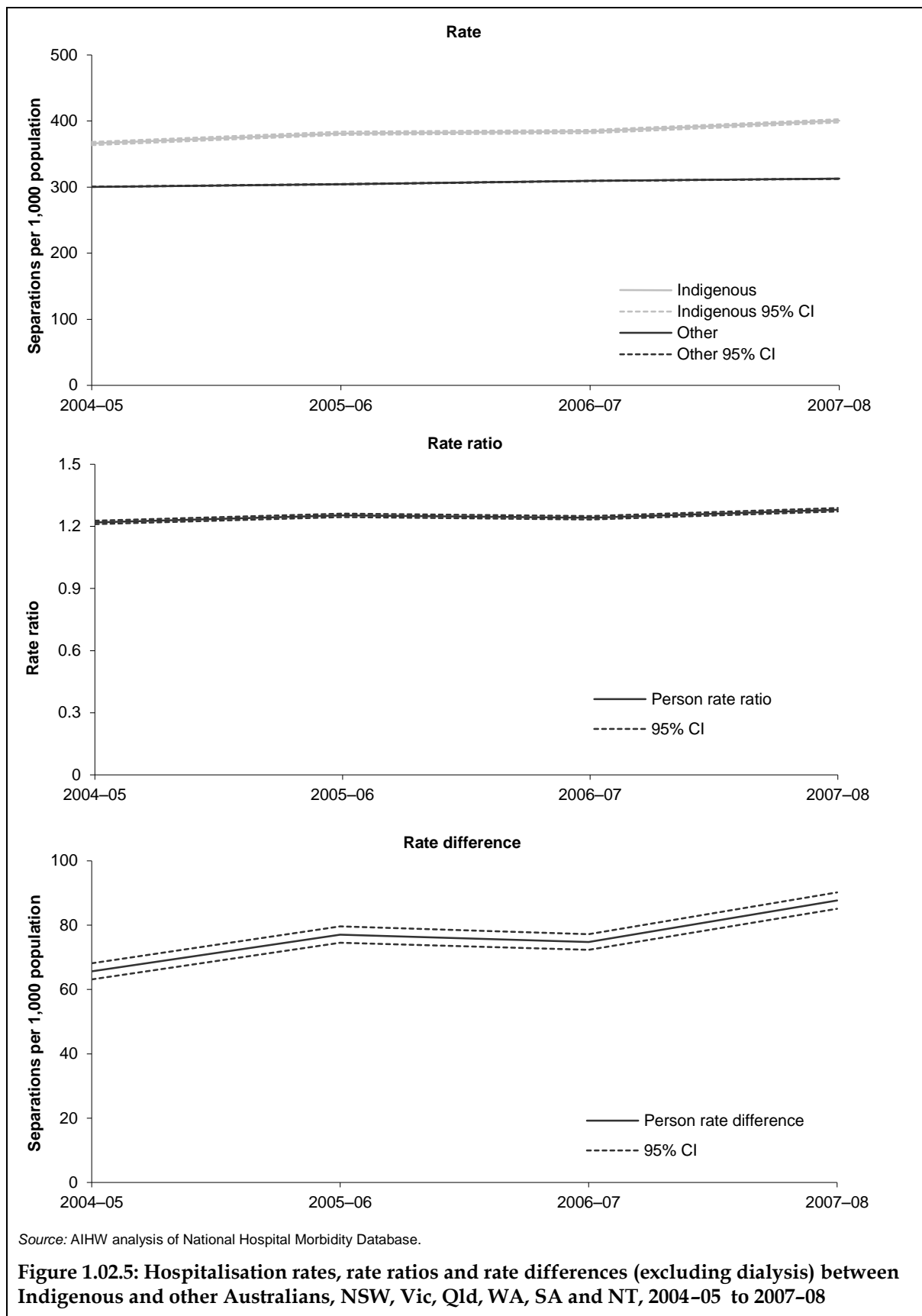
Notes

1. Rates have been directly age-standardised using the 2001 Australian standard population.

2. Population estimates are based on 2006 Census.

3. Care types 7.3, 9 & 10 (Newborn – unqualified days only; organ procurement; hospital boarder) excluded from analysis.

Source: AIHW analysis of National Hospital Morbidity Database.



