

**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.

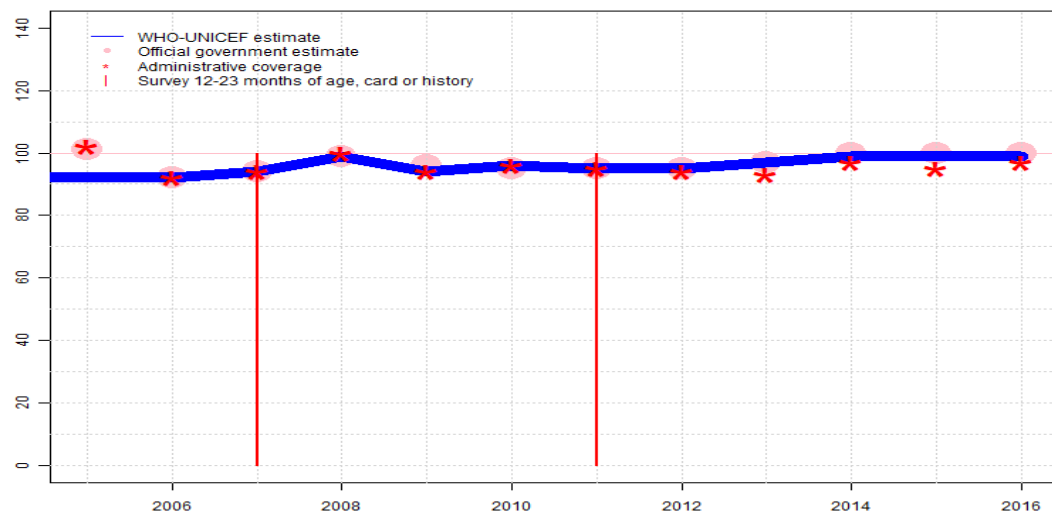
**PcV3:** percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect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

**Disclaimer:** All reasonable precautions have been taken by the World Health Organization and United Nations Children's Fund to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization or United Nations Children's Fund be liable for damages arising from its use.

# Bhutan - BCG

BTN - BCG



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	92	92	94	99	94	96	95	95	97	99	99	99
Estimate GoC	●●●	●●●	●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●●	●
Official	101	92	94	99	96	95	95	95	97	100	100	100
Administrative	102	92	94	100	94	96	95	94	93	97	95	97
Survey	NA	NA	100	NA	NA	NA	100	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: 2015 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.

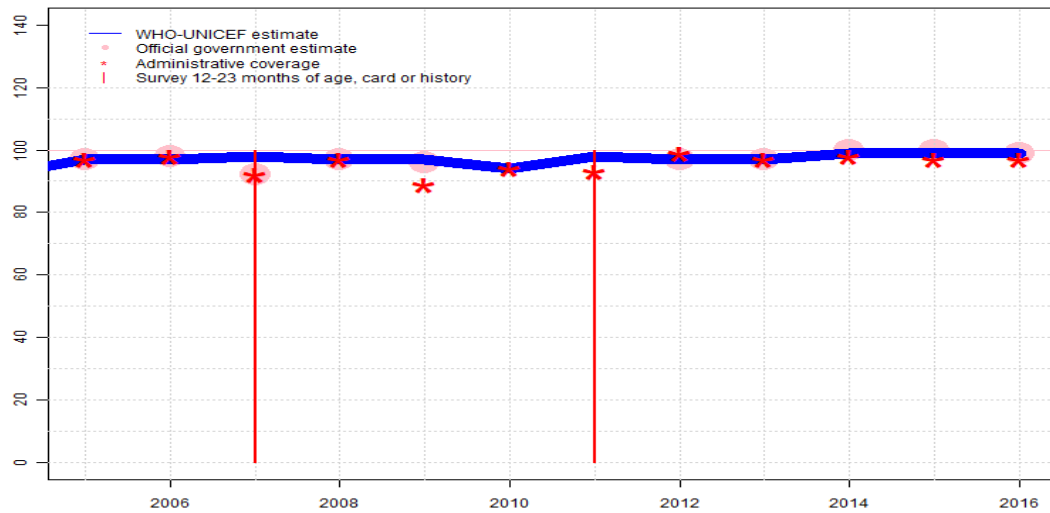
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. Programme reports that official government estimate is based in part on the 2012 National Health Survey. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 100 percent based on 1 survey(s). GoC=R+ S+ D+
- 2010: Estimate based on reported administrative data. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2009: Estimate based on reported administrative data. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 100 percent based on 1 survey(s). Estimate challenged by: D-
- 2006: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2005: Estimate based on interpolation between coverage reported by national government. Reported data excluded because 101 percent greater than 100 percent. GoC=R+ S+ D+

# Bhutan - DTP1

BTN - DTP1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	97	97	98	97	97	94	98	97	97	99	99	99
Estimate GoC	•	•	•	•••	•	•••	•	•••	•••	••	••	•
Official	97	98	92	97	96	NA	NA	97	97	100	100	99
Administrative	97	98	92	97	89	94	93	99	97	98	97	97
Survey	NA	NA	100	NA	NA	NA	100	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: 2015 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.

