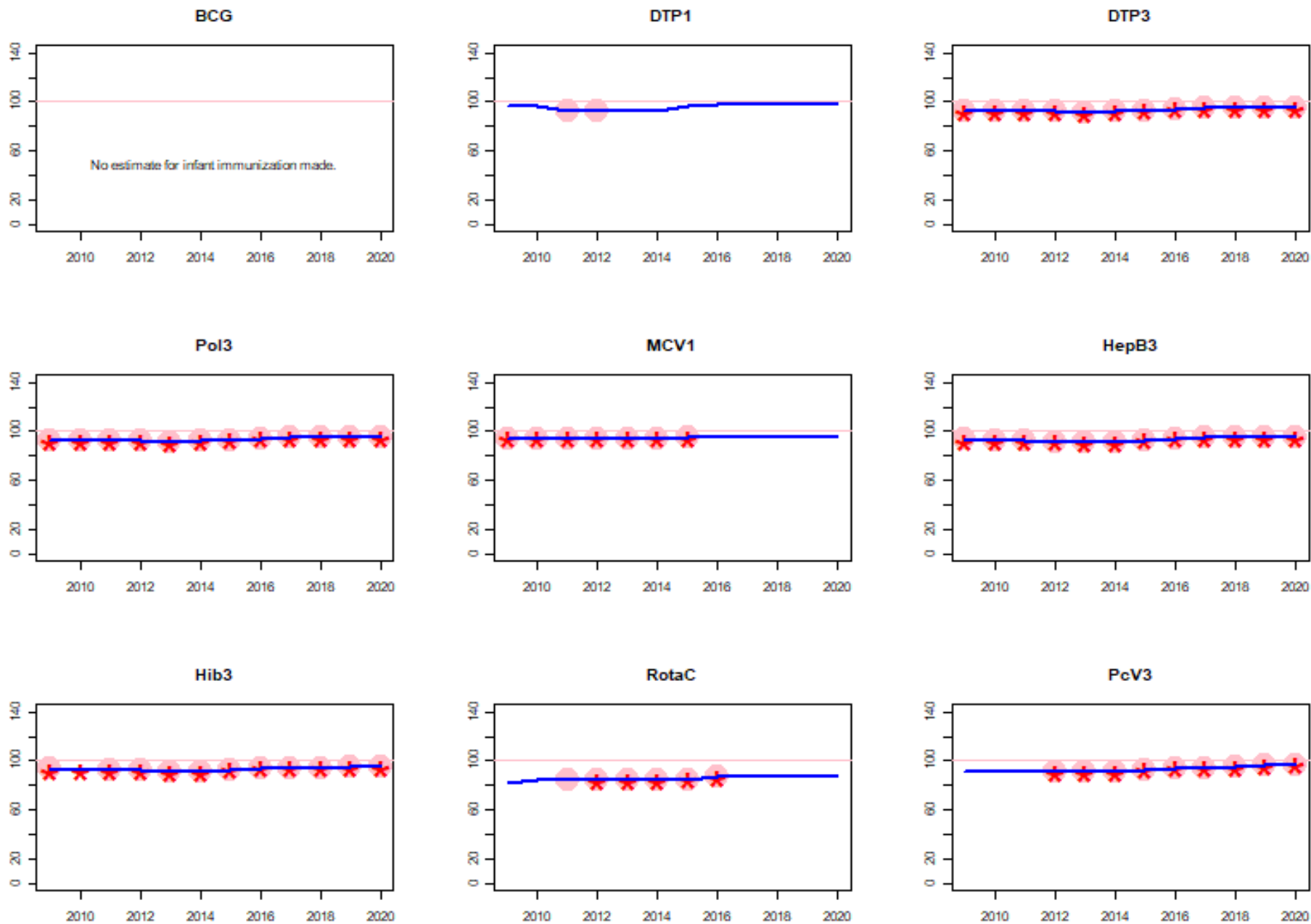


# Australia: WHO and UNICEF estimates of immunization coverage: 2020 revision



**BACKGROUND NOTE:** Each year WHO and UNICEF jointly review reports submitted by Member States regarding national immunization coverage, finalized survey reports as well as data from the published and grey literature. Based on these data, with due consideration to potential biases and the views of local experts, WHO and UNICEF attempt to distinguish between situations where the available empirical data accurately reflect immunization system performance and those where the data are likely to be compromised and present a misleading view of immunization coverage while jointly estimating the most likely coverage levels for each country.

WHO and UNICEF estimates are country-specific; that is to say, each country's data are reviewed individually, and data are not borrowed from other countries in the absence of data. Estimates are not based on ad hoc adjustments to reported data; in some instances empirical data are available from a single source, usually the nationally reported coverage data. In cases where no data are available for a given country/vaccine/year combination, data are considered from earlier and later years and interpolated to estimate coverage for the missing year(s). In cases where data sources are mixed and show large variation, an attempt is made to identify the most likely estimate with consideration of the possible biases in available data. For methods see:

\*Burton et al. 2009. WHO and UNICEF estimates of national infant immunization coverage: methods and processes.

\*Burton et al. 2012. A formal representation of the WHO and UNICEF estimates of national immunization coverage: a computational logic approach.

\*Brown et al. 2013. An introduction to the grade of confidence used to characterize uncertainty around the WHO and UNICEF estimates of national immunization coverage.

## DATA SOURCES.

**ADMINISTRATIVE coverage:** Reported by national authorities and based on aggregated administrative reports from health service providers on the number of vaccinations administered during a given period (numerator data) and reported target population data (denominator data). May be biased by inaccurate numerator and/or denominator data.

**OFFICIAL coverage:** Estimated coverage reported by national authorities that reflects their assessment of the most likely coverage based on any combination of administrative coverage, survey-based estimates or other data sources or adjustments. Approaches to determine OFFICIAL coverage may differ across countries.

