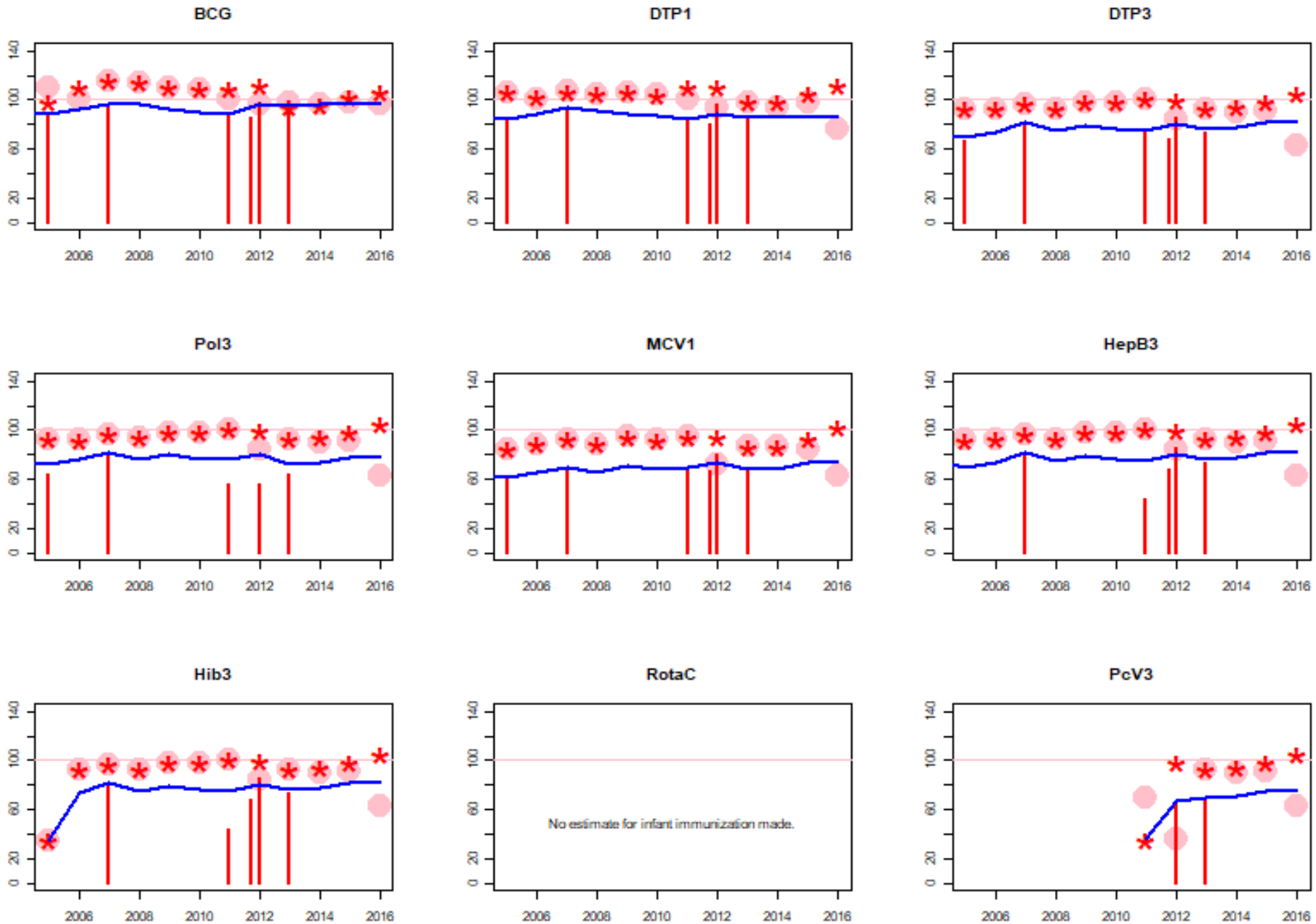


Benin: WHO and UNICEF estimates of immunization coverage: 2016 revision



# Benin: WHO and UNICEF estimates of immunization coverage: 2016 revision

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

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

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

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

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

## DATA SOURCES.

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

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

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

## ABBREVIATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

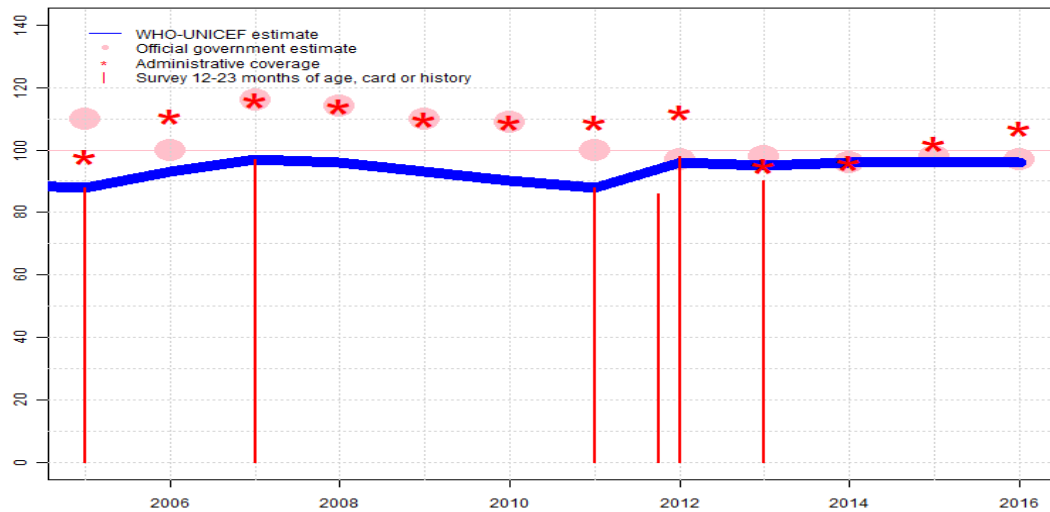
**PcV3:** percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect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

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

**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.

# Benin - BCG

BEN - BCG



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	88	93	97	96	93	90	88	96	95	96	96	96
Estimate GoC	•	•	•	•	•	•	•	•	•••	•••	•	•
Official	110	100	116	114	110	109	100	97	98	96	98	97
Administrative	98	111	116	114	110	109	109	112	95	96	102	107
Survey	88	NA	97	NA	NA	NA	88	*	90	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 extrapolation from data reported by national government. Reported data excluded because 107 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-
- 2015: Estimate based on extrapolation from data reported by national government. Reported data excluded because 102 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate of 96 percent changed from previous revision value of 89 percent. Estimate challenged by: D-
- 2014: Estimate based on reported administrative data. Reported official government estimate is based on DQS results from ten zone sanitaires and supervisory reports, however the methodology used to adjust from the administrative coverage levels is not described. Estimate of 96 percent changed from previous revision value of 93 percent. GoC=R+ S+ D+
- 2013: Estimate based on administrative data reported by national government supported by survey. Survey evidence of 90 percent based on 1 survey(s). Reported official government estimate based on the results of an external EPI review conducted in 10 communes. Estimate of 95 percent changed from previous revision value of 92 percent. GoC=R+ S+ D+
- 2012: Estimate based on interpolation between data reported by national government supported by survey. Survey evidence of 92 percent based on 2 survey(s). Reported data excluded because 112 percent greater than 100 percent. Official government estimate based on survey results. Estimate of 96 percent changed from previous revision value of 93 percent. Estimate challenged by: D-
- 2011: Estimate of 88 percent assigned by working group. Estimate is based on survey result. Reported data excluded because 109 percent greater than 100 percent. Official government estimate based on survey results. Estimate challenged by: D-R-
- 2010: Reported data calibrated to 2007 and 2011 levels. Reported data excluded because 109 percent greater than 100 percent. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2007 and 2011 levels. Reported data excluded because 110 percent greater than 100 percent. Estimate challenged by: D-R-
- 2008: Reported data calibrated to 2007 and 2011 levels. Reported data excluded because 114 percent greater than 100 percent. Estimate challenged by: D-R-
- 2007: Estimate of 97 percent assigned by working group. Estimate based on survey results to maintain consistency with other vaccines. Reported data excluded because 116 percent greater than 100 percent. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2005 and 2007 levels. Estimate challenged by: D-R-