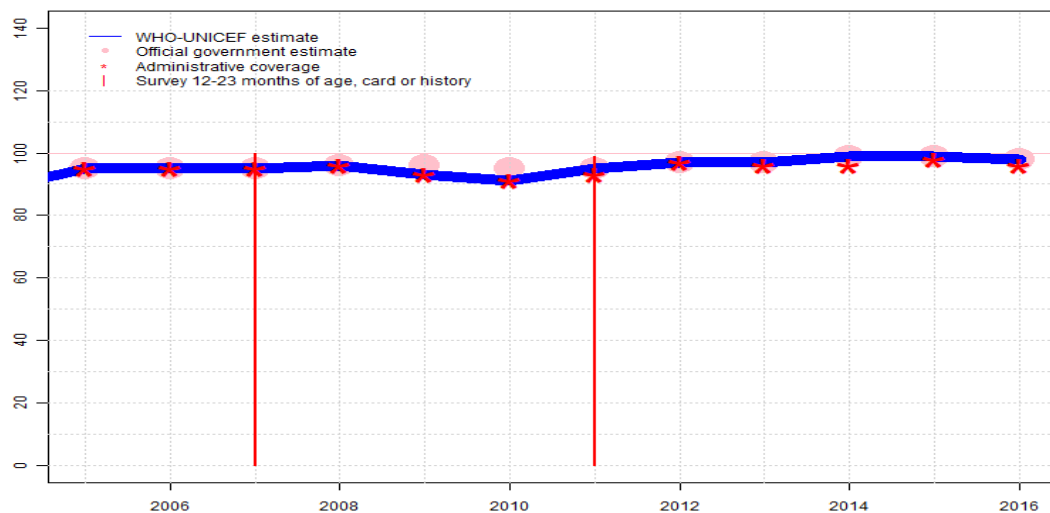
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. Programme reports that official government estimate is based in part on the 2012 National Health Survey. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2011: DTP1 coverage estimated based on DTP3 coverage of 95. DTP-HepB-Hib combination vaccine re-introduced in July 2011. Estimate challenged by: R-
- 2010: Estimate based on reported administrative data. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2009: DTP1 coverage estimated based on DTP3 coverage of 93. DTP-HepB-Hib combination introduced in 2009 and withdrawn following an adverse event and replaced with DTP-HepB combination vaccine. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. Estimate challenged by: R-
- 2008: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: DTP1 coverage estimated based on DTP3 coverage of 95. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 1997 and 2007 levels. Estimate challenged by: R-
- 2005: Reported data calibrated to 1997 and 2007 levels. Estimate challenged by: R-

# Bhutan - DTP3

BTN - DTP3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	95	95	95	96	93	91	95	97	97	99	99	98
Estimate GoC	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●●	●
Official	95	95	95	96	96	95	95	97	97	99	99	98
Administrative	95	95	95	96	93	91	93	97	96	96	98	96
Survey	NA	NA	100	NA	NA	NA	99	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: 2015 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.

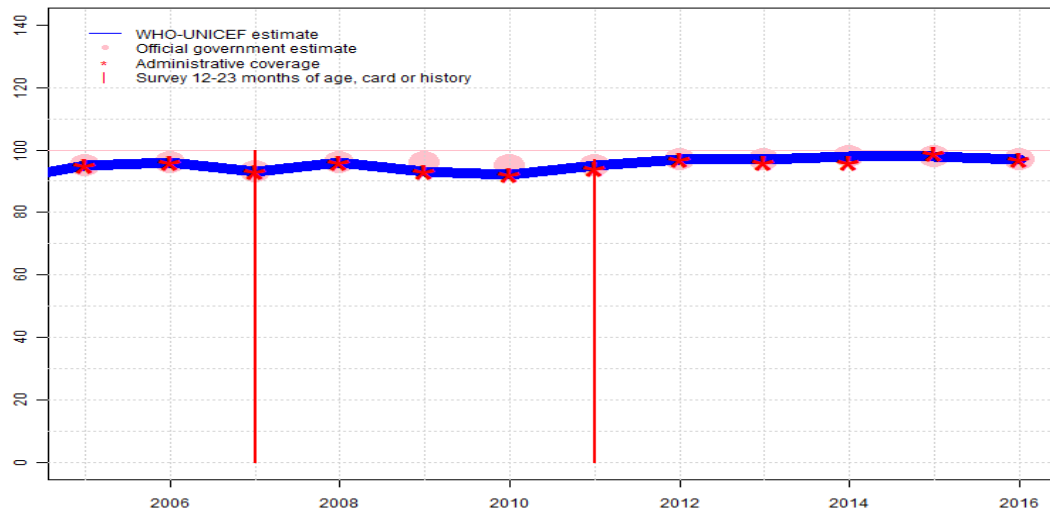
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. Programme reports that official government estimate is based in part on the 2012 National Health Survey. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 99 percent based on 1 survey(s). DTP-HepB-Hib combination vaccine re-introduced in July 2011. GoC=R+ S+ D+
- 2010: Estimate based on reported administrative data. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2009: Estimate based on reported administrative data. DTP-HepB-Hib combination introduced in 2009 and withdrawn following an adverse event and replaced with DTP-HepB combination vaccine. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 99 percent based on 1 survey(s). The National EPI Coverage Survey, 2009 card or history results of 100 percent modified for recall bias to 99 percent based on 1st dose card or history coverage of 100 percent, 1st dose card only coverage of 97 percent and 3d dose card only coverage of 97 percent. GoC=R+ S+ D+
- 2006: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+