Sensitivity of hospitalisation trends to changes in identification for Qld, WA, SA and NT

- The fitted trends described above have been examined for their sensitivity to changes in Indigenous identification. Three scenarios for identification were posted – constant identification, increasing identification and decreasing identification:
 - Under the constant identification scenario, the number of hospitalisations for the period under study was adjusted using the following identification factors:
 - Queensland 87%
 - Western Australia 97%
 - South Australia 85%
 - Northern Territory 98%
 - Under the increasing identification scenario, hospitalisations were adjusted by linearly increasing the identification through the period under study – from 80% in 2001–02 to 87% in 2007–08 for Queensland, from 94% to 97% for Western Australia, from 79% to 85% for South Australia, and from 94% to 98% for the Northern Territory.
 - Under the decreasing identification scenario, hospitalisations were adjusted by linearly decreasing the identification from 87% in 2001–02 to 80% in 2007–08 for Queensland, from 97% to 94% for Western Australia, from 85% to 79% for South Australia, and from 98% to 94% for the Northern Territory.
- The adjustments in the latter two scenarios were based on judgments about the largest plausible shifts in identification during the period; of course, if any actual shift in identification was more extreme than has been assumed under these scenarios, then the observed trends in hospitalisations might not persist.
- For all hospitalisations including dialysis, the increases in hospitalisation rates, rate ratios and rate differences during the period 2001–02 to 2007–08 remained significant under all three identification scenarios.
- For all hospitalisations excluding dialysis, all but one of the observed significant increases in hospitalisation rates, rate ratios and rate differences during the period 2001–02 to 2007–08 remained statistically significant under the constant identification scenario. The exception was the Indigenous persons' rate which increased but not significantly. Under the increasing identification scenario Indigenous females' and persons' rate increases were not significant, as a consequence the rate ratio for these two statistics changes to significant decreases. The rate difference declined for females. Under the decreasing identification scenario, all the reported significant increases continued to be observed. In addition the Indigenous males' rate increased significantly, with the flow-on effect of increasing significantly the rate ratio and rate difference.

Sensitivity of hospitalisation trends to changes in identification for NSW, Vic, Qld, WA, SA and NT

- The fitted trends described above have been examined for their sensitivity to changes in Indigenous identification. Three scenarios for identification were posted – constant identification, increasing identification and decreasing identification:
 - Under the constant identification scenario, the number of hospitalisations for the period under study was adjusted using the following identification factors:
 - New South Wales 87%

- Victoria 80%
 - Queensland 87%
 - Western Australia 97%
 - South Australia 85%
 - Northern Territory 98%
- Under the increasing identification scenario, hospitalisations were adjusted by linearly increasing the identification through the period under study – from 70% in 2004–05 to 87% in 2007–08 for New South Wales, from 75% to 80% in Victoria, from 86% to 87% in Queensland, from 96% to 97% for Western Australia, from 82% to 85% for South Australia, and from 96% to 98% for the Northern Territory.
 - Under the decreasing identification scenario, hospitalisations were adjusted by linearly decreasing the identification from 87% in 2004–05 to 70% in 2007–08 for New South Wales, from 80% to 75% in Victoria, from 87% to 86% in Queensland, from 97% to 96% for Western Australia, from 85% to 82% for South Australia, and from 98% to 96% for the Northern Territory.
- The adjustments in the latter two scenarios were based on judgments about the largest plausible shifts in identification during the period; of course, if any actual shift in identification was more extreme than has been posted under these scenarios, then the observed trends in hospitalisations might not persist.
 - For all hospitalisations including dialysis except the increasing scenario, the increases in hospitalisation rates, rate ratios and rate differences during the period 2004–05 to 2007–08 remained significant under all three identification scenarios. Under the increasing identification scenario, increases were not significant for Indigenous females and persons, and the corresponding rate ratios and rate differences. In addition the rate ratio for males was not significant.
 - For all hospitalisations excluding dialysis, all the observed significant increases in hospitalisation rates, rate ratios and rate differences during the period 2004–05 to 2007–08 remained statistically significant under the constant identification scenario. Under the increasing identification scenario, rates for Indigenous males and persons were not significant. These changes were reflected in the corresponding rate ratios and rate differences. However there was a significant decrease in the female rate ratio and rate difference. According to the decreasing identification scenario, all the significant increases were preserved, in addition there was a significant increase in the rate ratio and rate difference for Indigenous males.

Time series by principal diagnosis

Hospitalisation rates by principal diagnosis were compared for the six jurisdictions that have been assessed as having adequate identification of Indigenous hospitalisations for all years from 2004–05 to 2007–08 – New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory.