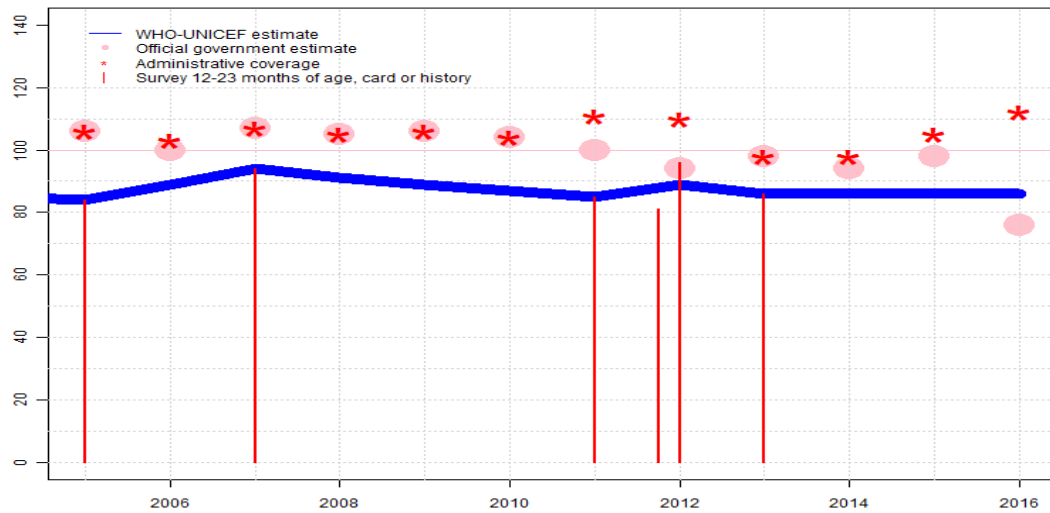
# Benin - BCG

---

2005: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 88 percent based on 1 survey(s). Reported data excluded because 110 percent greater than 100 percent. Estimate challenged by: D-R-

# Benin - DTP1

BEN - DTP1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	84	89	94	91	89	87	85	89	86	86	86	86
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	106	100	107	105	106	104	100	94	98	94	98	76
Administrative	106	103	107	105	106	104	111	110	98	98	105	112
Survey	84	NA	94	NA	NA	NA	85	*	86	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: Reported data calibrated to 2013 levels. Reported data excluded because 112 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2013 levels. Reported data excluded because 105 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate of 86 percent changed from previous revision value of 90 percent. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2013 levels. Reported official government estimate is based on DQS results from ten zone sanitaires and supervisory reports, however the methodology used to adjust from the administrative coverage levels is not described. Estimate of 86 percent changed from previous revision value of 90 percent. GoC=Assigned by working group. Consistency across vaccines.
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 86 percent based on 1 survey(s). Reported official government estimate based on the results of an external EPI review conducted in 10 communes. Estimate of 86 percent changed from previous revision value of 90 percent. GoC=Assigned by working group. Consistency across vaccines.
- 2012: Estimate of 89 percent assigned by working group. Estimate based on average between two surveys. Reported data excluded because 110 percent greater than 100 percent. Official government estimate based on survey results. Estimate of 89 percent changed from previous revision value of 90 percent. Estimate challenged by: D-R-
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 85 percent based on 1 survey(s). Reported data excluded because 111 percent greater than 100 percent. Official government estimate based on survey results. Estimate challenged by: D-R-
- 2010: Reported data calibrated to 2007 and 2011 levels. Reported data excluded because 104 percent greater than 100 percent. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2007 and 2011 levels. Reported data excluded because 106 percent greater than 100 percent. Estimate challenged by: D-R-
- 2008: Reported data calibrated to 2007 and 2011 levels. Reported data excluded because 105 percent greater than 100 percent. Estimate challenged by: D-R-
- 2007: Estimate of 94 percent assigned by working group. Estimate is based on survey results for all antigens. Reported data excluded because 107 percent greater than 100 percent. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2005 and 2007 levels. Estimate challenged by: D-R-

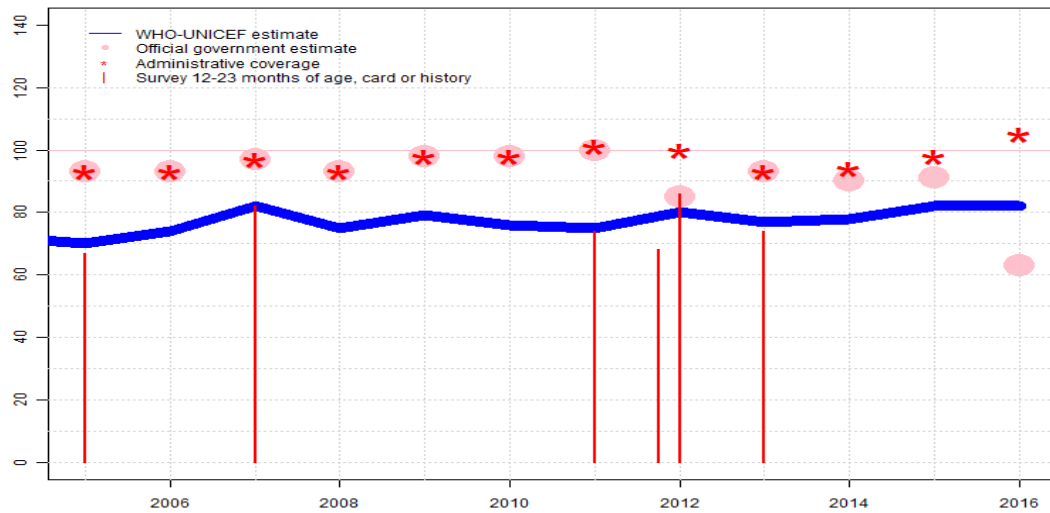
# Benin - DTP1

---

2005: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 84 percent based on 1 survey(s). Reported data excluded because 106 percent greater than 100 percent. Estimate challenged by: D-R-

# Benin - DTP3

BEN - DTP3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	70	74	82	75	79	76	75	80	77	78	82	82
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	93	93	97	93	98	98	100	85	93	90	91	63
Administrative	93	93	97	93	98	98	101	100	93	94	98	105
Survey	67	NA	82	NA	NA	NA	74	*	74	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: Reported data calibrated to 2013 levels. Reported data excluded because 105 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-R-

2015: Reported data calibrated to 2013 levels. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate of 82 percent changed from previous revision value of 79 percent. Estimate challenged by: D-R-

2014: Reported data calibrated to 2013 levels. Reported official government estimate is based on DQS results from ten zone sanitaires and supervisory reports, however the methodology used to adjust from the administrative coverage levels is not described. Estimate of 78 percent changed from previous revision value of 75 percent. Estimate challenged by: D-R-

2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 77 percent based on 1 survey(s). Benin Multiple Indicator Cluster Survey 2014 card or history results of 74 percent modified for recall bias to 77 percent based on 1st dose card or history coverage of 86 percent, 1st dose card only coverage of 68 percent and 3d dose card only coverage of 61 percent. Reported official government estimate based on the results of an external EPI review conducted in 10 communes. Estimate of 77 percent changed from previous revision value of 74 percent. Estimate challenged by: D-R-

2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 80 percent based on 2 survey(s). External Review of the Immunization System in Benin in 2014 card or history results of 86 percent modified for recall bias to 87 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 82 percent and 3d dose card only coverage of 74 percent. Benin Multiple Indicator Cluster Survey 2014 card or history results of 68 percent modified for recall bias to 73 percent based on 1st dose card or history coverage of 81 percent, 1st dose card only coverage of 53 percent and 3d dose card only coverage of 48 percent. Official government estimate based on survey results. Estimate of 80 percent changed from previous revision value of 81 percent. Estimate challenged by: D-R-

