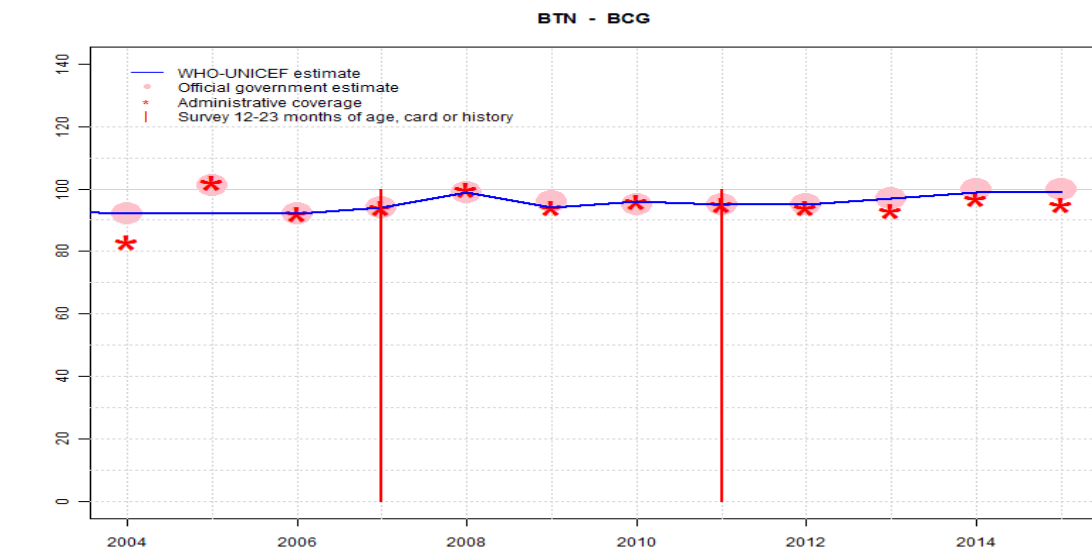


# Bhutan - BCG



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	92	92	92	94	99	94	96	95	95	97	99	99
Estimate GoC	••	••	•••	•	•••	•••	•••	•••	•••	•••	••	••
Official	92	101	92	94	99	96	95	95	95	97	100	100
Administrative	83	102	92	94	100	94	96	95	94	93	97	95
Survey	NA	NA	NA	100	NA	NA	NA	100	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.

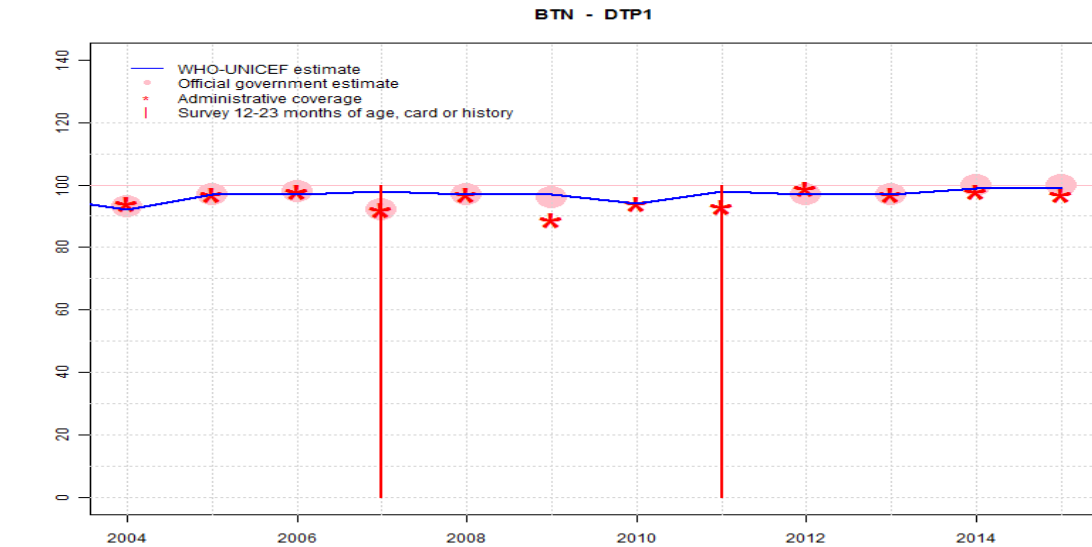
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

- 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). Estimate challenged by: 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+ 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+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ 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+
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+

# Bhutan - DTP1



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	92	97	97	98	97	97	94	98	97	97	99	99
Estimate GoC	••	••	••	•	•••	•	•••	•	•••	•••	••	••
Official	93	97	98	92	97	96	NA	NA	97	97	100	100
Administrative	94	97	98	92	97	89	94	93	99	97	98	97
Survey	NA	NA	NA	100	NA	NA	NA	100	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.

