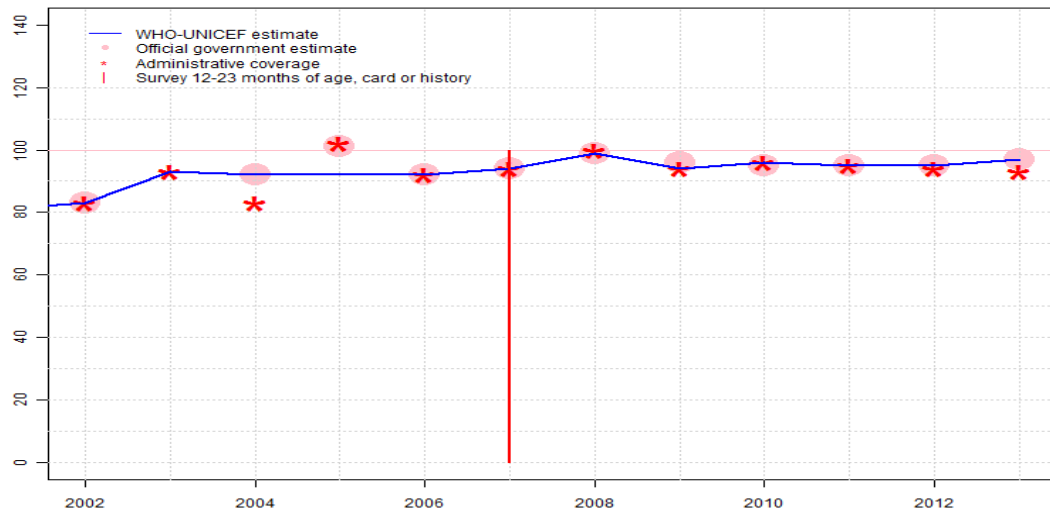


# Bhutan - BCG

BTN - BCG



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	83	93	92	92	92	94	99	94	96	95	95	97
Estimate GoC	•	••	••	••	•••	•••	•••	•••	••	••	••	••
Official	83	NA	92	101	92	94	99	96	95	95	95	97
Administrative	83	93	83	102	92	94	100	94	96	95	94	93
Survey	NA	NA	NA	NA	NA	100	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: 2012 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.

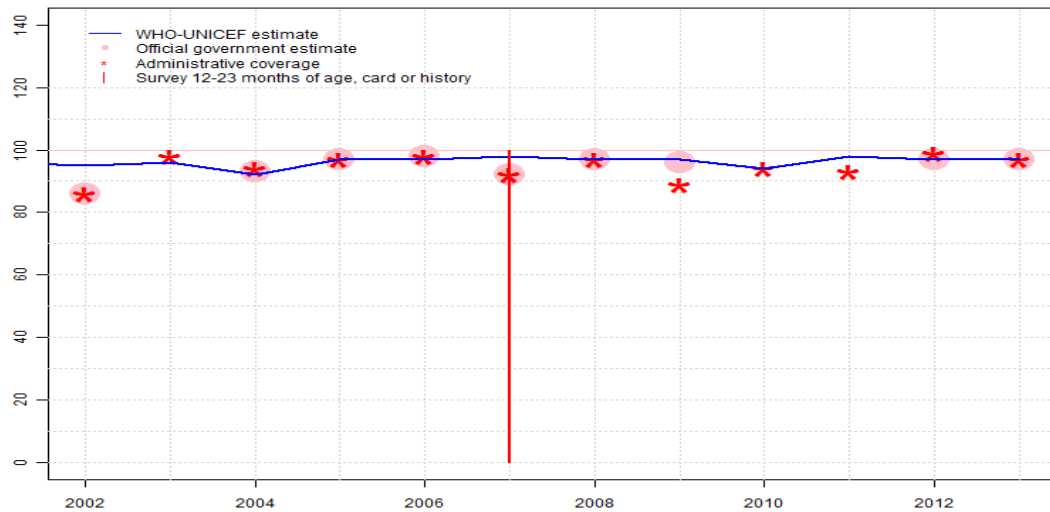
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2002: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2003: Estimate based on reported administrative data. GoC=R+ D+
- 2004: Estimate based on coverage reported by national government. GoC=R+ D+
- 2005: Estimate based on interpolation between coverage reported by national government. Reported data excluded. 101 percent greater than 100 percent. GoC=S+ D+
- 2006: 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). GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. 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+
- 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+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+

