# National Indigenous Reform Agreement: PI 02-Mortality rate (and excess deaths) by leading causes, 2012

## Exported from METEOR (AIHW's Metadata Online Registry)

# National Indigenous Reform Agreement: PI 02-Mortality rate (and excess deaths) by leading causes, 2012

## Identifying and definitional attributes

| | |
|---|---|
| **Metadata item type:** | Indicator |
| **Indicator type:** | Indicator |
| **Short name:** | PI 02-Mortality rate (and excess deaths) by leading causes, 2012 |
| **METEOR identifier:** | 438560 |
| **Registration status:** | Indigenous, Superseded 13/06/2013 |
| **Description:** | There are two measures for this indicator: |
| | Measure (1a): Mortality rates for Australians by leading causes of death (ICD-10 chapter level), by Indigenous status. |
| | Measure (1b): Excess deaths for Indigenous Australians by the leading causes of death (ICD-10 chapter level). |
| **Rationale:** | Achieving the Closing the Gap target of closing the life expectancy gap within a generation requires monitoring mortality rates for different diseases so that it is understood which diseases are major contributors to mortality among Indigenous Australians and where programs are succeeding and where they are not. |
| **Indicator set:** | National Indigenous Reform Agreement (2012)<br>Indigenous, Superseded 13/06/2013 |
| **Outcome area:** | Indigenous Australians achieve health outcomes comparable to the broader population<br>Indigenous, Superseded 25/02/2024 |
| **Data quality statement:** | National Indigenous Reform Agreement: PI 02-Mortality rate (and excess deaths) by leading causes, 2012 QS<br>Indigenous, Superseded 13/06/2013 |

## Collection and usage attributes

| | |
|---|---|
| **Computation description:** | There are two measures for this indicator: |
| | Measure (1a): Mortality rates for Australians by the leading causes of death, by Indigenous status. |
| | Measure (1b): Excess deaths for Indigenous Australians by the leading causes of death. |
| | Crude rates are calculated for Indigenous Australians. |
| | Age-standardised rates are calculated for Indigenous and non-Indigenous Australians. |
| | Rate ratios and rate differences are calculated for Indigenous:non-Indigenous. |
| | Note: Causes to be listed from highest to lowest Indigenous percentage for the most recent period (5 years combined). |
| | Variability bands are to be calculated for rates (single year data only) using the standard method (see definition below). |
| | For trends: Percentage change and statistical significance of change is to be calculated (required for CRC reporting). |
| | Excludes deaths where Indigenous status was not stated. |

Presentation:

(1a): Number, percentage, rate per 100,000 persons; rate ratios, rate differences, variability bands; and causes (as per list contained in 'Definitions' below) listed from highest to lowest percentage.

(1b): Number (observed, expected, excess); percentage (per cent of excess deaths); and causes (as per list contained in 'Definitions' below) listed from highest to lowest percentage.

Definitions:

Excess deaths: observed number of deaths less expected number of deaths if the age-specific rates of the non-Indigenous population for the corresponding period were applied to the Indigenous population.

This measure refers to 'leading causes of death'. Data are provided for 'selected causes of death' according to the ICD-10 codes used for 'leading causes of death' in the Aboriginal and Torres Strait Islander Health Performance Framework:

- Circulatory diseases (I00-I99)
- Neoplasms (cancer) (C00-D48)
-  Malignant neoplasms of digestive organs (C15-C26)
-  Malignant neoplasm of bronchus and lung (C34)
-  Malignant neoplasm of cervix uteri (C53)
- External causes of morbidity and mortality (V01-Y98)
- Endocrine, metabolic and nutritional disorders (E00-E90)
-  Diabetes mellitus (E10-E14)
- Respiratory diseases (J00-J99)
- Digestive diseases (K00-K93)
- Kidney Diseases (N00-N29)
- Conditions originating in the perinatal period (P00-P96)
- Infectious and parasitic diseases (A00-B99)
- Nervous system diseases (G00-G99)
- Other causes
- All Causes

For single year data, the following top 5 causes of death are to be reported:

- Circulatory diseases (I00-I99)
- Neoplasms (cancer) (C00-D48)
- External causes of morbidity and mortality (V01-Y98)
- Endocrine, metabolic and nutritional disorders (E00-E90)
- Respiratory diseases (J00-J99)
- Total (top 5 causes)
- Other causes
- Total (All Causes)

The top 5 causes of death need to be re-assessed each reporting period. If a change is identified, data may need to be backcast to the baseline year for the most recent set of top 5 causes to ensure a consistent time series.

