Papua New Guinea: WHO and UNICEF estimates of immunization coverage: 2019 revision

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2021   data received as of June 29, 2020
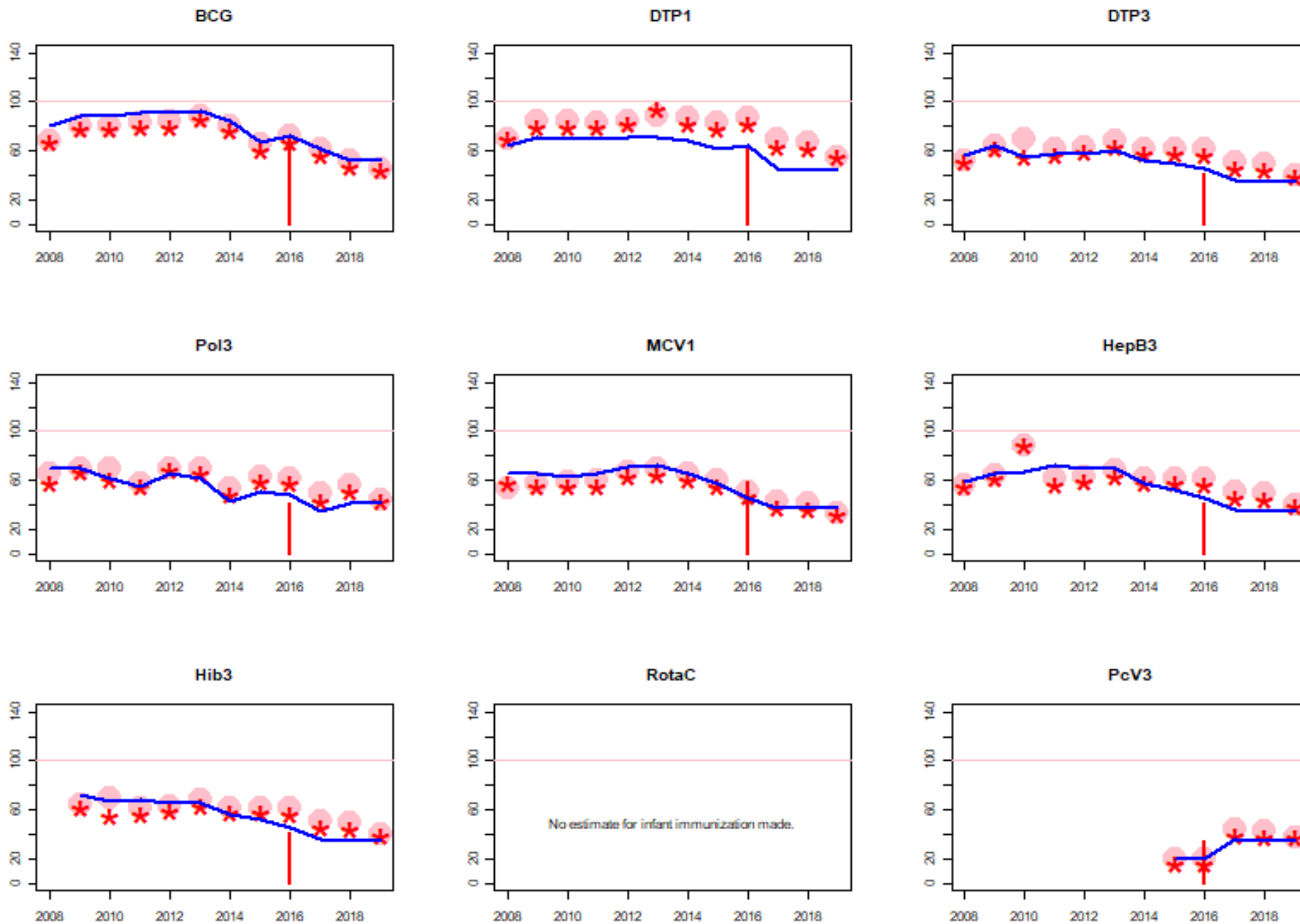
BACKGROUND NOTE: Each year WHO and UNICEF jointly review reports submitted by Member States regarding national immunization coverage, finalized survey reports as well as data from the published and grey literature. Based on these data, with due consideration to potential biases and the views of local 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. Co verage 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.
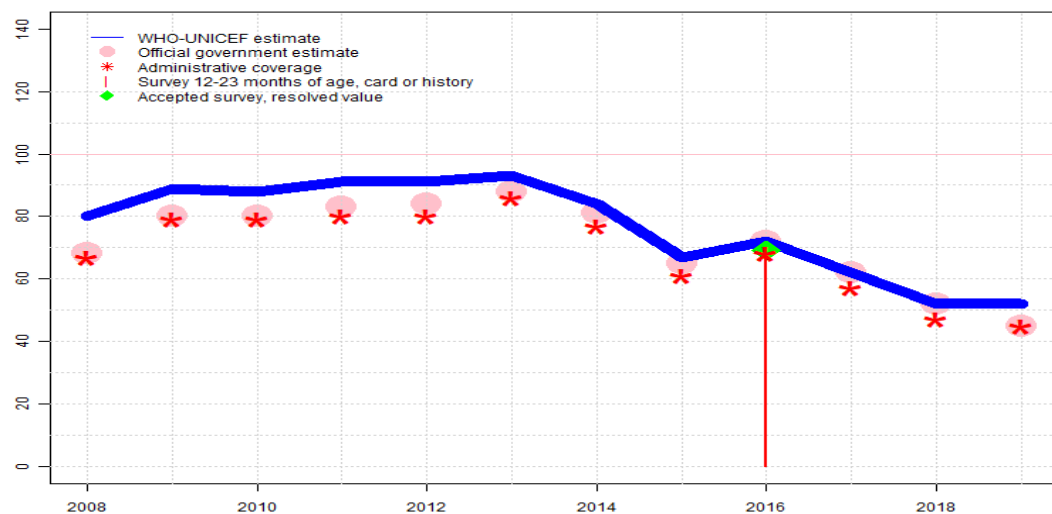
PcV3: percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect 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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Papua New Guinea - BCG

PNG - BCG

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	80	89	88	91	91	93	84	67	72	62	52	52
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	68	80	80	83	84	88	81	65	72	62	52	45
Administrative	67	79	79	80	80	86	77	61	68	57	47	45
Survey	NA	NA	NA	NA	NA	NA	NA	NA	69	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: 2019 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:

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Observed decline in reported coverage for several antigens appears to reflect unexplained seven percent increase in target population. Year to year population growth was previously around three percent. GoC=Assigned by working group. Consistency with other antigens.

2018: Estimate based on coverage reported by national government. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. 2016-2018 DHS Key Indicators Report coverage of 69 percent. Estimate of 52 percent changed from previous revision value of 69 percent. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Estimate based on coverage reported by national government. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Consistent decline in reported coverage for almost all vaccines. Estimate of 62 percent changed from previous revision value of 79 percent. GoC=Assigned by working group. See comment in 2018.

2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 69 percent based on 1 survey(s). Reported data reflects three quarters of expected district-level reports. Programme reports 3.5 months stock out at national level. Estimate of 72 percent changed from previous revision value of 89 percent. GoC=Assigned by working group. See comment in 2018.

2015: Reported data calibrated to 2005 and 2016 levels. Programme reports a three month vaccine stock-out at national level. Estimate of 67 percent changed from previous revision value of 82 percent. GoC=Assigned by working group. See comment in 2018.