# Bhutan - Pol3

BTN - Pol3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	95	96	93	96	93	92	95	97	97	98	98	97
Estimate GoC	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●●	●
Official	95	96	93	96	96	95	95	97	97	98	98	97
Administrative	95	96	93	96	93	92	94	97	96	96	99	97
Survey	NA	NA	100	NA	NA	NA	97	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: 2015 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.

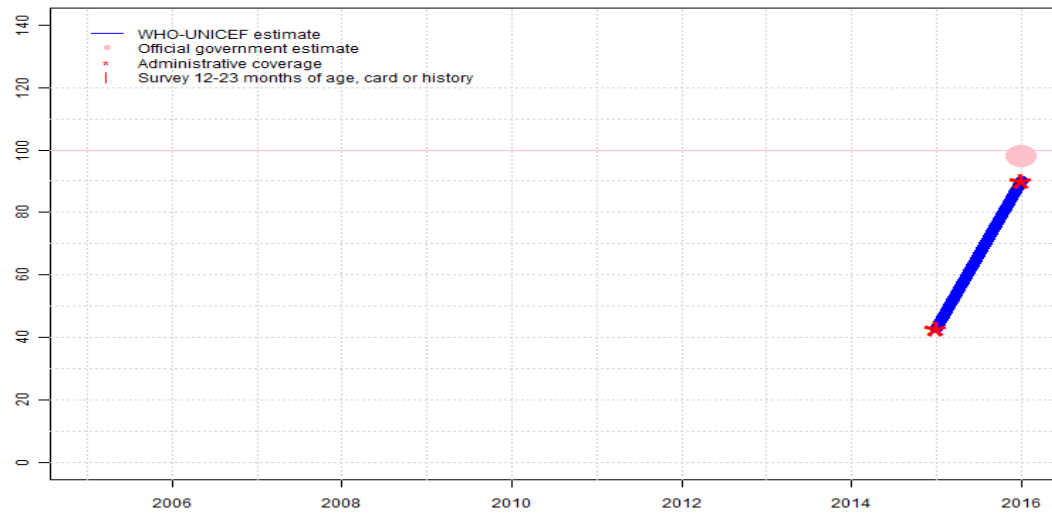
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. Programme reports that official government estimate is based in part on the 2012 National Health Survey. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 97 percent based on 1 survey(s). GoC=R+ S+ D+
- 2010: Estimate based on reported administrative data. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2009: Estimate based on reported administrative data. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 99 percent based on 1 survey(s). The National EPI Coverage Survey, 2009 card or history results of 100 percent modified for recall bias to 99 percent based on 1st dose card or history coverage of 100 percent, 1st dose card only coverage of 97 percent and 3d dose card only coverage of 97 percent. GoC=R+ S+ D+
- 2006: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+

# Bhutan - IPV1

BTN - IPV1



## Description:

- 2016: Estimate based on reported administrative estimate. Reported official coverage is based on National Health Survey, 2012. Estimate based on reported data following introduction. Programme reports vaccine stock-out of 5 months at national level. Survey results from 2012 do not include IPV. Estimate challenged by: D-
- 2015: Estimate based on reported administrative estimate. Reported official coverage is based on National Health Survey, 2012. IPV introduced in July 2015. GoC=R+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	43	90
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	••	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	43	90
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