Standard method for variability band computation:

Rates derived from administrative data counts are not subject to sampling error but may still be subject to natural random variation, especially for small counts. A 95% confidence interval for an estimate is a range of values which is very likely (95 times out of 100) to contain the true unknown value. Where the 95% confidence intervals of two estimates do not overlap it can be concluded that there is a statistically significant difference between the two estimates. This is the standard method used in AIHW publications for which formulas can be sourced from Breslow and Day (1987) in the publication 'Statistical methods in cancer research'. Typically in the standard method, the observed rate is assumed to have natural variability in the numerator count (e.g. deaths, hospital visits) but not in the population denominator count. Also, the rate is assumed to have been generated from a Normal distribution ("Bell curve"). Random variation in the numerator count is assumed to be centred around the true value - i.e. there is no systematic bias.

**Computation:**          Mortality rates (1a):

Crude percentage: number of deaths by cause divided by all deaths.

Crude rate: 100,000 x (Numerator ÷ Denominator).

Age-standardised rate: calculated using the direct method using five year age groups from 0-4 to 75 years and over and the Australian population as at 30 June 2001 as the standard. Age-standardisation should be done in accordance with the NIRAPIMG agreed principles for direct age-standardisation (see Comments section).

Rate ratio: Indigenous age-standardised rate divided by non-Indigenous age-standardised rate

Rate difference: Indigenous age-standardised rate minus non-Indigenous age-standardised rate

Variability band: to be calculated using the standard method for estimating 95% confidence intervals as follows:

*Crude rate:*

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

**Where d = the number of deaths**

*Age-standardised rate:*

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

**Where $w_i$ = the proportion of the standard population in age group i**

**$d_i$ = the number of deaths in age group i**

**$n_i$ = the number of people in the population in age group i**

**Percentage change: Calculated by multiplying the average annual change over the period by the number of data points less 1. This is then divided by the rate for the first year in the series and multiplied by 100.**

**The average annual change in rates, rate ratios and rate differences are calculated using linear regression which uses the least squares method to calculate a straight line that best fits the data and returns an array that best describes the line. The simple linear regression line, Y = a + bX, or 'slope' estimate was used to determine the average annual change in the data over the period. The formula used to calculate the slope estimate and standard error of the slope in Microsoft Excel is:**

**LINEST: (known_y's, known_x's, true) entered as an array formula (Ctrl, Shift, Enter).**

**Statistical significance of change: The 95% confidence intervals (CIs) for the standard error of the slope estimate (average annual change) are used to determine whether the apparent increases or decreases in the data are statistically significant at the p<0.05 level. The formula used to calculate the CIs for the standard error of the slope estimate is:**

***95%CI(x) = x ± 1.96 x SE(x)***

**where x is the average annual change (slope estimate). If the upper and**

**lower 95% confidence intervals do not include zero, then it can be concluded that there is statistical evidence of an increasing or decreasing trend in the data over the study period.**

**Excess deaths (1b):**

**Observed number of Indigenous deaths less expected number of Indigenous deaths if the age specific rates of the non-Indigenous population for the corresponding period were applied to the Indigenous population. Percentage by cause.**

| | |
|---|---|
| **Numerator:** | Number of deaths |
| **Numerator data elements:** | |

---

**Data Element / Data Set**

[Person—date of birth, DDMMYYYY](#)

**Data Source**

[ABS Death Registrations Collection](#)

**Guide for use**

Data source type: Administrative by-product data

---

**Data Element / Data Set**

[Person—date of birth, DDMMYYYY](#)

**Data Source**

[ABS Causes of Death Collection](#)

**Guide for use**

Data source type: Administrative by-product data

---

**Data Element / Data Set**

[Person—date of death, DDMMYYYY](#)

**Data Source**

[ABS Death Registrations Collection](#)

**Guide for use**

Data source type: Administrative by-product data

---

**Data Element / Data Set**

[Person—date of death, DDMMYYYY](#)

**Data Source**

[ABS Causes of Death Collection](#)

**Guide for use**

Data source type: Administrative by-product data

---

**Denominator:**      Total population of all people

**Denominator data elements:**

> **Data Element / Data Set**
>
> [Person—estimated resident population of Australia, total people N[N(7)]](#)
>
> **Data Source**
>
> [ABS Estimated resident population (total population)](#)
>
> **Guide for use**
>
> Data source type: Derived from Census, PES and estimates of fertility, mortality, net migration etc.