**SURVEY coverage:** Based on estimated coverage from population-based household surveys among children aged 12-23 months or 24-35 months following a review of survey methods and results. Information is based on the combination of vaccination history from documented evidence or caregiver recall. Survey results are considered for the appropriate birth cohort based on the period of data collection.

## ABBREVIATIONS

**BCG:** percentage of births who received one dose of Bacillus Calmette Guerin vaccine.

**DTP1 / DTP3:** percentage of surviving infants who received the 1st / 3rd dose, respectively, of diphtheria and tetanus toxoid with pertussis containing vaccine.

**Pol3:** percentage of surviving infants who received the 3rd dose of polio containing vaccine. May be either oral or inactivated polio vaccine.

**IPV1:** percentage of surviving infants who received at least one dose of inactivated polio vaccine. In countries utilizing an immunization schedule recommending either (i) a primary series of three doses of oral polio vaccine (OPV) plus at least one dose of IPV where OPV is included in routine

immunization and/or campaign or (ii) a sequential schedule of IPV followed by OPV, WHO and UNICEF estimates for IPV1 reflect coverage with at least one routine dose of IPV among infants <1 year of age among countries. For countries utilizing IPV containing vaccine use only, i.e., no recommended dose of OPV, the WHO and UNICEF estimate for IPV1 corresponds to coverage for the 1st dose of IPV.

Production of IPV coverage estimates, which begins in 2015, results in no change of the estimated coverage levels for the 3rd dose of polio (Pol3). For countries recommending routine immunization with a primary series of three doses of IPV alone, WHO and UNICEF estimated Pol3 coverage is equivalent to estimated coverage with three doses of IPV. For countries with a sequential schedule, estimated Pol3 coverage is based on that for the 3rd dose of polio vaccine regardless of vaccine type.

**MCV1:** percentage of surviving infants who received the 1st dose of measles containing vaccine. In countries where the national schedule recommends the 1st dose of MCV at 12 months or later based on the epidemiology of disease in the country, coverage estimates reflect the percentage of children who received the 1st dose of MCV as recommended.

**MCV2:** percentage of children who received the 2nd dose of measles containing vaccine according to the nationally recommended schedule.

**RCV1:** percentage of surviving infants who received the 1st dose of rubella containing vaccine. Coverage estimates are based on WHO and UNICEF estimates of coverage for the dose of measles containing vaccine that corresponds to the first measles-rubella combination vaccine. Nationally reported coverage of RCV is not taken into consideration nor are the data represented in the accompanying graph and data table.

**HepBB:** percentage of births which received a dose of hepatitis B vaccine within 24 hours of delivery. Estimates of hepatitis B birth dose coverage are produced only for countries with a universal birth dose policy. Estimates are not produced for countries that recommend a birth dose to infants born to HepB virus-infected mothers only or where there is insufficient information to determine whether vaccination is within 24 hours of birth.

**HepB3:** percentage of surviving infants who received the 3rd dose of hepatitis B containing vaccine following the birth dose.

**Hib3:** percentage of surviving infants who received the 3rd dose of Haemophilus influenzae type b containing vaccine.

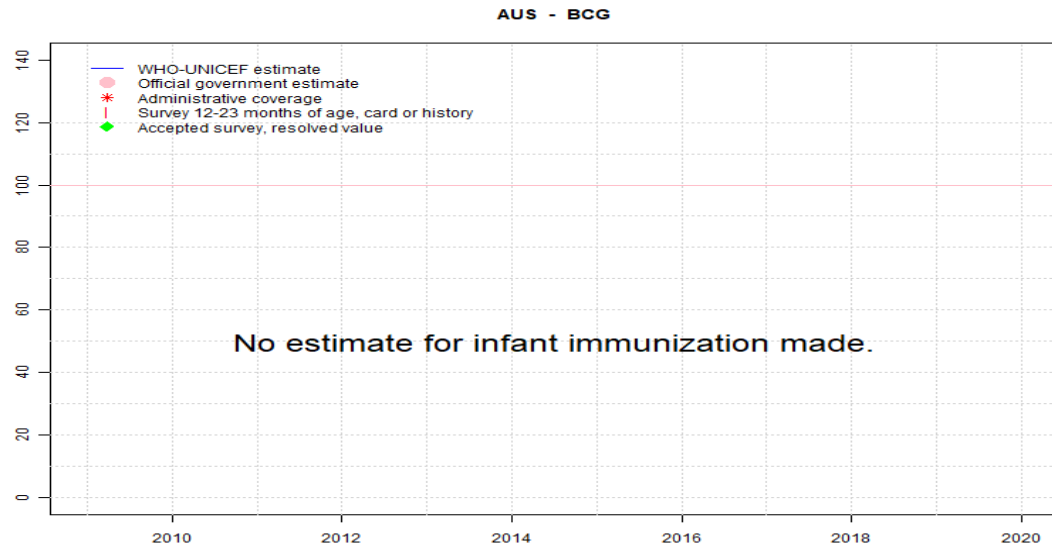
**RotaC:** percentage of surviving infants who received the final recommended dose of rotavirus vaccine, which can be either the 2nd or the 3rd dose depending on the vaccine.

**PcV3:** percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect the percentage of surviving infants who received two doses of PcV prior to the 1st birthday.

**YFV:** percentage of surviving infants who received one dose of yellow fever vaccine in countries where YFV is part of the national immunization schedule for children or is recommended in at risk areas; coverage estimates are annualized for the entire cohort of surviving infants.