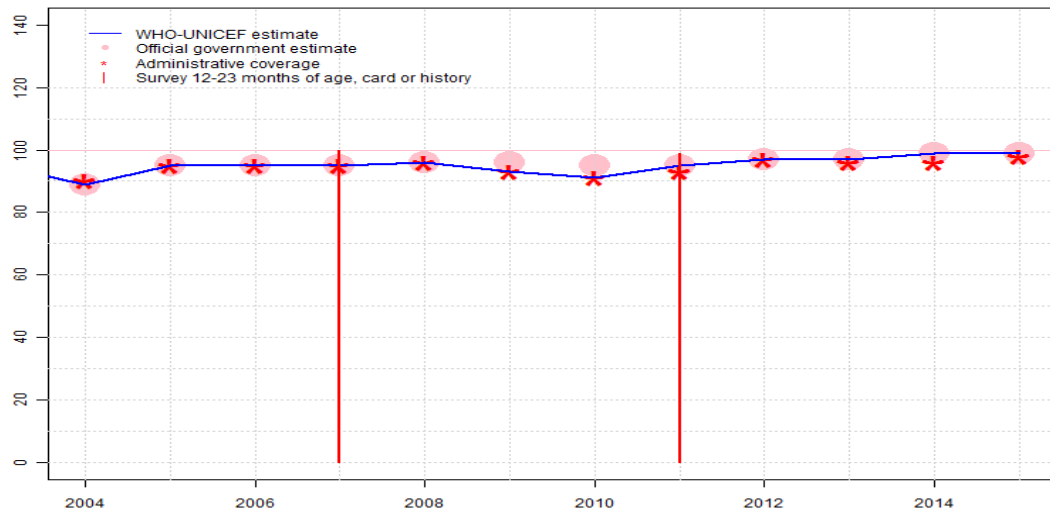
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 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+ 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-
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ 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+
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+

# Bhutan - DTP3

BTN - DTP3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	89	95	95	95	96	93	91	95	97	97	99	99
Estimate GoC	••	•••	•••	•••	•••	•••	•••	•••	•••	•••	••	••
Official	89	95	95	95	96	96	95	95	97	97	99	99
Administrative	90	95	95	95	96	93	91	93	97	96	96	98
Survey	NA	NA	NA	100	NA	NA	NA	99	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.

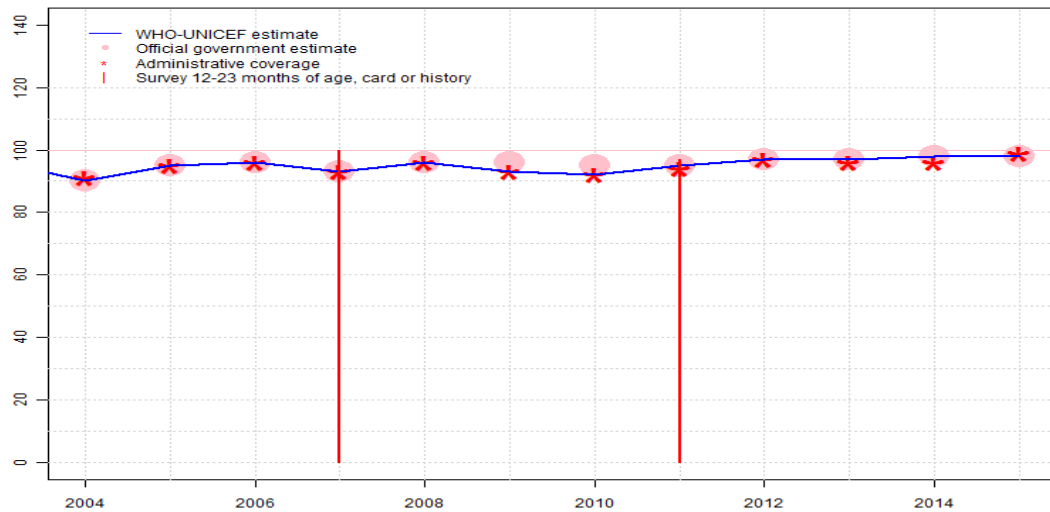
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 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+ 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+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ 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+
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+