2014: Reported data calibrated to 2005 and 2016 levels. Target population increase of 13 percent compared to 2013. Programme reports two month stock-out at national level. Estimate of 84 percent changed from previous revision value of 98 percent. GoC=Assigned by working group. See comment in 2018.

2013: Reported data calibrated to 2005 and 2016 levels. Estimate of 93 percent changed from previous revision value of 99 percent. GoC=Assigned by working group. See comment in 2018.

2012: Reported data calibrated to 2005 and 2016 levels. Estimate of 91 percent changed from previous revision value of 99 percent. GoC=Assigned by working group. See comment in 2018.

2011: Reported data calibrated to 2005 and 2016 levels. Administrative coverage is adjusted for vaccinations provided in the private sector. Previous surveys have consistently indicated higher coverage than administrative coverage. Estimate of 91 percent changed from previous revision value of 99 percent. GoC=Assigned by working group. See comment in 2018.

2010: Reported data calibrated to 2005 and 2016 levels. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. Es-

timate of 88 percent changed from previous revision value of 96 percent. GoC=Assigned by working group. See comment in 2018.

2009: Reported data calibrated to 2005 and 2016 levels. . Public - private sector discrepancy noted by WHO and UNICEF, however, adjust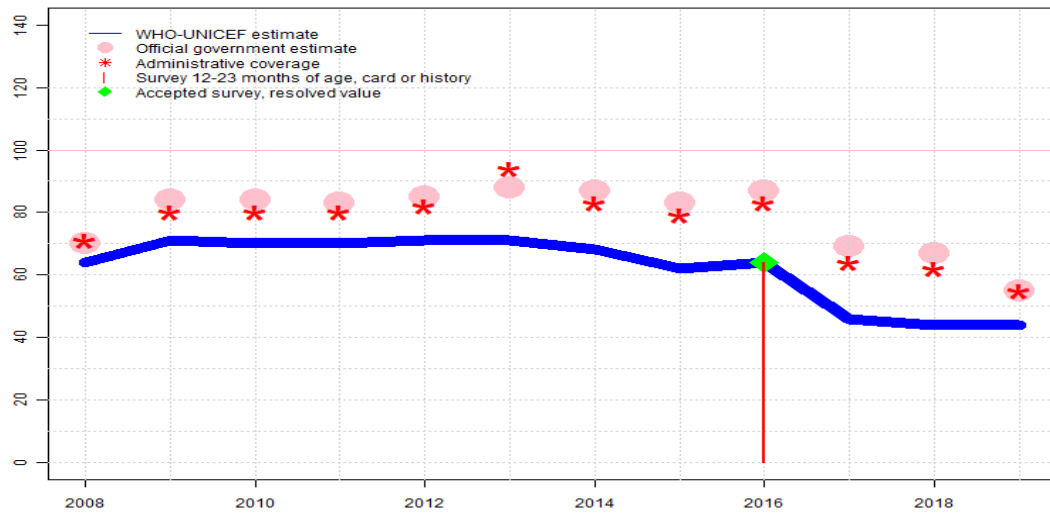ment inconsistently applied across antigens. Estimate of 89 percent changed from previous revision value of 96 percent. GoC=Assigned by working group. See comment in 2018.

2008: Reported data calibrated to 2005 and 2016 levels. Estimate of 80 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. See comment in 2018.

Papua New Guinea - DTP1

PNG - DTP1

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	64	71	70	70	71	71	68	62	64	46	44	44
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	70	84	84	83	85	88	87	83	87	69	67	55
Administrative	71	80	80	80	82	94	83	79	83	64	62	55
Survey	NA	NA	NA	NA	NA	NA	NA	NA	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: 2019 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:

2019: Reported data calibrated to 2016 levels. Reported data excluded. Observed decline in reported coverage for several antigens appears to reflect unexplained seven percent increase in target population. Year to year population growth was previously around three percent. Reported data excluded due to sudden change in coverage from 67 level to 55 percent. Estimate challenged by: D-R-

2018: Reported data calibrated to 2016 levels. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. Estimate of 44 percent changed from previous revision value of 67 percent. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Reported data calibrated to 2016 levels. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Consistent decline in reported coverage for almost all vaccines. Estimate of 46 percent changed from previous revision value of 69 percent. GoC=Assigned by working group. See comment in 2018.

2016: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 64 percent based on 1 survey(s). Reported data reflects three quarters of expected district-level reports. Estimate of 64 percent changed from previous revision value of 87 percent. GoC=Assigned by working group. See comment in 2018.

2015: Reported data calibrated to 2005 and 2016 levels. Estimate of 62 percent changed from previous revision value of 83 percent. GoC=Assigned by working group. See comment in 2018.

2014: Reported data calibrated to 2005 and 2016 levels. Target population increase of 13 percent compared to 2013. Estimate of 68 percent changed from previous revision value of 87 percent. GoC=Assigned by working group. See comment in 2018.

2013: Reported data calibrated to 2005 and 2016 levels. Estimate of 71 percent changed from previous revision value of 88 percent. GoC=Assigned by working group. See comment in 2018.

2012: Reported data calibrated to 2005 and 2016 levels. Estimate of 71 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. See comment in 2018.

2011: Reported data calibrated to 2005 and 2016 levels. Administrative coverage is adjusted for vaccinations provided in the private sector. Previous surveys have consistently indicated higher coverage than administrative coverage. Estimate of 70 percent changed from previous revision value of 83 percent. GoC=Assigned by working group. See comment in 2018.

2010: Reported data calibrated to 2005 and 2016 levels. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. Estimate of 70 percent changed from previous revision value of 80 percent. GoC=Assigned by working group. See comment in 2018.

2009: Reported data calibrated to 2005 and 2016 levels. . Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across
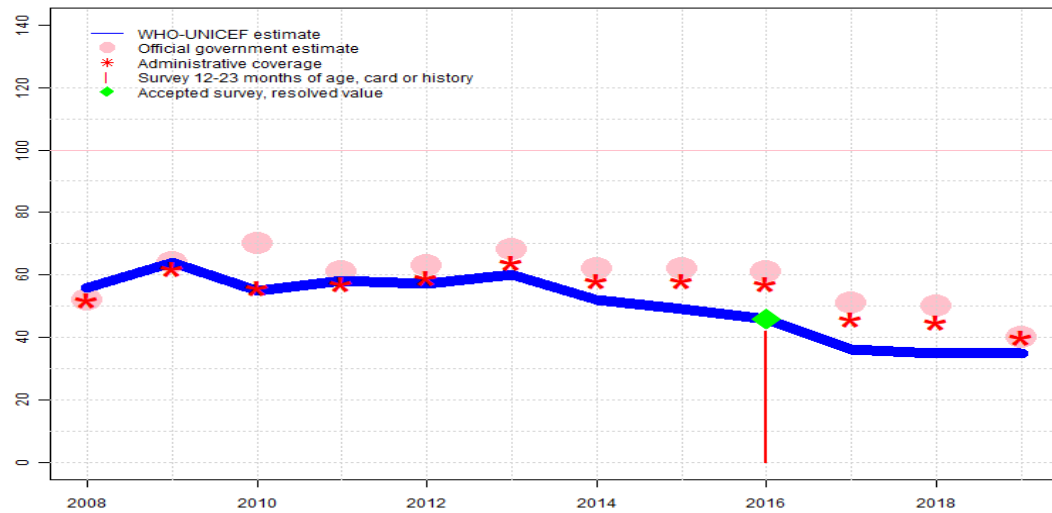
antigens. Estimate of 71 percent changed from previous revision value of 80 percent. GoC=Assigned by working group. See comment in 2018.