2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 75 percent based on 1 survey(s). Benin Demographic and Health Survey EDSB IV 2011-2012 card or history results of 74 percent modified for recall bias to 75 percent based on 1st dose card or history coverage of 85 percent, 1st dose card only coverage of 52 percent and 3d dose card only coverage of 46 percent. Reported data excluded because 101 percent greater than 100 percent. Official government estimate

# Benin - DTP3

---

based on survey results. Estimate challenged by: D-R-

2010: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-

2009: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-

2008: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-

2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 82 percent based on 1 survey(s). Estimate challenged by: D-R-S-

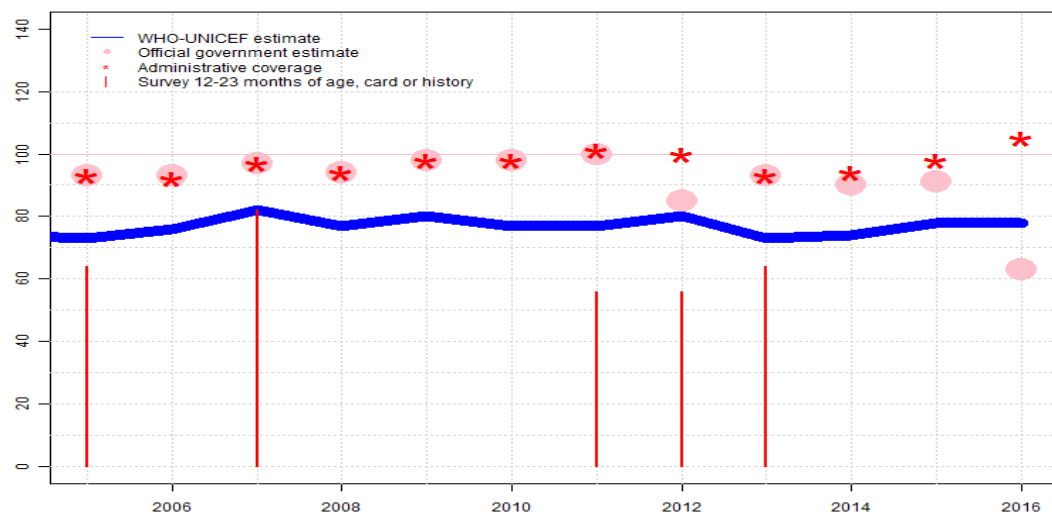
2006: Reported data calibrated to 2005 and 2007 levels. Estimate challenged by: D-R-

2005: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 70 percent based on 1 survey(s). Benin Demographic and Health Survey, 2006 card or history results of 67 percent modified for recall bias to 70 percent based on 1st dose card or history coverage of 84 percent, 1st dose card only coverage of 62 percent and 3d dose card only coverage of 52 percent. Estimate challenged by: D-R-S-



# Benin - Pol3

BEN - Pol3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	73	76	82	77	80	77	77	80	73	74	78	78
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	93	93	97	94	98	98	100	85	93	90	91	63
Administrative	93	92	97	94	98	98	101	100	93	94	98	105
Survey	64	NA	82	NA	NA	NA	56	56	64	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: Reported data calibrated to 2013 levels. Reported data excluded because 105 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2013 levels. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate of 78 percent changed from previous revision value of 79 percent. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2013 levels. Reported official government estimate is based on DQS results from ten zone sanitaires and supervisory reports, however the methodology used to adjust from the administrative coverage levels is not described. Estimate of 74 percent changed from previous revision value of 75 percent. Estimate challenged by: D-R-
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 73 percent based on 1 survey(s). Benin Multiple Indicator Cluster Survey 2014 card or history results of 64 percent modified for recall bias to 73 percent based on 1st dose card or history coverage of 84 percent, 1st dose card only coverage of 67 percent and 3d dose card only coverage of 58 percent. Reported official government estimate based on the results of an external EPI review conducted in 10 communes. Estimate of 73 percent changed from previous revision value of 74 percent. Estimate challenged by: D-R-
- 2012: Estimate of 80 percent assigned by working group. Estimate is based on DTP3. Benin Multiple Indicator Cluster Survey 2014 card or history results of 56 percent modified for recall bias to 68 percent based on 1st dose card or history coverage of 80 percent, 1st dose card only coverage of 53 percent and 3d dose card only coverage of 45 percent. Official government estimate based on survey results. Estimate of 80 percent changed from previous revision value of 81 percent. Estimate challenged by: D-R-S-
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 77 percent based on 1 survey(s). Benin Demographic and Health Survey EDSB IV 2011-2012 card or history results of 56 percent modified for recall bias to 77 percent based on 1st dose card or history coverage of 85 percent, 1st dose card only coverage of 50 percent and 3d dose card only coverage of 45 percent. Reported data excluded because 101 percent greater than 100 percent. Official government estimate based on survey results. Estimate challenged by: D-R-
- 2010: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-
- 2008: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-

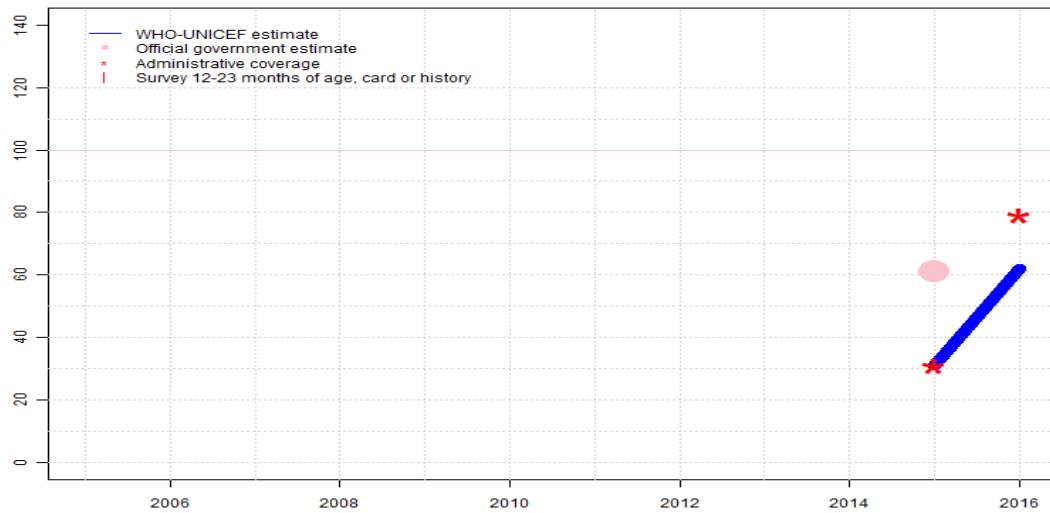
# Benin - Pol3

---

- 2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 82 percent based on 1 survey(s). Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2005 and 2007 levels. Estimate challenged by: D-R-
- 2005: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 73 percent based on 1 survey(s). Benin Demographic and Health Survey, 2006 card or history results of 64 percent modified for recall bias to 73 percent based on 1st dose card or history coverage of 89 percent, 1st dose card only coverage of 63 percent and 3d dose card only coverage of 52 percent. Estimate challenged by: D-R-

# Benin - IPV1

BEN - IPV1



## Description:

2016: Estimate based on the relationship between reported DTP3 coverage and number of children vaccinated. Reported data excluded due to unexplained sudden change in coverage from 31 level to 79 percent. Programme reports a 3-month vaccine stockout. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-R-

2015: Estimate based on reported administrative estimate. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. GoC=Assigned by working group. Consistency across vaccines.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31	62
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	61	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	31	79
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