# Bhutan - Pol3

BTN - Pol3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	90	95	96	93	96	93	92	95	97	97	98	98
Estimate GoC	••	•••	•••	•••	•••	•••	•••	•••	•••	•••	••	••
Official	90	95	96	93	96	96	95	95	97	97	98	98
Administrative	91	95	96	93	96	93	92	94	97	96	96	99
Survey	NA	NA	NA	100	NA	NA	NA	97	NA	NA	NA	NA

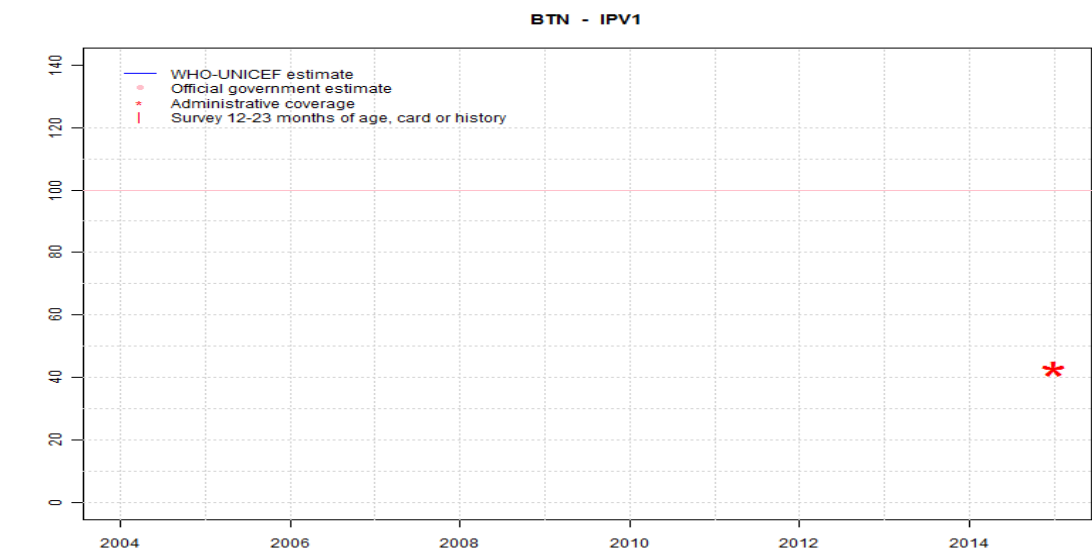
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- 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+ 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+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ 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+
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+



Description:

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+

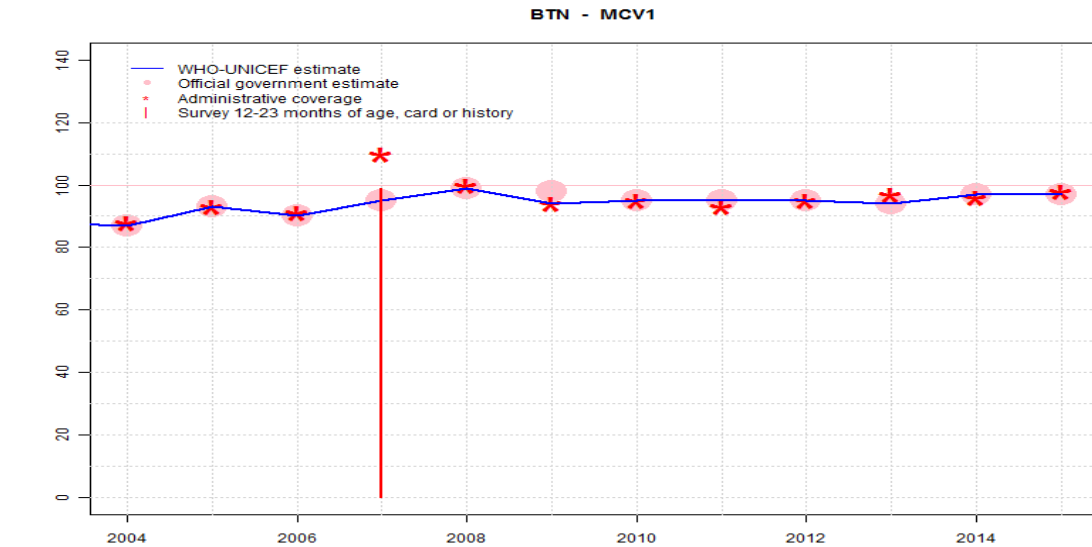
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	43
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	43
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	87	93	90	95	99	94	95	95	95	94	97	97
Estimate GoC	••	•••	•••	•••	•••	•••	••	••	••	••	••	••
Official	87	93	90	95	99	98	95	95	95	94	97	97
Administrative	88	93	91	110	100	94	95	93	95	97	96	98
Survey	NA	NA	NA	99	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.

