

National Indigenous Reform Agreement: PI 06-Under five mortality rate by leading cause, 2015

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National Indigenous Reform Agreement: PI 06-Under five mortality rate by leading cause, 2015

Identifying and definitional attributes

Metadata item type:	Indicator
Indicator type:	Indicator
Short name:	PI06-Under five mortality rate by leading cause, 2015
METEOR identifier:	579074
Registration status:	Indigenous , Superseded 18/11/2015
Description:	<p>Mortality rates for children aged less than five years, by leading causes of death (ICD-10 chapter level), by Indigenous status.</p> <p>The Australian Bureau of Statistics (ABS) data for this indicator is for perinatal mortality, infant mortality (0<1 year), child 1-4 years mortality and child 0-4 years mortality.</p>
Rationale:	High level of public interest. Key measure for the ' <i>Closing the Gap</i> ' indicator of halving the gap in mortality rates for children under 5.
Indicator set:	National Indigenous Reform Agreement (2015) Indigenous , Superseded 18/11/2015
Outcome area:	Indigenous children have the same health outcomes as other Australian children Indigenous , Standard 21/07/2010
Data quality statement:	National Indigenous Reform Agreement: PI 06—Under five mortality rate by leading cause, 2015, Quality Statement Indigenous , Superseded 07/02/2017

Collection and usage attributes

Population group age to:	<p>This indicator uses a number of different population group age bands:</p> <ul style="list-style-type: none">• For perinatal: All fetal deaths of at least 20 completed weeks' gestation or at least 400g birth weight, and all live-born babies who died within 28 days of birth (refer to definition under computation)• For infants: Live births, from birth to less than 1 year of age• For children aged 1-4 years: population from 1 year of age to less than 5 years of age• For children aged 0-4 years: population less than 5 years of age.
Computation description:	<p>Rates are calculated for Indigenous and non-Indigenous.</p> <p>For children 1-4 and children 0-4 years:</p> <ul style="list-style-type: none">• Rates for single year use single year for numerator and average of three years (with reference year as middle year) for denominator.• Rates for 5 years combined use average of 5 years for numerator and denominator . <p>Variability bands are to be calculated for rates (single year and national data for 5 years combined) using the standard method (see definition below).</p> <p>Reporting is only for those jurisdictions which have adequate levels of Indigenous identification (NSW, Qld, WA, SA and NT from 1998).</p> <p>For trends: Percentage change and statistical significance of change is to be calculated (required for assessment of progress against targets).</p> <p>Excludes deaths where Indigenous status was not stated.</p> <p>Rate ratios and rate differences are calculated for Indigenous: non-Indigenous.</p>

Note: Causes of death to be listed from highest to lowest Indigenous percentage for the most recent period (5 years combined).

Presentation:

Number, percentage; rate per 1,000 of all births (perinatal), rate per 1,000 live births (infant), rate per 100,000 population (children 1-4 years and children 0-4 years), rate ratio, rate difference and variability bands.

Note: causes to be listed from highest to lowest Indigenous percentage.

Definitions:

'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.

'Perinatal mortality' is defined as death of an infant within 28 days of birth (neonatal death) or of a fetus (unborn child) of at least 20 completed weeks of gestation or with a birth weight of at least 400 grams).

Aboriginal and Torres Strait Islander Health Performance Framework 'Leading causes of death' are classified using ICD-10 codes:

Perinatal mortality:

Main condition in the fetus/infant:

Other conditions originating in the perinatal period (P10-P15 and P50-P96); Disorders related to length of gestation and fetal growth (P05-P08); Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99); Respiratory and cardiovascular disorders specific to the perinatal period (P20-P29); Infections specific to the perinatal period (P35-P39); Other conditions; Total deaths.

Main condition in the mother, fetus and newborn affected by:

Complications of placenta, cord and membranes (P02); Maternal complications of pregnancy (P01); Maternal conditions that may be unrelated to present pregnancy (P00); Other complications of labour and delivery and noxious influences transmitted via placenta or breast milk (P03-P04); Total deaths.