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# Australia - BCG



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

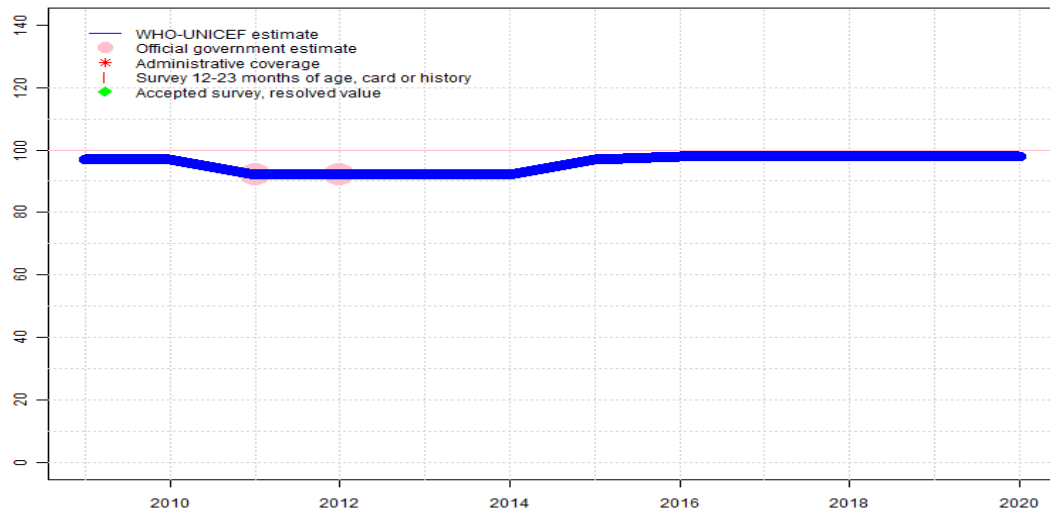
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

# Australia - DTP1

AUS - DTP1



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	97	97	92	92	92	92	97	98	98	98	98	98
Estimate GoC	•	•	••	••	•	•	•	•	•	•	•	•
Official	NA	NA	92	92	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

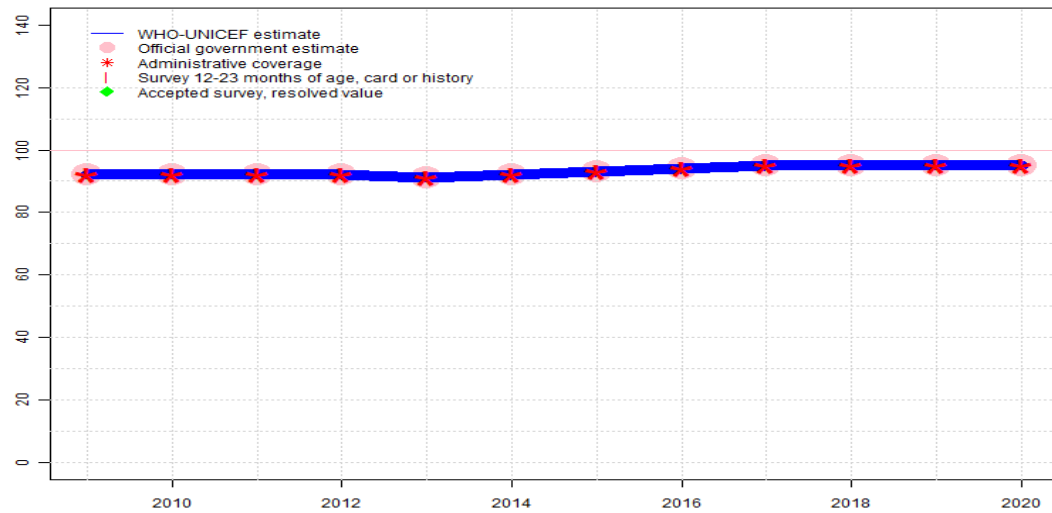
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2020: DTP1 coverage estimated based on DTP3 coverage of 95. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=No accepted empirical data
- 2019: DTP1 coverage estimated based on DTP3 coverage of 95. GoC=No accepted empirical data
- 2018: DTP1 coverage estimated based on DTP3 coverage of 95. GoC=No accepted empirical data
- 2017: DTP1 coverage estimated based on DTP3 coverage of 95. GoC=No accepted empirical data
- 2016: DTP1 coverage estimated based on DTP3 coverage of 94. GoC=No accepted empirical data
- 2015: DTP1 coverage estimated based on DTP3 coverage of 93. GoC=No accepted empirical data
- 2014: Estimate based on extrapolation from data reported by national government. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=No accepted empirical data
- 2013: Estimate based on extrapolation from data reported by national government. GoC=No accepted empirical data
- 2012: Estimate based on coverage reported by national government. GoC=R+
- 2011: Estimates based on reported data. GoC=R+
- 2010: DTP1 coverage estimated based on DTP3 coverage of 92. GoC=No accepted empirical data
- 2009: DTP1 coverage estimated based on DTP3 coverage of 92. GoC=No accepted empirical data

# Australia - DTP3

AUS - DTP3



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	92	92	92	92	91	92	93	94	95	95	95	95
Estimate GoC	•	••	••	••	••	••	••	••	••	••	••	••
Official	92	92	92	92	91	92	93	94	95	95	95	95
Administrative	92	92	92	92	91	92	93	94	95	95	95	95
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

2020: Estimate based on coverage reported by national government. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=R+ D+

2019: Estimate based on coverage reported by national government. GoC=R+ D+

2018: Estimate based on coverage reported by national government. GoC=R+ D+

2017: Estimate based on coverage reported by national government. GoC=R+ D+

2016: Estimate based on coverage reported by national government. GoC=R+ D+

2015: Estimate based on coverage reported by national government. GoC=R+ D+

2014: Estimate based on coverage reported by national government. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=R+ D+