> **Data Element / Data Set**
>
> [Person—estimated resident population of Australia, total people N[N(7)]](#)
>
> **Data Source**
>
> [ABS Indigenous experimental estimates and projections (2001 Census-based)](#)
>
> **Guide for use**
>
> Data source type: Derived from Census, Post-enumeration survey (PES) and estimates of fertility, mortality, net migration etc.

**Disaggregation:**

Measure 1(a):

**Current period** - 2005-2009:

For Indigenous only (crude rates, and percentage):

- State and Territory (including national total) by leading cause of death including total (ICD-10 chapter level and some sub-chapter level).

For Indigenous and non-Indigenous (age-standardised rates, rate ratios, and rate differences):

- State and Territory (including national total) by leading cause of death including total (ICD-10 chapter level and some sub-chapter level), by Indigenous status.
- State and Territory (including national total) by sex by leading cause of death including total (ICD-10 chapter level and some sub-chapter level), by Indigenous status.

**Time series** - 2006 (to be provided for the 2012 CRC report to be used as the first year in the time series to align with the baseline year of 2006 for the Life expectancy target), 2007 and 2008 (revised using direct method of age-standardising and revised cause of deaths data), 2009 (current period for cause of death and previous year for all-cause) and 2010 (current period for all-cause):

For Indigenous and non-Indigenous (age-standardised rates, rate ratios, rate differences, variability bands, percentage change and statistical significance of change):

- National by sex by Indigenous status: all-cause.
- State/Territory (including national total) by Indigenous status: all-cause.
- State/Territory (including national total) by leading causes of death including total (Top 5 ICD-10 chapter levels as listed under 'definitions'), by Indigenous status.

Measure (1b):

**Current period (2005-2009):**

For Indigenous only (number – observed, expected, excess; and per cent of excess deaths): National by sex, by leading cause of excess deaths (ICD-10 chapter level and some sub-chapter level).

**Disaggregation data elements:**

**Data Element / Data Set**

[Person—sex, code N](#)

**Data Source**

[ABS Death Registrations Collection](#)

**Guide for use**

Data source type: Administrative by-product data

**Data Element / Data Set**

[Person—Indigenous status, code N](#)

**Data Source**

[ABS Death Registrations Collection](#)

**Guide for use**

Data source type: Administrative by-product data

**Data Element / Data Set**

[Person—underlying cause of death, code (ICD-10 2nd edn) ANN-ANN](#)

**Data Source**

[ABS Causes of Death Collection](#)

**Guide for use**

Data source type: Administrative by-product data

**Data Element / Data Set**

[Person—area of usual residence, geographical location code (ASGC 2008) NNNNN](#)

**Data Source**

[ABS Death Registrations Collection](#)

**Guide for use**

Data source type: Administrative by-product data

**Comments:**

Most recent data available for 2012 CRC report is 2010 for all-cause and 2009 by cause of death. Backcast data is also provided for 2006, 2007 and 2008.

Data are based on reference year.

Aggregated data will be used for the current reporting period (2005-2009).

Single year data will be used for time series (2006, 2007, 2008, 2009 and 2010 for all-cause and 2006, 2007, 2008 and 2009 for causes); noting that previously supplied data will be used unless a resupply is provided.

Disaggregation by Indigenous status will be based on data only from jurisdictions for which the quality of Indigenous identification is considered acceptable.

At this stage, only data from selected state/territories are considered of acceptable quality for reporting mortality of Indigenous persons (NSW, Qld, WA, SA and NT).

National rates should include these five states and territories only.

Disaggregation by state/territory should be based on the usual residence of the

deceased.

Due to the small number of Indigenous deaths reported each year, 5 year combined data will be reported for the current reporting period. Single year data will be used for reporting time series.

To report trends, the COAG Reform Council will separately request percentage change and statistical significance testing for this indicator directly from the AIHW when ABS supplies the data.

Variability bands accompanying mortality data should be used for the purposes of comparisons over time. They should not be used for comparing mortality rates at a single point in time between jurisdictions as the variability bands and mortality rates do not take into account differences in under-identification of Indigenous deaths between jurisdictions.

Baseline year of NIRA target (Close the life expectancy gap within a generation) is 2006; baseline year for this indicator is 2006; target year is 2031.

**NIRAPIMG agreed Principles for reporting directly age-standardised rates for administrative data:**

**Overarching principle:** Before undertaking age-standardisation, analysts must investigate the data being used to understand the age-specific distribution and any limitations that may impact on the results.