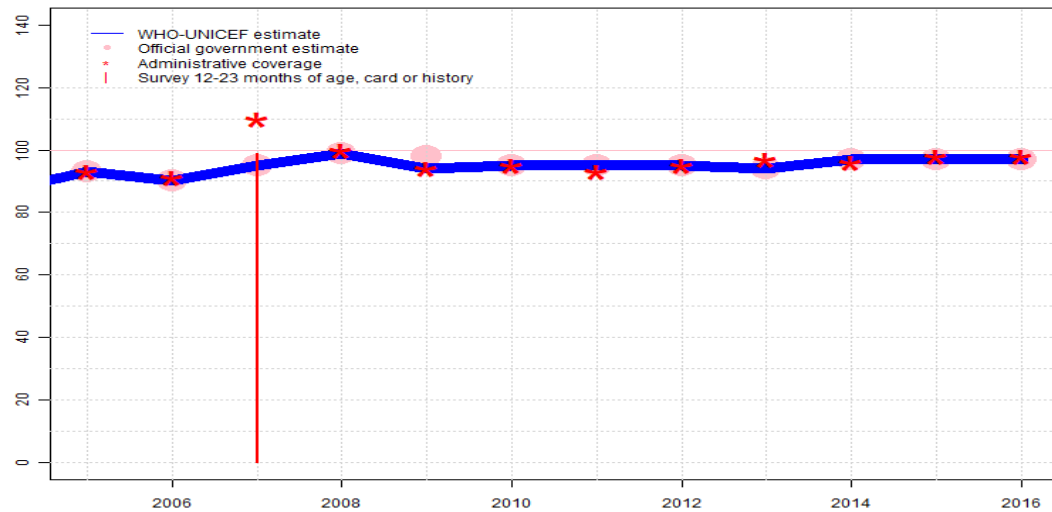
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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.

# Bhutan - MCV1

BTN - MCV1



## Description:

- 2016: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. Programme reports that official government estimate is based in part on the 2012 National Health Survey. 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. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ D+
- 2009: Estimate based on reported administrative data. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 99 percent based on 1 survey(s). GoC=R+ S+ D+
- 2006: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	93	90	95	99	94	95	95	95	94	97	97	97
Estimate GoC	●●●	●●●	●●●	●●●	●●●	●●	●●	●●	●●	●●	●●	●
Official	93	90	95	99	98	95	95	95	94	97	97	97
Administrative	93	91	110	100	94	95	93	95	97	96	98	98
Survey	NA	NA	99	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.

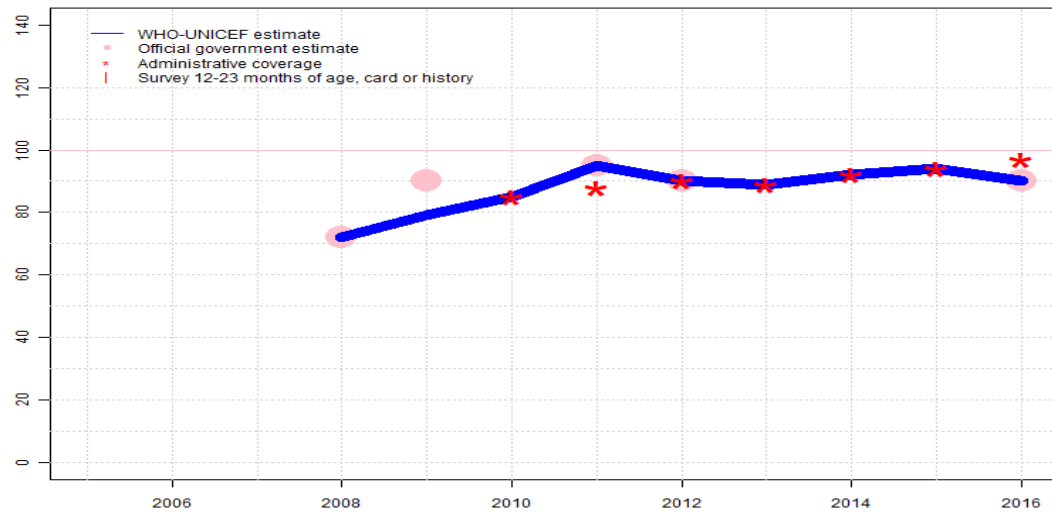
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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.