2013: Estimate based on coverage reported by national government. GoC=R+ D+

2012: Estimate based on coverage reported by national government. GoC=R+ D+

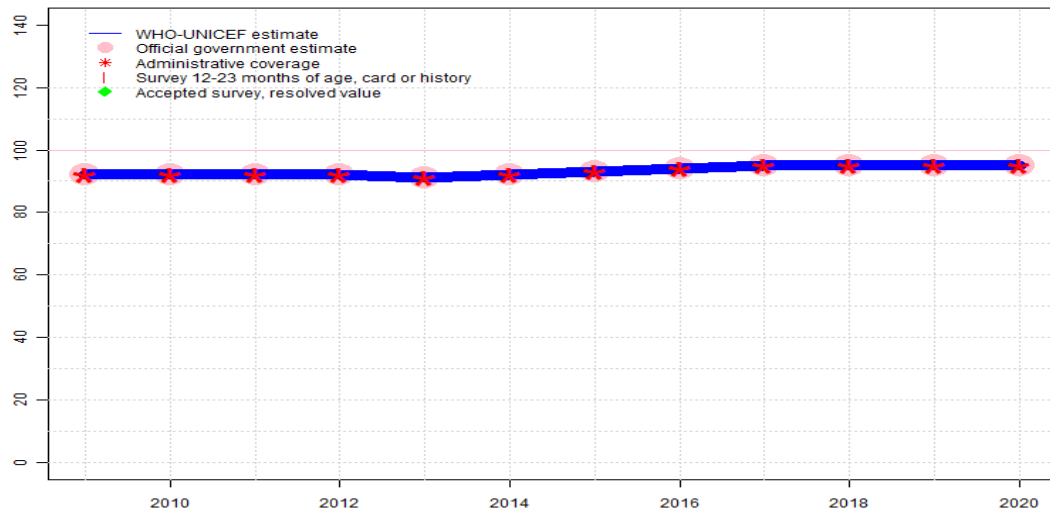
2011: Estimate based on coverage reported by national government. GoC=R+ D+

2010: Estimate based on coverage reported by national government. GoC=R+ D+

2009: Estimate based on coverage reported by national government. Estimate challenged by: D-

# Australia - Pol3

AUS - Pol3



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	92	92	92	92	91	92	93	94	95	95	95	95
Estimate GoC	•	••	••	••	••	••	••	••	••	••	••	••
Official	92	92	92	92	91	92	93	94	95	95	95	95
Administrative	92	92	92	92	91	92	93	94	95	95	95	95
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

2020: Estimate based on coverage reported by national government. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=R+ D+

2019: Estimate based on coverage reported by national government. GoC=R+ D+

2018: Estimate based on coverage reported by national government. GoC=R+ D+

2017: Estimate based on coverage reported by national government. GoC=R+ D+

2016: Estimate based on coverage reported by national government. GoC=R+ D+

2015: Estimate based on coverage reported by national government. GoC=R+ D+

2014: Estimate based on coverage reported by national government. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=R+ D+

2013: Estimate based on coverage reported by national government. GoC=R+ D+

2012: Estimate based on coverage reported by national government. GoC=R+ D+

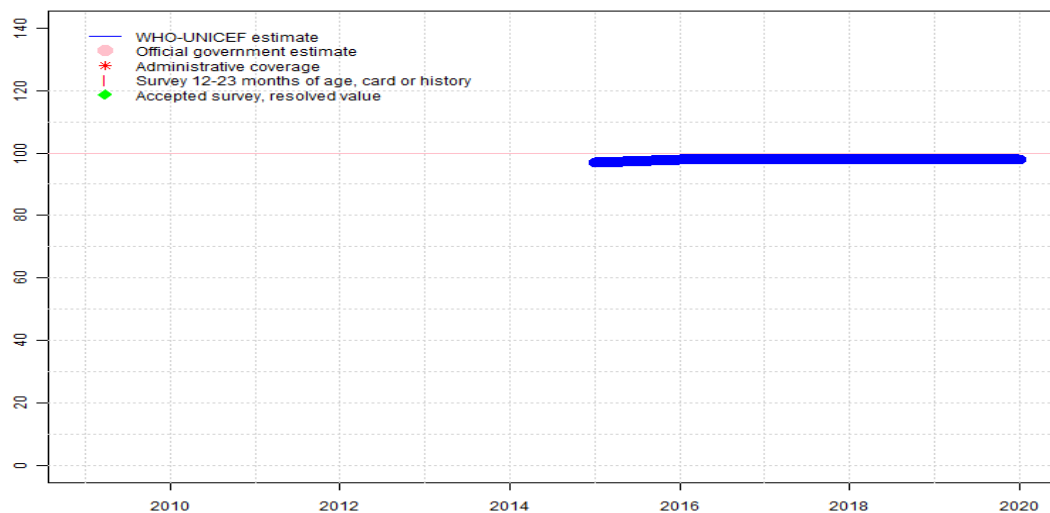
2011: Estimate based on coverage reported by national government. GoC=R+ D+

2010: Estimate based on coverage reported by national government. GoC=R+ D+

2009: Estimate based on coverage reported by national government. Estimate challenged by: D-

# Australia - IPV1

AUS - IPV1



## Description:

Estimates for a dose of inactivated polio vaccine (IPV) begin in 2015 following the Global Polio Eradication Initiative's Polio Eradication and Endgame Strategic Plan: 2013-2018 which recommended at least one full dose or two fractional doses of IPV into routine immunization schedules as a strategy to mitigate the potential consequences should any re-emergence of type 2 poliovirus occur following the planned withdrawal of Sabin type 2 strains from oral polio vaccine (OPV).

2020: Based on DTP1 estimate. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018.

