

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

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

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

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

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

## DATA SOURCES.

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

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

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

## ABBREVIATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

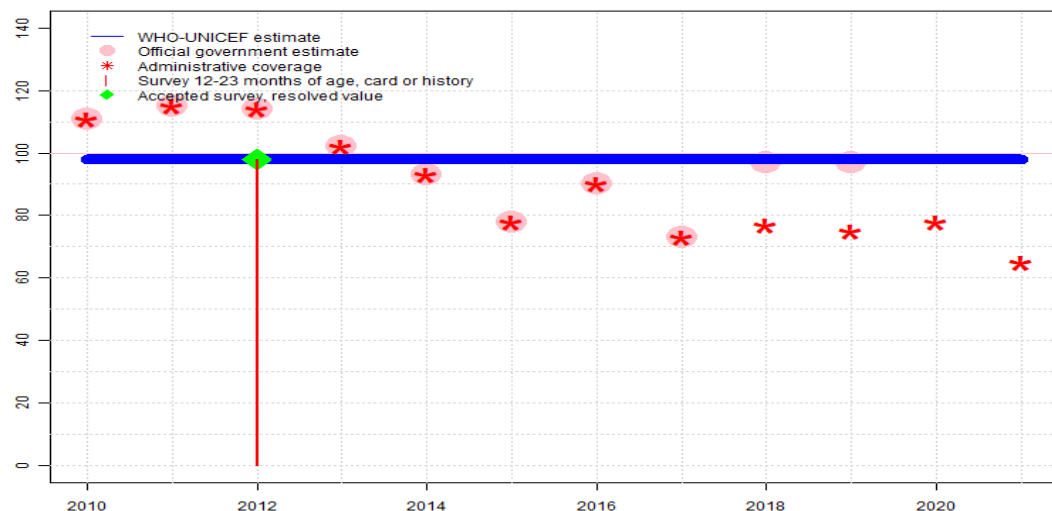
**PcV3:** percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect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

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

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# Botswana - BCG

BWA - BCG



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	98	98	98	98	98	98	98	98	98	98	98
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	111	115	114	102	93	78	90	73	97	97	NA	NA
Administrative	111	115	114	102	93	78	90	73	77	75	78	65
Survey	NA	NA	98	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: 2022 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:

2021: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to sudden change in coverage from 78 level to 65 percent. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2020: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Country switched to DHIS2 information system and indicates some unquantified data loss. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2019: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2018: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2017: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to decline in reported coverage from 90 percent to 73 percent with increase to 97 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

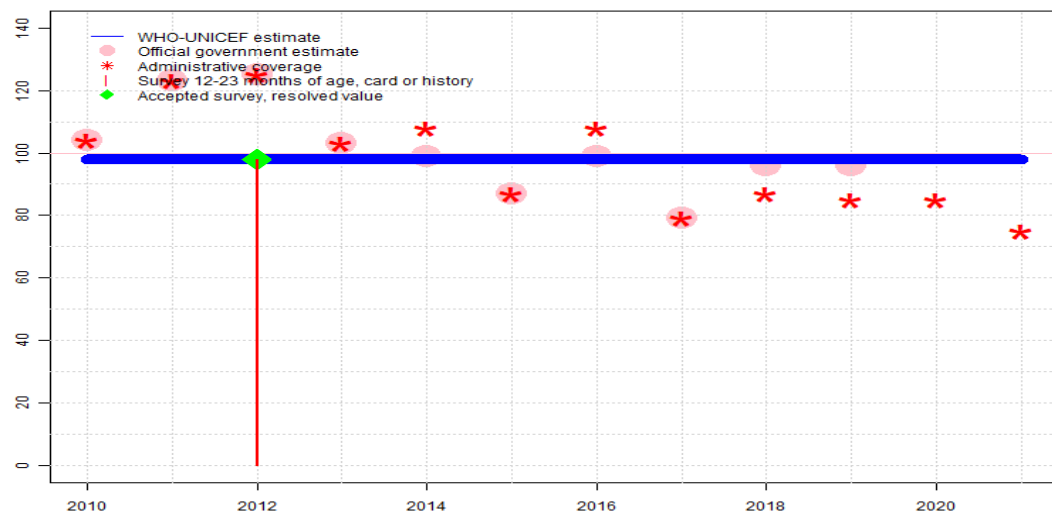
2016: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to an increase from 78 percent to 90 percent with decrease 73 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2015: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to decline in reported coverage from 93 percent to 78 percent with increase to 90 percent. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate

- is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2014: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2013: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded because 102 percent greater than 100 percent. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2012: Estimate of 98 percent assigned by working group. Estimate based on survey results. Reported data excluded because 114 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2011: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded because 115 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2010: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. Reported data excluded because 111 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

# Botswana - DTP1

BWA - DTP1



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	98	98	98	98	98	98	98	98	98	98	98
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	104	123	125	103	99	87	99	79	96	96	NA	NA
Administrative	104	123	125	103	108	87	108	79	87	85	85	75
Survey	NA	NA	98	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: 2022 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:

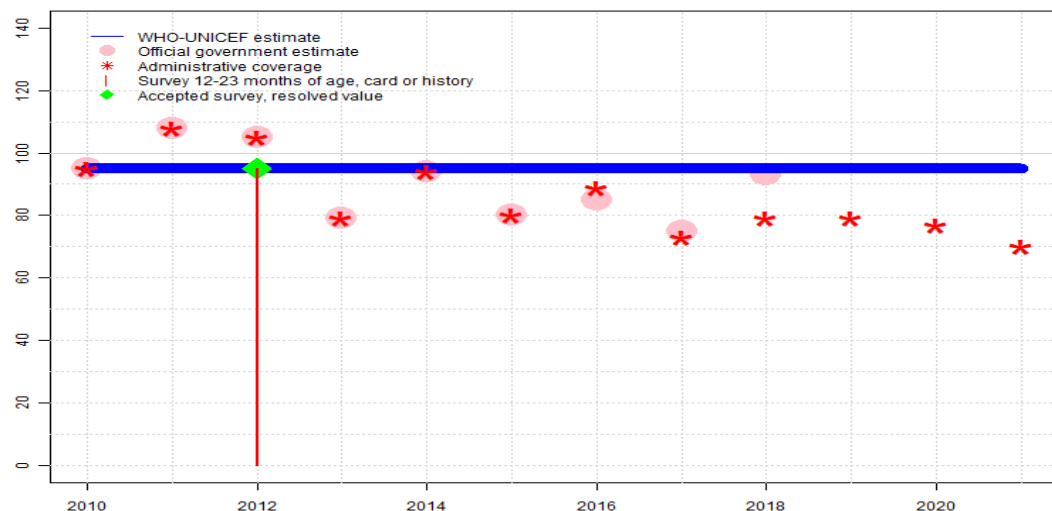
- 2021: Estimate based on extrapolation from data reported by national government. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2020: Estimate based on extrapolation from data reported by national government. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Country switched to DHIS2 information system and indicates some unquantified data loss. Programme reported a three month vaccine stock-out at national level. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2018: Estimate based on extrapolation from data reported by national government. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2017: Estimate based on extrapolation from data reported by national government. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to decline in reported coverage from 99 percent to 79 percent with increase to 96 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2016: Estimate based on extrapolation from data reported by national government. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to an increase from 87 percent to 99 percent with decrease 79 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2015: Estimate based on extrapolation from data reported by national government. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to decline in reported coverage from 99 percent to 87 percent with increase to 99 percent. Decline in reported coverage appears

to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

- 2014: Estimate based on extrapolation from data reported by national government. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2013: Estimate based on extrapolation from data reported by national government. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded because 103 percent greater than 100 percent. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2012: Estimate based on survey results. Reported data excluded because 125 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2011: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded because 123 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2010: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. Reported data excluded because 104 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

# Botswana - DTP3

BWA - DTP3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	95	95	95	95	95	95	95	95	95	95	95	95
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	95	108	105	79	94	80	85	75	93	NA	NA	NA
Administrative	95	108	105	79	94	80	89	73	79	79	77	70
Survey	NA	NA	95	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: 2022 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.

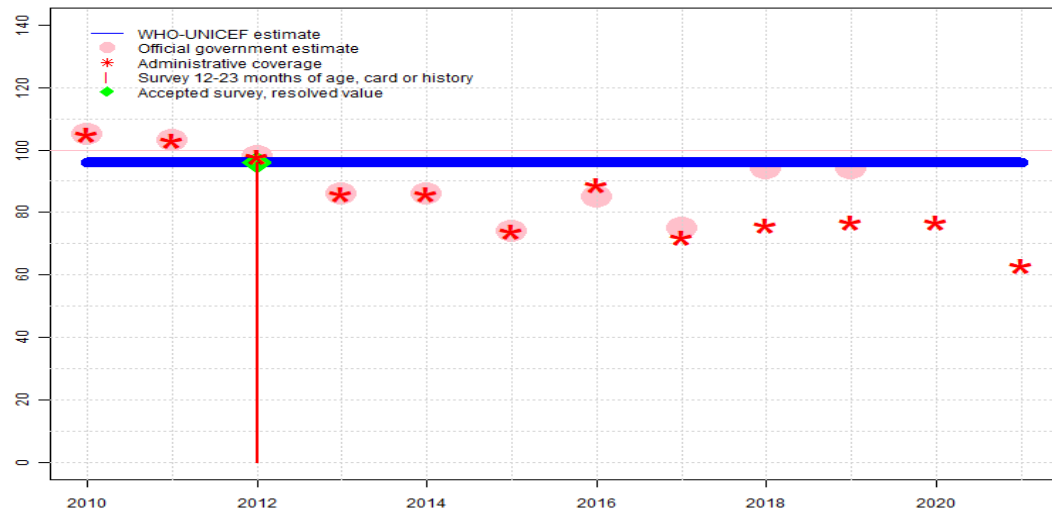
## Description:

- 2021: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2020: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Country switched to DHIS2 information system and indicates some unquantified data loss. Programme reported a three month vaccine stock-out at national level. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2019: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2018: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to an increase from 75 percent to 93 percent with decrease 79 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2017: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2016: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2015: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2014: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data

