

# National Indigenous Reform Agreement: PI 09-Child under 5 mortality rate (and excess deaths), 2012

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# National Indigenous Reform Agreement: PI 09-Child under 5 mortality rate (and excess deaths), 2012

## Identifying and definitional attributes

<b>Metadata item type:</b>	Indicator
<b>Indicator type:</b>	Indicator
<b>Short name:</b>	PI 09-Child under 5 mortality rate (and excess deaths), 2012
<b>METEOR identifier:</b>	438608
<b>Registration status:</b>	<a href="#">Indigenous</a> , Superseded 13/06/2013
<b>Description:</b>	<p>There are two measures for this indicator:</p> <p>Measure (1a): Mortality rates for children aged less than five years, by Indigenous status</p> <p>and</p> <p>Measure (1b): Excess deaths for Indigenous children aged less than five years.</p> <p>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.</p>
<b>Rationale:</b>	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.
<b>Indicator set:</b>	<a href="#">National Indigenous Reform Agreement (2012)</a> <a href="#">Indigenous</a> , Superseded 13/06/2013
<b>Outcome area:</b>	<a href="#">Indigenous children have the same health outcomes as other Australian children</a> <a href="#">Indigenous</a> , Standard 21/07/2010
<b>Data quality statement:</b>	<a href="#">National Indigenous Reform Agreement: PI 09-Child under 5 mortality rate (and excess deaths), 2012 QS</a> <a href="#">Indigenous</a> , Superseded 13/06/2013

## Collection and usage attributes

<b>Population group age to:</b>	<p>This indicator uses a number of different population group age bands:</p> <ul style="list-style-type: none"><li>• For perinatal: 28 days of birth or less (refer to definition under computation)</li><li>• For infants: Less than 1 year of age</li><li>• For children aged 1-4 years: Less than 5 years of age</li><li>• For children aged 0-4 years: Less than 5 years of age.</li></ul>
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**Computation description:** Rates are calculated for Indigenous and non-Indigenous.

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.

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

Presentation:

(1a): Number, 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

(1b): Excess deaths: number.

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.

**Computation:**

Perinatal and infant mortality rates:  $1000 \times (\text{Numerator} \div \text{Denominator})$ .

Children 1-4 and 0-4 mortality rates:  $100,000 \times (\text{Numerator} \div \text{Denominator})$ .

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:

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

Where d = the number of deaths in the relevant age-group

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.

**Excess deaths:** Observed number of Indigenous deaths among babies before, during or within one month of birth (perinatals), infants, children aged 1-4 years and children aged 0-4 years less expected number of deaths among Indigenous children of the corresponding age group if the age specific rate of the non-Indigenous population for the corresponding period was applied to the Indigenous population.

**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 (foetal 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 0 to 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—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

**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, 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, 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, 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, PES and estimates of fertility, mortality, net migration etc.

**Disaggregation:**

Measure (1a):

**Current period:** 2005-2009 (perinatal) and 2006-2010 (infant, child 1-4, child 0-4):

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) by Indigenous status

**Time series:**

2008 (previously supplied); 2009 (perinatal–required for 2012 reporting) and 2010 (infant, child 0-4–required for 2012 reporting):

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), by Indigenous status

Measure (1b):

Current period (5 year aggregated data):

For Indigenous only (number – observed, expected, excess):

- By age-group (perinatal, infant, child 1-4 years and child 0-4 years).

**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 Perinatal Deaths 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

**Data Element / Data Set**

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

**Data Source**

[ABS Perinatal Deaths Collection](#)

**Guide for use**

Data source type: Administrative by-product data



**Comments:**

Most recent data available for 2012 CRC report is 2010 for ABS infant and child mortality data; and 2009 for ABS perinatal data;

Infant and child mortality:

Aggregated data (2006-2010) will be reported for the current reporting period.

Single year data (2008, 2009 and 2010) will be reported for time series analyses (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 (2005-2009) will be reported for the current reporting period.

Single year data (2008 and 2009) will be reported for time series analyses (national level only for perinatals) noting that data provided for previous years 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 is based on state/territory of usual residence of the deceased.

Indigenous child 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 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 for NIRA target (Halve the child mortality gap within a decade) is 2008; baseline year for this indicator is 2008; target year is 2018.

Perinatal data from the AIHW Perinatal Data Collection was reported for this indicator in previous reporting cycles, however it is no longer required.

**Representational attributes**

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

**Indicator conceptual framework**

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

**Data source attributes**

**Data sources:**

<b>Data Source</b>
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[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 Perinatal Deaths 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**

## 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.

## Source and reference attributes

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

## Relational attributes

**Related metadata references:**

Supersedes [National Indigenous Reform Agreement: PI 09b-Child under 5 mortality rate \(and excess deaths\) \(ABS Data\), 2011 Indigenous](#), Superseded 01/07/2012

Has been superseded by [National Indigenous Reform Agreement: PI 06-Under five mortality rate by leading cause, 2013 Indigenous](#), Superseded 13/12/2013

See also [National Healthcare Agreement: PB 09-Halve the mortality gap for Indigenous children under five within a decade, 2012 Health!](#), Superseded 25/06/2013

[Indigenous](#), Standard 11/09/2012

See also [National Healthcare Agreement: PI 19-Infant and young child mortality rate, 2012 Health!](#), Superseded 25/06/2013