Infant mortality:

Certain conditions originating in the perinatal period (P00-P96); Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99); Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99); Sudden infant death syndrome (R95); Injury and poisoning (V01-Y99); Diseases of the respiratory system (J00-J99); Diseases of the circulatory system (I00-I99); Certain infectious and parasitic diseases (A00-B99); Other causes; All causes.

Child 1-4 mortality:

Injury and poisoning (V01-Y99); Diseases of the respiratory system (J00-J99); Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99); Diseases of the nervous system (G00-G99); Diseases of the circulatory system (I00-I99); Certain infectious and parasitic diseases (A00-B99); Certain conditions originating in the perinatal period (P00-P96); Symptoms, signs and

abnormal clinical and laboratory findings, not elsewhere classified (R00-R99);
Other causes; All causes.

Child 0-4 mortality:

Certain conditions originating in the perinatal period (P00-P96); Congenital malformations, deformations and chromosomal abnormalities (Q00-Q99); Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified (R00-R99); Injury and poisoning (V01-Y99); Diseases of the respiratory system (J00-J99); Diseases of the circulatory system (I00-I99); Diseases of the nervous system (G00-G99); Certain infectious and parasitic diseases (A00-B99); Other causes; All causes.

Computation:

Perinatal and infant mortality rates: 1000 x (Numerator ÷ Denominator).

Children 1-4 and 0-4 mortality rates: 100,000 x (Numerator ÷ Denominator).

Rate ratio: Indigenous rate divided by non-Indigenous rate.

Rate difference: Indigenous rate minus non-Indigenous rate.

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

Crude rate:

$$CI(CR)_{95\%} = p \pm 1.96 \times \sqrt{\frac{pq}{n}}$$

Where p = mortality rate

$q = 1-p$

n = denominator used to calculate mortality rate.

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:

$$95\% CI(x) = x \pm 1.96 \times SE(x)$$

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.

Definitions:

'Perinatal mortality' is defined in the ABS Perinatals Collection as death of a baby within 28 days of birth (neonatal death) or of a fetus (unborn child) of at least 20 completed weeks of gestation or with a birth weight of at least 400 grams.

Numerator:

Perinatal: Number of perinatal deaths (fetal and neo-natal)

Infant: Number of deaths among children aged less than 1 year

Children 1-4: Number of deaths among children aged 1-4 years

Children 0-4: Number of deaths among children aged 0-4 years

Numerator data elements:

Data Element / Data Set

Person—age

Data Source

[ABS Death Registrations Collection](#)

Guide for use

Data source type: Administrative by-product data

Infant and child numerator data source

Data Element / Data Set

Person—date of birth

Data Source

[ABS Causes of Death Collection](#)

Guide for use

Data source type: Administrative by-product data

Infant and child numerator data source

Data Element / Data Set

Person—date of death

Data Source

[ABS Causes of Death Collection](#)

Guide for use

Data source type: Administrative by-product data

Infant and child numerator data source

Data Element / Data Set

Birth—birth status

Data Source

[ABS Perinatal Deaths Collection](#)

Guide for use

Data source type: Administrative by-product data

Perinatal numerator data source

Data Element / Data Set

Number of fetal and neonatal deaths

Data Source

[ABS Perinatal Deaths Collection](#)

Denominator:

Guide for use
Data source type: Administrative by-product data
Perinatal: Number of all births (including live births, and stillbirths of at least 20 completed weeks of gestation or with a birth weight of at least 400 grams).
Perinatal numerator data source

Infant: Number of registered live births

Children 1-4: Population aged 1-4 years

Children 0-4: Population aged 0-4 years

Denominator data elements:

Data Element / Data Set
Birth—birth status
Data Source
[ABS birth registration data](#)
Guide for use
Data Source type: Administrative by-product data
Perinatal and infant denominator data source

Data Element / Data Set
Person—age
Data Source
[ABS Estimated resident population \(2011 Census-based\)](#)
Guide for use
Data Source type: ERP is derived from Census, Census Post Enumeration Survey (PES) and estimates of fertility, mortality, net migration etc.
Child 1-4 and 0-4 years denominator data source

Data Element / Data Set
Person—estimated resident population of Australia
Data Source
[ABS Estimated resident population \(2011 Census-based\)](#)
Guide for use
Data Source type: Estimated resident population (ERP) is derived from Census, Census Post Enumeration Survey (PES) and estimates of fertility, mortality, net migration etc.
Child 1-4 and 0-4 years denominator data source.