# Bhutan - DTP1

BTN - DTP1



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	95	96	92	97	97	98	97	97	94	98	97	97
Estimate GoC	•	•	••	••	••	•	•••	•	••	•	••	••
Official	86	NA	93	97	98	92	97	96	NA	NA	97	97
Administrative	86	98	94	97	98	92	97	89	94	93	99	97
Survey	NA	NA	NA	NA	NA	100	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: 2012 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.

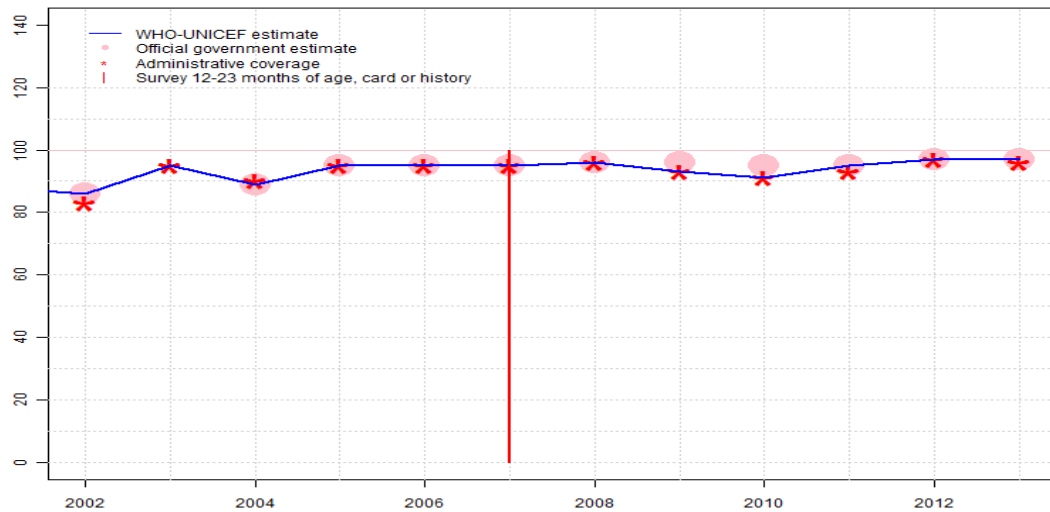
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2002: DTP1 coverage estimated based on DTP3 coverage of 86. Estimate challenged by: D-R-
- 2003: Reported data calibrated to 1997 and 2007 levels. GoC=No accepted empirical data
- 2004: Reported data calibrated to 1997 and 2007 levels. GoC=D+
- 2005: Reported data calibrated to 1997 and 2007 levels. GoC=S+ D+
- 2006: Reported data calibrated to 1997 and 2007 levels. GoC=S+ D+
- 2007: DTP1 coverage estimated based on DTP3 coverage of 95. Estimate challenged by: D-R-
- 2008: Estimate based on coverage reported by national government. 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-
- 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+
- 2011: DTP1 coverage estimated based on DTP3 coverage of 95. DTP-HepB-Hib combination vaccine re-introduced in July 2011. Estimate challenged by: R-
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+

# Bhutan - DTP3

BTN - DTP3



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	86	95	89	95	95	95	96	93	91	95	97	97
Estimate GoC	•	••	••	•••	•••	•••	•••	•••	••	••	••	••
Official	86	NA	89	95	95	95	96	96	95	95	97	97
Administrative	83	95	90	95	95	95	96	93	91	93	97	96
Survey	NA	NA	NA	NA	NA	100	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: 2012 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.