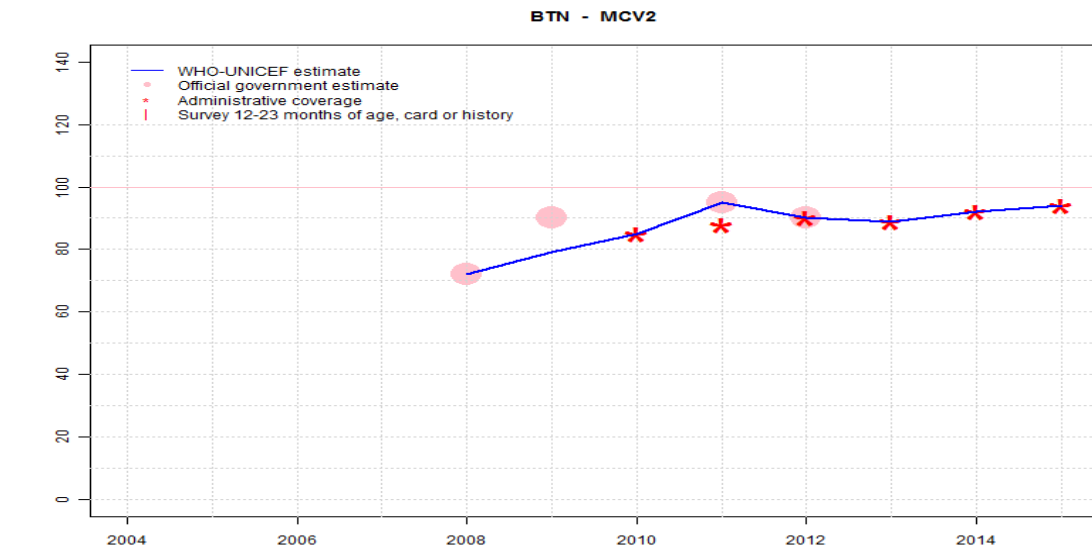
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 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+
- 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+
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+



# Bhutan - MCV2



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	72	79	85	95	90	89	92	94
Estimate GoC	NA	NA	NA	NA	••	•	••	••	••	••	••	••
Official	NA	NA	NA	NA	72	90	NA	95	90	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	85	88	90	89	92	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: 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.

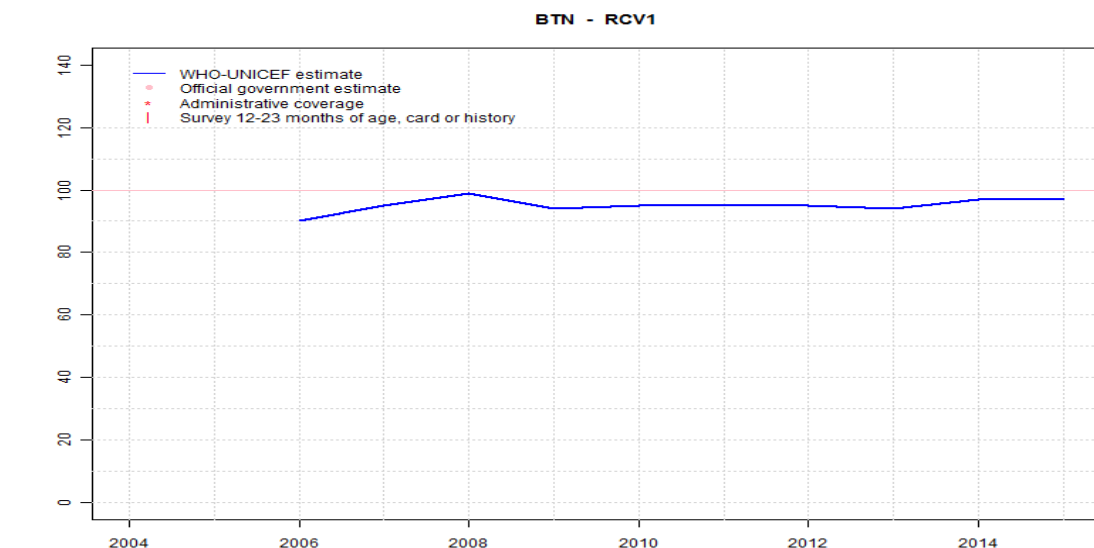
## Description:

