Statistical concepts

Adjusting financial data to real dollars

Time series financial data are adjusted to real dollars using the general government final consumption expenditure (GGFCE) chain price deflator so that comparisons over time are not affected by inflation (box 1).

Box 1 – GGFCE deflator formulas

The GGFCE deflator is calculated from the ABS General government final consumption expenditure chain price indexes (ABS 2022) using the June estimates as follows:

The formula used to re-base GGFCE deflators is:

$$N_t = 100 \times \frac{O_t}{B}$$

Where:

N_t is the re-based GGFCE deflator in financial year *t;* O_t is the chain price index in June of financial year *t;* B is the chain price index in June of the financial year that will be the new base.

The formula to convert nominal dollars to real dollars is:

$$R_t = \frac{D_t}{N_t} \times 100$$

Where, for financial year *t*:

R_t is real dollars; D_t is nominal dollars; N_t is the GGFCE deflator

Not all financial data in the Report are deflated using the GGFCE deflator. The exceptions include some health sections, the Emergency services for fire and other events section and the Vocational education and training section, which use service specific deflators to calculate real dollars.

The calculations to achieve real dollars are in two steps:

Step 1. Re-basing the GGFCE deflator (table 1).

The ABS publishes the GGFCE deflator with the base year lagged two years (for example, for June 2022 the available deflator has a base year of June 2020 = 100). This Report requires a base year of 2020-21 and

2021-22. Table 1 shows how the GGFCE deflator is re-based for use in this Report. Five GGFCE deflator series are published, from 2017-18 = 100 to 2021-22 = 100 (table 2A.26).

Table 1 – Re basing the GGFCE deflator[a]

Year	ABS chain price index (June 2020 = 100)	Calculation	Financial year	Re-based GGFCE deflator (June 2022 = 100)
June 2018	96.0	96.0/103.4*100	2017-18	92.8
June 2019	98.3	98.3/103.4*100	2018-19	95.1
June 2020	100.0	100.0/103.4*100	2019-20	96.7
June 2021	101.2	101.2/103.4*100	2020-21	97.9
June 2022	103.4	103.4/103.4*100	2021-22	100.0

a. Based on the chain price index values from ABS (2022).

Source: ABS (2022), 'Table 36. Expenditure on Gross Domestic Product (GDP), Chain volume measures and Current prices, Annual' [time series spreadsheet], *Australian National Accounts: National Income, Expenditure and Product, June 2022*, https://www.abs.gov.au/statistics/economy/national-accounts/australian-national-accounts-national-income-expenditure-and-product/jun-2022, accessed 8 September 2022; table 2A.26.

Step 2. Transforming nominal dollars into real dollars (table 2).

Nominal dollars are transformed into real dollars by dividing the nominal dollars by the GGFCE deflator for the applicable financial year and multiplying by 100. The deflator used may vary according to the most current year for which the particular financial data are available. For example, if the most current year for the data is 2020-21 then the data are deflated using the deflator series for 2020-21 = 100. If the most current year is 2021-22 then the data are deflated using the deflator series for 2021-22 = 100. Table 2 shows how the GGFCE deflator for 2021-22 = 100 is applied.

Table 2 – Applying the GGFCE deflator to derive real dollars[a]

Financial year	Nominal expenditure	GGFCE deflator (2021-22= 100)	Calculation	Real expenditure
2017-18	6 300	92.8	(6 300/92.8)*100	6 789
2018-19	6 350	95.1	(6 350/95.1)*100	6 677
2019-20	6 485	96.7	(6 485/96.7)*100	6 706
2020-21	7 020	97.9	(7 020/97.9)*100	7 171
2021-22	7 200	100.0	(7 200/100.0)*100	7 200

a. Based on the chain price index values from ABS (2022).

Source: Table 1.

Reliability of estimates

Data for some indicators in this Report are based on samples, either from surveys or from a selection of observations from, for example, administrative data sets. The potential for sampling error — that is, the error that occurs by chance because the data are obtained from a sample and not the entire population — means that the reported estimates might not accurately reflect the true value.

This Report indicates the reliability of estimates based on samples generally by reporting either relative standard errors (RSEs) or confidence intervals (CIs). RSEs and CIs are calculated based on the standard error (SE). The larger the SE, RSE or CI, the less reliable the estimate is as an indicator for the whole population (ABS 2015).