Data Element / Data Set
Person—age
Data Source
[ABS Indigenous estimates and projections \(2011 Census-based\)](#)
Guide for use

Data Source type: Indigenous population data are derived from Census, Census Post Enumeration Survey (PES) and estimates of fertility, mortality, net migration etc.

Child 1-4 and 0-4 years denominator data source

Data Element / Data Set

Person—estimated resident population of Australia

Data Source

[ABS Indigenous estimates and projections \(2011 Census-based\)](#)

Guide for use

Data Source type: Indigenous population data are derived from Census, Census Post Enumeration Survey (PES) and estimates of fertility, mortality, net migration etc.

Child 1-4 and 0-4 years denominator data source

Disaggregation:

Reporting is only for those jurisdictions which have adequate levels of Indigenous identification (NSW, Qld, WA, SA and NT from 1998).

Current period: Five year aggregate:

- 2008-2012 (perinatal, infant, child 1-4 years, and child 0-4 years by cause, and perinatal all-cause).
- 2009-2013 (infant, child 1-4 years, child 0-4 years all-cause).

For Indigenous and non-Indigenous (numbers, rates, percentage, rate ratios, rate differences, variability bands):

- Total (selected states/territories) by leading cause of death including total (ICD-10 chapter level and some sub-chapter level) by age group (perinatal, infant, child 1-4 years, and child 0-4 years).
- Total (selected states/territories) by age group (infant, child 1-4 years, and child 0-4 years): all-cause.
- State/territory (including total) by age group (infant, child 1-4 years, and child 0-4 years): all-cause.

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

- State/territory (including total) by age group (perinatal (fetal, neonatal and total perinatal), infant, child 1-4 years and child 0-4 years).
- Total (selected states/territories) by age group (infant, child 1-4 years, and child 0-4 years): all-cause.
- State/territory (including total) by age group (infant, child 1-4 years, and child 0-4 years): all-cause.

Time series:

Single year data:

- 2007, 2008, 2009, 2010, 2011, 2012 and 2013 (by all-cause for infant and child 0-4 years).
- 2006, 2007, 2008, 2009, 2010, 2011 and 2012 (by all-cause for perinatal).

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

- Total (selected states/territories) by age group (perinatal, infant, and child 0-4 years).

Disaggregation data elements:

Data Element / Data Set

Person—area of usual residence, statistical area level 2 (SA2) (ASGS 2011)

Data Source

[ABS Death Registrations Collection](#)

Guide for use

Data source type: Administrative by-product data

Data Element / Data Set

Person—Indigenous status

Data Source

[ABS Death Registrations Collection](#)

Guide for use

Data source type: Administrative by-product data

Data Element / Data Set

Person—area of usual residence, statistical area level 2 (SA2) (ASGS 2011)

Data Source

[ABS Causes of Death Collection](#)

Guide for use

Data source type: Administrative by-product data

Data Element / Data Set

Person—Indigenous status

Data Source

[ABS Causes of Death Collection](#)

Guide for use

Data source type: Administrative by-product data

Data Element / Data Set

Person—underlying cause of death (ICD-10 2nd edn)

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, statistical area level 2 (SA2) (ASGS 2011)

Data Source

[ABS Perinatal Deaths Collection](#)

Guide for use

Data source type: Administrative by-product data

Data Element / Data Set

Person—Indigenous status

Data Source

[ABS Perinatal Deaths Collection](#)

Guide for use

Data source type: Administrative by-product data

Data Element / Data Set

Person—underlying cause of death (ICD-10 2nd edn)

Data Source

[ABS Perinatal Deaths Collection](#)

Guide for use

Data source type: Administrative by-product data

Comments:

Most recent data available for 2015 report is 2013 for infant and child all-cause mortality and 2012 for perinatal data and cause of death data.