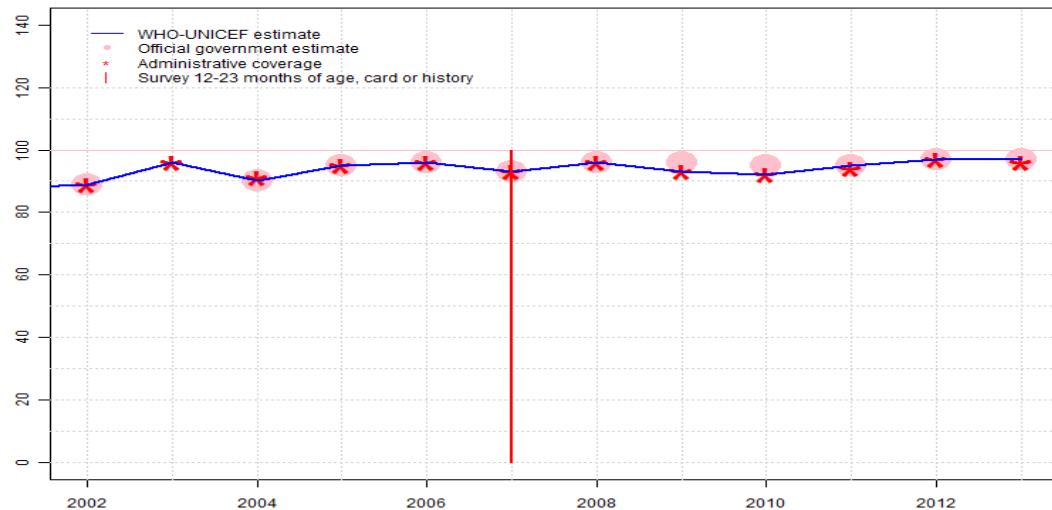
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2002: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2003: Estimate based on reported administrative data. GoC=R+
- 2004: Estimate based on coverage reported by national government. GoC=R+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2006: 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+
- 2008: Estimate based on coverage reported by national government. 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+
- 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+
- 2011: Estimate based on coverage reported by national government. DTP-HepB-Hib combination vaccine re-introduced in July 2011. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+

# Bhutan - Pol3

BTN - Pol3



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	89	96	90	95	96	93	96	93	92	95	97	97
Estimate GoC	●	●●	●●	●●●	●●●	●●●	●●●	●●●	●●	●●	●●	●●
Official	89	NA	90	95	96	93	96	96	95	95	97	97
Administrative	89	96	91	95	96	93	96	93	92	94	97	96
Survey	NA	NA	NA	NA	NA	100	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.

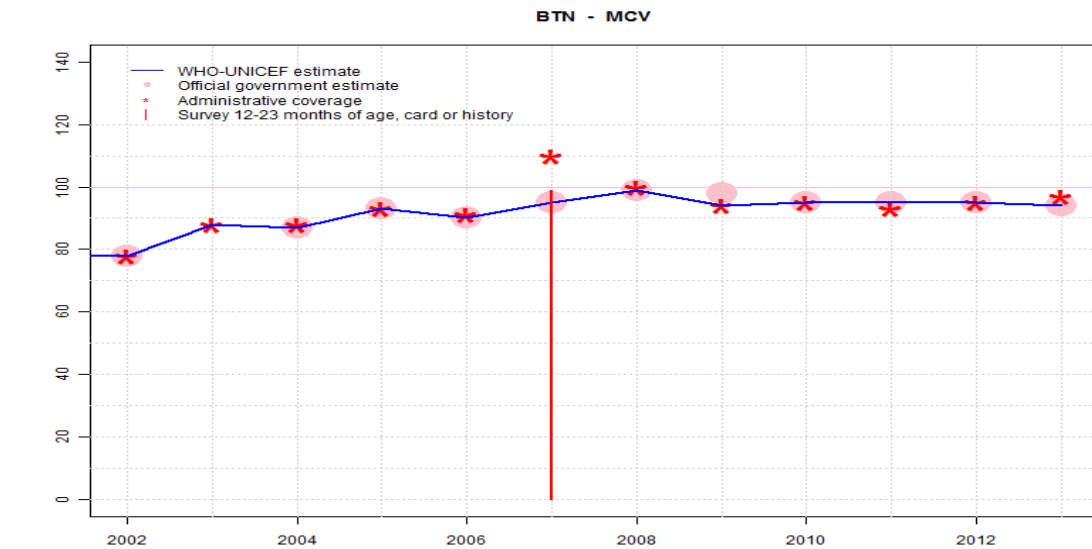
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2012 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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:

- 2002: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2003: Estimate based on reported administrative data. GoC=R+ D+
- 2004: Estimate based on coverage reported by national government. GoC=R+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2006: 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+
- 2008: Estimate based on coverage reported by national government. 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+
- 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+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+

# Bhutan - MCV



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	78	88	87	93	90	95	99	94	95	95	95	94
Estimate GoC	•	••	••	•••	•••	•••	•••	•••	••	••	••	••
Official	78	NA	87	93	90	95	99	98	95	95	95	94
Administrative	78	88	88	93	91	110	100	94	95	93	95	97
Survey	NA	NA	NA	NA	NA	99	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.