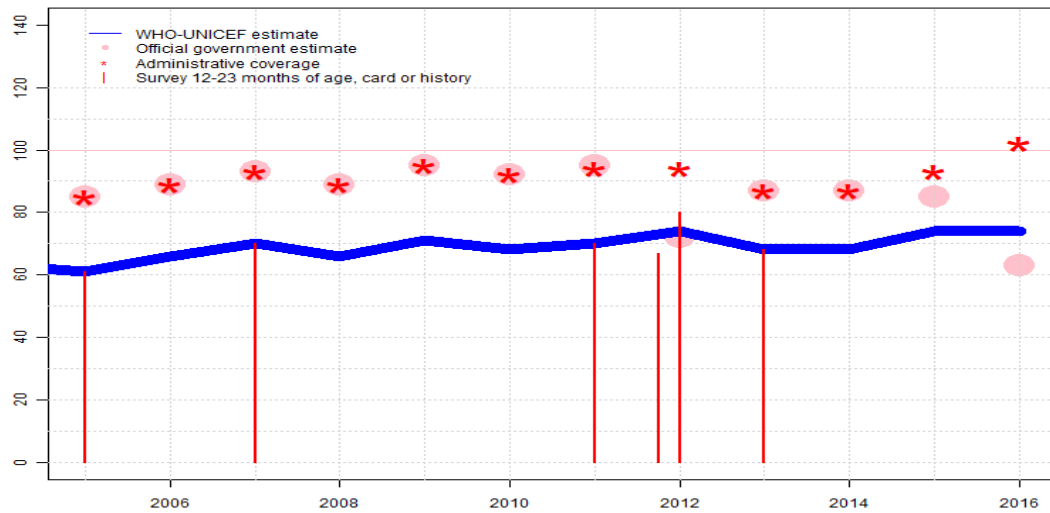
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

# Benin - MCV1

BEN - MCV1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	61	66	70	66	71	68	70	74	68	68	74	74
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	85	89	93	89	95	92	95	72	87	87	85	63
Administrative	85	89	93	89	95	92	94	94	87	87	93	102
Survey	61	NA	70	NA	NA	NA	70	*	68	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.

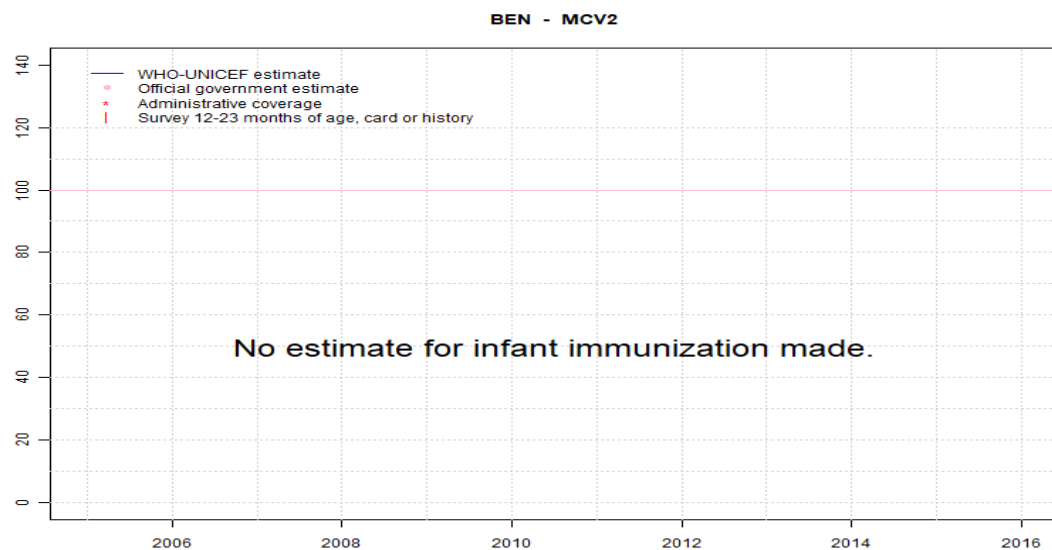
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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: Reported data calibrated to 2013 levels. Reported data excluded because 102 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2013 levels. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate of 74 percent changed from previous revision value of 75 percent. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2013 levels. Reported official government estimate is based on DQS results from ten zone sanitaires and supervisory reports, however the methodology used to adjust from the administrative coverage levels is not described. Estimate challenged by: D-R-
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 68 percent based on 1 survey(s). Reported official government estimate based on the results of an external EPI review conducted in 10 communes. Estimate challenged by: D-R-
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 74 percent based on 2 survey(s). Official government estimate based on survey results. Estimate of 74 percent changed from previous revision value of 75 percent. Estimate challenged by: D-R-
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 70 percent based on 1 survey(s). Official government estimate based on survey results. Estimate challenged by: D-R-
- 2010: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-
- 2008: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-
- 2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 70 percent based on 1 survey(s). Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2005 and 2007 levels. Estimate challenged by: D-R-
- 2005: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 61 percent based on 1 survey(s). Estimate challenged by: D-R-

# Benin - MCV2



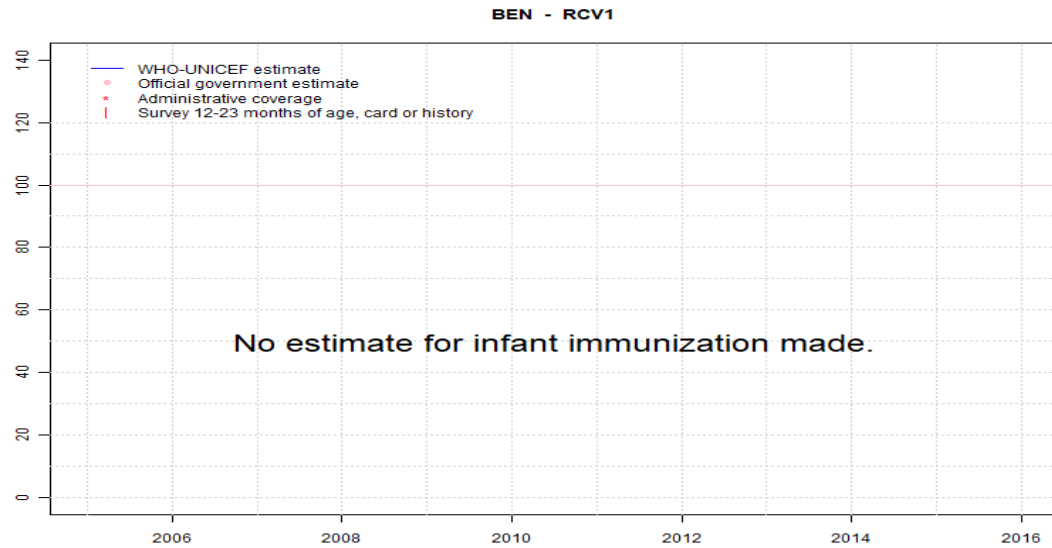
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.

# Benin - RCV1



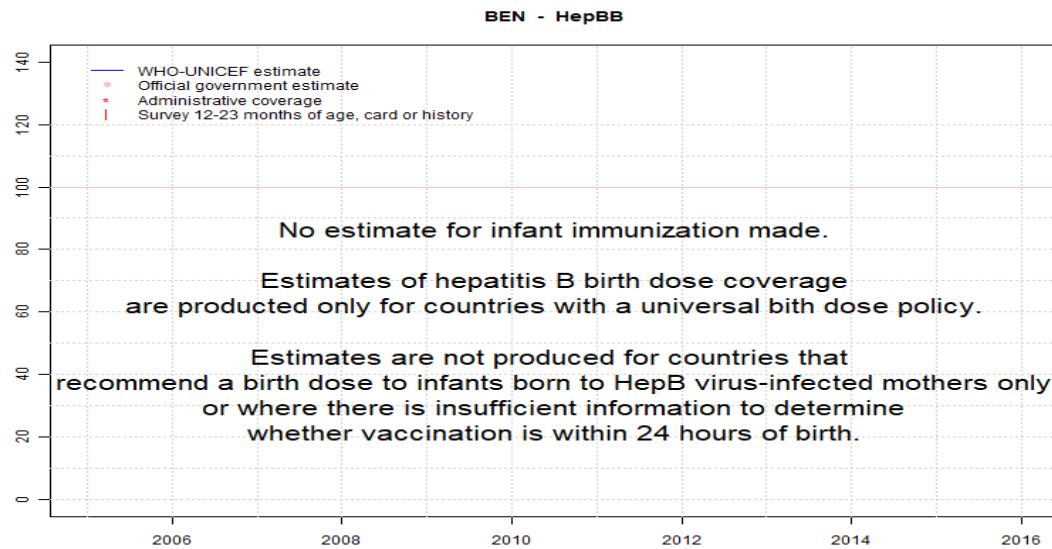
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.