2008: Reported data calibrated to 2005 and 2016 levels. Decline was the results of five months vaccine shortage. Estimate of 64 percent changed from previous revision value of 70 percent. GoC=Assigned by working group. See comment in 2018.

Papua New Guinea - DTP3

PNG - DTP3

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	56	64	55	58	57	60	52	49	46	36	35	35
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	52	64	70	61	63	68	62	62	61	51	50	40
Administrative	52	62	56	57	59	64	58	58	57	46	45	40
Survey	NA	NA	NA	NA	NA	NA	NA	NA	42	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: 2019 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:

2019: Reported data calibrated to 2016 levels. Reported data excluded. Observed decline in reported coverage for several antigens appears to reflect unexplained seven percent increase in target population. Year to year population growth was previously around three percent. Estimate challenged by: D-R-

2018: Reported data calibrated to 2016 levels. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. 2016-2018 DHS Key Indicators Report coverage of 42 percent. Estimate of 35 percent changed from previous revision value of 61 percent. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Reported data calibrated to 2016 levels. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Consistent decline in reported coverage for almost all vaccines. Estimate of 36 percent changed from previous revision value of 62 percent. GoC=Assigned by working group. See comment in 2018.

2016: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 46 percent based on 1 survey(s). Papua New Guinea Demographic and Health Survey 2016-2018 card or history results of 42 percent modifed for recall bias to 46 percent based on 1st dose card or history coverage of 64 percent, 1st dose card only coverage of 50 percent and 3rd dose card only coverage of 36 percent. Reported data reflects three quarters of expected district-level reports. Estimate of 46 percent changed from previous revision value of 72 percent. GoC=Assigned by working group. See comment in 2018.

2015: Reported data calibrated to 2005 and 2016 levels. Estimate of 49 percent changed from previous revision value of 73 percent. GoC=Assigned by working group. See comment in 2018.

2014: Reported data calibrated to 2005 and 2016 levels. Target population increase of 13 percent compared to 2013. Estimate of 52 percent changed from previous revision value of 73 percent. GoC=Assigned by working group. See comment in 2018.

2013: Reported data calibrated to 2005 and 2016 levels. Estimate of 60 percent changed from previous revision value of 79 percent. GoC=Assigned by working group. See comment in 2018.

2012: Reported data calibrated to 2005 and 2016 levels. Estimate of 57 percent changed from previous revision value of 74 percent. GoC=Assigned by working group. See comment in 2018.

2011: Reported data calibrated to 2005 and 2016 levels. Administrative coverage is adjusted for vaccinations provided in the private sector. Previous surveys have consistently indicated higher coverage than administrative coverage. Estimate of 58 percent changed from previous revision value of 72 percent. GoC=Assigned by working group. See comment in 2018.

2010: Reported data calibrated to 2005 and 2016 levels. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. Es-

timate of 55 percent changed from previous revision value of 67 percent. GoC=Assigned by working group. See comment in 2018.

2009: Reported data calibrated to 2005 and 2016 levels. . Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. Estimate of 64 percent changed from previous revision value of 73 percent. GoC=Assigned by working group. See comment in 2018.

2008: Reported data calibrated to 2005 and 2016 levels. Decline was the results of five months vaccine shortage. Estimate of 56 percent changed from previous revision value of 63 percent. GoC=Assigned by working group. See comment in 2018.

Papua New Guinea - Pol3

PNG - Pol3

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	69	70	61	55	65	62	43	51	48	35	42	42
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	65	70	70	58	70	69	53	63	62	49	56	44
Administrative	58	68	61	55	69	66	49	59	58	44	51	44
Survey	NA	NA	NA	NA	NA	NA	NA	NA	42	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: 2019 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:

2019: Reported data calibrated to 2016 levels. Reported data excluded. Observed decline in reported coverage for several antigens appears to reflect unexplained seven percent increase in target population. Year to year population growth was previously around three percent.Reported data excluded due to sudden change in coverage from 56 level to 44 percent. Estimate challenged by: D-R-

2018: Reported data calibrated to 2016 levels. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. 2016-2018 DHS Key Indicators Report coverage of 42 percent. Estimate of 42 percent changed from previous revision value of 67 percent. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Reported data calibrated to 2016 levels. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Consistent decline in reported coverage for almost all vaccines. Estimate of 35 percent changed from previous revision value of 60 percent. GoC=Assigned by working group. See comment in 2018.

2016: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 48 percent based on 1 survey(s). Papua New Guinea Demographic and Health Survey 2016-2018 card or history results of 42 percent modifed for recall bias to 48 percent based on 1st dose card or history coverage of 69 percent, 1st dose card only coverage of 52 percent and 3rd dose card only coverage of 36 percent. Reported data reflects three quarters of expected district-level reports. Estimate of 48 percent changed from previous revision value of 73 percent. GoC=Assigned by working group. See comment in 2018.

2015: Reported data calibrated to 2005 and 2016 levels. Estimate of 51 percent changed from previous revision value of 74 percent. GoC=Assigned by working group. See comment in 2018.

2014: Reported data calibrated to 2005 and 2016 levels. Target population increase of 13 percent compared to 2013. Programme reports two month stock-out at national level. Estimate of 43 percent changed from previous revision value of 64 percent. GoC=Assigned by working group. See comment in 2018.

2013: Reported data calibrated to 2005 and 2016 levels. Programme reports three months stock-out at national level. Estimate of 62 percent changed from previous revision value of 80 percent. GoC=Assigned by working group. See comment in 2018.

2012: Reported data calibrated to 2005 and 2016 levels. Rise in coverage is attributable to recovery from vaccine shortage. Estimate of 65 percent changed from previous revision value of 81 percent. GoC=Assigned by working group. See comment in 2018.