- excluded due to an increase from 79 percent to 94 percent with decrease 80 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2013: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to decline in reported coverage from 105 percent to 79 percent with increase to 94 percent. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2012: Estimate of 95 percent assigned by working group. Estimate based on survey results. Reported data excluded because 105 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2011: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded because 108 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2010: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

# Botswana - Pol3

BWA - Pol3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	96	96	96	96	96	96	96	96	96	96	96	96
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	105	103	98	86	86	74	85	75	94	94	NA	NA
Administrative	105	103	98	86	86	74	89	72	76	77	77	63
Survey	NA	NA	96	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: 2022 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:

2021: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to sudden change in coverage from 77 level to 63 percent. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2020: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Country switched to DHIS2 information system and indicates some unquantified data loss. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2019: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2018: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2017: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2016: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2015: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to decline in reported coverage from 86 percent to 74 percent with increase to 85 percent. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2014: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Programme reports

one month stock-out of polio vaccine. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

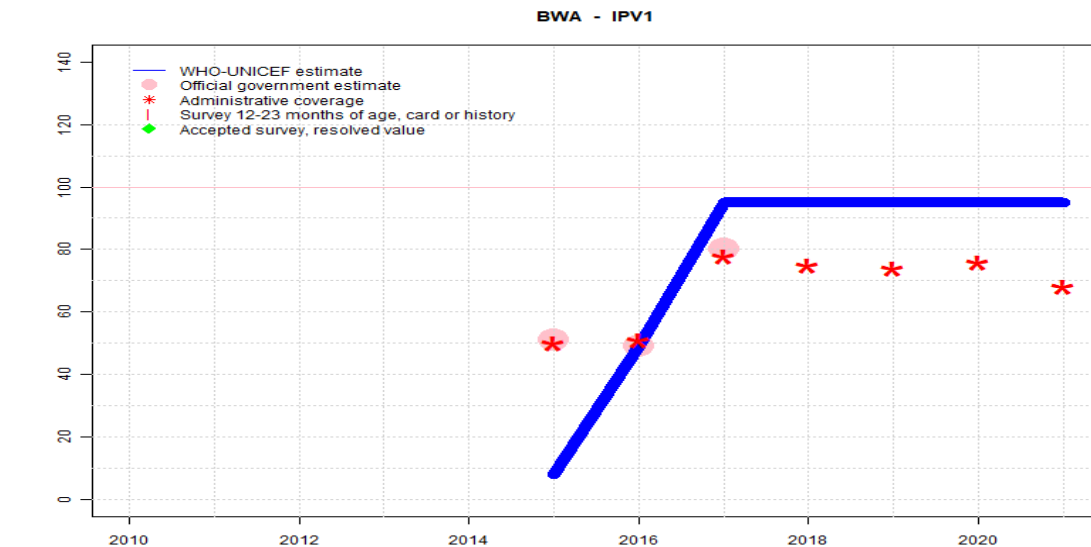
2013: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2012: Estimate of 96 percent assigned by working group. Estimate based on survey results. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2011: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded because 103 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2010: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. Reported data excluded because 105 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

# Botswana - IPV1



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	NA	NA	NA	8	49	95	95	95	95	95
Estimate GoC	NA	NA	NA	NA	NA	•	•	•	•	•	•	•
Official	NA	NA	NA	NA	NA	51	49	80	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	50	51	78	75	74	76	68
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: 2022 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:

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

2021: Estimate based on estimated DTP3 coverage. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. Estimate challenged by: D-R-

2020: Estimate based on estimated DTP3 coverage. Country switched to DHIS2 information system and indicates some unquantified data loss. Estimate challenged by: D-R-

2019: Estimate based on estimated DTP3 coverage. Estimate challenged by: D-R-

2018: Estimate based on estimated DTP3 coverage. Estimate challenged by: D-R-

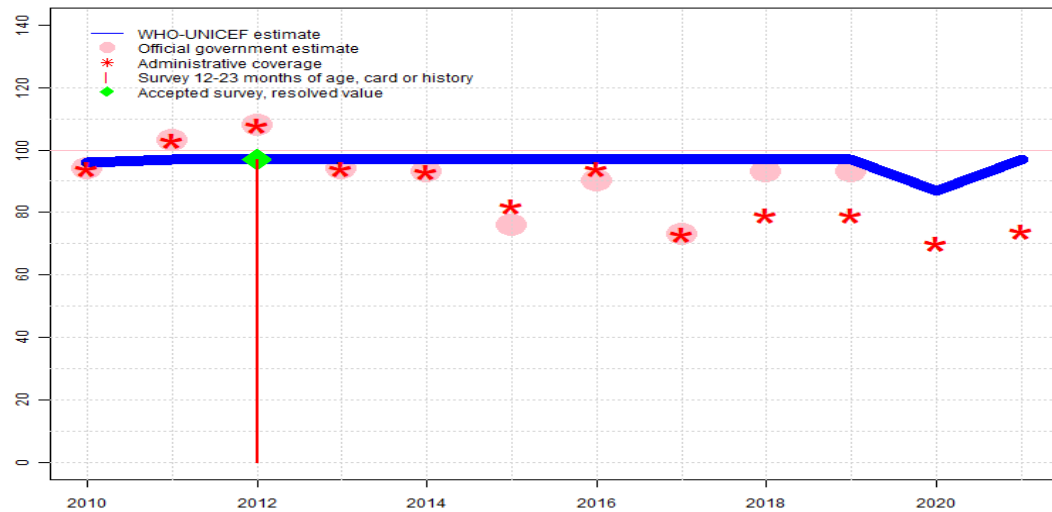
2017: Estimate based on DTP3 coverage estimate. Programme reported 2.8 months stock-out of IPV. Estimate challenged by: D-R-