Data are by reference year.

Single year data for children under 5 by leading cause of death are not produced as the data are too small to identify trends. The body analysing progress against targets may reconsider this for future reports.

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 selected states and territories (NSW, Qld, WA, SA and NT) are considered of accepted quality for reporting Indigenous deaths for all ages.

National rates should include these four states and one territory only.

Disaggregation by state/territory is based on state/territory of usual residence of the deceased.

Indigenous child and particularly infant mortality data is subject to high variability due to small numbers of deaths among children 0 to 4 years.

Due to the small number of Indigenous deaths reported each year, 5 year combined data are recommended for reporting for the current reporting period. Disaggregation by leading causes of death is recommended to be reported at the national level only and not by state/territory due to small numbers.

Single year data will be used for time series in the numerator and three year average for the denominator.

Infant and child mortality:

Aggregated data (2009-2013) will be reported for all-cause mortality, and 2008-

2012 for cause of death, for the current reporting period.

Single year data (2006, 2007, 2008, 2009, 2010, 2011, 2012 and 2013) will be reported for time series analyses (all-cause mortality and national level only for infants and child 0-4 years). All child (1-4 years and 0-4 years) data to be resupplied with new denominator. For the 2015 report, data to re-supplied for:

- 2010 and 2011 for revised cause of death data
- Rates data for child 1-4 and child 0-4 years due to revised and rebased Indigenous population data.

Perinatal data:

Aggregated data (2008-2012) will be reported for the current reporting period.

Single year data (2006, 2007, 2008, 2009, 2010, 2011 and 2012 - 2013 only for all cause total for infant and child mortality) will be reported for time series analyses, noting that data provided for previous years will be used unless a resupply is provided. For the 2015 report, data to re-supplied for 2010 and 2011 for revised cause of death data.

To report trends, the body assessing progress against targets should 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 and for national estimates at a point in time for Indigenous/non-Indigenous and cause of death comparisons. 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 for NIRA target (Halve the child mortality gap within a decade) is 2008; baseline year for this indicator is 2006; target year is 2018.

Child 1-4 and child 0-4 mortality measures are derived from ERPs and projections based on the 2011 Census. The non-Indigenous population will be calculated based on 2011 Census based ERP total population minus 2011 Census based projections. First release total population ERP is to be used until rebased.

Perinatal data from the AIHW Perinatal Data Collection was reported for this indicator in the 2008-09 and 2009-10 reporting cycles. However, AIHW Perinatal Data Collection data are no longer required, as ABS data are now used.

Representational attributes

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

Indicator conceptual framework

Framework and dimensions: [Deaths](#)

Data source attributes

Data sources:

Data Source

[ABS birth registration data](#)

Frequency

Annual

Data custodian

Australian Bureau of Statistics

Data Source

[ABS Death Registrations Collection](#)

Frequency

Annual

Data custodian

Australian Bureau of Statistics

Data Source

[ABS Estimated resident population \(2011 Census-based\)](#)

Frequency

Quarterly

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

Data Source

[ABS Indigenous estimates and projections \(2011 Census-based\)](#)

Frequency

Periodic

Data custodian

Australian Bureau of Statistics

Data Source

[ABS Perinatal Deaths Collection](#)

Frequency

Annual

Data custodian

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 06-Under five mortality rate by leading cause, 2014 Indigenous](#), Superseded 24/11/2014

Has been superseded by [National Indigenous Reform Agreement: PI 06—Under five mortality rate by leading cause, 2016 Indigenous](#), Superseded 01/07/2016

See also [National Healthcare Agreement: PB b-Better health: halve the mortality gap for Indigenous children under five by 2018, 2014 Health!](#), Superseded 14/01/2015