# Benin - HepBB



	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

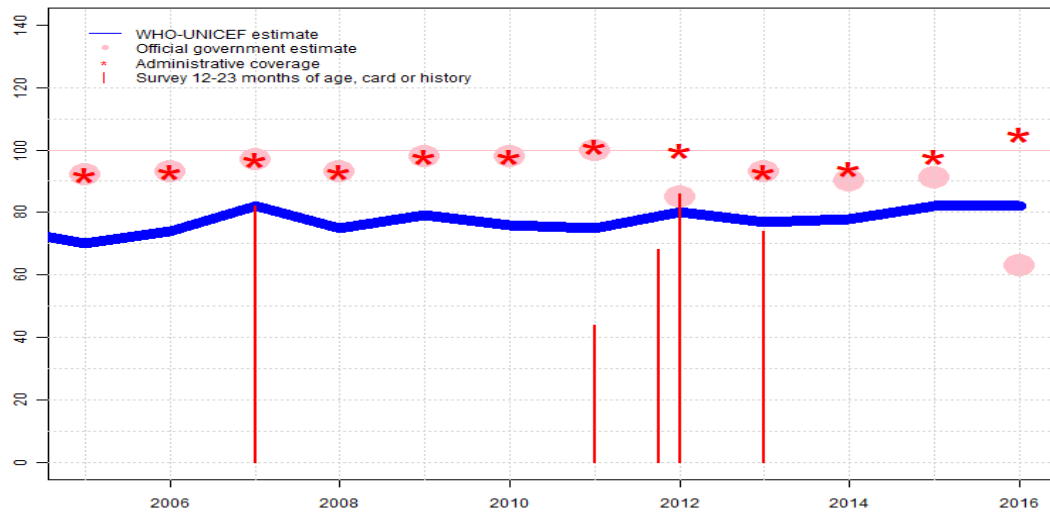
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

# Benin - HepB3

BEN - HepB3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	70	74	82	75	79	76	75	80	77	78	82	82
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	92	93	97	93	98	98	100	85	93	90	91	63
Administrative	92	93	97	93	98	98	101	100	93	94	98	105
Survey	NA	NA	82	NA	NA	NA	44	*	74	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: Reported data calibrated to 2013 levels. Reported data excluded because 105 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-R-

2015: Reported data calibrated to 2013 levels. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate of 82 percent changed from previous revision value of 79 percent. Estimate challenged by: D-R-

2014: Reported data calibrated to 2013 levels. Reported official government estimate is based on DQS results from ten zone sanitaires and supervisory reports, however the methodology used to adjust from the administrative coverage levels is not described. Estimate of 78 percent changed from previous revision value of 75 percent. Estimate challenged by: D-R-

2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 77 percent based on 1 survey(s). Benin Multiple Indicator Cluster Survey 2014 card or history results of 74 percent modified for recall bias to 77 percent based on 1st dose card or history coverage of 86 percent, 1st dose card only coverage of 68 percent and 3d dose card only coverage of 61 percent. Reported official government estimate based on the results of an external EPI review conducted in 10 communes. Estimate of 77 percent changed from previous revision value of 74 percent. Estimate challenged by: D-R-

2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 80 percent based on 2 survey(s). External Review of the Immunization System in Benin in 2014 card or history results of 86 percent modified for recall bias to 87 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 82 percent and 3d dose card only coverage of 74 percent. Benin Multiple Indicator Cluster Survey 2014 card or history results of 68 percent modified for recall bias to 73 percent based on 1st dose card or history coverage of 81 percent, 1st dose card only coverage of 53 percent and 3d dose card only coverage of 48 percent. Official government estimate based on survey results. Estimate of 80 percent changed from previous revision value of 81 percent. Estimate challenged by: D-R-

2011: Estimate of 75 percent assigned by working group. Estimate follows DTP3 coverage level based on survey. Benin Demographic and Health Survey EDSB IV 2011-2012 results ignored by working group. Survey results for HepB3 are inconsistent with DTP3 results. Reported data excluded because 101 percent greater than 100 percent. Official government estimate based on survey results. Estimate challenged by: D-R-

2010: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-



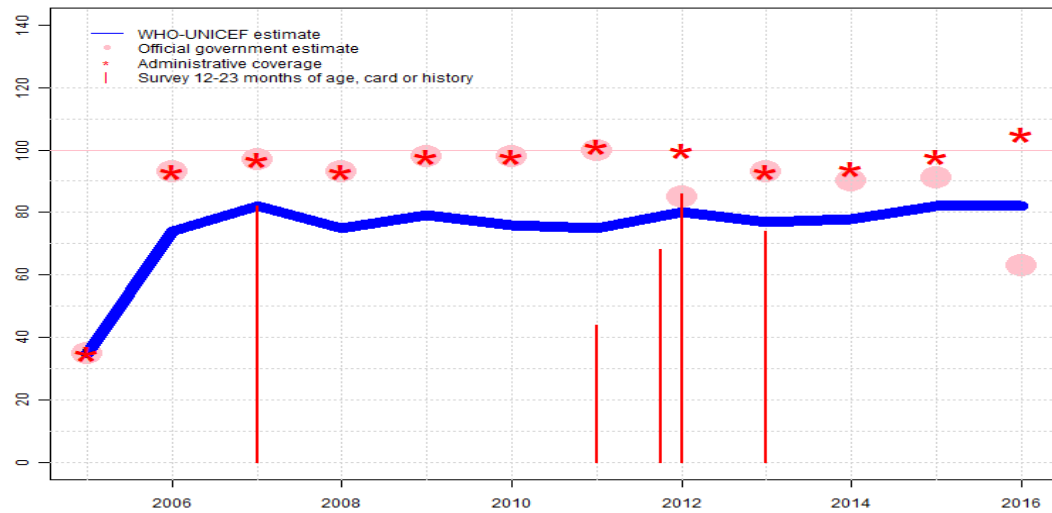
# Benin - HepB3

---

- 2009: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-
- 2008: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-
- 2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 82 percent based on 1 survey(s). Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2005 and 2007 levels. Estimate challenged by: D-R-
- 2005: Estimate of 70 percent assigned by working group. DTP-HepB-Hib pentavalent vaccine introduced in 2005. Estimate based on estimated DTP3 coverage. Estimate challenged by: D-R-S-

# Benin - Hib3

BEN - Hib3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	35	74	82	75	79	76	75	80	77	78	82	82
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	35	93	97	93	98	98	100	85	93	90	91	63
Administrative	35	93	97	93	98	98	101	100	93	94	98	105
Survey	NA	NA	82	NA	NA	NA	44	*	74	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: Reported data calibrated to 2013 levels. Reported data excluded because 105 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-R-

2015: Reported data calibrated to 2013 levels. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate of 82 percent changed from previous revision value of 79 percent. Estimate challenged by: D-R-

2014: Reported data calibrated to 2013 levels. Reported official government estimate is based on DQS results from ten zone sanitaires and supervisory reports, however the methodology used to adjust from the administrative coverage levels is not described. Estimate of 78 percent changed from previous revision value of 75 percent. Estimate challenged by: D-R-