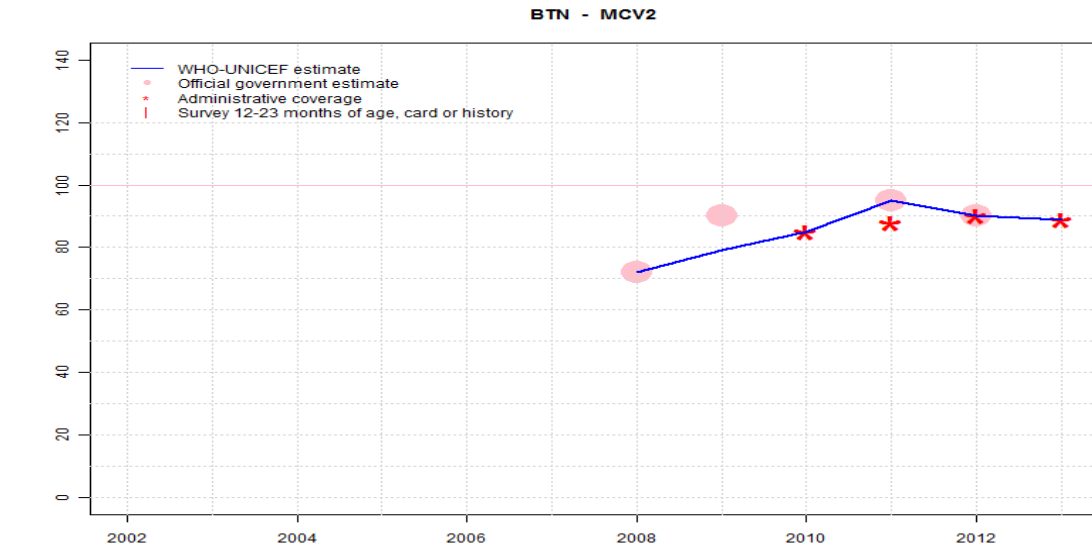
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2012 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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:

- 2002: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2003: Estimate based on reported administrative data. GoC=R+ D+
- 2004: Estimate based on coverage reported by national government. GoC=R+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2006: 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+
- 2008: Estimate based on coverage reported by national government. 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+
- 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+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+

# Bhutan - MCV2



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	NA	NA	NA	NA	NA	NA	72	79	85	95	90	89
Estimate GoC	NA	NA	NA	NA	NA	NA	●●	●	●●	●●	●●	●●
Official	NA	NA	NA	NA	NA	NA	72	90	NA	95	90	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	85	88	90	89
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: 2012 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.

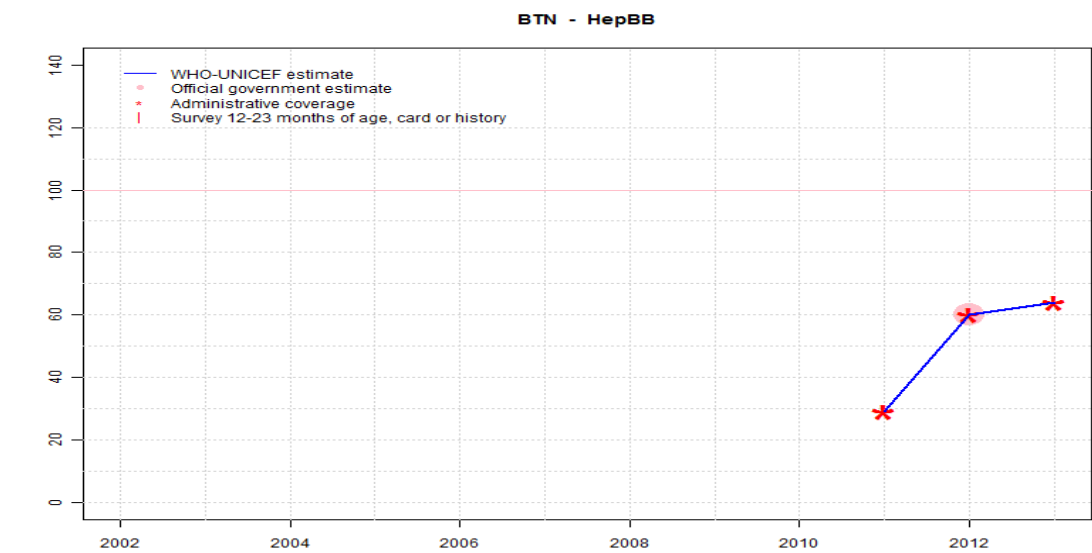
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