**Principle 1:** The standard population used should be the Australian Estimated Resident Population as at 30 June 2001 from the 2001 Census until population estimates from the 2011 Census become available.

The population used as the denominator for the calculation of Indigenous age-standardised rates should be SERIES B of Indigenous experimental estimates and projections 2006 to 2021 based on the 2006 Census until population estimates from the 2011 Census become available.

**Principle 2:** If the denominator is less than 30 in any one age group, then do not attempt to produce age-standardised rates.

Age-groups may be collapsed to obtain a denominator of 30 or more (provided that this is in accordance with Principle 3 and 4).

**Principle 3:** If the total number of Indigenous events (e.g. deaths, hospital separations) is less than 20, then do not attempt to produce age-standardised rates.

Combining several years of data, or aggregating jurisdictions should be considered to obtain a total of 20 or more events.

If this does not meet the purpose (i.e. data are required for time series or jurisdictional comparisons), or does not result in greater than 20 events in total, then other measures and contextual information should be reported instead of age-standardised rates which could include total number of events, crude rates, age-specific rates, age-specific rate ratios and median age at death.

**Principle 4:** Age-standardised rates should be calculated using the five year age groupings of 0-4 to 75+ (provided Principles 2 and 3 for denominator and numerator are met).

10-year age groups may be used to overcome small numbers (20 year age groups are too wide and should not be used).

**Principle 5:** Additional contextual information (most importantly age-specific rates and ratios) should be provided in addition to age-standardised rates when:

a) the age-standardised rates and rate ratios lie largely outside the range of the age-specific rates and rate ratios.

b) the pattern of age-specific rates of the Indigenous and non-Indigenous populations differ substantially (e.g. deaths from a certain cause concentrate on younger ages for Indigenous population while for non-Indigenous they may occur at older ages).

c) the age-specific rates depart from the assumption of a uniform increase in death with age (e.g. injury which peaks in the young adult to middle-ages and certain cancers amenable to treatment for some age groups).

d) the condition of interest is largely confined to a specific age range (e.g. STIs and women who give birth). In such instances, age-standardisation could be restricted to include the age groups within this age range only.

**Principle 6:** For conditions restricted to a specific age group (e.g. conditions originating in the perinatal period and SIDS), it is recommended to report the age-specific rate for the age group of interest instead of the age-standardised rate.

## Representational attributes

| | |
|---|---|
| **Representation class:** | Rate |
| **Data type:** | Real |
| **Unit of measure:** | Person |
| **Format:** | N[NN].N |

## Indicator conceptual framework

| | |
|---|---|
| **Framework and dimensions:** | [Deaths](#) |

## Data source attributes

**Data sources:**

**Data Source**

[ABS Estimated resident population (total population)](#)

**Frequency**

Quarterly

**Data quality statement**

[ABS Estimated resident population (total population), QS](#)

**Data custodian**

Australian Bureau of Statistics

**Data Source**

[ABS Death Registrations Collection](#)

**Frequency**

Annual

**Data custodian**

Australian Bureau of Statistics

**Data Source**

[ABS Indigenous experimental estimates and projections (2001 Census-based)](#)

**Frequency**

Periodic

**Data quality statement**

[ABS Indigenous experimental estimates and projections, QS](#)

**Data custodian**

Australian Bureau of Statistics

**Data Source**

[ABS Causes of Death Collection](#)

**Frequency**

Annual

**Data quality statement**

[ABS causes of death collection, QS](#)

**Data custodian**

Australian Bureau of Statistics

## Accountability attributes

**Reporting requirements:** National Indigenous Reform Agreement.

**Organisation responsible for providing data:** Australian Bureau of Statistics (ABS).

**Further data development /**
**collection required:**

Specification: Long-term.

Improve the quality of Indigenous identification in deaths data.

## Source and reference attributes

**Steward:**
[National Indigenous Reform Agreement Performance Information Management Group](#)

# Relational attributes

**Related metadata**
**references:**

Supersedes [National Indigenous Reform Agreement: PI 02-Mortality rate (and excess deaths) by leading causes, 2011](#)
　　[Indigenous](#), Superseded 01/07/2012

Has been superseded by [National Indigenous Reform Agreement: PI 02-Mortality rate by leading causes, 2013](#)
　　[Indigenous](#), Superseded 13/12/2013

See also [National Healthcare Agreement: PI 59-Age-standardised mortality by major cause of death, 2012](#)
　　[Health](#), Superseded 25/06/2013