2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 77 percent based on 1 survey(s). Benin Multiple Indicator Cluster Survey 2014 card or history results of 74 percent modified for recall bias to 77 percent based on 1st dose card or history coverage of 86 percent, 1st dose card only coverage of 68 percent and 3d dose card only coverage of 61 percent. Reported official government estimate based on the results of an external EPI review conducted in 10 communes. Estimate of 77 percent changed from previous revision value of 74 percent. Estimate challenged by: D-R-

2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 80 percent based on 2 survey(s). External Review of the Immunization System in Benin in 2014 card or history results of 86 percent modified for recall bias to 87 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 82 percent and 3d dose card only coverage of 74 percent. Benin Multiple Indicator Cluster Survey 2014 card or history results of 68 percent modified for recall bias to 73 percent based on 1st dose card or history coverage of 81 percent, 1st dose card only coverage of 53 percent and 3d dose card only coverage of 48 percent. Official government estimate based on survey results. Estimate of 80 percent changed from previous revision value of 81 percent. Estimate challenged by: D-R-

2011: Estimate of 75 percent assigned by working group. Estimate follows DTP3 coverage level based on survey. Benin Demographic and Health Survey EDSB IV 2011-2012 results ignored by working group. Survey results for Hib3 are inconsistent with DTP3 results. Reported data excluded because 101 percent greater than 100 percent. Official government estimate based on survey results. Estimate challenged by: D-R-

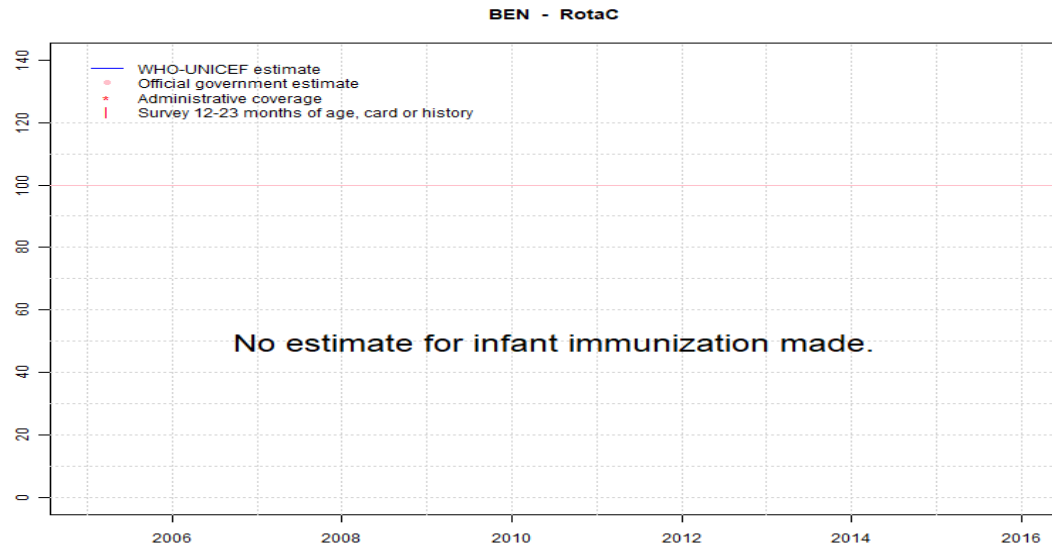
2010: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-

# Benin - Hib3

---

2009: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-  
2008: Reported data calibrated to 2007 and 2011 levels. Estimate challenged by: D-R-  
2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 82 percent based on 1 survey(s). Estimate challenged by: D-R-  
2006: Estimate based on estimated DTP3 coverage. Estimate challenged by: D-R-  
2005: Hib vaccine introduced in 2005 as part of DTP-HepB-Hib pentavalent vaccine. Estimate challenged by: S-

# Benin - 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

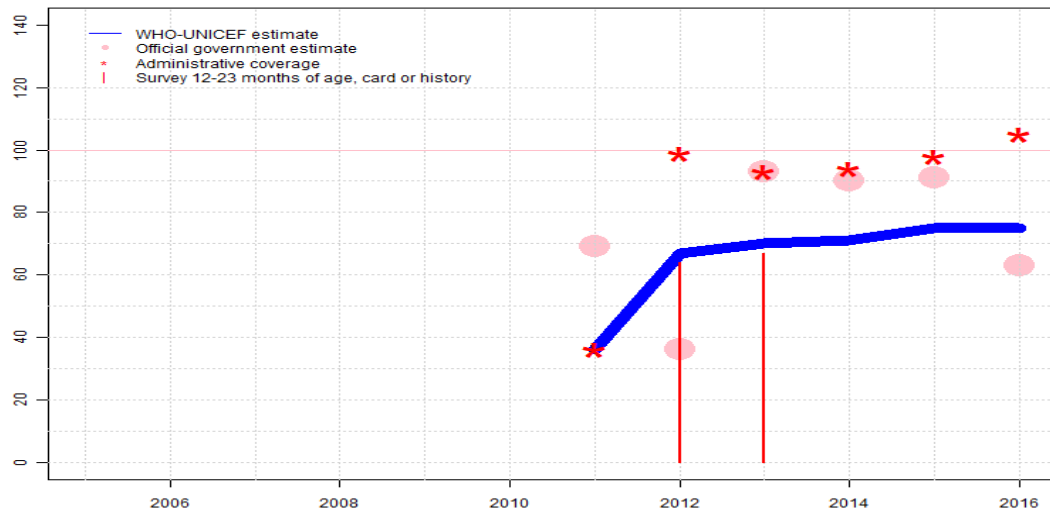
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

# Benin - PcV3

BEN - PcV3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	36	67	70	71	75	75
Estimate GoC	NA	NA	NA	NA	NA	NA	•	•	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	69	36	93	90	91	63
Administrative	NA	NA	NA	NA	NA	NA	36	99	93	94	98	105
Survey	NA	NA	NA	NA	NA	NA	NA	64	67	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.

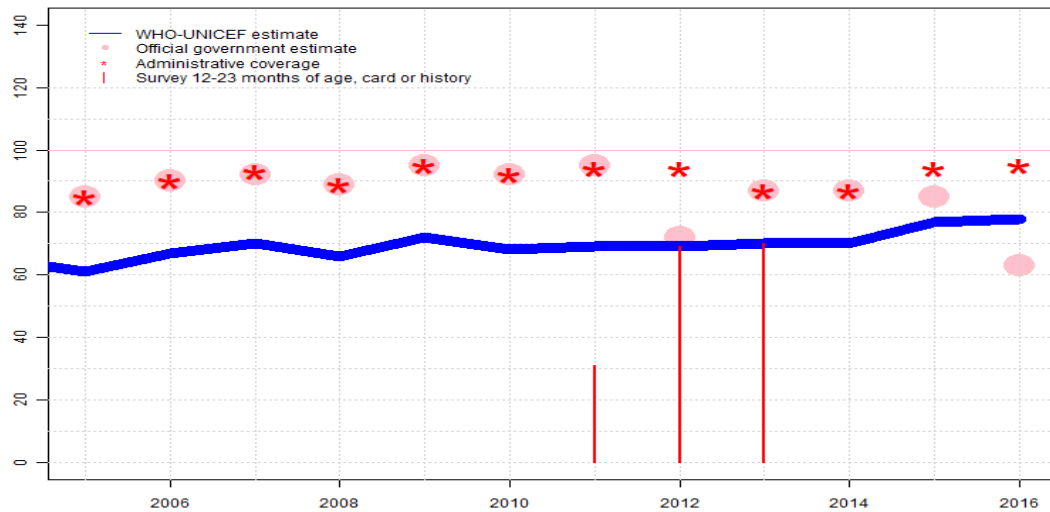
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Reported data calibrated to 2013 levels. Reported data excluded because 105 percent greater than 100 percent. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2013 levels. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate of 75 percent changed from previous revision value of 74 percent. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2013 levels. Reported official government estimate is based on DQS results from ten zone sanitaires and supervisory reports, however the methodology used to adjust from the administrative coverage levels is not described. Estimate of 71 percent changed from previous revision value of 70 percent. Estimate challenged by: D-R-
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 70 percent based on 1 survey(s). Benin Multiple Indicator Cluster Survey 2014 card or history results of 67 percent modified for recall bias to 70 percent based on 1st dose card or history coverage of 79 percent, 1st dose card only coverage of 61 percent and 3d dose card only coverage of 54 percent. Reported official government estimate based on the results of an external EPI review conducted in 10 communes. Estimate of 70 percent changed from previous revision value of 69 percent. Estimate challenged by: D-R-
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 67 percent based on 1 survey(s). Benin Multiple Indicator Cluster Survey 2014 card or history results of 64 percent modified for recall bias to 67 percent based on 1st dose card or history coverage of 77 percent, 1st dose card only coverage of 48 percent and 3d dose card only coverage of 42 percent. Official government estimate based on survey results. Estimate of 67 percent changed from previous revision value of 81 percent. Estimate challenged by: D-R-
- 2011: Pneumococcal conjugate vaccine was introduced in 2011. Official government estimate based on survey results. Methodology for adjusted national estimates unclear. Estimate challenged by: S-