2011: Reported data calibrated to 2005 and 2016 levels. Administrative coverage is adjusted for vaccinations provided in the private sector. Previous surveys have consistently indicated higher coverage than administrative coverage. Estimate of 55 percent changed from previous revision value of 69 percent. GoC=Assigned by working group. See comment in 2018.
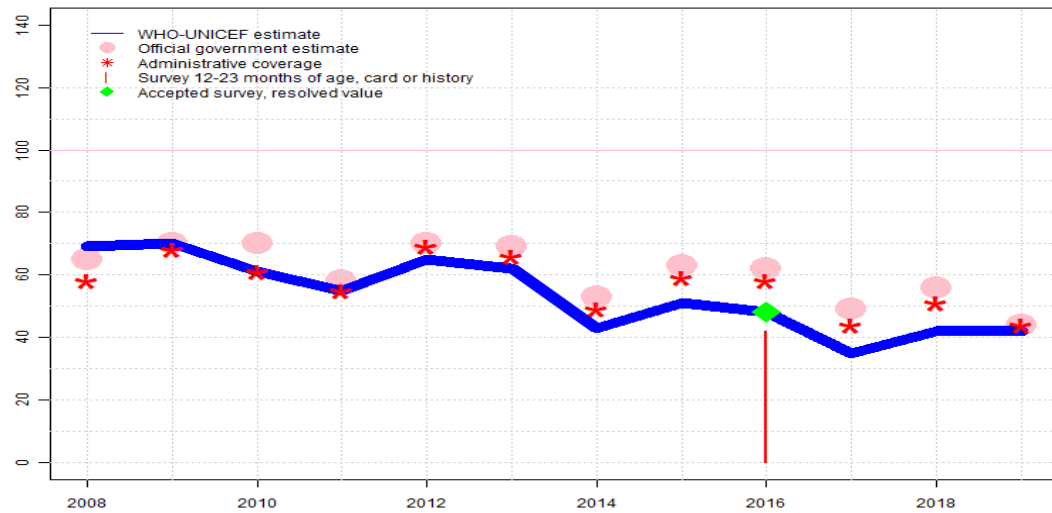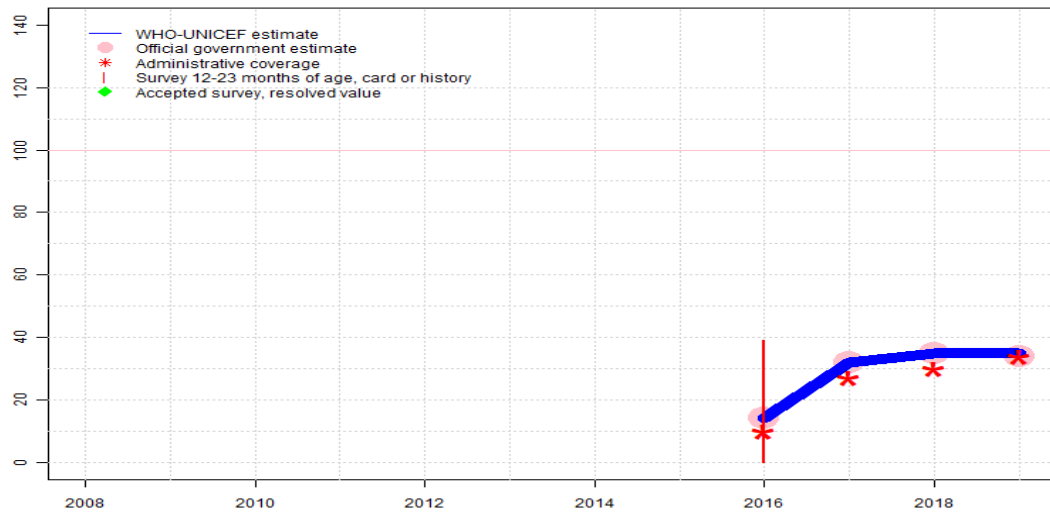
2010: Reported data calibrated to 2005 and 2016 levels. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. Estimate of 61 percent changed from previous revision value of 72 percent. GoC=Assigned by working group. See comment in 2018.

2009: Reported data calibrated to 2005 and 2016 levels. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. Estimate of 70 percent changed from previous revision value of 79 percent. GoC=Assigned by working group. See comment in 2018.

2008: Reported data calibrated to 2005 and 2016 levels. Estimate of 69 percent changed from previous revision value of 76 percent. GoC=Assigned by working group. See comment in 2018.

Papua New Guinea - IPV1

PNG - IPV1

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	14	32	35	35
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	14	32	35	34
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	10	27	30	34
Survey	NA	NA	NA	NA	NA	NA	NA	NA	39	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: 2019 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).

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Observed decline in reported coverage for several antigens appears to reflect unexplained seven percent increase in target population. Year to year population growth was previously around three percent. Actual IPV1 coverage is likely lower than that estimated based on reported doses administered vis-a-vis the third dose of DTP. GoC=Assigned by working group. Consistency with other antigens recommended at the same age.

2018: Estimate based on coverage reported by national government. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. Estimate based on reported data during period of introduction. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Estimate based on coverage reported by national government. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Estimate based on reported data during period of introduction. Consistent decline in reported coverage for almost all vaccines. GoC=Assigned by working group. See comment in 2018.

2016: Estimate based on coverage reported by national government. Papua New Guinea Demographic and Health Survey 2016-2018 results ignored by working group. Survey results ignored during period of introduction. Reported data reflects three quarters of expected district-level reports. Inactivated polio vaccine in 2015, reporting starts in 2016. Unclear whether doses given as part of an intensification of routine vaccination are included in the reported coverage. Programme reports two months stock out of IPV at national level. GoC=Assigned by working group. See comment in 2018.

PNG - MCV1
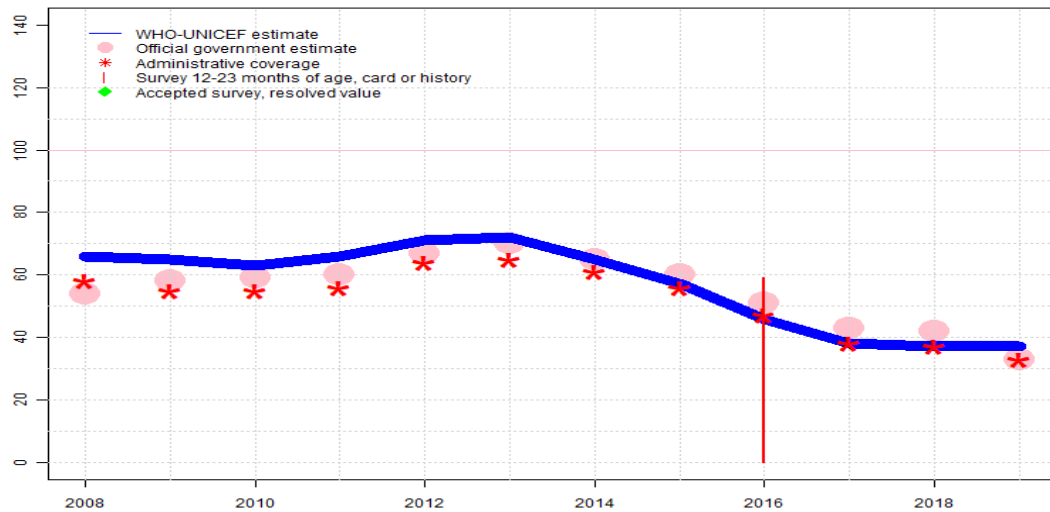
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	66	65	63	66	71	72	65	57	46	38	37	37
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	54	58	59	60	67	70	65	60	51	43	42	33
Administrative	58	55	55	56	64	65	61	56	47	38	37	33
Survey	NA	NA	NA	NA	NA	NA	NA	NA	59	NA	NA	NA

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: 2019 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:

2019: Reported data calibrated to 2016 levels. Reported data excluded. Observed decline in reported coverage for several antigens appears to reflect unexplained seven percent increase in target population. Year to year population growth was previously around three percent. Estimate challenged by: R-

2018: Reported data calibrated to 2016 levels. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. 2016-2018 DHS Key Indicators Report coverage of 40 percent for dose recommended at nine months. Estimate of 37 percent changed from previous revision value of 61 percent. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Reported data calibrated to 2016 levels. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Consistent decline in reported coverage for almost all vaccines. Estimate of 38 percent changed from previous revision value of 62 percent. GoC=Assigned by working group. See comment in 2018.

2016: Estimate of 46 percent assigned by working group. Estimate is based on estimated DTP3 level. Reported administrative data suggests MCV1 coverage is lower than that for DTP3. Papua New Guinea Demographic and Health Survey 2016-2018 results ignored by working group. Survey results may included doses delivered through campaign. Reported data reflects three quarters of expected district-level reports. Estimate of 46 percent changed from previous revision value of 70 percent. GoC=Assigned by working group. See comment in 2018.

2015: Reported data calibrated to 2005 and 2016 levels. Estimate of 57 percent changed from previous revision value of 79 percent. GoC=Assigned by working group. See comment in 2018.

2014: Reported data calibrated to 2005 and 2016 levels. Target population increase of 13 percent compared to 2013. Programme reports two month stock-out at national level. Estimate of 65 percent changed from previous revision value of 84 percent. GoC=Assigned by working group. See comment in 2018.