GoC=No accepted empirical data  
 2019: Estimate based on estimated DTP1 coverage. GoC=No accepted empirical data  
 2018: Estimate based on estimated DTP1 coverage. GoC=No accepted empirical data  
 2017: Estimate based on estimated DTP1 coverage. GoC=No accepted empirical data  
 2016: Estimate based on estimated DTP1 coverage. GoC=No accepted empirical data  
 2015: Based on DTP1 estimate. GoC=No accepted empirical data

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	NA	NA	NA	NA	NA	NA	97	98	98	98	98	98
Estimate GoC	NA	NA	NA	NA	NA	NA	•	•	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

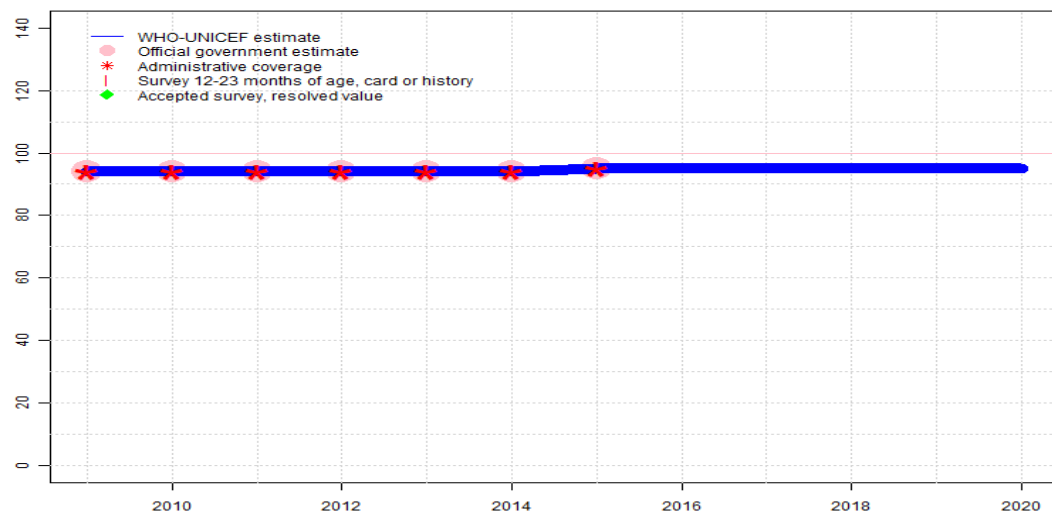
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.



# Australia - MCV1

AUS - MCV1



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	94	94	94	94	94	94	95	95	95	95	95	95
Estimate GoC	•	••	••	••	••	••	••	•	•	•	•	•
Official	94	94	94	94	94	94	95	NA	NA	NA	NA	NA
Administrative	94	94	94	94	94	94	95	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

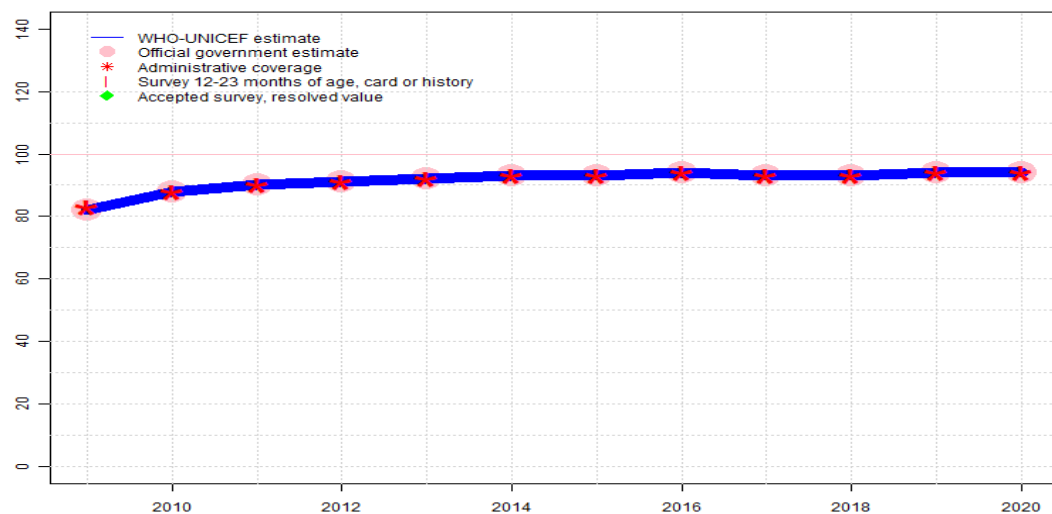
## Description:

- 2020: Estimate based on extrapolation from data reported by national government. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=No accepted empirical data
- 2019: Estimate based on extrapolation from data reported by national government. GoC=No accepted empirical data
- 2018: Estimate based on extrapolation from data reported by national government. GoC=No accepted empirical data
- 2017: Estimate based on extrapolation from data reported by national government. GoC=No accepted empirical data
- 2016: Estimate based on extrapolation from data reported by national government. GoC=No accepted empirical data
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2010: Estimate based on coverage reported by national government. GoC=R+ D+
- 2009: Estimate based on coverage reported by national government. Estimate challenged by: D-



# Australia - MCV2

AUS - MCV2



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	82	88	90	91	92	93	93	94	93	93	94	94
Estimate GoC	●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	82	88	90	91	92	93	93	94	93	93	94	94
Administrative	83	88	90	91	92	93	93	94	93	93	94	94
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

Coverage estimates for the second dose of measles containing vaccine are for children by the nationally recommended age.

2020: Estimate based on coverage reported by national government. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=R+ D+

2019: Estimate based on coverage reported by national government. GoC=R+ D+

2018: Estimate based on coverage reported by national government. GoC=R+ D+

2017: Estimate based on coverage reported by national government. GoC=R+ D+

2016: Estimate based on coverage reported by national government. GoC=R+ D+

2015: Estimate based on coverage reported by national government. GoC=R+ D+

2014: Estimate based on coverage reported by national government. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=R+ D+