# Benin - YFV

BEN - YFV



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	61	67	70	66	72	68	69	69	70	70	77	78
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	85	90	92	89	95	92	95	72	87	87	85	63
Administrative	85	90	93	89	95	92	94	94	87	87	94	95
Survey	NA	NA	NA	NA	NA	NA	31	69	70	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: Reported data calibrated to 2013 levels. Programme reports a 3-month vaccine stockout. Reported official government estimate is based on results from supervisory reports and results from an external review in 2014. However, the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2013 levels. Reported official government estimate is based on results from supervisory reports and results from an external review, however the methodology used to adjust from the administrative coverage levels is not described. Review of trends in reported number of doses administered is inconsistent with reported coverage levels. Estimate of 77 percent changed from previous revision value of 71 percent. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2013 levels. Reported official government estimate is based on DQS results from ten zone sanitaires and supervisory reports, however the methodology used to adjust from the administrative coverage levels is not described. Estimate of 70 percent changed from previous revision value of 64 percent. Estimate challenged by: D-R-
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 70 percent based on 1 survey(s). Reported official government estimate based on the results of an external EPI review conducted in 10 communes. Estimate of 70 percent changed from previous revision value of 64 percent. Estimate challenged by: D-R-
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 69 percent based on 1 survey(s). Official government estimate based on survey results. Estimate of 69 percent changed from previous revision value of 71 percent. Estimate challenged by: D-R-
- 2011: Reported data calibrated to 2008 and 2012 levels. Benin Demographic and Health Survey EDSB IV 2011-2012 results ignored by working group. Survey results for yellow fever vaccine are based on measles estimates. Official government estimate based on survey results. Estimate of 69 percent changed from previous revision value of 71 percent. Estimate challenged by: D-R-
- 2010: Reported data calibrated to 2008 and 2012 levels. Estimate of 68 percent changed from previous revision value of 69 percent. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2008 and 2012 levels. Estimate challenged by: D-R-
- 2008: Estimate of 66 percent assigned by working group. YFV estimate follows the MCV estimate levels. Estimate challenged by: D-R-
- 2007: Estimate of 70 percent assigned by working group. YFV estimate follows the MCV estimate levels. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2005 and 2007 levels. Estimate challenged by: D-R-
- 2005: Estimate of 61 percent assigned by working group. YFV estimate follows the MCV estimate levels. Estimate challenged by: D-R-

# Benin - survey details

2013 Benin: Enquete par grappes a indicateurs multiples (MICS) 2014

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	89	12-23 m	2426	73
BCG	Card	71	12-23 m	2426	73
BCG	Card or History	90	12-23 m	2426	73
DTP1	C or H <12 months	85	12-23 m	2426	73
DTP1	Card	68	12-23 m	2426	73
DTP1	Card or History	86	12-23 m	2426	73
DTP3	C or H <12 months	71	12-23 m	2426	73
DTP3	Card	61	12-23 m	2426	73
DTP3	Card or History	74	12-23 m	2426	73
HepB1	C or H <12 months	85	12-23 m	2426	73
HepB1	Card	68	12-23 m	2426	73
HepB1	Card or History	86	12-23 m	2426	73
HepB3	C or H <12 months	71	12-23 m	2426	73
HepB3	Card	61	12-23 m	2426	73
HepB3	Card or History	74	12-23 m	2426	73
Hib1	C or H <12 months	85	12-23 m	2426	73
Hib1	Card	68	12-23 m	2426	73
Hib1	Card or History	86	12-23 m	2426	73
Hib3	C or H <12 months	71	12-23 m	2426	73
Hib3	Card	61	12-23 m	2426	73
Hib3	Card or History	74	12-23 m	2426	73
MCV1	C or H <12 months	64	12-23 m	2426	73
MCV1	Card	53	12-23 m	2426	73
MCV1	Card or History	68	12-23 m	2426	73
PCV1	C or H <12 months	77	12-23 m	2426	73
PCV1	Card	61	12-23 m	2426	73
PCV1	Card or History	79	12-23 m	2426	73
PCV3	C or H <12 months	64	12-23 m	2426	73
PCV3	Card	54	12-23 m	2426	73
PCV3	Card or History	67	12-23 m	2426	73
Pol1	C or H <12 months	83	12-23 m	2426	73
Pol1	Card	67	12-23 m	2426	73
Pol1	Card or History	84	12-23 m	2426	73
Pol3	C or H <12 months	62	12-23 m	2426	73
Pol3	Card	58	12-23 m	2426	73
Pol3	Card or History	64	12-23 m	2426	73
YFV	C or H <12 months	65	12-23 m	2426	73

YFV	Card	55	12-23 m	2426	73
YFV	Card or History	70	12-23 m	2426	73

2012 Benin: Enquete par grappes a indicateurs multiples (MICS) 2014

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	85	24-35 m	2415	73
BCG	Card	56	24-35 m	2415	73
BCG	Card or History	86	24-35 m	2415	73
DTP1	C or H <12 months	80	24-35 m	2415	73
DTP1	Card	53	24-35 m	2415	73
DTP1	Card or History	81	24-35 m	2415	73
DTP3	C or H <12 months	65	24-35 m	2415	73
DTP3	Card	48	24-35 m	2415	73
DTP3	Card or History	68	24-35 m	2415	73
HepB1	C or H <12 months	80	24-35 m	2415	73
HepB1	Card	53	24-35 m	2415	73
HepB1	Card or History	81	24-35 m	2415	73
HepB3	C or H <12 months	65	24-35 m	2415	73
HepB3	Card	48	24-35 m	2415	73
HepB3	Card or History	68	24-35 m	2415	73
Hib1	C or H <12 months	80	24-35 m	2415	73
Hib1	Card	53	24-35 m	2415	73
Hib1	Card or History	81	24-35 m	2415	73
Hib3	C or H <12 months	65	24-35 m	2415	73
Hib3	Card	48	24-35 m	2415	73
Hib3	Card or History	68	24-35 m	2415	73
MCV1	C or H <12 months	60	24-35 m	2415	73
MCV1	Card	43	24-35 m	2415	73
MCV1	Card or History	67	24-35 m	2415	73
PCV1	C or H <12 months	74	24-35 m	2415	73
PCV1	Card	48	24-35 m	2415	73
PCV1	Card or History	77	24-35 m	2415	73
PCV3	C or H <12 months	60	24-35 m	2415	73
PCV3	Card	42	24-35 m	2415	73
PCV3	Card or History	64	24-35 m	2415	73
Pol1	C or H <12 months	78	24-35 m	2415	73
Pol1	Card	53	24-35 m	2415	73
Pol1	Card or History	80	24-35 m	2415	73