2013: Reported data calibrated to 2005 and 2016 levels. Estimate of 72 percent changed from previous revision value of 89 percent. GoC=Assigned by working group. See comment in 2018.

2012: Reported data calibrated to 2005 and 2016 levels. Estimate of 71 percent changed from previous revision value of 86 percent. GoC=Assigned by working group. See comment in 2018.

2011: Reported data calibrated to 2005 and 2016 levels. Administrative coverage is adjusted for vaccinations provided in the private sector. Previous surveys have consistently indicated higher coverage than administrative coverage. Estimate of 66 percent changed from previous revision value of 79 percent. GoC=Assigned by working group. See comment in 2018.

2010: Reported data calibrated to 2005 and 2016 levels. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. Es-

timate of 63 percent changed from previous revision value of 74 percent. GoC=Assigned by working group. See comment in 2018.

2009: Reported data calibrated to 2005 and 2016 levels. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistent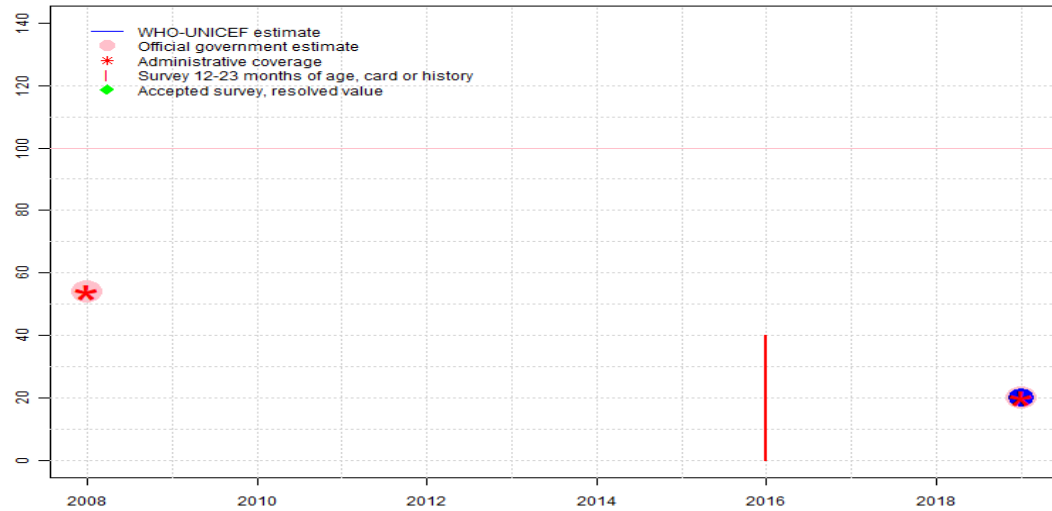ly applied across antigens. Estimate of 65 percent changed from previous revision value of 74 percent. GoC=Assigned by working group. See comment in 2018.

2008: Reported data calibrated to 2005 and 2016 levels. Estimate of 66 percent changed from previous revision value of 73 percent. GoC=Assigned by working group. See comment in 2018.

PNG - MCV2

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

Description:

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

2019: Estimate based on coverage reported by national government. Estimate is based on reported data on an exceptional basis relative to other antigens. GoC=Assigned by working group. Consistency with other antigens recommended at the same age.

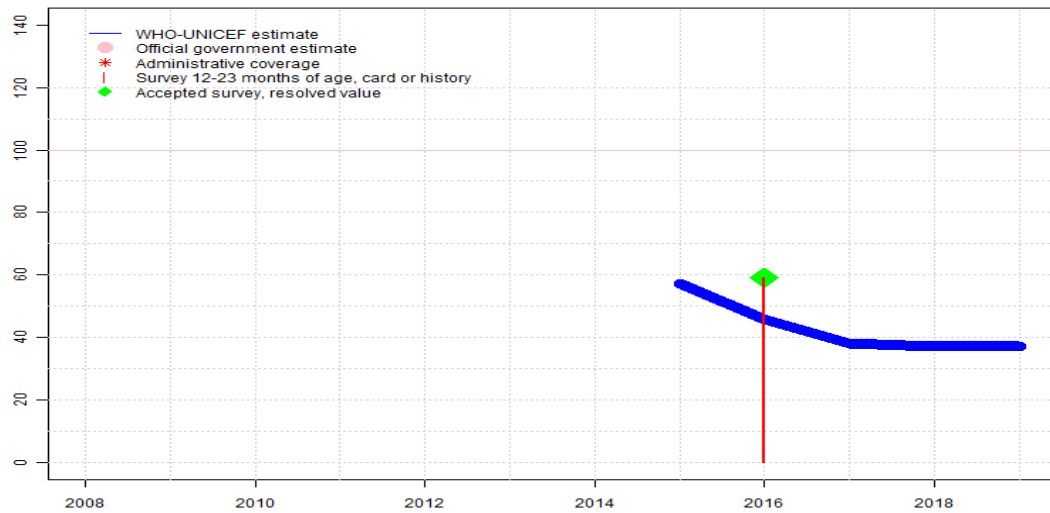|	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●
Official	54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20
Administrative	54	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20
Survey	NA	NA	NA	NA	NA	NA	NA	NA	40	NA	NA	NA

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: 2019 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.

PNG - RCV1

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

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.

2019: Estimate based on estimated MCV1. Estimate challenged by: R-

2018: Estimate based on estimated MCV1. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. Estimate of 37 percent changed from previous revision value of 61 percent. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Estimate based on estimated MCV1. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Consistent decline in reported coverage for almost all vaccines. Estimate of 38 percent changed from previous revision value of 62 percent. GoC=Assigned by working group. See comment in 2018.

2016: Estimate based on estimated MCV1. Reported data reflects three quarters of expected district-level reports. Estimate of 46 percent changed from previous revision value of 70 percent. GoC=Assigned by working group. See comment in 2018.

2015: Estimate based on estimated MCV1. Estimate of 57 percent changed from previous revision value of 79 percent. GoC=Assigned by working group. See comment in 2018.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	NA	NA	NA	NA	NA	NA	NA	57	46	38	37	37
Estimate GoC	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	59	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: 2019 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.