# Bhutan - MCV2

BTN - MCV2



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	72	79	85	95	90	90	92	94	90
Estimate GoC	NA	NA	NA	●●	●	●●	●●	●●	●●	●●	●●	●●
Official	NA	NA	NA	72	90	NA	95	90	NA	NA	NA	90
Administrative	NA	NA	NA	NA	NA	85	88	90	89	92	94	97
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

## Description:

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

2016: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+

2015: Estimate based on reported administrative estimate. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+

2014: Estimate based on reported administrative estimate. Programme reports that official government estimate is based in part on the 2012 National Health Survey. GoC=R+ D+

2013: Estimate based on reported administrative estimate. 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 estimate. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ D+

2009: Estimate based on interpolation between reported values. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=No accepted empirical data

2008: Estimate based on coverage reported by national government. GoC=R+

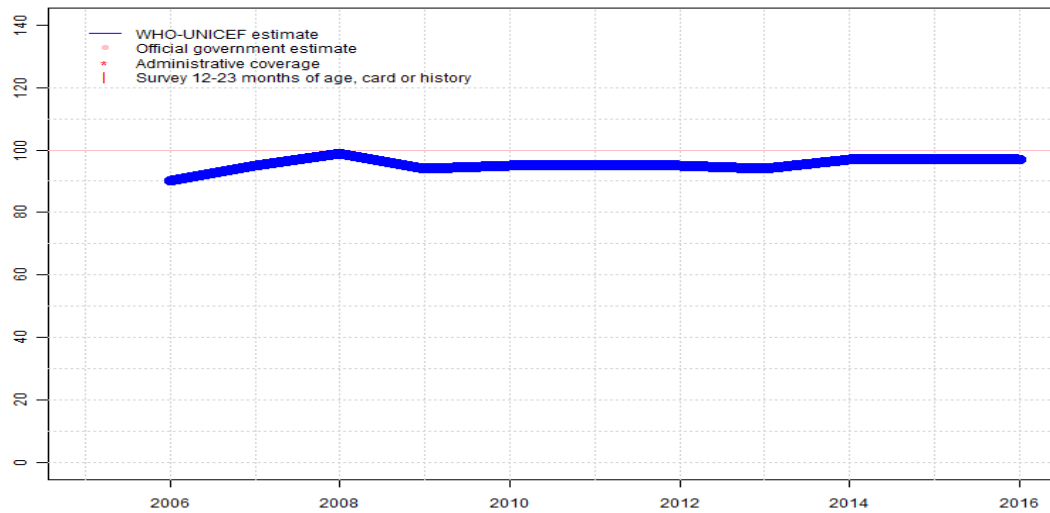
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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.

# Bhutan - RCV1

BTN - RCV1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	90	95	99	94	95	95	95	94	97	97	97
Estimate GoC	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: 2015 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.

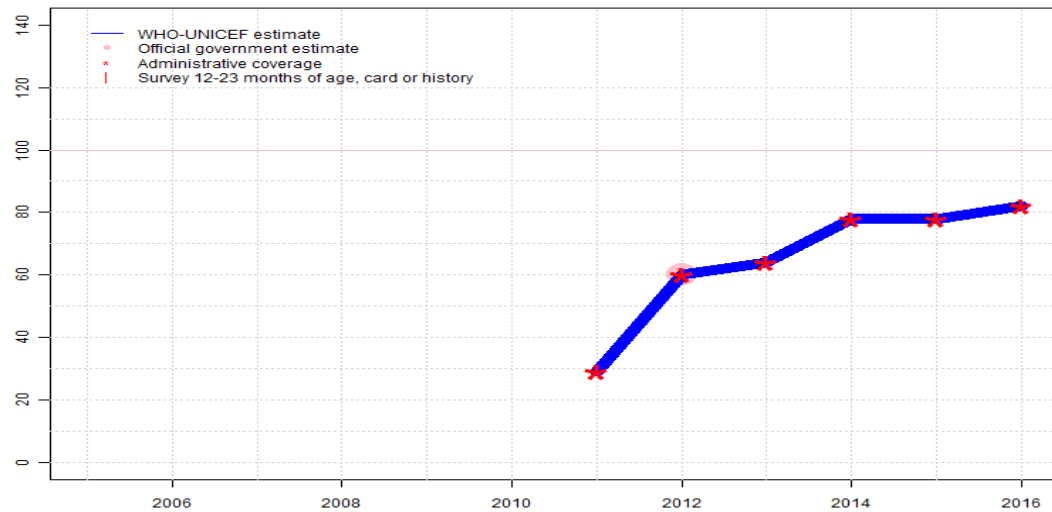
## Description:

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.

- 2016: Estimate based on estimated MCV1. Reported official coverage is based on National Health Survey, 2012. Estimate challenged by: D-
- 2015: Estimate based on estimated MCV1. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+
- 2014: Estimate based on estimated MCV1. Programme reports that official government estimate is based in part on the 2012 National Health Survey. 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. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ D+
- 2009: Estimate based on estimated MCV1. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2008: Estimate based on estimated MCV1. GoC=R+ S+ D+
- 2007: Estimate based on estimated MCV1. GoC=R+ S+ D+
- 2006: Estimate based on estimated MCV1. GoC=R+ S+ D+