2016: Programme reported 6 and a half months stock-out of IPV. Estimate challenged by: R-

2015: Estimate of 8 percent assigned by working group. Inactivated polio vaccine in November 2015. Programme reports 50 percent coverage in 17 percent of target population. Estimate is based on coverage achieved in total annual national target population. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. Estimate challenged by: R-

# Botswana - MCV1

BWA - MCV1



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	96	97	97	97	97	97	97	97	97	97	87	97
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	94	103	108	94	93	76	90	73	93	93	NA	NA
Administrative	94	103	108	94	93	82	94	73	79	79	70	74
Survey	NA	NA	97	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: 2022 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:

2021: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2020: Estimate exceptionally based on reported decline in numerator consistent with reported a three month vaccine stock-out at national and subnational levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Country switched to DHIS2 information system and indicates some unquantified data loss. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2019: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2018: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2017: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to decline in reported coverage from 90 percent to 73 percent with increase to 93 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

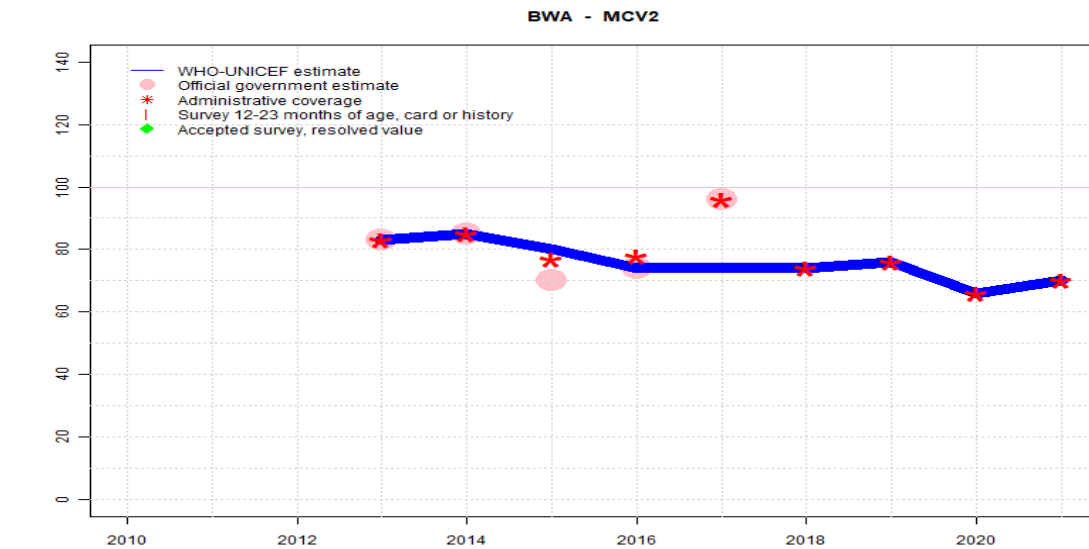
2016: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to an increase from 76 percent to 90 percent with decrease 73 percent. Programme reported a measles-containing vaccines of less than a month. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

2015: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded due to decline in reported coverage from 93 percent to 76 percent with increase to 90 percent. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported

number of children vaccinated in 2015 compared to 2014 reported totals. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

- 2014: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2013: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2012: Estimate of 97 percent assigned by working group. Estimate based on survey results. Reported data excluded because 108 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2011: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded because 103 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2010: Estimate based on interpolation between 2006 and 2012 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

# Botswana - MCV2



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	NA	83	85	80	74	74	74	76	66	70
Estimate GoC	NA	NA	NA	•	•	•	•	•	•	•	•	•
Official	NA	NA	NA	83	85	70	74	96	NA	NA	NA	NA
Administrative	NA	NA	NA	83	85	77	78	96	74	76	66	70
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: 2022 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.