2013: Estimate based on coverage reported by national government. GoC=R+ D+

2012: Estimate based on coverage reported by national government. GoC=R+ D+

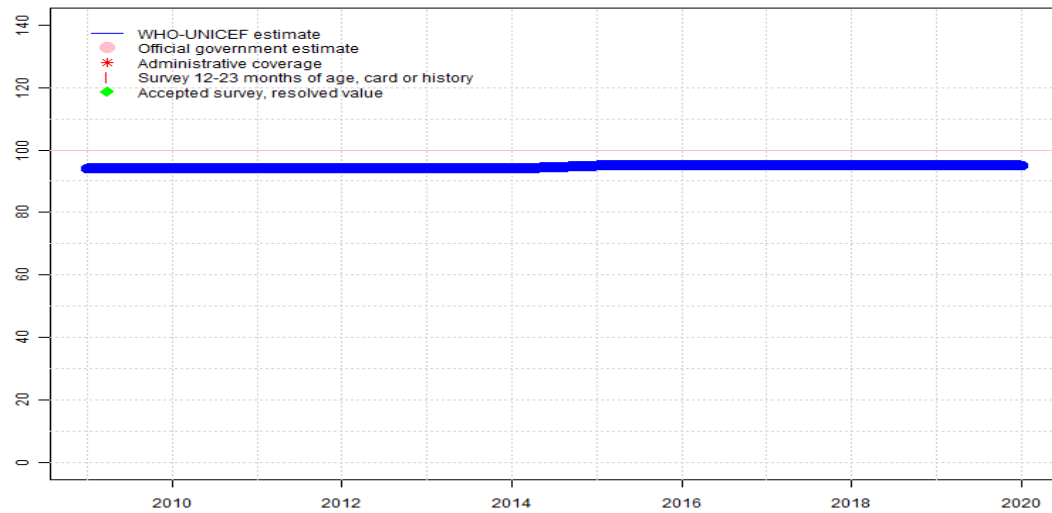
2011: Estimate based on coverage reported by national government. GoC=R+ D+

2010: Estimate based on coverage reported by national government. GoC=R+ D+

2009: Estimate based on coverage reported by national government. Estimate challenged by: D-

# Australia - RCV1

AUS - RCV1



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	94	94	94	94	94	94	95	95	95	95	95	95
Estimate GoC	•	••	••	••	••	••	••	•	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

For this revision, coverage estimates for the first dose of rubella containing vaccine are based on WHO and UNICEF estimates of coverage of measles containing vaccine. Nationally reported coverage of rubella containing vaccine is not taken into consideration nor are they represented in the the accompanying graph and data table.

2020: Estimate based on estimated MCV1. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=No accepted empirical data

2019: Estimate based on estimated MCV1. GoC=No accepted empirical data

2018: Estimate based on estimated MCV1. GoC=No accepted empirical data

2017: Estimate based on estimated MCV1. GoC=No accepted empirical data

2016: Estimate based on estimated MCV1. GoC=No accepted empirical data

2015: Estimate based on estimated MCV1. GoC=R+ D+

2014: Estimate based on estimated MCV1. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=R+ D+

2013: Estimate based on estimated MCV1. GoC=R+ D+

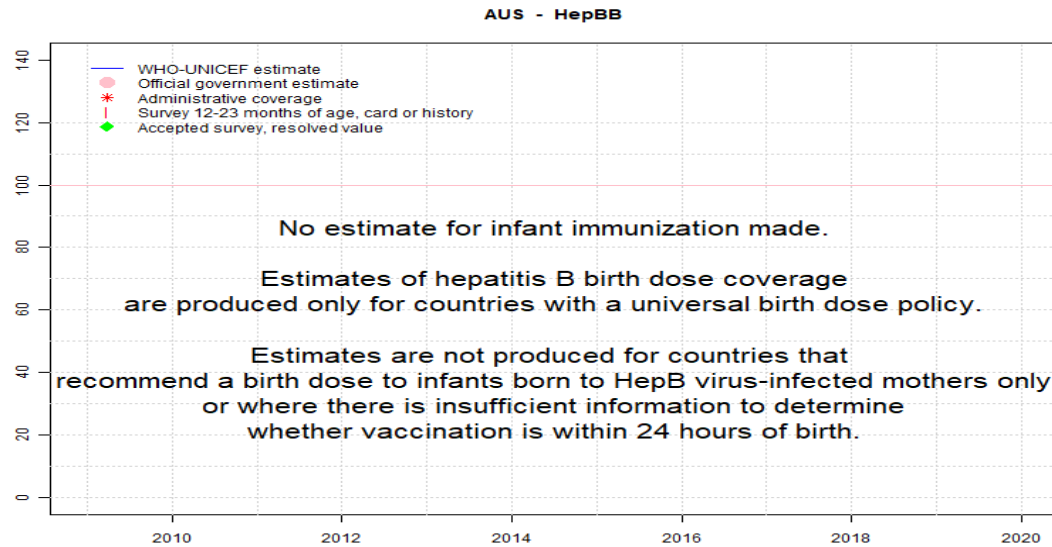
2012: Estimate based on estimated MCV1. GoC=R+ D+

2011: Estimate based on estimated MCV1. GoC=R+ D+

2010: Estimate based on estimated MCV1. GoC=R+ D+

2009: Estimate based on estimated MCV1. Estimate challenged by: D-

# Australia - HepBB



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

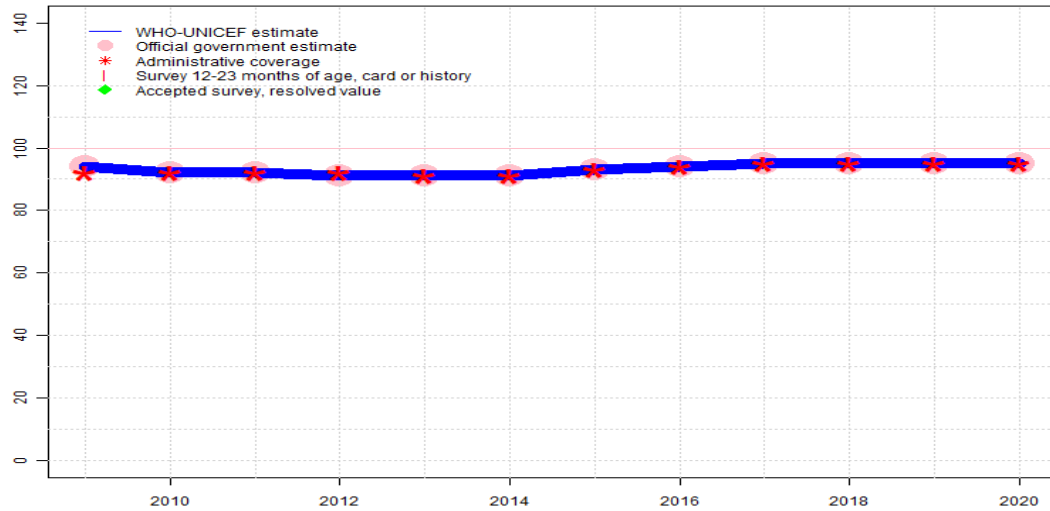
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