Standard error

The SE measures the sampling error of an estimate (box 2). (There can also be non-sampling error, or systematic biases, in data.) There are several types of SE. A commonly used type of SE in this Report is the SE of the mean (average), which measures how much the estimated mean value might differ from the true population mean value.

Box 2 – Standard error

The SE of a method of measurement or estimation is the estimated standard deviation of the error in that method. Specifically, it estimates the standard deviation of the difference between the measured or estimated values and the true values. Standard deviation is a measure of how spread out the data are, that is, a measure of variability.

The SE of the mean, an unbiased estimate of expected error in the sample estimate of a population mean, is the sample estimate of the population standard deviation (sample standard deviation) divided by the square root of the sample size (assuming statistical independence of the values in the sample):

$$SE_{\bar{x}} = \frac{s}{\sqrt{n}}$$

Where:

$SE_{\bar{x}}$ is the SE of the sample estimate of a population mean, s is the sample's standard deviation (the sample-based estimate of the standard deviation of the population), and n is the size (number of items) of the sample.

Decreasing the uncertainty of a mean value estimate by a factor of two requires the sample size to increase fourfold. Decreasing SE by a factor of ten requires the sample size to increase hundredfold.

Relative standard error

The RSE is used to indicate the reliability of an estimate (box 3). The RSE shows the size of the error relative to the estimate, and is derived by dividing the SE of the estimate by the estimate. As with the SE, the higher the RSE, the less confidence there is that the sample estimate is close to the true value of the population mean. A rule of thumb adopted in this Report is that estimates with an RSE of less than 25 per cent are considered reliable, estimates with an RSE between 25 and 50 per cent are to be used with caution and estimates with an RSE greater than 50 per cent are considered too unreliable for general use.

Box 3 – Relative standard error

The SE can be expressed as a proportion of the estimate — known as the RSE. The formula for the RSE of an estimate is:

$$RSE\ (x) = \frac{SE(x)}{x}$$

Where:

x is the estimate and $SE(x)$ is the SE of the estimate.

RSEs are generally multiplied by 100 and expressed as a percentage.

Proportions and percentages formed from the ratio of two estimates are also subject to sampling error. The size of the error depends on the accuracy of both the numerator and the denominator.

For proportions where the numerator is a subset of the denominator, for example the ratio of people who completed a certification over the people who attended the training to get the certification, then an approximation of the RSE can be calculated using the following formula:

$$RSE\left(\frac{x}{y}\right) = \sqrt{[RSE(x)]^2 - [RSE(y)]^2}$$

Where:

x is the numerator, and y is the denominator, of the estimated proportion.

For proportions where the denominator and numerator are independent estimates, for example a ratio of rates relating to two separate populations such as Aboriginal and Torres Strait Islander and non-Indigenous, and when the RSEs on the denominator and numerator are small, then an approximation of the RSE can be calculated using the following formula:

$$RSE\left(\frac{x}{y}\right) = \sqrt{[RSE(x)]^2 + [RSE(y)]^2}$$

Note that the formulas shown above for the approximation of the RSE of a proportion are considered unsuitable when the RSE of the numerator is very close to, or below, the RSE of the denominator. In this case, it is recommended to use the following formula to calculate the RSE of the proportion:

$$RSE\left(\frac{x}{y}\right) = \sqrt{[RSE(x)]^2 + \left(1 - \frac{2x}{y}\right) * [RSE(y)]^2}$$

Source: ABS (2019).

Confidence intervals

Confidence intervals (CIs) are used to indicate the reliability of an estimate. A CI is a specified interval, with the sample statistic at the centre, within which the corresponding population value can be said to lie with a given level of confidence (ABS 2015). Increasing the desired confidence level will widen the CIs (figure 1).

CIs are useful because a range, rather than a single estimate, is more likely to encompass the real figure for the population value being estimated.