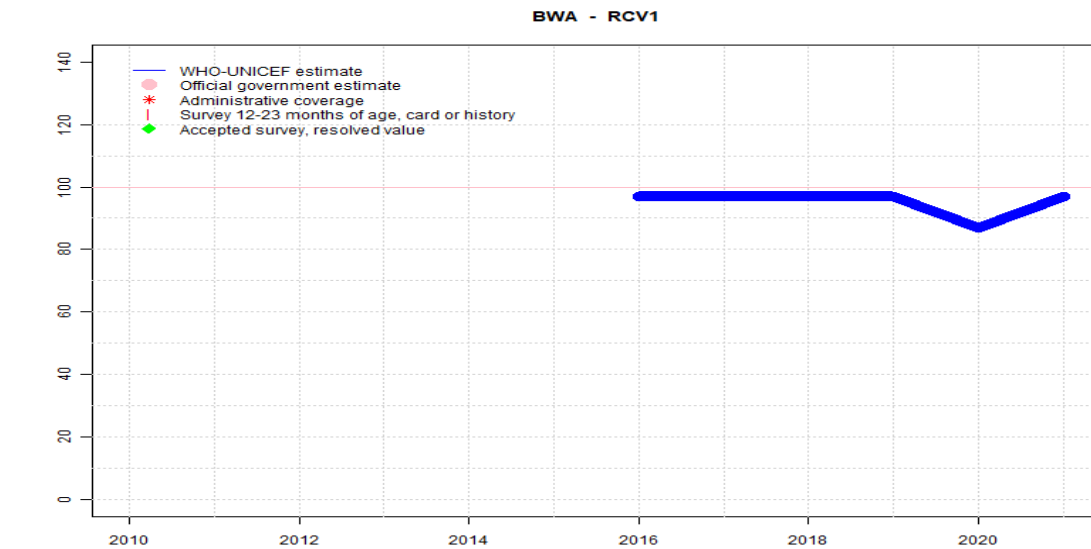
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

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

- 2021: Estimate based on reported administrative estimate. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2020: Estimate based on reported administrative estimate. Country switched to DHIS2 information system and indicates some unquantified data loss. Programme reports a three month vaccine stock-out at national and subnational levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2019: Estimate based on reported administrative estimate. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2018: Estimate based on reported administrative estimate. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2017: Estimate based on interpolation between reported values. Reported data excluded due to an increase from 74 percent to 96 percent with decrease 74 percent. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2016: Estimate based on coverage reported by national government. Programme reported a measles-containing vaccines of less than a month. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2015: Estimate based on interpolation between reported values. Reported data excluded. Vaccine to vaccine consistency. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Estimate based on coverage reported by national government. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2013: Estimate based on coverage reported by national government. Measles 2nd dose introduced in 2011, reporting started in 2013. Recommended age of administration is 18 months. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.

# Botswana - RCV1



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	NA	NA	NA	NA	97	97	97	97	87	97
Estimate GoC	NA	NA	NA	NA	NA	NA	•	•	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

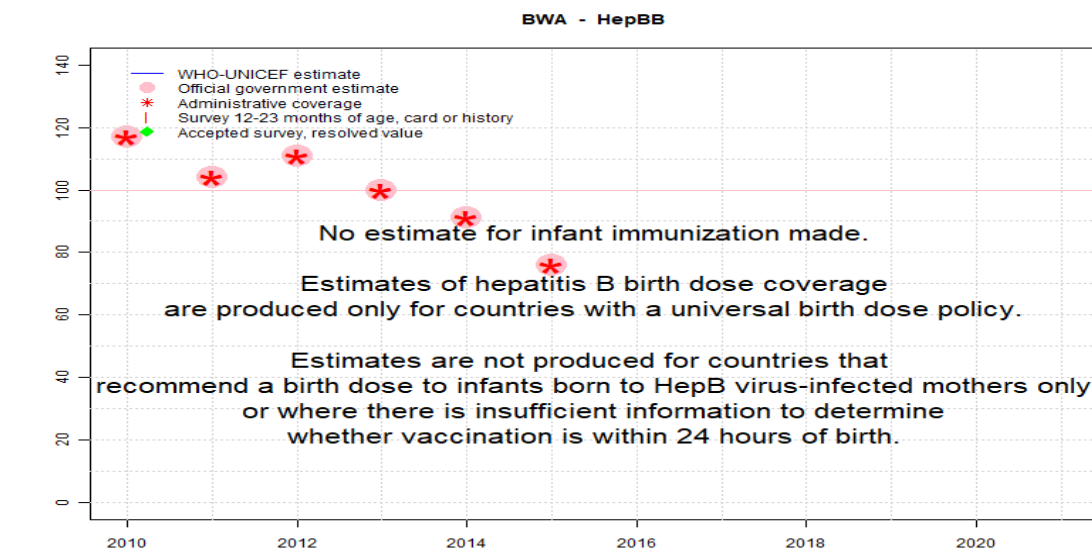
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

## Description:

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

- 2021: Estimate based on estimated MCV1. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2020: Estimate based on estimated MCV1 coverage. Country switched to DHIS2 information system and indicates some unquantified data loss. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2019: Estimate based on estimated MCV1. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2018: Estimate based on estimated MCV1. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2017: Estimate based on estimated MCV1. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2016: Estimate based on estimated MCV1. Rubella containing vaccine introduced during 2016. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
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	117	104	111	100	91	76	NA	NA	NA	NA	NA	NA
Administrative	117	104	111	100	91	76	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