# Australia - HepB3

AUS - HepB3



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	94	92	92	91	91	91	93	94	95	95	95	95
Estimate GoC	•	••	••	••	••	••	••	••	••	••	••	••
Official	94	92	92	91	91	91	93	94	95	95	95	95
Administrative	92	92	92	92	91	91	93	94	95	95	95	95
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

2020: Estimate based on coverage reported by national government. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunization Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=R+ D+

2019: Estimate based on coverage reported by national government. GoC=R+ D+

2018: Estimate based on coverage reported by national government. GoC=R+ D+

2017: Estimate based on coverage reported by national government. GoC=R+ D+

2016: Estimate based on coverage reported by national government. GoC=R+ D+

2015: Estimate based on coverage reported by national government. GoC=R+ D+

2014: Estimate based on coverage reported by national government. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=R+ D+

2013: Estimate based on coverage reported by national government. GoC=R+ D+

2012: Estimate based on coverage reported by national government. GoC=R+ D+

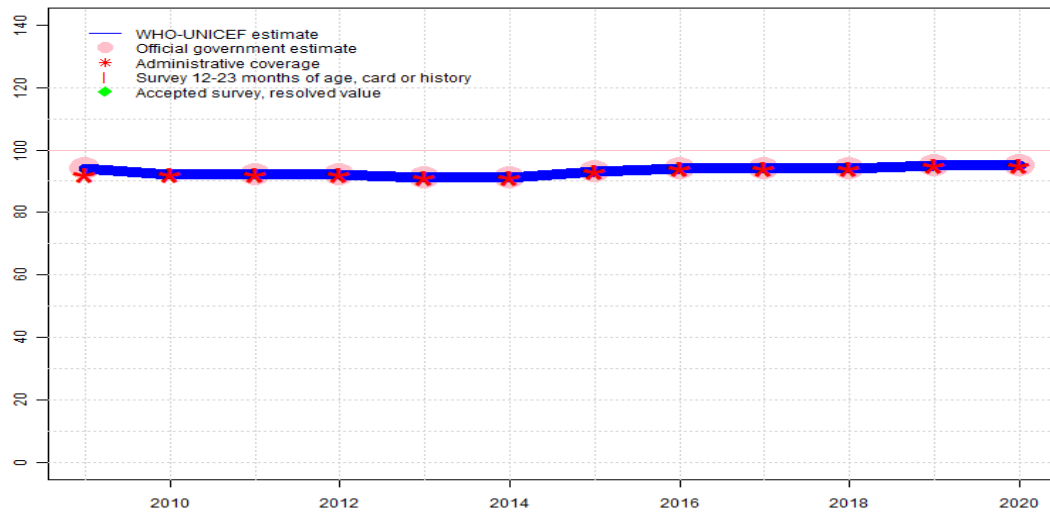
2011: Estimate based on coverage reported by national government. GoC=R+ D+

2010: Estimate based on coverage reported by national government. GoC=R+ D+

2009: Estimate based on coverage reported by national government. Estimate challenged by: D-

# Australia - Hib3

AUS - Hib3



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	94	92	92	92	91	91	93	94	94	94	95	95
Estimate GoC	●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	94	NA	92	92	91	91	93	94	94	94	95	95
Administrative	92	92	92	92	91	91	93	94	94	94	95	95
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

2020: Estimate based on coverage reported by national government. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=R+ D+

2019: Estimate based on coverage reported by national government. GoC=R+ D+

2018: Estimate based on coverage reported by national government. GoC=R+ D+

2017: Estimate based on coverage reported by national government. GoC=R+ D+

2016: Estimate based on coverage reported by national government. GoC=R+ D+

2015: Estimate based on coverage reported by national government. GoC=R+ D+

2014: Estimate based on coverage reported by national government. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=R+ D+

2013: Estimate based on coverage reported by national government. GoC=R+ D+

2012: Estimate based on coverage reported by national government. GoC=R+ D+

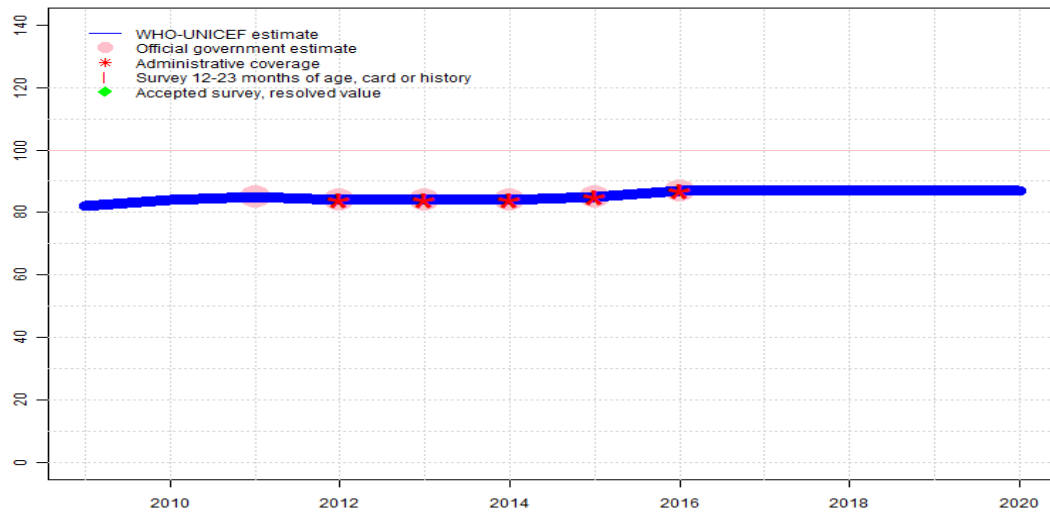
2011: Estimate based on coverage reported by national government. GoC=R+ D+