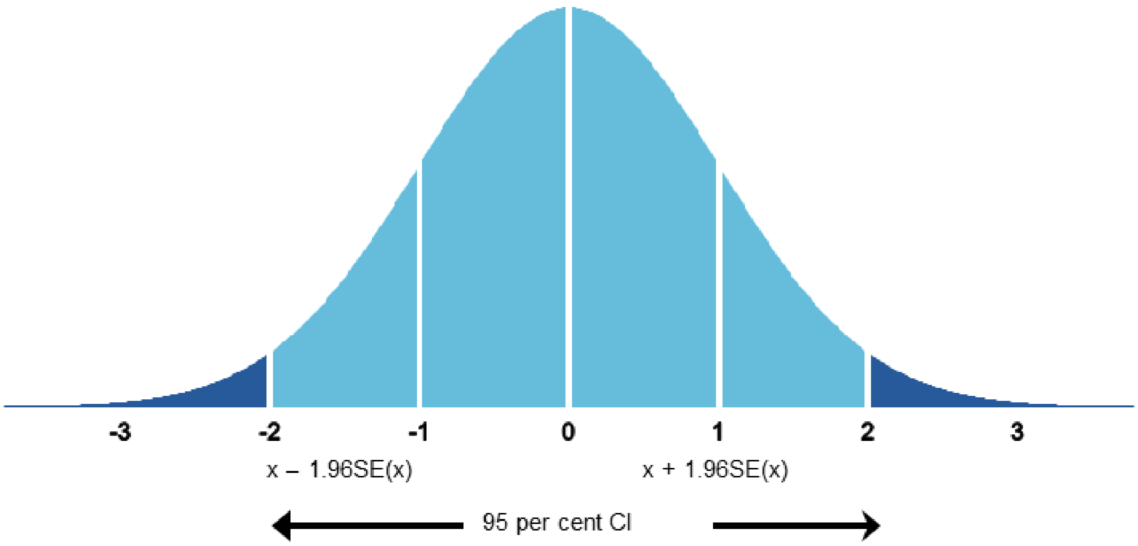
CIs are calculated from the population estimate and its associated SE. The most commonly used CI is calculated for 95 per cent levels of probability. For example, if the estimate from a survey was that 628 300 people report having their needs fully met by a government service, and the associated SE of the estimate was 10 600 people, then the 95 per cent CI would be calculated by:

- lower confidence limit = 628 300 – (1.96 x 10 600) = 628 300 – 20 776 = 607 524
- upper confidence limit = 628 300 + (1.96 x 10 600) = 628 300 + 20 776 = 649 076.

This indicates that we can be 95 per cent sure the true number of people who perceive that their needs are met by a government service is between 607 524 and 649 076.

The smaller the SE of the estimate, the narrower the CIs and the closer the estimate can be expected to be to the true value.

Figure 1 – Normal distribution with 95 per cent confidence intervals



It can be said with 95 per cent confidence that the population lies within the blue area

CIs also test for statistical differences between sample results (box 4).

Box 4 – Using confidence intervals to test for statistical significance

The CIs — the value ranges within which estimates are likely to fall — can be used to test whether the results reported for two estimated proportions are statistically different. If the CIs for the results do not overlap, then there can be confidence that the estimated proportions differ from each other. To test whether the 95 per cent CIs of two estimates overlap, a range is derived using the following formulas:

$$R_1 = \left(\frac{x_2}{y_2} - \frac{x_1}{y_1}\right) - 1.96\sqrt{(RSE\left(\frac{x_2}{y_2}\right) \times \left(\frac{x_2}{y_2}\right))^2 + (RSE\left(\frac{x_1}{y_1}\right) \times \left(\frac{x_1}{y_1}\right))^2}$$

and

$$R_2 = \left(\frac{x_2}{y_2} - \frac{x_1}{y_1}\right) + 1.96\sqrt{(RSE\left(\frac{x_2}{y_2}\right) \times \left(\frac{x_2}{y_2}\right))^2 + (RSE\left(\frac{x_1}{y_1}\right) \times \left(\frac{x_1}{y_1}\right))^2}$$

If none of the values in this range is zero, then the difference between the two estimated proportions is statistically significant.

For example, consider survey data that estimated that the proportion of people who perceived that their needs were met by government services was 50 per cent in jurisdiction A, with a 95 per cent CI of ± 5 per cent, and 25 per cent of people in jurisdiction B, with a 95 per cent CI of ± 10 per cent. These results imply that we can be 95 per cent sure the true result for jurisdiction A lies between 55 and 45 per cent, and the true result for jurisdiction B lies between 15 and 35 per cent. As these two ranges do not overlap, it can be said that the results for jurisdiction A and jurisdiction B are statistically significantly different.