# Bhutan - HepBB

BTN - HepBB



## Description:

- 2016: Estimate based on reported administrative estimate. Reported official coverage is based on National Health Survey, 2012. Estimate challenged by: D-
- 2015: Estimate based on reported administrative estimate. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+
- 2014: Estimate based on reported administrative estimate. Programme reports that official government estimate is based in part on the 2012 National Health Survey. Estimate is based on reported data consistent with other vaccines. GoC=R+ D+
- 2013: Estimate based on reported administrative estimate. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2011: Estimate based on reported administrative estimate. GoC=R+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	29	60	64	78	78	82
Estimate GoC	NA	NA	NA	NA	NA	NA	••	••	••	••	••	•
Official	NA	NA	NA	NA	NA	NA	NA	60	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	29	60	64	78	78	82
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

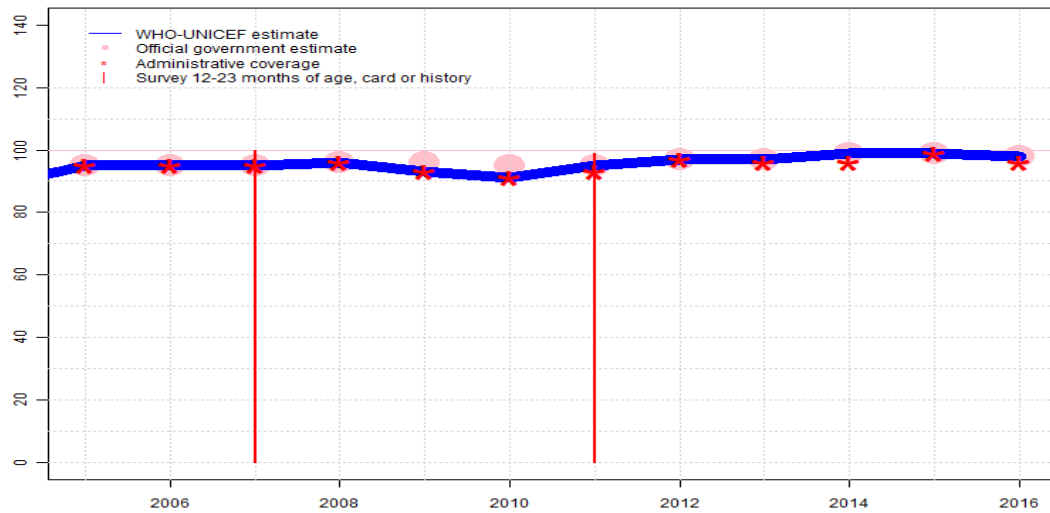
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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.

# Bhutan - HepB3

BTN - HepB3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	95	95	95	96	93	91	95	97	97	99	99	98
Estimate GoC	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●●	●
Official	95	95	95	96	96	95	95	97	97	99	99	98
Administrative	95	95	95	96	93	91	93	97	96	96	99	96
Survey	NA	NA	100	NA	NA	NA	99	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: 2015 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.

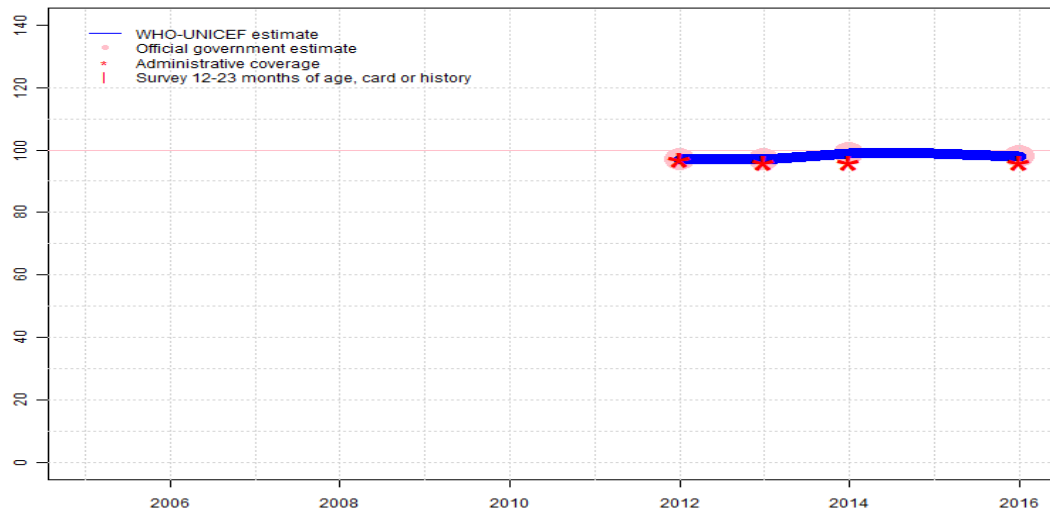
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. Programme reports that official government estimate is based in part on the 2012 National Health Survey. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 99 percent based on 1 survey(s). DTP-HepB-Hib combination vaccine re-introduced in July 2011. GoC=R+ S+ D+
- 2010: Estimate based on reported administrative data. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2009: Estimate based on reported administrative data. DTP-HepB-Hib combination introduced in 2009 and withdrawn following an adverse event and replaced with DTP-HepB combination vaccine. Ministry of Health reports targets set in their 2008-2013 national comprehensive multi-year plan for immunization as their estimate of coverage levels achieved. Estimates based on administrative coverage. GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 99 percent based on 1 survey(s). The National EPI Coverage Survey, 2009 card or history results of 100 percent modified for recall bias to 99 percent based on 1st dose card or history coverage of 100 percent, 1st dose card only coverage of 97 percent and 3d dose card only coverage of 97 percent. GoC=R+ S+ D+
- 2006: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+