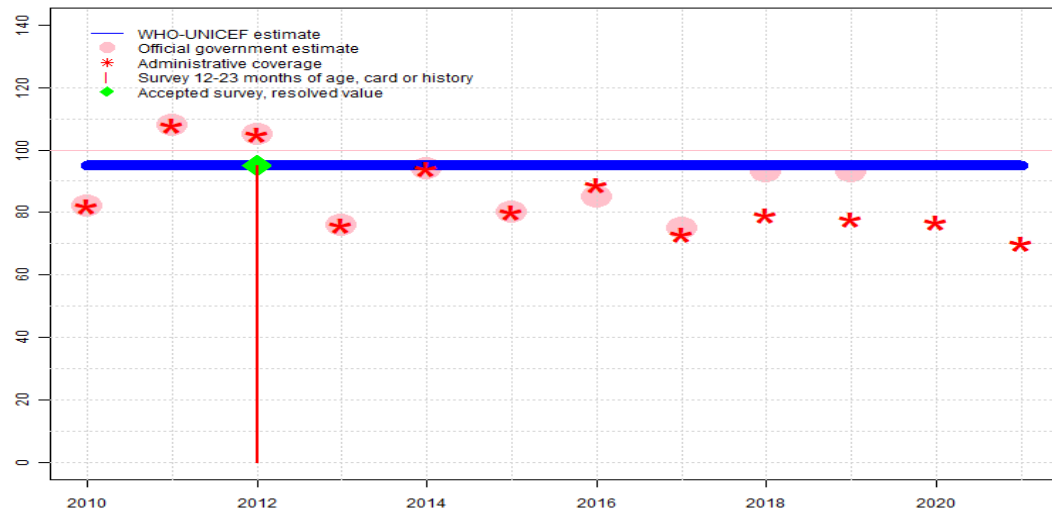
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2022 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.

# Botswana - HepB3

BWA - HepB3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	95	95	95	95	95	95	95	95	95	95	95	95
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	82	108	105	76	94	80	85	75	93	93	NA	NA
Administrative	82	108	105	76	94	80	89	73	79	78	77	70
Survey	NA	NA	95	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: 2022 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.

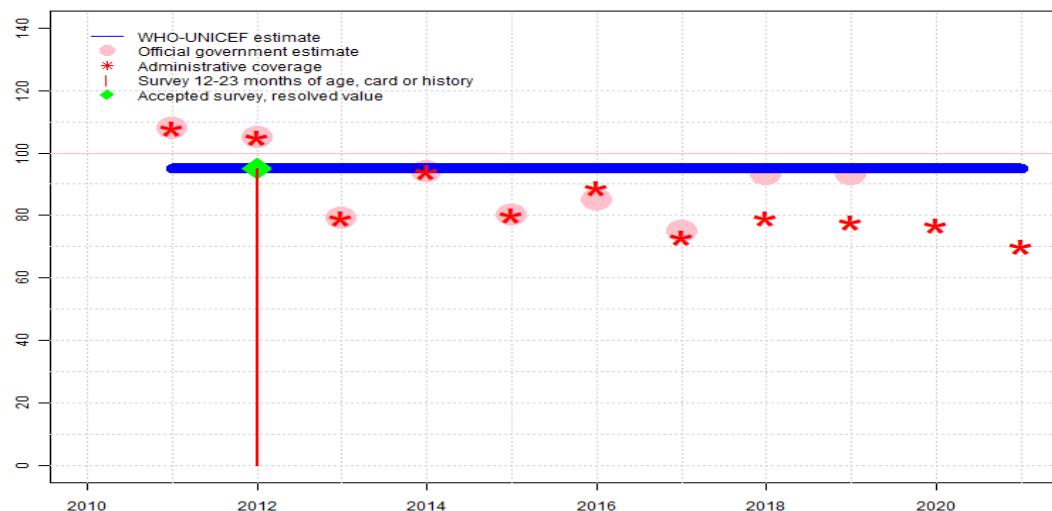
## Description:

- 2021: Reported data calibrated to 2012 levels. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2020: Reported data calibrated to 2012 levels. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. Country switched to DHIS2 information system and indicates some unquantified data loss. Programme reported a three month vaccine stock-out at national level. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2019: Reported data calibrated to 2012 levels. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2018: Reported data calibrated to 2012 levels. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2017: Reported data calibrated to 2012 levels. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2016: Reported data calibrated to 2012 levels. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2015: Reported data calibrated to 2012 levels. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2014: Reported data calibrated to 2012 levels. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. Reported data excluded due to an increase from 76 percent to 94 percent with decrease 80 percent. GoC=Assigned by

- working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2013: Reported data calibrated to 2012 levels. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. Reported data excluded due to decline in reported coverage from 105 percent to 76 percent with increase to 94 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2012: Estimate of 95 percent assigned by working group. Estimate based on survey results. Reported data excluded because 105 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2011: Estimate of 95 percent assigned by working group. Based on DTP3 coverage Reported data excluded because 108 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.
- 2010: Estimate based on interpolation between 2006 and 2011 levels. Fluctuation in reported data suggest poor quality administrative recording and reporting. Reported data excluded. Nationally reported data vary widely and exceed 100 percent for some antigens. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2006 and 2012 birth cohorts.