Variability bands

Rates derived from administrative data counts are not subject to sampling error but might be subject to natural random variation, especially for small counts. For mortality data, variability bands are used to account for this variation (box 5).

Box 5 – Variability bands

The variability bands to be calculated using the standard method for estimating 95 per cent confidence intervals are:

Crude rate (CR)

$$CI(CR)_{95\%} = CR \pm 1.96 \frac{CR}{\sqrt{\sum_{i=1}^{I} d}}$$

Where:

d is the numerator of the estimated proportion

Age-standardised rate (ASR)

$$CI(ASR)_{95\%} = ASR \pm 1.96 \sqrt{\sum_{i=1}^{I} \frac{\mathrm{w}_i^2 d_i}{n_i^2}}$$

Where:

w_i is the proportion of the standard population in age group i

d_i is the number of deaths in age group i

n_i is the number of people in the population in age group i.

Infant mortality rate (IMR)

$$CI(IMR)_{95\%} = IMR \pm 1.96 \frac{IMR}{\sqrt{d_o}}$$

Where:

d_0 is the number of deaths in infants aged less than 1 year.

Variability bands accompanying mortality data should be used for the purpose of within jurisdiction analysis at a point in time and over time. They should not be used for comparing mortality rates at a single point in time or over time between jurisdictions as they do not take into account differences in under-identification of Aboriginal and Torres Strait Islander people’s deaths between jurisdictions.

Typically, in this standard method, the observed rate is assumed to have natural variability in the numerator count (for example, deaths) but not in the population denominator count. Variations in Aboriginal and Torres Strait Islander people’s death rates may arise from uncertainty in the recording of Indigenous status on the death registration forms (in particular, under-identification of Aboriginal and Torres Strait Islander people’s deaths) and in the ABS Census of Population and Housing, from which population estimates are derived. These variations are not considered in this method. Also, the rate is assumed to have been generated from a normal distribution (figure 1). Random variation in the numerator count is assumed to be centred around the true value — that is, there is no systematic bias.

Population measures

Data are frequently expressed relative to population in this Report. For example, expenditure per person, or proportion of people who utilise a service or who benefit from a service. This enables comparison of data across populations of different sizes using relative numbers — standardised by population size — as distinct from absolute numbers.

Estimated Resident Population (ERP) data are available quarterly — that is, at end March, June, September and December of each year. The mid-point ERP is typically used for the calculation of population rates in this Report — for example, the 30 June ERP for calendar year data (table 2A.1) and the 31 December ERP for financial year data (table 2A.2).

This Report uses first preliminary ERP data wherever possible and replaces these with final rebased data when available. For the 2023 Report, this equates to:

- for June, ERP for 2012 to 2016 are final based on the 2016 Census of Population and Housing; ERP for 2017 to 2021 are first preliminary based on the 2016 Census
- for December, ERP for 2012 to 2015 are final based on the 2016 Census of Population and Housing; ERP for 2016 to 2020 are first preliminary based on the 2016 Census; ERP for 2021 are first preliminary based on the 2021 Census.

Average annual growth rate

This Report presents a growth rate to facilitate meaningful comparisons of changes over time. The method used is the average annual growth rate (AAGR) which is the uniform growth rate that would need to have applied each year for the value in the first year to grow to the value in the final year of the period of analysis (box 6).

Box 6 – Average annual growth rate

(The formula for calculating a compound average annual growth rate (AAGR) is:

$$AAGR_{(t_0,t_n)} = \left[\left(\frac{P_{(t_n)}}{P_{(t_0)}} \right)^{\left(\frac{1}{t_n - t_0}\right)} - 1 \right] \times 100$$

Where:

$P_{(t_0)}$ is the value in the initial period, $P_{(t_n)}$ is the value in the last period and

$t_n - t_0$ is the number of periods (which will be one less than the total number of years).

Age-standardisation of data

Rationale for age-standardisation of data

The age profile of Australian people varies across jurisdictions, periods of time, geographic areas and/or population subgroups (for example, between Aboriginal and Torres Strait Islander people and non-Indigenous people). Variations in age profiles are important because they can affect the likelihood of using a particular service (such as a public hospital) or particular 'events' occurring (such as death, incidence of disease or incarceration). Age-standardisation adjusts for the effect of variations in age profiles when comparing service usage, or rates, of particular events across different populations.