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

- 2008: Estimate based on coverage reported by national government. GoC=R+
- 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
- 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+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on reported administrative estimate. GoC=R+ D+





	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	29	60	64
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	●●	●●	●●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	60	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	29	60	64
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: 2012 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.

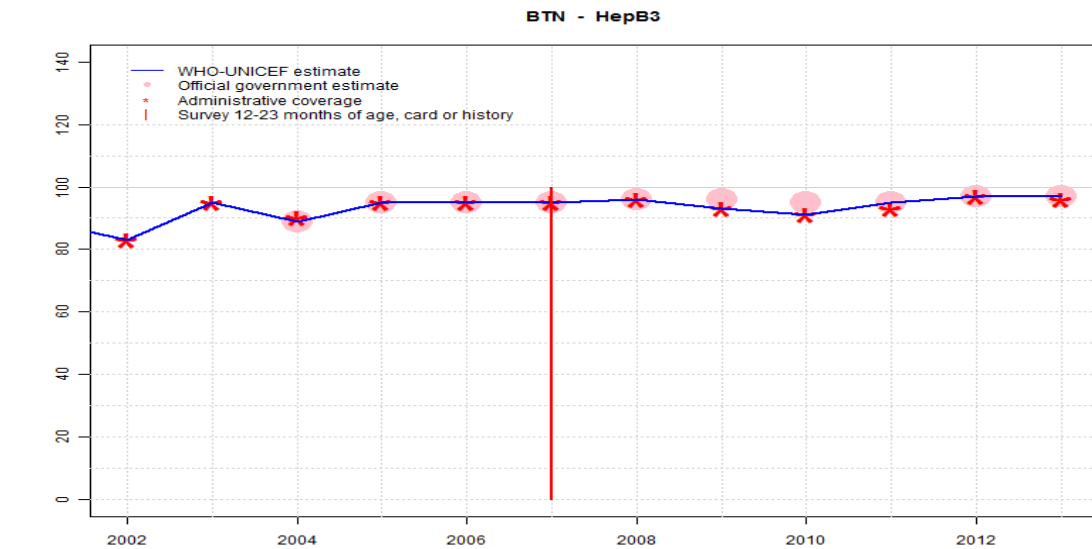
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

Description:

- 2011: Estimate based on reported administrative estimate. GoC=R+ D+  
2012: Estimate based on coverage reported by national government. GoC=R+ D+  
2013: Estimate based on reported administrative estimate. GoC=R+ D+



# Bhutan - HepB3



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	83	95	89	95	95	95	96	93	91	95	97	97
Estimate GoC	•	••	••	•••	•••	•••	•••	•••	••	••	••	••
Official	NA	NA	89	95	95	95	96	96	95	95	97	97
Administrative	83	95	90	95	95	95	96	93	91	93	97	96
Survey	NA	NA	NA	NA	NA	100	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.