# Bhutan - Hib3

BTN - Hib3



## Description:

- 2016: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. Estimate challenged by: D-
- 2015: Estimate based on interpolation between reported values. Reported official coverage is based on National Health Survey, 2012. GoC=No accepted empirical data
- 2014: Estimate based on coverage reported by national government. Programme reports that official government estimate is based in part on the 2012 National Health Survey. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. DTP-HepB-Hib combination vaccine re-introduced in July 2011. Reporting began in 2012. GoC=R+ D+

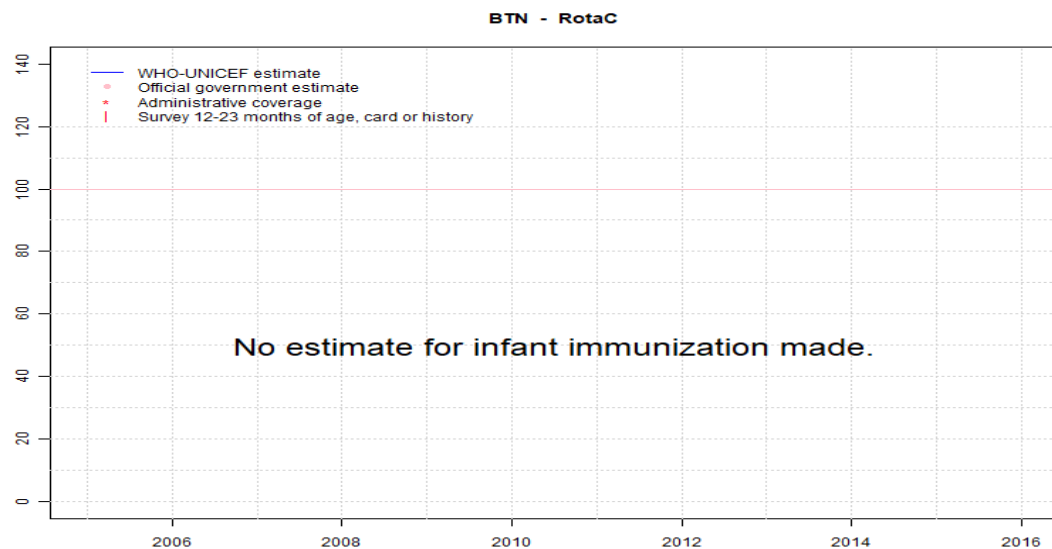
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	97	97	99	99	98
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	●●	●●	●●	●	●
Official	NA	NA	NA	NA	NA	NA	NA	97	97	99	99	98
Administrative	NA	NA	NA	NA	NA	NA	NA	97	96	96	NA	96
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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: 2015 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.

# Bhutan - RotaC



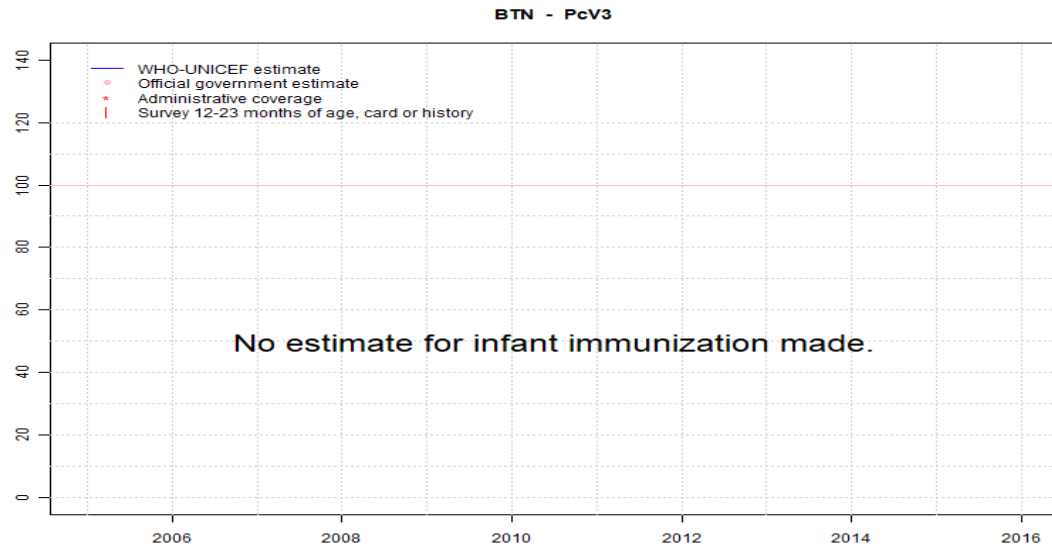
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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: 2015 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.