Calculating age-standardised rates

Age-standardisation adjusts each of the comparison/study populations (for example, Aboriginal and Torres Strait Islander people and non-Indigenous people) against a standard population (box 7). The latest standard population used is the final 30 June ERP for the 2001 (AIHW 2015).[1] The result is a standardised estimate for each of the comparison/study populations.

The Report generally publishes age-standardised rates that have been calculated using either one of two methods, as appropriate.

- The direct method is generally used for comparisons between study groups, and is recommended by the AIHW (2011) for the purposes of comparing health and welfare outcome measures (for example, mortality rates, life expectancy, hospital separation rates and disease incidence rates) of Aboriginal and Torres Strait Islander people and non-Indigenous people.
- The indirect method is recommended when the age-specific rates for the population being studied are not known (or are unreliable), but the total number of events is known (AIHW 2015).

The *direct method* has three steps:

- Step 1: Calculate the age-specific rate for each age group for the study/comparison group.
- Step 2: Calculate the expected number of 'events' in each age group by multiplying the age-specific rates by the corresponding standard population.
- Step 3: Sum the expected number of cases in each age group and divide by the total of the standard population.

The *indirect method* has four steps:

- Step 1: Calculate the age-specific rates for each age group in the standard population.
- Step 2: Apply the age-specific rates resulting from step 1 to the number in each age group of the study population and sum to derive the total 'expected' number of cases for the study population.
- Step 3: Divide the observed number of events in the study population by the 'expected' number of cases for the study population derived in step 2.
- Step 4: Multiply the result of step 3 by the crude rate in the standard population.

[1] See page 2.27 in SCRGSP (2015) for the background on choice of year for the standard population and timeline for revision.

Box 7 – Direct and indirect age-standardisation

The formula for deriving the age-standardised rate using the *direct method* is:

$$ASR = \frac{\sum(r_i P_i)}{\sum P_i}$$

The formula for deriving the age-standardised rate using the *indirect method* is:

$$ASR = \frac{C}{\sum(R_i p_i)} \times R$$

Where:

ASR is the age-standardised rate for the population being studied

r_i is the age group-specific rate for age group ***i*** in the population being studied

P_i is the population of age group ***i*** in the standard population

C is the observed number of events in the population being studied

$\sum(R_i p_i)$ is the expected number of events in the population being studied

R_i is the age group-specific rate for age group ***i*** in the standard population

p_i is the population for age group ***i*** in the population being studied

R is the crude rate in the standard population.

Source: AIHW (2015).

Tables 3–4 contain examples of the application of direct and indirect age-standardisation, respectively. Age-standardised rates are generally multiplied by 1000 or 100 000 to avoid small decimal fractions. They are then reported as age-standardised rates per 1000 or 100 000 population (AIHW 2015).

Table 3 – Age-standardisation of data using the direct method

Step 1

Age groups	Non-Indigenous people			Aboriginal and Torres Strait Islander people		
	Population	People with severe/profound limitations	Age-specific severe/profound limitations	Population	People with severe/profound limitations	Age-specific severe/profound limitations
	C1	C2	C3 = C2/C1*100	C4	C5	C6=C5/C4*100
18 to 24	1 869 200	34 200	1.8	54 400	2 800	5.1
25 to 29	1 389 700	24 700	1.8	36 300	1 600	4.4
30 to 34	1 458 500	37 100	2.5	34 800	2 800	8.0
35 to 39	1 432 000	43 900	3.1	31 200	1 600	5.1
40 to 44	1 475 000	70 200	4.8	26 600	2 800	10.5
45 to 49	1 366 300	43 800	3.2	20 600	2 000	9.7
50 to 54	1 263 900	47 900	3.8	17 700	3 000	16.9
55 to 59	1 060 700	63 500	6.0	12 400	1 400	11.3
60 to 64	816 400	49 700	6.1	7 000	1 100	15.7
65 or over	2 222 200	283 400	12.9	12 900	3 200	24.8
Total	**14 353 900**	**698 400**	**4.9**	**253 900**	**22 300**	**8.8**