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



# Bhutan - RCV1



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	90	95	99	94	95	95	95	94	97	97
Estimate GoC	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.

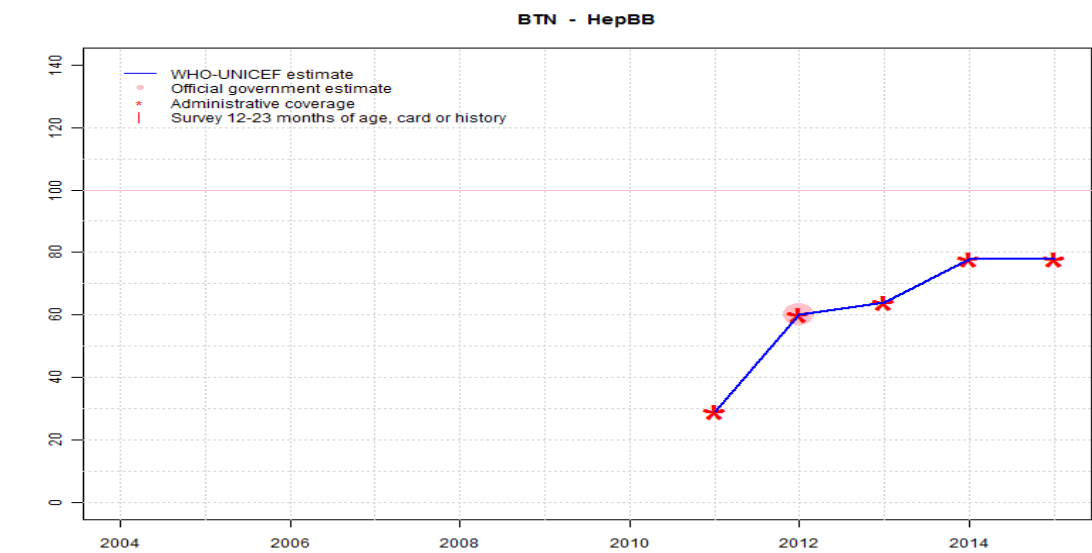
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

## 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 accompanying graph and data table.

- 2006: Estimate based on estimated MCV1. GoC=R+ S+ D+
- 2007: Estimate based on estimated MCV1. GoC=R+ S+ D+
- 2008: Estimate based on estimated MCV1. GoC=R+ S+ 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+
- 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+
- 2011: Estimate based on estimated MCV1. GoC=R+ D+
- 2012: Estimate based on estimated MCV1. GoC=R+ D+
- 2013: Estimate based on estimated MCV1. 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+
- 2015: Estimate based on estimated MCV1. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	29	60	64	78	78
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	●●	●●	●●	●●	●●
Official	NA	NA	NA	NA	NA	NA	NA	NA	60	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	29	60	64	78	78
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.