Papua New Guinea - HepBB

PNG - HepBB

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	27	26	31	31	35	37	31	32	35	33	25	25
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	27	27	35	31	35	37	31	32	35	33	25	21
Administrative	27	26	31	27	30	34	27	28	31	28	20	21
Survey	NA	NA	NA	NA	NA	NA	NA	NA	58	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.
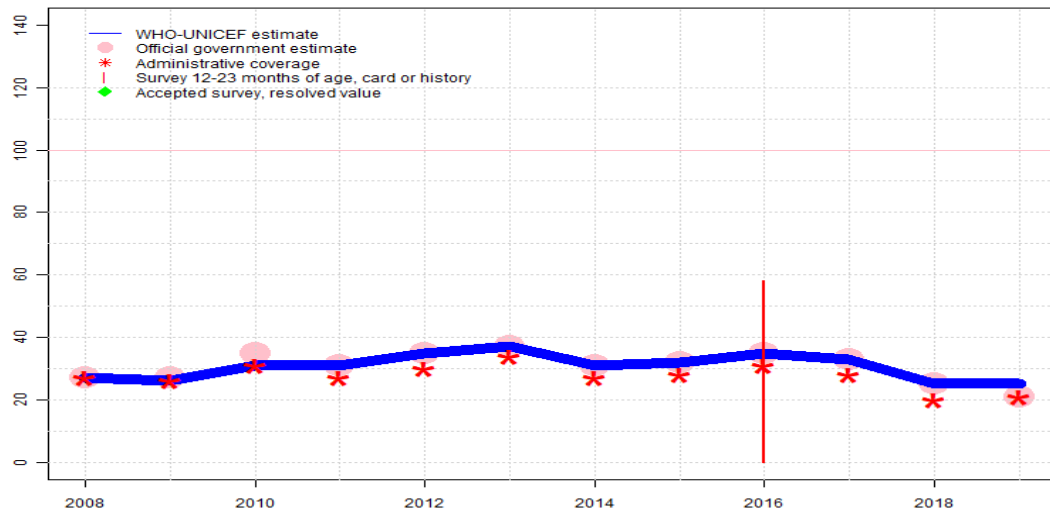
●●● Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2019 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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.
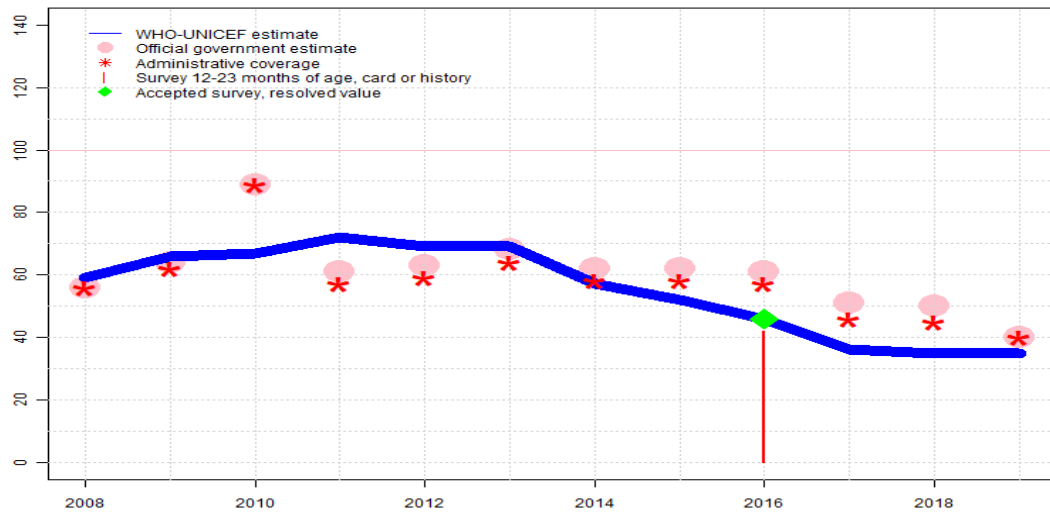
Description:

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Observed decline in reported coverage for several antigens appears to reflect unexplained seven percent increase in target population. Year to year population growth was previously around three percent. GoC=Assigned by working group. Consistency with other antigens.

2018: Estimate based on coverage reported by national government. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Estimate based on coverage reported by national government. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Consistent decline in reported coverage for almost all vaccines. GoC=Assigned by working group. See comment in 2018.

2016: Estimate based on coverage reported by national government. Papua New Guinea Demographic and Health Survey 2016-2018 results ignored by working group. Survey results ignored due to insufficient information regarding whether HepB doses were received within 24 hours of birth. Reported data reflects three quarters of expected district-level reports. GoC=Assigned by working group. See comment in 2018.

2015: Estimate based on coverage reported by national government. GoC=Assigned by working group. See comment in 2018.

2014: Estimate based on coverage reported by national government. Target population increase of 13 percent compared to 2013. GoC=Assigned by working group. See comment in 2018.

2013: Estimate based on coverage reported by national government. Programme reports two months stock out at national level. GoC=Assigned by working group. See comment in 2018.

2012: Estimate based on coverage reported by national government. GoC=Assigned by working group. See comment in 2018.

2011: Estimate based on coverage reported by national government. Administrative coverage is adjusted for vaccinations provided in the private sector. Previous surveys have consistently indicated higher coverage than administrative coverage. GoC=Assigned by working group. See comment in 2018.

2010: Estimate based on reported administrative estimate. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. GoC=Assigned by working group. See comment in 2018.

2009: Estimate based on reported administrative estimate. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. GoC=Assigned by working group. See comment in 2018.

2008: Estimate based on coverage reported by national government. GoC=Assigned by working group. See comment in 2018.

Papua New Guinea - HepB3

PNG - HepB3

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	59	66	67	72	69	69	57	52	46	36	35	35
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	56	64	89	61	63	68	62	62	61	51	50	40
Administrative	56	62	89	57	59	64	58	58	57	46	45	40
Survey	NA	NA	NA	NA	NA	NA	NA	NA	42	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: 2019 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:

2019: Reported data calibrated to 2016 levels. Reported data excluded. Observed decline in reported coverage for several antigens appears to reflect unexplained seven percent increase in target population. Year to year population growth was previously around three percent. Estimate challenged by: D-R-

2018: Reported data calibrated to 2016 levels. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. 2016-2018 DHS Key Indicators Report coverage of 42 percent. Estimate of 35 percent changed from previous revision value of 61 percent. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Reported data calibrated to 2016 levels. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Consistent decline in reported coverage for almost all vaccines. Estimate of 36 percent changed from previous revision value of 62 percent. GoC=Assigned by working group. See comment in 2018.

2016: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 46 percent based on 1 survey(s). Papua New Guinea Demographic and Health Survey 2016-2018 card or history results of 42 percent modifed for recall bias to 46 percent based on 1st dose card or history coverage of 64 percent, 1st dose card only coverage of 50 percent and 3rd dose card only coverage of 36 percent. Reported data reflects three quarters of expected district-level reports. Estimate of 46 percent changed from previous revision value of 72 percent. GoC=Assigned by working group. See comment in 2018.

2015: Reported data calibrated to 2011 and 2016 levels. Estimate of 52 percent changed from previous revision value of 73 percent. GoC=Assigned by working group. See comment in 2018.

2014: Reported data calibrated to 2011 and 2016 levels. Target population increase of 13 percent compared to 2013. Estimate of 57 percent changed from previous revision value of 73 percent. GoC=Assigned by working group. See comment in 2018.

2013: Reported data calibrated to 2011 and 2016 levels. Estimate of 69 percent changed from previous revision value of 79 percent. GoC=Assigned by working group. See comment in 2018.

2012: Reported data calibrated to 2011 and 2016 levels. Estimate of 69 percent changed from previous revision value of 74 percent. GoC=Assigned by working group. See comment in 2018.

2011: Estimate of 72 percent assigned by working group. Estimate based on estimated DTP3 coverage. Administrative coverage is adjusted for vaccinations provided in the private sector. Previous surveys have consistently indicated higher coverage than administrative coverage. GoC=Assigned by working group. See comment in 2018.

2010: Estimate of 67 percent assigned by working group. Estimate based on estimated DTP3 coverage. Reported data excluded. .Reported data excluded due to an increase from 62 percent to 89 percent with decrease 61 percent. Public - private sector discrepancy

noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. GoC=Assigned by working group. See comment in 2018.