# Botswana - Hib3

BWA - Hib3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	95	95	95	95	95	95	95	95	95	95	95
Estimate GoC	NA	•	•	•	•	•	•	•	•	•	•	•
Official	NA	108	105	79	94	80	85	75	93	93	NA	NA
Administrative	NA	108	105	79	94	80	89	73	79	78	77	70
Survey	NA	NA	95	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: 2022 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:

- 2021: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.
- 2020: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Country switched to DHIS2 information system and indicates some unquantified data loss. Programme reported a three month vaccine stock-out at national level. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.
- 2019: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.
- 2018: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.
- 2017: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.
- 2016: Reported data calibrated to 2012 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.
- 2015: Estimate based on survey results. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.
- 2014: Estimate based on survey results. Reported data excluded due to an increase from 79 percent to 94 percent with decrease 80 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.
- 2013: Estimate based on survey results. Reported data excluded due to decline in reported

# Botswana - Hib3

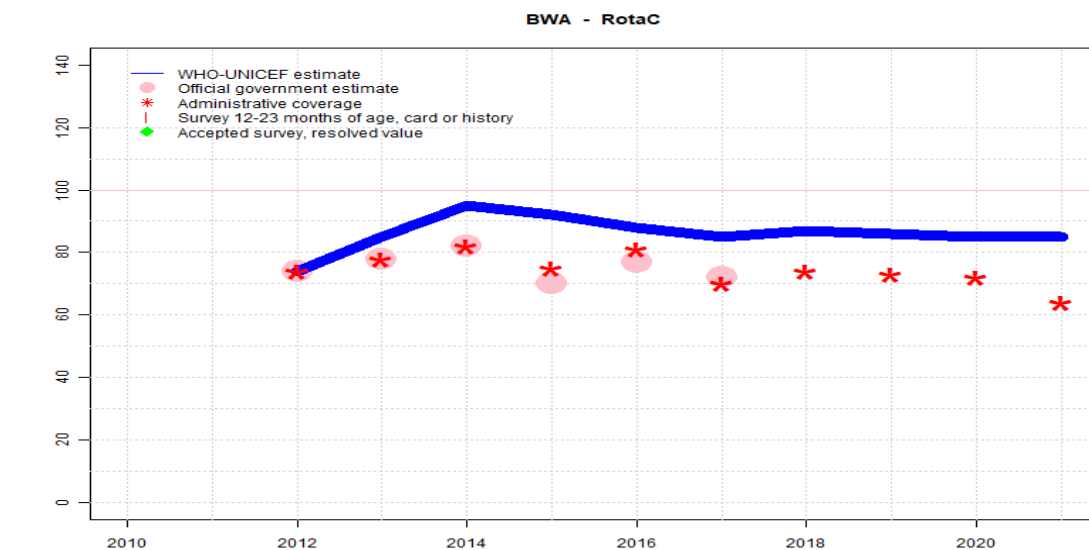
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coverage from 105 percent to 79 percent with increase to 94 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.

2012: Estimate based on survey results. Reported data excluded because 105 percent greater than 100 percent. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.

2011: Based on DTP3 coverage Reported data excluded because 108 percent greater than 100 percent. Hib vaccine introduced in 2011. The presentation is DTP-HepB-Hib. GoC=Assigned by working group. Reported coverage and denominator are inconsistent, and the estimate is confirmed only by survey for 2012 birth cohort.

# Botswana - RotaC



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	74	85	95	92	88	85	87	86	85	85
Estimate GoC	NA	NA	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	74	78	82	70	77	72	NA	NA	NA	NA
Administrative	NA	NA	74	78	82	75	81	70	74	73	72	64
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 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.

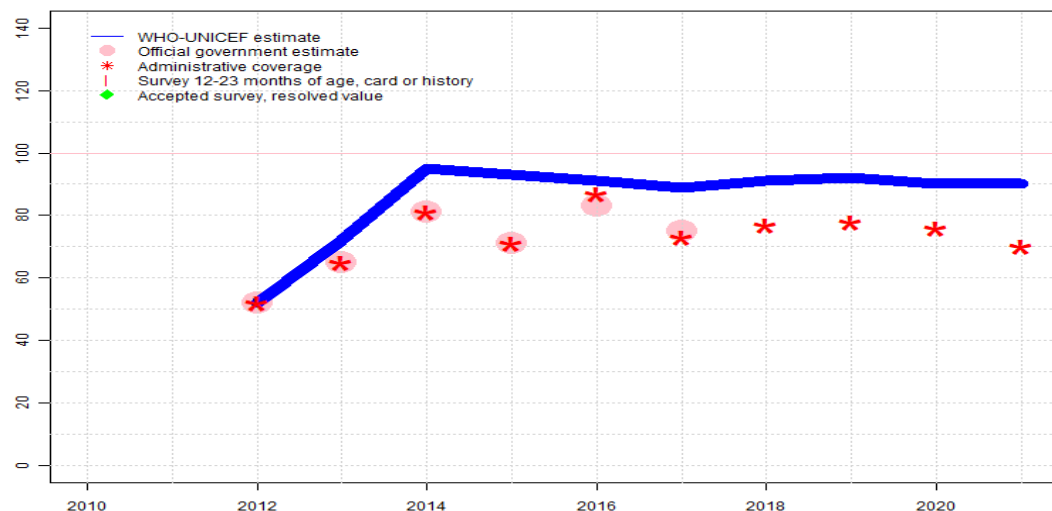
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2021: Estimate is an extrapolation from 2020 estimated coverage. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2020: Reported data calibrated to 2014 levels. Country switched to DHIS2 information system and indicates some unquantified data loss. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2019: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2018: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2017: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2016: Reported data calibrated to 2014 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2015: Reported data calibrated to 2014 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Estimate of 95 percent assigned by working group. Estimate is based on estimated DTP3 coverage. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2013: Reported data calibrated to 2012 and 2014 levels. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2012: Rotavirus vaccine was introduced in 2012. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.