# Benin - survey details

Pol3	C or H <12 months	53	24-35 m	2415	73
Pol3	Card	45	24-35 m	2415	73
Pol3	Card or History	56	24-35 m	2415	73
YFV	C or H <12 months	61	24-35 m	2415	73
YFV	Card	44	24-35 m	2415	73
YFV	Card or History	69	24-35 m	2415	73

DTP1	History	34	12-23 m	1159	54
DTP3	C or H <12 months	80	12-23 m	2535	54
DTP3	Card	46	12-23 m	1375	54
DTP3	Card or History	74	12-23 m	2534	54
DTP3	History	27	12-23 m	1159	54
HepB1	C or H <12 months	49	12-23 m	2535	54
HepB1	Card	49	12-23 m	1375	54
HepB1	Card or History	49	12-23 m	2534	54
HepB3	C or H <12 months	43	12-23 m	2535	54
HepB3	Card	44	12-23 m	1375	54
HepB3	Card or History	44	12-23 m	2534	54
Hib1	C or H <12 months	49	12-23 m	2535	54
Hib1	Card	49	12-23 m	1375	54
Hib1	Card or History	49	12-23 m	2534	54
Hib3	C or H <12 months	43	12-23 m	2535	54
Hib3	Card	44	12-23 m	1375	54
Hib3	Card or History	44	12-23 m	2534	54
MCV1	C or H <12 months	62	12-23 m	2535	54
MCV1	Card	42	12-23 m	1375	54
MCV1	Card or History	70	12-23 m	2534	54
MCV1	History	28	12-23 m	1159	54
Pol1	C or H <12 months	84	12-23 m	2535	54
Pol1	Card	50	12-23 m	1375	54
Pol1	Card or History	85	12-23 m	2534	54
Pol1	History	34	12-23 m	1159	54
Pol3	C or H <12 months	54	12-23 m	2535	54
Pol3	Card	45	12-23 m	1375	54
Pol3	Card or History	56	12-23 m	2534	54
Pol3	History	12	12-23 m	1159	54
YFV	C or H <12 months	24	12-23 m	2534	54
YFV	Card	31	12-23 m	1375	54
YFV	Card or History	31	12-23 m	2534	54

## 2012 Revue externe du système de vaccination au Bénin en 2014

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	97	12-23 m	15813	89
BCG	Card or History	98	12-23 m	15813	89
DTP1	Card	82	12-23 m	15813	89
DTP1	Card or History	96	12-23 m	15813	89
DTP3	Card	74	12-23 m	15813	89
DTP3	Card or History	86	12-23 m	15813	89
HepB1	Card	82	12-23 m	15813	89
HepB1	Card or History	96	12-23 m	15813	89
HepB3	Card	74	12-23 m	15813	89
HepB3	Card or History	86	12-23 m	15813	89
Hib1	Card	82	12-23 m	15813	89
Hib1	Card or History	96	12-23 m	15813	89
Hib3	Card	74	12-23 m	15813	89
Hib3	Card or History	86	12-23 m	15813	89
MCV1	Card	68	12-23 m	15813	89
MCV1	Card or History	80	12-23 m	15813	89

## 2011 Enquête Démographique et de Santé du Bénin EDSB IV 2011-2012

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	87	12-23 m	2535	54
BCG	Card	53	12-23 m	1375	54
BCG	Card or History	88	12-23 m	2534	54
BCG	History	35	12-23 m	1159	54
DTP1	C or H <12 months	84	12-23 m	2535	54
DTP1	Card	52	12-23 m	1375	54
DTP1	Card or History	85	12-23 m	2534	54

## 2007 Revue externe 2008 du Programme Elargi de Vaccination

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	94	12-23 m	7105	77
BCG	Card or History	97	12-23 m	7105	77
DTP1	Card	71	12-23 m	7105	77



# Benin - survey details

DTP1	Card or History	94	12-23 m	7105	77
DTP3	Card	62	12-23 m	7105	77
DTP3	Card or History	82	12-23 m	7105	77
HepB1	Card	71	12-23 m	7105	77
HepB1	Card or History	94	12-23 m	7105	77
HepB3	Card	62	12-23 m	7105	77
HepB3	Card or History	82	12-23 m	7105	77
Hib1	Card	71	12-23 m	7105	77
Hib1	Card or History	94	12-23 m	7105	77
Hib3	Card	62	12-23 m	7105	77
Hib3	Card or History	82	12-23 m	7105	77
MCV1	Card	53	12-23 m	7105	77
MCV1	Card or History	70	12-23 m	7105	77
Pol1	Card	70	12-23 m	7105	77
Pol1	Card or History	93	12-23 m	7105	77
Pol3	Card	62	12-23 m	7105	77
Pol3	Card or History	82	12-23 m	7105	77

## 2005 Enquête Démographique et de Santé au Bénin de 2006

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	88	12-23 m	3005	66
BCG	Card	65	12-23 m	3005	66
BCG	Card or History	88	12-23 m	3005	66
BCG	History	23	12-23 m	3005	66
DTP1	C or H <12 months	83	12-23 m	3005	66
DTP1	Card	62	12-23 m	3005	66
DTP1	Card or History	84	12-23 m	3005	66
DTP1	History	22	12-23 m	3005	66
DTP3	C or H <12 months	64	12-23 m	3005	66
DTP3	Card	52	12-23 m	3005	66
DTP3	Card or History	67	12-23 m	3005	66
DTP3	History	15	12-23 m	3005	66
MCV1	C or H <12 months	51	12-23 m	3005	66
MCV1	Card	45	12-23 m	3005	66
MCV1	Card or History	61	12-23 m	3005	66
MCV1	History	16	12-23 m	3005	66
Pol1	C or H <12 months	88	12-23 m	3005	66
Pol1	Card	63	12-23 m	3005	66

Pol1	Card or History	89	12-23 m	3005	66
Pol1	History	25	12-23 m	3005	66
Pol3	C or H <12 months	62	12-23 m	3005	66
Pol3	Card	52	12-23 m	3005	66
Pol3	Card or History	64	12-23 m	3005	66
Pol3	History	12	12-23 m	3005	66

## 2000 Benin, Revue Externe du Programme Elargi de Vaccination, 2001

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	94	12-23 m	2699	85
DTP1	Card or History	91	12-23 m	2699	85
DTP3	Card or History	79	12-23 m	2699	85
MCV1	Card or History	72	12-23 m	2699	85
Pol1	Card or History	92	12-23 m	2699	85
Pol3	Card or History	78	12-23 m	2699	85

## 2000 Enquête Démographique et de Santé au Bénin 2001, 2002

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	89	12-23 m	932	73
BCG	Card	72	12-23 m	932	73
BCG	Card or History	90	12-23 m	932	73
BCG	History	18	12-23 m	932	73
DTP1	C or H <12 months	86	12-23 m	932	73
DTP1	Card	71	12-23 m	932	73
DTP1	Card or History	87	12-23 m	932	73
DTP1	History	16	12-23 m	932	73
DTP3	C or H <12 months	68	12-23 m	932	73
DTP3	Card	62	12-23 m	932	73
DTP3	Card or History	72	12-23 m	932	73
DTP3	History	10	12-23 m	932	73
MCV1	C or H <12 months	56	12-23 m	932	73
MCV1	Card	58	12-23 m	932	73
MCV1	Card or History	68	12-23 m	932	73
MCV1	History	10	12-23 m	932	73
Pol1	C or H <12 months	89	12-23 m	932	73

## Benin - survey details

---

Pol1	Card	72	12-23 m	932	73	Pol3	Card	62	12-23 m	932	73
Pol1	Card or History	90	12-23 m	932	73	Pol3	Card or History	69	12-23 m	932	73
Pol1	History	18	12-23 m	932	73	Pol3	History	8	12-23 m	932	73
Pol3	C or H <12 months	66	12-23 m	932	73						

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)