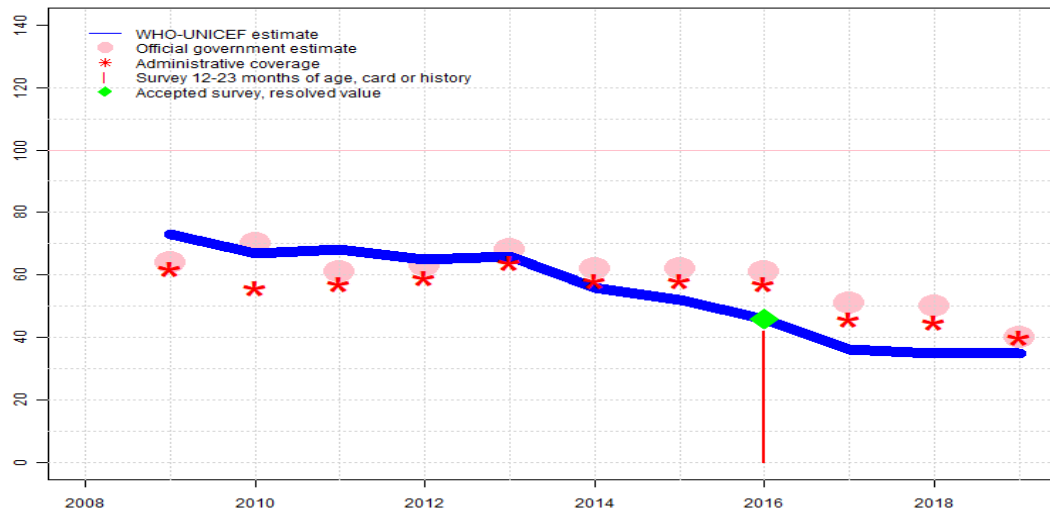2009: Reported data calibrated to 2005 and 2010 levels. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. GoC=Assigned by working group. See comment in 2018.

2008: Reported data calibrated to 2005 and 2010 levels. Decline was the results of five months vaccine shortage. GoC=Assigned by working group. See comment in 2018.

Papua New Guinea - Hib3

PNG - Hib3

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	NA	73	67	68	65	66	56	52	46	36	35	35
Estimate GoC	NA	•	•	•	•	•	•	•	•	•	•	•
Official	NA	64	70	61	63	68	62	62	61	51	50	40
Administrative	NA	62	56	57	59	64	58	58	57	46	45	40
Survey	NA	NA	NA	NA	NA	NA	NA	NA	42	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: 2019 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:

2019: Reported data calibrated to 2016 levels. Reported data excluded. Observed decline in reported coverage for several antigens appears to reflect unexplained seven percent increase in target population. Year to year population growth was previously around three percent. Estimate challenged by: D-R-

2018: Reported data calibrated to 2016 levels. Programme reports do not include private sector providers. Programme notes administrative reporting completeness is 78 percent. 2016-2018 DHS Key Indicators Report coverage of 42 percent. Estimate of 35 percent changed from previous revision value of 61 percent. GoC=Assigned by working group. Fluctuation in reported coverage across the time series suggests challenges in routine monitoring system.

2017: Reported data calibrated to 2016 levels. Programme reports that persistent challenges contributed to the declines in coverage for 2017. Consistent decline in reported coverage for almost all vaccines. Estimate of 36 percent changed from previous revision value of 62 percent. GoC=Assigned by working group. See comment in 2018.

2016: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 46 percent based on 1 survey(s). Papua New Guinea Demographic and Health Survey 2016-2018 card or history results of 42 percent modifed for recall bias to 46 percent based on 1st dose card or history coverage of 64 percent, 1st dose card only coverage of 50 percent and 3rd dose card only coverage of 36 percent. Reported data reflects three quarters of expected district-level reports. Estimate of 46 percent changed from previous revision value of 72 percent. GoC=Assigned by working group. See comment in 2018.

2015: Reported data calibrated to 2010 and 2016 levels. Estimate of 52 percent changed from previous revision value of 73 percent. GoC=Assigned by working group. See comment in 2018.

2014: Reported data calibrated to 2010 and 2016 levels. Target population increase of 13 percent compared to 2013. Estimate of 56 percent changed from previous revision value of 73 percent. GoC=Assigned by working group. See comment in 2018.

2013: Reported data calibrated to 2010 and 2016 levels. Estimate of 66 percent changed from previous revision value of 79 percent. GoC=Assigned by working group. See comment in 2018.

2012: Reported data calibrated to 2010 and 2016 levels. Estimate of 65 percent changed from previous revision value of 74 percent. GoC=Assigned by working group. See comment in 2018.

2011: Reported data calibrated to 2010 and 2016 levels. Administrative coverage is adjusted for vaccinations provided in the private sector. Previous surveys have consistently indicated higher coverage than administrative coverage. Estimate of 68 percent changed from previous revision value of 72 percent. GoC=Assigned by working group. See comment in 2018.

2010: Estimate of 67 percent assigned by working group. Estimate based on estimated DTP3. Vaccine presentation is DTP-HepB-Hib. Public - private sector discrepancy noted

by WHO and UNICEF, however, adjustment inconsistently applied across antigens. GoC=Assigned by working group. See comment in 2018.

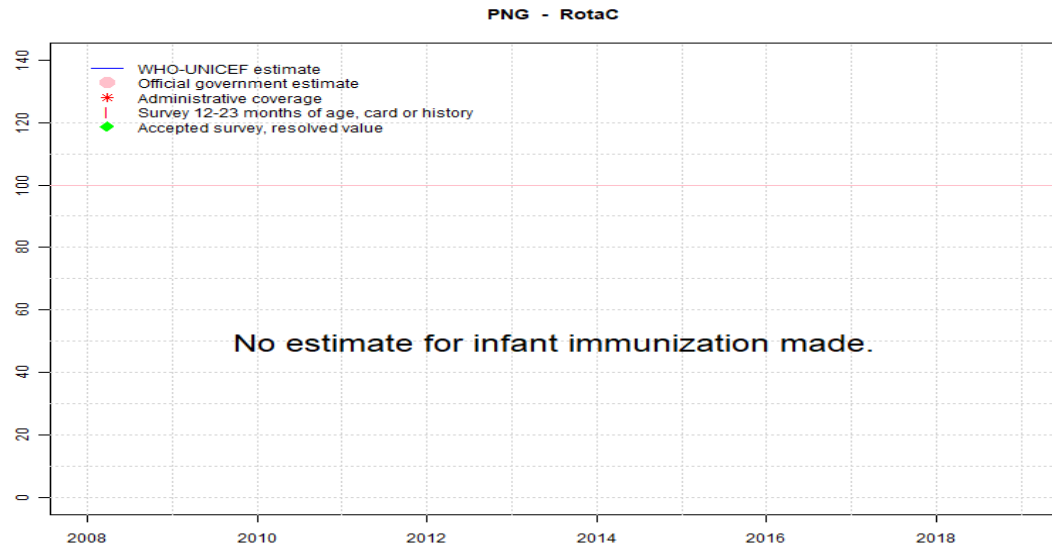2009: Reported data calibrated to 2010 levels. Hib introduced in 2008. Reporting started in 2009. Public - private sector discrepancy noted by WHO and UNICEF, however, adjustment inconsistently applied across antigens. GoC=Assigned by working group. See comment in 2018.

Papua New Guinea - RotaC

PNG - RotaC

No estimate for infant immunization made.