2010: Estimate based on reported administrative data. GoC=R+ D+

2009: Estimate based on coverage reported by national government. Estimate challenged by: D-

# Australia - RotaC

AUS - RotaC



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	82	84	85	84	84	84	85	87	87	87	87	87
Estimate GoC	•	•	••	•	••	••	••	••	•	•	•	•
Official	NA	NA	85	84	84	84	85	87	NA	NA	NA	NA
Administrative	NA	NA	NA	84	84	84	85	87	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

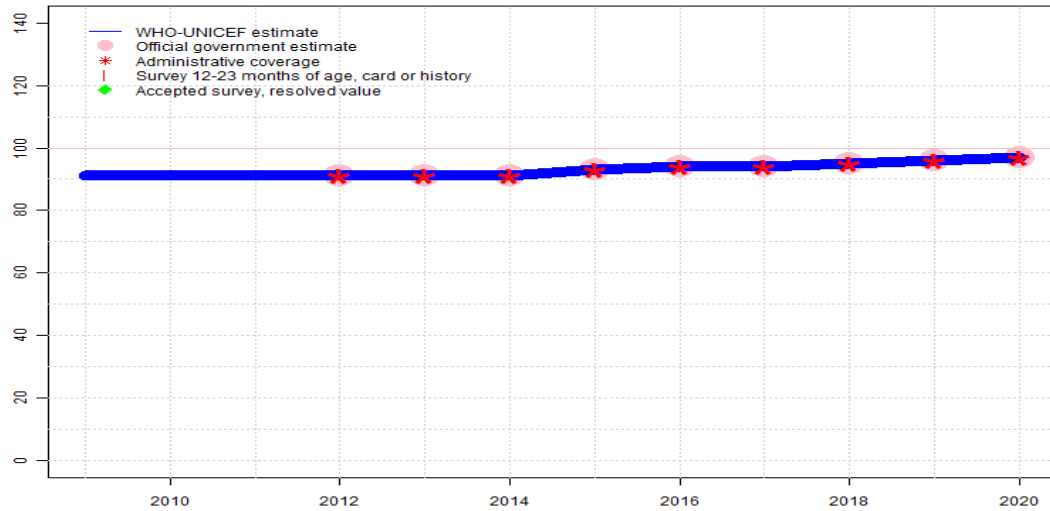
## Description:

- 2020: Estimate based on extrapolation from data reported by national government. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=No accepted empirical data
- 2019: Estimate based on extrapolation from data reported by national government. GoC=No accepted empirical data
- 2018: Estimate based on extrapolation from data reported by national government. GoC=No accepted empirical data
- 2017: Estimate based on extrapolation from data reported by national government. GoC=No accepted empirical data
- 2016: Estimate based on coverage reported by national government. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2011: Estimate based on coverage reported by national government. GoC=R+
- 2010: Estimate based on interpolation between reported values. GoC=No accepted empirical data
- 2009: Estimate based on interpolation between reported values. GoC=No accepted empirical data



# Australia - PcV3

AUS - PcV3



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Estimate	91	91	91	91	91	91	93	94	94	95	96	97
Estimate GoC	•	•	•	••	••	••	••	••	••	••	••	••
Official	NA	NA	NA	91	91	91	93	94	94	95	96	97
Administrative	NA	NA	NA	91	91	91	93	94	94	95	96	97
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is not a judgment of the quality of data reported by national authorities.

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

2020: Estimate based on coverage reported by national government. A study of vaccination coverage as observed from an analysis of the Australian Immunization Register can be found online at <http://ncirs.org.au> by searching for NCIRS Annual Immunisation Coverage Report 2018. Results of a 2018 assessment of the completeness of records in Australian Immunization Register indicates the register slightly underestimates vaccination coverage and that this varies across the country. Results can be found online at <http://www.ncirs.org.au> by searching for Australian Immunisation Register Data Transfer Study - Stage 2 Final Report, August 2018. GoC=R+ D+

2019: Estimate based on coverage reported by national government. GoC=R+ D+

2018: Estimate based on coverage reported by national government. GoC=R+ D+

2017: Estimate based on coverage reported by national government. GoC=R+ D+

2016: Estimate based on coverage reported by national government. GoC=R+ D+

2015: Estimate based on coverage reported by national government. GoC=R+ D+

2014: Estimate based on coverage reported by national government. Results of an audit of the Australian Immunisation Register (available at <https://www.anao.gov.au/work/performance-audit/administration-australian-childhood-immunisation-register>) supports reported coverage levels. GoC=R+ D+

2013: Estimate based on coverage reported by national government. GoC=R+ D+

2012: Estimate based on coverage reported by national government. GoC=R+ D+

2011: Estimate based on interpolation between reported values. GoC=No accepted empirical data

2010: Estimate based on interpolation between reported values. GoC=No accepted empirical data

2009: Estimate based on interpolation between reported values. GoC=No accepted empirical data



Further information and estimates for previous years are available at:

<http://www.data.unicef.org/child-health/immunization>

<https://www.who.int/teams/immunization-vaccines-and-biologicals/immunization-analysis-and-insights/global-monitoring/data-statistics-and-graphics>