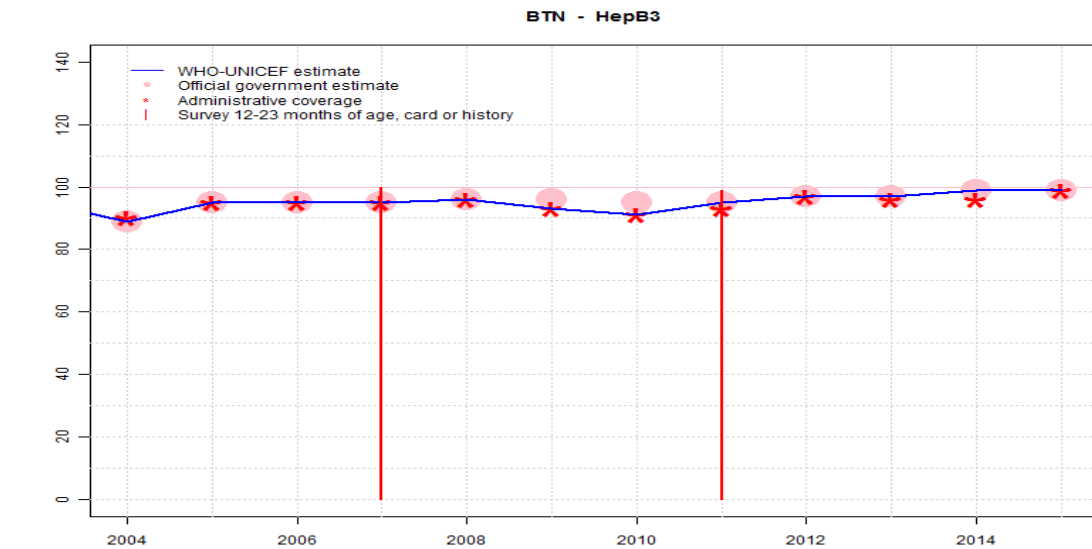
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

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

# Bhutan - HepB3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	89	95	95	95	96	93	91	95	97	97	99	99
Estimate GoC	••	•••	•••	•••	•••	•••	•••	•••	•••	•••	••	••
Official	89	95	95	95	96	96	95	95	97	97	99	99
Administrative	90	95	95	95	96	93	91	93	97	96	96	99
Survey	NA	NA	NA	100	NA	NA	NA	99	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.

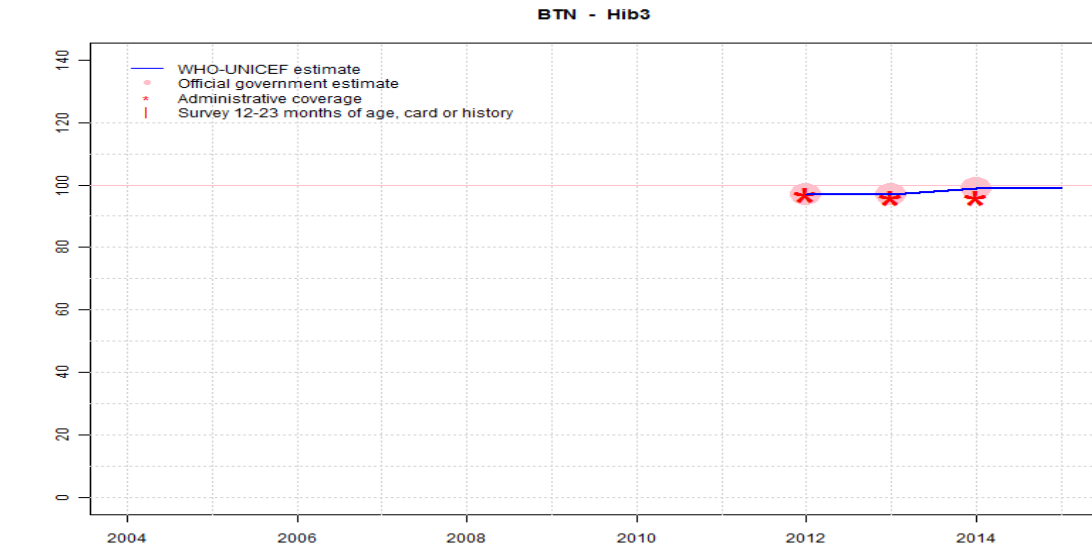
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

- 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+ 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+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ 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+
- 2015: Estimate based on coverage reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=R+ D+

# Bhutan - Hib3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	97	97	99	99
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	••	••	••	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	97	97	99	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	97	96	96	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.