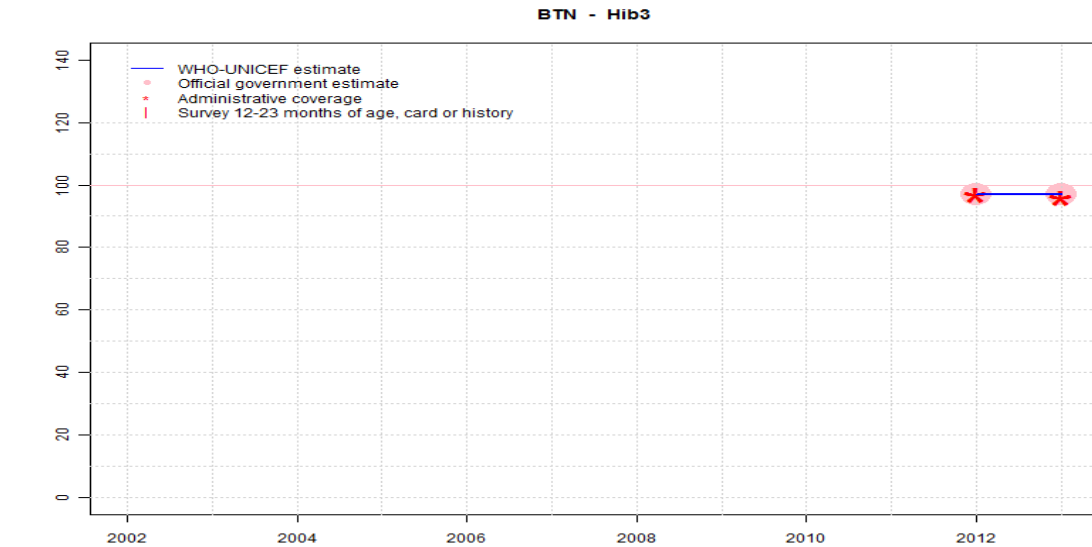
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2012 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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:

- 2002: Estimate based on reported administrative data. Estimate challenged by: D-
- 2003: Estimate based on reported administrative data. GoC=R+
- 2004: Estimate based on coverage reported by national government. GoC=R+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2006: 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+
- 2008: Estimate based on coverage reported by national government. 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+
- 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+
- 2011: Estimate based on coverage reported by national government. DTP-HepB-Hib combination vaccine re-introduced in July 2011. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+

# Bhutan - Hib3



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97	97
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●●	●●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97	97
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	97	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.

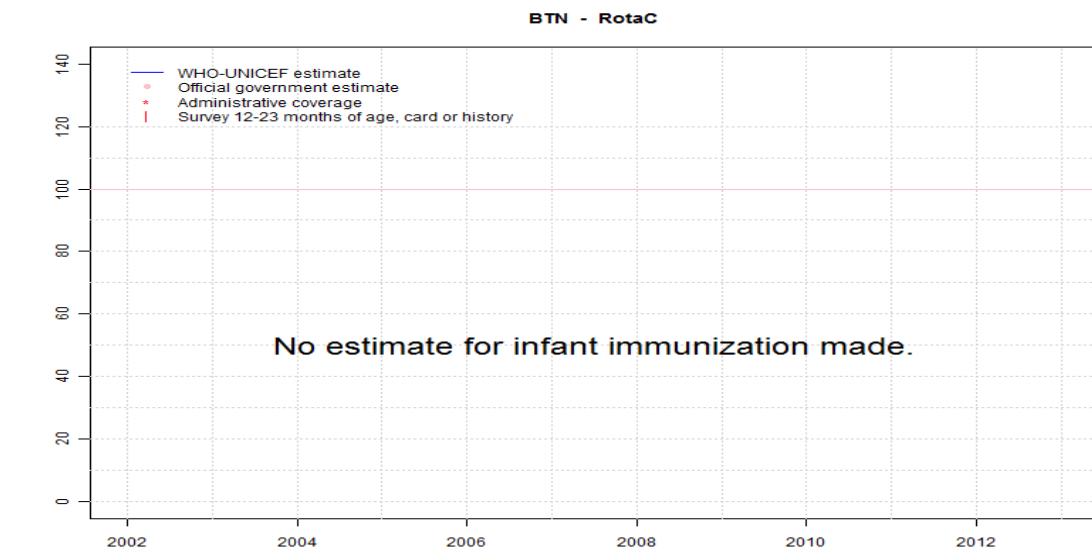
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2012 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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:

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

# Bhutan - RotaC

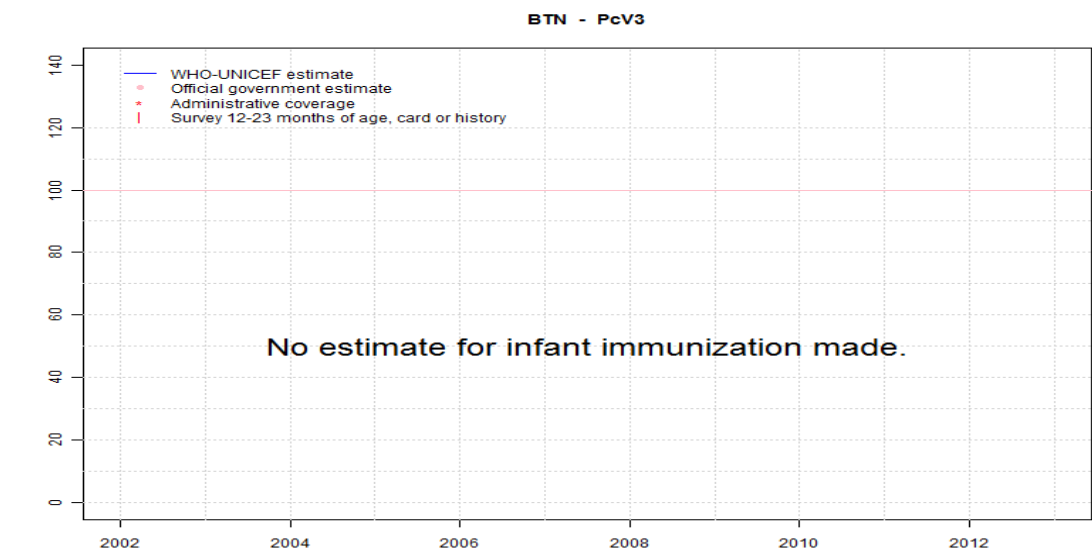


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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: 2012 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.



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
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: 2012 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

## 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
MCV	Card	95	12-23 m	1193	98
MCV	Card or History	99	12-23 m	1193	98
MCV	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
MCV	Card	92	12-23 m	214	95
MCV	Card or History	96	12-23 m	214	95
MCV	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
Pol3	Card	94	12-23 m	214	95
Pol3	Card or History	99	12-23 m	214	95
Pol3	History	5	12-23 m	214	95

Further information and estimates prior to 2002 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)

## Bhutan

### WHO/UNICEF Estimates of Protection at Birth (PAB) against tetanus

In countries where tetanus is recommended for girls and women coverage is usually reported as "TT2+", i.e. the proportion of (pregnant) women who have received their second or superior TT dose in a given year. TT2 + coverage, however, can under-represent the actual proportion of births that are protected against tetanus as it does not include women who have previously received protective doses, women who received one dose without documentation of previous doses, and women who received doses in TT (or Td) supplemental immunization activities (SIA). In addition, girls who have received DTP in their childhood and are entering childbearing age, may be protected with TT booster doses.

WHO and UNICEF have developed a model that takes into account the above scenarios, and calculates the proportion of births in a given year that can be considered as having been protected against tetanus - "Protection at Birth".

In this model, annual cohorts of women are followed from infancy through their life. A proportion receive DTP in infancy (estimated based on the WHO-UNICEF estimates of DTP3 coverage). In addition some of these women also receive TT through routine services when they are pregnant and may also receive TT during SIAs. The model also adjusts reported data, taking into account coverage patterns in other years, and/or results available through surveys. The duration of protection is then calculated, based on WHO estimates of the duration of protection by doses ever received. The proportion of births that are protected against tetanus as a result of maternal immunization reflects the tetanus immunization received by the mother throughout her life rather than simply the TT immunizations received during the current pregnancy.

Year	PAB coverage estimate (%)
2002	87
2003	87
2004	86
2005	85
2006	85
2007	84
2008	89
2009	89
2010	89
2011	89
2012	89
2013	83

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<sup>1</sup> This model is described in: Griffiths U., Wolfson L., Quddus A., Younus M., Hafiz R.. Incremental cost-effectiveness of supplementary immunization activities to prevent neo-natal tetanus in Pakistan. Bulletin of the World Health Organization 2004; 82:643-651.