Step 2

Age groups	Standard population	Non-Indigenous people expected number of 'events'	Aboriginal and Torres Strait Islander people expected number of 'events'
	C7	C8=C7*C3/100	C9=C7*C6/100
18 to 24	1 844 162	33 742	94 920
25 to 29	1 407 081	25 009	62 020
30 to 34	1 466 615	37 306	118 004
35 to 39	1 492 204	45 746	76 523
40 to 44	1 479 257	70 403	155 711
45 to 49	1 358 594	43 553	131 902
50 to 54	1 300 777	49 298	220 471
55 to 59	1 008 799	60 393	113 897
60 to 64	822 024	50 042	129 175
65 or over	2 435 534	310 607	604 163
Total	**14 615 047**	**726 098**	**1 706 787**

Step 3

	Non-Indigenous people age-standardised rate	Aboriginal and Torres Strait Islander people age-standardised rate
	C10=∑C8/∑C7*100	C11=∑C9/∑C7*100
Total	**5.0**	**11.7**

Source: AIHW (Australian Institute of Health and Welfare) 2006, 'Potential Population' — Updating the Indigenous Factor in Disability Services Performance Indicator Denominators, Welfare Working Paper Series Number 50, Cat. no. DIS 45, Canberra; ABS (2008) Population by Age and Sex, Australian States and Territories, June 2007, Cat. no. 3201.0, Canberra.

Table 4 – Age-standardisation of data using the indirect method[a,b]

Variable	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
C — Observed number of imprisonments									
Aboriginal and Torres Strait Islander people	3 467.0	715.1	3 442.0	2 564.5	728.1	154.3	101.4	1 609.4	12 781.8
Non-Indigenous people	8 906.0	5 800.3	6 146.6	3 821.3	2 227.3	479.3	284.7	256.3	27 921.8
R — Standard population imprisonment rate (per 100 000 prisoners)									
									153.2
p_i — Study populations[c]									
Aboriginal and Torres Strait Islander people									
18–20 years	11 280	2 484	9 956	4 161	1 901	1 157	340	2 743	34 029
20–24 years	26 953	6 319	23 236	10 082	4 404	2 743	963	7 056	81 779
25–29 years	24 181	6 053	20 693	9 312	3 800	2 310	926	6 855	74 147
30–34 years	20 086	5 071	16 633	8 749	3 469	2 013	686	6 724	63 441
35–39 years	15 919	3 607	13 570	7 125	2 753	1 899	475	6 064	51 427
40–44 years	13 118	2 966	11 873	5 836	2 118	1 445	430	4 878	42 680
45–54 years	27 739	5 982	23 638	10 937	4 485	3 035	886	8 969	85 716
55+ years	39 777	8 487	30 786	13 645	5 757	4 760	1022	9 873	114 161
Total	**179 053**	**40 969**	**150 385**	**69 847**	**28 687**	**19 362**	**5 728**	**53 162**	**547 380**
Non-Indigenous people									
18–20 years	172 356	144 571	116 520	56 709	38 288	10 882	9 243	3 257	551 914
20–24 years	479 811	418 185	305 352	151 044	105 260	28 277	29 000	8 715	1 525 836
25–29 years	554 053	504 575	340 043	168 558	111 725	30 961	32 454	13 844	1 756 415
30–34 years	590 370	522 741	351 582	190 702	113 711	31 379	34 015	17 102	1 851 859
35–39 years	576 312	501 577	350 642	197 144	115 259	30 713	34 960	14 895	1 821 803
40–44 years	515 716	434 929	324 925	174 867	105 242	29 379	31 235	12 482	1 629 063
45–54 years	987 226	826 699	656 856	337 306	217 904	65 008	54 324	22 737	3 168 678
55+ years	2 338 457	1 842 877	1 467 458	730 246	570 806	185 091	103 800	38 604	7 279 015
Total	**6 214 301**	**5 196 154**	**3 913 378**	**2 006 576**	**1 378 195**	**411 690**	**329 031**	**131 636**	**19 584 583**