Hospitalisation rates among Indigenous Australians for most principal diagnoses for the period June 2004 to July 2005 were similar to those for the period June 2007 to July 2008. Hospitalisation rates of Indigenous Australians for care involving dialysis; symptoms, signs and abnormal clinical findings; endocrine, nutritional and metabolic diseases; and diseases of the digestive system increased between the two periods. Hospitalisation rates of

Indigenous Australians for diseases of the respiratory and genitourinary systems declined between the two periods (Table 1.02.10).

Table 1.02.10: Hospitalisations, by principal diagnosis and Indigenous status, NSW, Vic, Qld, WA, SA and NT, July 2004 to June 2005 and July 2006 to June 2008 ^{(a)(b)(c)(d)}

Principal diagnosis	2004–05 to 2005–06			2006–07 to 2007–08		
	Indigenous number per 1,000 ^(f)	Other ^(e) number per 1,000 ^(f)	Ratio ^(g)	Indigenous number per 1,000 ^(f)	Other ^(e) number per 1,000 ^(f)	Ratio ^(g)
Injury & poisoning & certain other consequences of external causes	42.3	22.5	1.9*	43.6	23.4	1.9*
Pregnancy, childbirth and the puerperium	32.0	22.9	1.4*	33.7	23.4	1.4*
Diseases of the respiratory system	42.1	15.8	2.7*	41.0	15.8	2.6*
Diseases of the digestive system	35.2	39.0	0.9*	37.1	39.5	0.9*
Symptoms, signs and abnormal clinical and laboratory findings	30.5	21.1	1.4*	32.8	23.0	1.4*
Mental and behavioural disorders	24.0	13.9	1.7*	25.1	13.9	1.8*
Diseases of the circulatory system	32.8	21.2	1.5*	33.4	21.0	1.6*
Diseases of the genitourinary system	18.8	17.4	1.1*	18.6	17.0	1.1*
Diseases of the skin & subcutaneous tissue	12.7	5.6	2.3*	13.3	5.7	2.3*
Certain infectious and parasitic diseases	9.2	4.4	2.1*	9.5	4.3	2.2*
Endocrine, nutritional and metabolic diseases	17.4	5.9	3.0*	19.4	6.5	3.0*
Other ^(h)	76.6	112.8	0.7*	84.8	117.3	0.7*
<i>Total</i>	<i>373.6</i>	<i>302.3</i>	<i>1.2*</i>	<i>392.3</i>	<i>310.9</i>	<i>1.3*</i>
Care involving dialysis	380.7	36.5	10.4*	421.3	39.1	10.8*
Total⁽ⁱ⁾	754.6	338.9	2.2*	813.7	23.4	2.3*

* Represents results with statistically significant differences in the Indigenous/other comparisons at the $p < 0.05$ level.

(a) Data are from public and most private hospitals. Data exclude private hospitals in the Northern Territory.

(b) Categories are based on the ICD-10-AM fifth edition (National Centre for Classification in Health 2006).

(c) Financial year reporting.

(d) Data are reported by state/territory of usual residence of the patient hospitalised and are for New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory only. These jurisdictions are considered to have adequate levels of Indigenous identification from 2004–05, although the level of accuracy varies by jurisdiction and hospital. Data for these jurisdictions over-represent Indigenous populations in less urbanised and more remote locations. Hospitalisation data for these four jurisdictions should not be assumed to represent the hospitalisation experience in the other jurisdictions.

(e) 'Other' includes hospitalisations of non-Indigenous people and those for whom Indigenous status was not stated.

(f) Directly age-standardised using the Australian 2001 standard population.

(g) Rate ratio Indigenous: other.

(h) Includes: diseases of the musculoskeletal system and connective tissue; neoplasms; diseases of the nervous system; certain conditions originating in the perinatal period; diseases of the ear and mastoid process; diseases of the eye and adnexa; diseases of the blood and blood-forming organs and certain disorders involving the immune system; congenital malformations, deformations and chromosomal abnormalities; and factors influencing health status and contact with health services (except dialysis).

(i) Includes hospitalisations for which no principal diagnosis was recorded.

Notes

1. Rates for Indigenous are calculated using the 2006 population estimates based on the 2006 Census (Series B).

2. Care types 7.3, 9 & 10 (Newborn – unqualified days only; organ procurement; hospital boarder) excluded from analysis.

Source: AIHW analysis of National Hospital Morbidity Database.

