National Indigenous Reform Agreement: PI 06-Under five mortality rate by leading cause, 2014

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National Indigenous Reform Agreement: PI 06-Under five mortality rate by leading cause, 2014

Identifying and definitional attributes

Metadata item type: Indicator

Indicator type: Indicator

Short name: PI 06-Under five mortality rate by leading cause, 2014

METEOR identifier: 525845

Registration status: Indigenous, Superseded 24/11/2014

Description: Mortality rates for children aged less than five years, by leading causes of death (ICD-10 chapter level), by Indigenous status.

The Australian Bureau of Statistics (ABS) data for this indicator is for perinatal mortality, infant mortality, child 1-4 years mortality and child 0-4 years mortality.

Rationale: High level of public interest. Key measure for the *'Closing the Gap'* indicator of halving the gap in mortality rates for children under 5.

Indicator set: National Indigenous Reform Agreement (2014)
Indigenous, Superseded 24/11/2014

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, 2014 QS
Indigenous, Superseded 17/02/2016

Collection and usage attributes

Population group age to: This indicator uses a number of different population group age bands:

- 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: From 1 year of age to less than 5 years of age
- For children aged 0-4 years: Less than 5 years of age.

Computation description: Rates are calculated for Indigenous and non-Indigenous.

Variability bands are to be calculated for rates (single year and national data for 5 years combined) 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.

Rate ratios and rate differences are calculated for Indigenous: non-Indigenous.

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).

'Leading causes of death' are ICD-10 codes used for leading causes of death in the Aboriginal and Torres Strait Islander Health Performance Framework:

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* ± 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.

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
Number of fetal and neonatal deaths

Data Source

ABS Perinatal Deaths Collection

Guide for use

Data source type: Administrative by-product data

Perinatal numerator data source

Data Element / Data Set

Birth—birth status, code N

Data Source

ABS Perinatal Deaths Collection

Guide for use

Data source type: Administrative by-product data

Perinatal numerator data source

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

Infant and child numerator data source

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

Infant and child numerator data source

Data Element / Data Set

Person—age, total years N[NN]

Data Source

ABS Death Registrations Collection

Guide for use

Data source type: Administrative by-product data

Infant and child numerator data source

Denominator:

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).

Infant: Number of 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, code N

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, total years N[NN]

Data Source

ABS Estimated resident population (total population)

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—age, total years N[NN]

Data Source

ABS Indigenous experimental estimates and projections (2001 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, total people N[N(7)]

Data Source

ABS Estimated resident population (total population)

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—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: 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

Disaggregation:

Current period: Five year aggregate:

- 2007-2011 (perinatal, infant, child 1-4 years, and child 0-4 years by cause, and perinatal all-cause).
- 2008-2012 (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):

- National 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).
- National by age group (infant, child 1-4 years, and child 0-4 years): all-cause.
- State/Territory (including national 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 and territory (including national total) by age group (perinatal (fetal, neonatal and total perinatal), infant, child 1-4 years and child 0-4 years).
- National by age group (infant, child 1-4 years, and child 0-4 years): all-cause.
- State/Territory (including national 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, and 2012 (by all-cause for infant and child 0-4 years).
- 2007, 2008, 2009, 2010, and 2011 (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):

- National by age group (perinatal, infant, and child 0-4 years).
- National by age group (perinatal, infant, and child 0-4 years) by remoteness: all-cause.

Disaggregation data elements:

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—Indigenous status, code N

Data Source

ABS Causes of Death Collection

Guide for use

Data source type: Administrative by-product data

Data Element / Data Set

Person—Indigenous status, code N

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

Data Source

ABS Perinatal Deaths 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) code (ASGS 2011) N(9)

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) code (ASGS 2011) N(9)

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) code (ASGS 2011) N(9)

Data Source

ABS Perinatal Deaths Collection

Guide for use

Data source type: Administrative by-product data

Comments:

Most recent data available for 2014 CRC report is 2012 for infant and child all-cause mortality and 2011 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 required as the data are too small to identify trends. The CRC 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.

Infant and child mortality:

Aggregated data (2008-2012) will be reported for all-cause mortality, and 2007-2011 for cause of death, for the current reporting period.

Single year data (2007, 2008, 2009, 2010, 2011 and 2012) will be reported for

time series analyses (all-cause mortality and national level only for infants and child 0-4 years), noting that data provided for previous years will be used unless a resupply is provided.

Perinatal data:

Aggregated data (2007-2011) will be reported for the current reporting period.

Single year data (2007, 2008, 2009, 2010, and 2011 - 2012 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.

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 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 2007; target year is 2018.

Child 1-4 and child 0-4 mortality measures are derived from ERPs and projections based on the 2006 Census. The non-Indigenous population will be calculated based on 2006 Census based ERP total population minus 2006 Census based projections. Projections from the 2011 Census will be available in mid-2014, at which point rates may need to be backcast to 2007 (the baseline for this indicator).

Rates may not be comparable with overall rates reported elsewhere in national reporting.

Perinatal data from the AIHW Perinatal Data Collection was reported for this indicator in the 2008-09 and 2009-10 reporting cycles, however it is no longer required.

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 (total population)

Frequency

Quarterly

Data quality statement

ABS Estimated resident population (total population), 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

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 Perinatal Deaths Collection

Frequency

Annual

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 06-Under five mortality rate by leading cause, 2013
Indigenous, Superseded 13/12/2013

Has been superseded by National Indigenous Reform Agreement: PI 06-Under five mortality rate by leading cause, 2015
Indigenous, Superseded 18/11/2015

See also National Healthcare Agreement: PB b-Better health: halve the mortality gap for Indigenous children under five by 2018, 2013
Health!, Superseded 30/04/2014