# Botswana - PcV3

BWA - PcV3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	52	72	95	93	91	89	91	92	90	90
Estimate GoC	NA	NA	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	52	65	81	71	83	75	NA	NA	NA	NA
Administrative	NA	NA	52	65	81	71	87	73	77	78	76	70
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: 2022 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:

- 2021: Estimate is an extrapolation from 2020 estimated coverage. 2021 data reporting is incomplete with about one third of the reports not yet at the national level at the time of eJRF data submission. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. WHO and UNICEF recommend an assessment of the administrative recording and reporting system. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2020: Reported data calibrated to 2014 levels. Country switched to DHIS2 information system and indicates some unquantified data loss. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2019: Reported data calibrated to 2014 levels. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2018: Reported data calibrated to 2014 levels. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2017: Reported data calibrated to 2014 levels. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2016: Reported data calibrated to 2014 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2015: Reported data calibrated to 2014 levels. Reported data excluded. Fluctuation in reported data suggest poor quality administrative recording and reporting. Decline in reported coverage appears to be an artifact of an increase in the target population from 2014 to 2015 combined with a slight decrease in the reported number of children vaccinated in 2015 compared to 2014 reported totals. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Estimate of 95 percent assigned by working group. Estimate is based on estimated DTP3 coverage. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned

by working group. GoC assigned to maintain consistency across vaccines.

2013: Reported data calibrated to 2012 and 2014 levels. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.

2012: Pneumococcal conjugate vaccine was introduced in 2012. Estimate is exceptionally based on official reported coverage in the absence of recent survey data on which other estimated coverage levels are based. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.

# Botswana - survey details

## 2012 Botswana Post Measles Campaign and Immunization Coverage Survey 2013

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	97.4	12-23 m	442	97
BCG	Card or History	98.5	12-23 m	456	97
DTP1	Card	96.1	12-23 m	442	97
DTP1	Card or History	98	12-23 m	456	97
DTP3	Card	93	12-23 m	442	97
DTP3	Card or History	95.2	12-23 m	456	97
HepB1	Card	96.1	12-23 m	442	97
HepB1	Card or History	98	12-23 m	456	97
HepB3	Card	93	12-23 m	442	97
HepB3	Card or History	95.2	12-23 m	456	97
Hib1	Card	96.1	12-23 m	442	97
Hib1	Card or History	98	12-23 m	456	97
Hib3	Card	93	12-23 m	442	97
Hib3	Card or History	95.2	12-23 m	456	97
MCV1	Card	93.6	12-23 m	442	97
MCV1	Card or History	96.7	12-23 m	456	97
Pol1	Card	96.1	12-23 m	442	97
Pol1	Card or History	97.6	12-23 m	456	97
Pol3	Card	94.1	12-23 m	442	97
Pol3	Card or History	96.5	12-23 m	456	97

## 2006 Botswana EPI Coverage Survey 2007

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	98.9	12-23 m	9083	98
DTP1	Card or History	97.5	12-23 m	9083	98
DTP3	Card or History	95.9	12-23 m	9083	98
HepB1	Card or History	96.9	12-23 m	9083	98

HepB3	Card or History	93.1	12-23 m	9083	98
MCV1	Card or History	93.7	12-23 m	9083	98
Pol1	Card or History	97.4	12-23 m	9083	98
Pol3	Card or History	96.3	12-23 m	9083	98

## 1999 Botswana Multiple Indicator Cluster Survey 2000, 2001

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	98.9	12-23 m	618	84
BCG	Card	86.9	12-23 m	618	84
BCG	Card or History	98.9	12-23 m	618	84
BCG	History	12	12-23 m	618	84
DTP1	C or H <12 months	97.5	12-23 m	618	84
DTP1	Card	86.5	12-23 m	618	84
DTP1	Card or History	98.5	12-23 m	618	84
DTP1	History	12	12-23 m	618	84
DTP3	C or H <12 months	94.3	12-23 m	618	84
DTP3	Card	84.9	12-23 m	618	84
DTP3	Card or History	96.9	12-23 m	618	84
DTP3	History	12	12-23 m	618	84
MCV1	C or H <12 months	83.4	12-23 m	618	84
MCV1	Card	77.6	12-23 m	618	84
MCV1	Card or History	89.6	12-23 m	618	84
MCV1	History	12	12-23 m	618	84
Pol1	C or H <12 months	97.9	12-23 m	618	84
Pol1	Card	86.5	12-23 m	618	84
Pol1	Card or History	98.5	12-23 m	618	84
Pol1	History	12	12-23 m	618	84
Pol3	C or H <12 months	93.8	12-23 m	618	84
Pol3	Card	84.6	12-23 m	618	84
Pol3	Card or History	96.6	12-23 m	618	84
Pol3	History	12	12-23 m	618	84

Further information and estimates for previous years are available at:  
<https://data.unicef.org/topic/child-health/immunization/>  
<https://immunizationdata.who.int/listing.html>