# Bhutan - PcV3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
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: 2015 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.

# Bhutan - survey details

## 2011 Bhutan National Health Survey 2012

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	96	12-23 m	878	91
BCG	Card or History	100	12-23 m	916	91
BCG	History	4	12-23 m	38	91
DTP1	Card	95	12-23 m	878	91
DTP1	Card or History	100	12-23 m	916	91
DTP1	History	4	12-23 m	38	91
DTP3	Card	94	12-23 m	878	91
DTP3	Card or History	99	12-23 m	916	91
DTP3	History	4	12-23 m	38	91
HepB1	Card	95	12-23 m	878	91
HepB1	Card or History	100	12-23 m	916	91
HepB1	History	4	12-23 m	38	91
HepB3	Card	94	12-23 m	878	91
HepB3	Card or History	99	12-23 m	916	91
HepB3	History	4	12-23 m	38	91
Pol1	Card	95	12-23 m	878	91
Pol1	Card or History	99	12-23 m	916	91
Pol1	History	4	12-23 m	38	91
Pol3	Card	93	12-23 m	878	91
Pol3	Card or History	97	12-23 m	916	91
Pol3	History	4	12-23 m	38	91

## 2007 The National EPI Coverage Survey, 2009

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	97	12-23 m	1193	98
BCG	Card or History	100	12-23 m	1193	98
BCG	History	3	12-23 m	1193	98
DTP1	Card	97	12-23 m	1193	98
DTP1	Card or History	100	12-23 m	1193	98
DTP1	History	3	12-23 m	1193	98
DTP3	Card	97	12-23 m	1193	98
DTP3	Card or History	100	12-23 m	1193	98
DTP3	History	3	12-23 m	1193	98
HepB1	Card	97	12-23 m	1193	98

HepB1	Card or History	100	12-23 m	1193	98
HepB1	History	3	12-23 m	1193	98
HepB3	Card	97	12-23 m	1193	98
HepB3	Card or History	100	12-23 m	1193	98
HepB3	History	3	12-23 m	1193	98
MCV1	Card	95	12-23 m	1193	98
MCV1	Card or History	99	12-23 m	1193	98
MCV1	History	4	12-23 m	1193	98
Pol1	Card	97	12-23 m	1193	98
Pol1	Card or History	100	12-23 m	1193	98
Pol1	History	3	12-23 m	1193	98
Pol3	Card	97	12-23 m	1193	98
Pol3	Card or History	100	12-23 m	1193	98
Pol3	History	3	12-23 m	1193	98

## 2001 Bhutan National EPI Coverage Evaluation Survey 2002

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	95	12-23 m	214	95
BCG	Card or History	100	12-23 m	214	95
BCG	History	4	12-23 m	214	95
DTP1	Card	95	12-23 m	214	95
DTP1	Card or History	100	12-23 m	214	95
DTP1	History	5	12-23 m	214	95
DTP3	Card	94	12-23 m	214	95
DTP3	Card or History	99	12-23 m	214	95
DTP3	History	5	12-23 m	214	95
HepB1	Card	94	12-23 m	214	95
HepB1	Card or History	98	12-23 m	214	95
HepB1	History	5	12-23 m	214	95
HepB3	Card	92	12-23 m	214	95
HepB3	Card or History	96	12-23 m	214	95
HepB3	History	5	12-23 m	214	95
MCV1	Card	92	12-23 m	214	95
MCV1	Card or History	96	12-23 m	214	95
MCV1	History	5	12-23 m	214	95
Pol1	Card	95	12-23 m	214	95
Pol1	Card or History	100	12-23 m	214	95
Pol1	History	5	12-23 m	214	95



# Bhutan - survey details

---

Pol3	Card	94	12-23 m	214	95	Pol3	History	5	12-23 m	214	95
Pol3	Card or History	99	12-23 m	214	95						

Further information and estimates for previous years are available at:

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

[http://www.who.int/immunization/monitoring\\_surveillance/routine/coverage/en/index4.html](http://www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index4.html)