Data quality issues

National Hospital Morbidity data

Hospital separations data

Separations

Differing admission practices among the jurisdictions and from year to year, and differing levels and patterns of service delivery can affect the number and pattern of hospitalisations.

The proportion of Aboriginal and Torres Strait Islander separations in public hospitals increased over the 11-year period 1996–97 to 2007–08, from 3.7% to 5.4%. In private hospitals, it stayed around 0.2% to 0.3% until 2003–04, when there was a modest increase to 0.5%.

Indigenous status question

Some jurisdictions have slightly different approaches to the collection and storage of the standard Indigenous status question and categories in their hospital collections. The 'not stated' category is missing from several collections. It is recommended that the standard wording and categories be used in all jurisdictions (AIHW 2005).

'Not stated' responses to the Indigenous status question were around 1% in public hospitals and 4% in private hospitals in 2007–08. This is a reduction from 1998–99 when 2% of responses in public hospitals and 8% of responses in private hospitals had a 'not stated' Indigenous status (AIHW 2009).

Under-identification

The incompleteness of Indigenous identification means the number of hospital separations recorded as Indigenous is an underestimate of hospitalisations involving Aboriginal and Torres Strait Islander people. An estimated 89% of Indigenous patients were correctly identified in Australian public hospital admission records in 2007–08. In other words, 11% of Indigenous patients were not identified, and the 'true' number of hospital admissions for Indigenous persons was about 12% higher than reported.

For several years, Queensland, South Australia, Western Australia and the Northern Territory reported that Indigenous status in their hospital separations data were of acceptable quality (AIHW 2007). The AIHW, however, has recently completed an assessment of the level of Indigenous under-identification in hospital data in all states and territories. Results from this assessment indicate that New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory have adequate Indigenous identification (80% or higher overall levels of Indigenous identification in public hospitals only) in their hospital separations data. For Tasmania and the Australian Capital Territory, the levels of Indigenous identification were not considered acceptable for analysis purposes. It has therefore been recommended that reporting of Indigenous hospital separations data be limited to information from New South Wales, Victoria, Queensland, Western Australia, South Australia and the Northern Territory, individually or in aggregate. The proportion of the Indigenous population covered by these six jurisdictions is 96%. The following caveats have also been recommended for analysis of hospitalisation data from selected jurisdictions (AIHW 2010):

- Interpretation of results should take into account the relative quality of the data from the jurisdictions included (currently a small degree of Indigenous under-identification in data from New South Wales and South Australia, and relatively marked Indigenous under-identification in data from Queensland and Victoria).
- Interpretation of time series analysis should take into account the possible contribution of changes over time in ascertainment of Indigenous status. This will be reflected in Indigenous patient changes in hospitalisation rates for Indigenous people.

- Data for these six jurisdictions over-represent Indigenous populations in less urbanised and more remote locations.
- Hospitalisation data for these six jurisdictions are not necessarily representative of other jurisdictions.

From the AIHW study, it was possible to produce correction factors for the level of Indigenous under-identification in hospital data for each jurisdiction and at the national level.

Remoteness areas

There were acceptable levels of Indigenous identification for all remoteness areas, ranging from 80% in *Major cities* to 97% in *Remote* and *Very remote* areas. The quality of data supports analyses by remoteness areas, in aggregate, across states and territories. However, the sample size was insufficient to allow assessment of the quality of Indigenous identification by remoteness area within jurisdictions.

Numerator and denominator

Rate and ratio calculations rely on good numerator and denominator data. There are changes in the completeness of identification of Indigenous people in hospital records. These may take place at different rates from changes in the identification of Indigenous people in other administrative collections and population censuses. Denominators used in this analysis are sourced from *Experimental estimates and projections: Aboriginal and Torres Strait Islander Australians 1991 to 2021* (ABS 2009).

Data sources for injury emergency episodes

The National Non-admitted Patient Emergency Department Care Database is a national collection of de-identified data on emergency department episodes based on the Non-admitted Emergency Department Care National Minimum Data Set. This data set includes the standard Indigenous status question but does not include injury coding (for example, ICD-10). The Injury Surveillance National Minimum Data Set includes injury coding (components of ICD-10) but does not include demographic details such as Indigenous status. Therefore, there is currently no national minimum data set containing both Indigenous status and injury coding.

List of symbols used in tables

- n.a. not available
- rounded to zero (including null cells)
- 0 zero
- .. not applicable
- n.e.c. not elsewhere classified
- n.f.d. not further defined
- n.p. not available for publication but included in totals where applicable, unless otherwise indicated

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