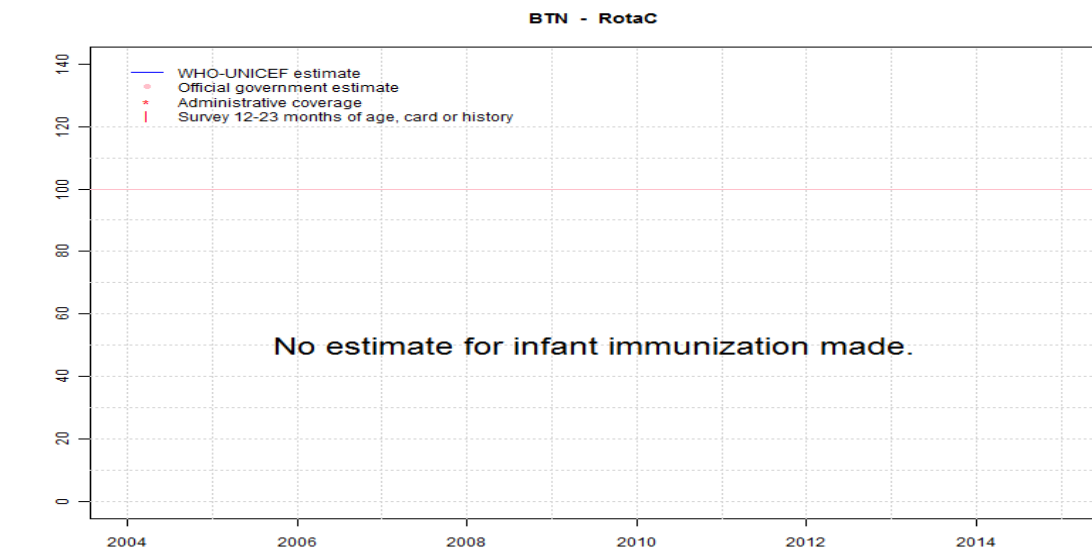
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

- 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+
- 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+
- 2015: Estimate based on extrapolation from data reported by national government. Reported official coverage is based on National Health Survey, 2012. GoC=No accepted empirical data

# Bhutan - RotaC



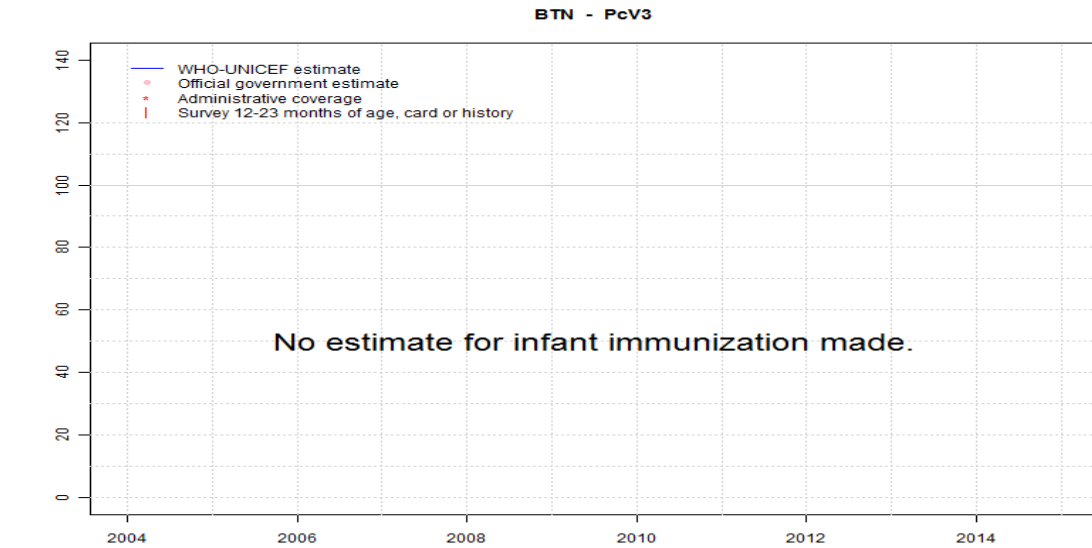
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
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)

## 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 receives 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.

The model was used in the mid to late 2000. Currently, the coverage series developed by the model is used as the baseline, and efforts are made to obtain data from all sources that include the JRF and reported trend over the years, routine PAB reporting and its trend over the years, data from surveys (DHS, MICS, EPI), whether countries have been validated for the attainment of maternal and neonatal tetanus elimination and what the TT coverage figures are from the survey etc and all the information is used to arrive at an estimate of the protection-at-birth from TT vaccination.

Year	PAB coverage estimate (%)
2004	86
2005	85
2006	85
2007	84
2008	89
2009	89
2010	89
2011	89
2012	89
2013	83
2014	83
2015	89

<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.