Variable	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
Step 1: Calculate R_i									
R_i — Standard population age-specific imprisonment rates per 100 000 prisoners (30 June 2001)									
18–20 years									179.4
20–24 years									359.4
25–29 years									345.2
30–34 years									271.8
35–39 years									193.6
40–44 years									131.6
45–54 years									77.3
55+ years									23.5
Step 2: $(R_i*p_i)/100\ 000$									
Aboriginal and Torres Strait Islander people									
18–20 years	20.2	4.5	17.9	7.5	3.4	2.1	0.6	4.9	61.0
20–24 years	96.9	22.7	83.5	36.2	15.8	9.9	3.5	25.4	293.9
25–29 years	83.5	20.9	71.4	32.1	13.1	8.0	3.2	23.7	256.0
30–34 years	54.6	13.8	45.2	23.8	9.4	5.5	1.9	18.3	172.4
35–39 years	30.8	7.0	26.3	13.8	5.3	3.7	0.9	11.7	99.6
40–44 years	17.3	3.9	15.6	7.7	2.8	1.9	0.6	6.4	56.2
45–54 years	21.4	4.6	18.3	8.5	3.5	2.3	0.7	6.9	66.3
55+ years	9.3	2.0	7.2	3.2	1.4	1.1	0.2	2.3	26.8
Total	**334.0**	**79.3**	**285.4**	**132.8**	**54.7**	**34.4**	**11.5**	**99.6**	**1 032.2**
Non-Indigenous people									
18–20 years	309.2	259.4	209.0	101.7	68.7	19.5	16.6	5.8	990.1
20–24 years	1 724.4	1 503.0	1 097.4	542.9	378.3	101.6	104.2	31.3	5 483.9
25–29 years	1 912.6	1 741.8	1 173.8	581.9	385.7	106.9	112.0	47.8	6 063.1
30–34 years	1 604.6	1 420.8	955.6	518.3	309.1	85.3	92.5	46.5	5 033.4

Variable	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
35–39 years	1 115.7	971.1	678.8	381.7	223.1	59.5	67.7	28.8	3 527.0
40–44 years	678.7	572.4	427.6	230.1	138.5	38.7	41.1	16.4	2 143.8
45–54 years	763.1	639.0	507.7	260.7	168.4	50.3	42.0	17.6	2 449.4
55+ years	549.5	433.1	344.9	171.6	134.1	43.5	24.4	9.1	1 710.6
Total	**8 657.9**	**7 540.5**	**5 394.9**	**2 788.9**	**1 806.0**	**505.2**	**500.5**	**203.3**	**27 401.3**
Step 3: $C/\sum (R_i * p_i)$									
Aboriginal and Torres Strait Islander people	10.4	9.0	12.1	19.3	13.3	4.5	8.8	16.2	12.4
Non-Indigenous people	1.0	0.8	1.1	1.4	1.2	0.9	0.6	1.3	1.0
Step 4: ***(Result of Step 3)*R***									
Age-standardised rate (per 100 000 prisoners)									
Aboriginal and Torres Strait Islander people	**1 590.0**	**1 380.6**	**1 847.5**	**2 959.3**	**2 038.4**	**686.7**	**1 345.8**	**2 474.7**	**1 897.1**
Non-Indigenous people	**157.6**	**117.8**	**174.5**	**209.9**	**188.9**	**145.3**	**87.2**	**193.1**	**156.1**

a. Rates are based on the indirect standardisation method, applying age-group imprisonment rates derived from Prison Census data. **b.** Rates are based on the daily average prisoner populations supplied by states and territories, calculated against adult population figures at December 2021 for people aged 18 or over, reflecting the age at which people are remanded or sentenced to adult custody. **c.** The Aboriginal and Torres Strait Islander study population as at 31 December 2021 is derived as the average of two June projections based on the 2016 Census of Population and Housing; and on the Series B fertility assumption. The non-Indigenous study population is calculated by subtracting the Aboriginal and Torres Strait Islander study population from the total estimated resident population as at 31 December 2021 based on the 2016 Census. Australia total population includes other territories.

Source: State and Territory governments (unpublished); ABS (unpublished) National, state and territory population, December 2021; ABS 2021, 'Table 5' [data set] and 'Projected population' [ABS.Stats table], Estimates and Projections, Aboriginal and Torres Strait Islander Australians, 2006 to 2031, https://www.abs.gov.au/statistics/people/aboriginal-and-torres-strait-islander-peoples/estimates-and-projections-aboriginal-and-torres-strait-islander-australians/2006-2031, accessed 3 August 2021; Steering Committee for the Review of Government Service Provision 2023, Report on Government Services 2023, table 8A.5.

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