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history
- Accepted survey, resolved value

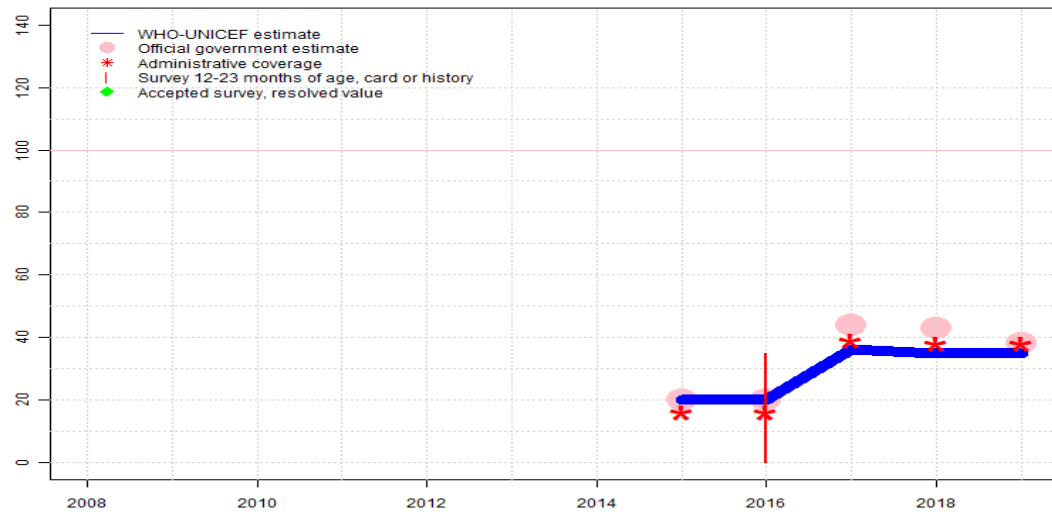|	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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: 2019 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.

PNG - PcV3

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Estimate	NA	NA	NA	NA	NA	NA	NA	20	20	36	35	35
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	•	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	20	20	44	43	38
Administrative	NA	NA	NA	NA	NA	NA	NA	16	16	39	38	38
Survey	NA	NA	NA	NA	NA	NA	NA	NA	35	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: 2019 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:

2019: Reported data calibrated to 2018 levels. Reported data excluded. Observed decline in
reported coverage for several antigens appears to reflect unexplained seven percent in-
crease in target population. Year to year population growth was previously around three
percent. Estimate challenged by: D-R-

2018: Estimate of 35 percent assigned by working group. Estimate is based on estimated DTP3.
Programme reports do not include private sector providers. Programme notes adminis-
trative reporting completeness is 78 percent. Estimate based on reported data during
period of introduction. Estimate of 35 percent changed from previous revision value of
43 percent. GoC=Assigned by working group. Fluctuation in reported coverage across
the time series suggests challenges in routine monitoring system.

2017: Estimate of 36 percent assigned by working group. Estimate is based on estimated DTP3.
Programme reports that persistent challenges contributed to the declines in coverage for
2017. Estimate based on reported data during period of introduction. Consistent decline
in reported coverage for almost all vaccines. Estimate of 36 percent changed from pre-
vious revision value of 44 percent. GoC=Assigned by working group. See comment in
2018.

2016: Estimate is based on reported data. Papua New Guinea Demographic and Health Sur-
vey 2016-2018 results ignored by working group. Survey results ignored during period
of introduction.Papua New Guinea Demographic and Health Survey 2016-2018 card or
history results of 35 percent modifed for recall bias to 39 percent based on 1st dose card
or history coverage of 58 percent, 1st dose card only coverage of 46 percent and 3rd
dose card only coverage of 31 percent. Reported data reflects three quarters of expected
district-level reports. Estimate based on reported data during period of introduction.
GoC=Assigned by working group. See comment in 2018.

2015: Estimate based on reported data. Pneumococcal conjugate vaccine introduced in 2013.
Reporting began in 2015. GoC=Assigned by working group. See comment in 2018.

2016 Papua New Guinea Demographic and Health Survey 2016-2018

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	67.1	12-23 m	1763	61
BCG	Card	52.9	12-23 m	1069	61
BCG	Card or History	69.4	12-23 m	1763	61
BCG	History	16.5	12-23 m	695	61
DTP1	C or H <12 months	60.9	12-23 m	1763	61
DTP1	Card	50	12-23 m	1069	61
DTP1	Card or History	63.9	12-23 m	1763	61
DTP1	History	13.9	12-23 m	695	61
DTP3	C or H <12 months	35	12-23 m	1763	61
DTP3	Card	35.9	12-23 m	1069	61
DTP3	Card or History	41.7	12-23 m	1763	61
DTP3	History	5.8	12-23 m	695	61
HepB1	C or H <12 months	60.9	12-23 m	1763	61
HepB1	Card	50	12-23 m	1069	61
HepB1	Card or History	63.9	12-23 m	1763	61
HepB1	History	13.9	12-23 m	695	61
HepB3	C or H <12 months	35	12-23 m	1763	61
HepB3	Card	35.9	12-23 m	1069	61
HepB3	Card or History	41.7	12-23 m	1763	61
HepB3	History	5.8	12-23 m	695	61
HepBB	C or H <12 months	55.5	12-23 m	1763	61
HepBB	Card	43.3	12-23 m	1069	61
HepBB	Card or History	57.5	12-23 m	1763	61
HepBB	History	14.2	12-23 m	695	61
Hib1	C or H <12 months	60.9	12-23 m	1763	61
Hib1	Card	50	12-23 m	1069	61
Hib1	Card or History	63.9	12-23 m	1763	61
Hib1	History	13.9	12-23 m	695	61
Hib3	C or H <12 months	35	12-23 m	1763	61
Hib3	Card	35.9	12-23 m	1069	61
Hib3	Card or History	41.7	12-23 m	1763	61
Hib3	History	5.8	12-23 m	695	61
IPV1	C or H <12 months	33.4	12-23 m	1763	61
IPV1	Card	26.4	12-23 m	1069	61
IPV1	Card or History	39.1	12-23 m	1763	61
IPV1	History	12.7	12-23 m	695	61
MCV1	C or H <12 months	50.1	12-23 m	1763	61
MCV1	Card	45.5	12-23 m	1069	61
MCV1	Card or History	58.7	12-23 m	1763	61
MCV1	History	13.2	12-23 m	695	61
MCV2	C or H <12 months	23.5	12-23 m	1763	61
MCV2	Card	32.1	12-23 m	1069	61
MCV2	Card or History	40.1	12-23 m	1763	61
MCV2	History	8	12-23 m	695	61
PCV1	C or H <12 months	54.2	12-23 m	1763	61
PCV1	Card	46.3	12-23 m	1069	61
PCV1	Card or History	58.3	12-23 m	1763	61
PCV1	History	12	12-23 m	695	61
PCV3	C or H <12 months	28.7	12-23 m	1763	61
PCV3	Card	31.3	12-23 m	1069	61
PCV3	Card or History	35.4	12-23 m	1763	61
PCV3	History	4	12-23 m	695	61
Pol1	C or H <12 months	66	12-23 m	1763	61
Pol1	Card	52.1	12-23 m	1069	61
Pol1	Card or History	69	12-23 m	1763	61
Pol1	History	16.9	12-23 m	695	61
Pol3	C or H <12 months	35.9	12-23 m	1763	61
Pol3	Card	36.2	12-23 m	1069	61
Pol3	Card or History	42.2	12-23 m	1763	61
Pol3	History	6	12-23 m	695	61

2005 Papua New Guinea Demographic and Health Survey 2006

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	66.7	12-23 m	883	70
BCG	Card or History	89.6	12-23 m	1254	70
DTP1	Card	66.5	12-23 m	883	70
DTP1	Card or History	87.9	12-23 m	1254	70
DTP3	Card	53.7	12-23 m	883	70
DTP3	Card or History	66.8	12-23 m	1254	70
HepB1	Card	64.8	12-23 m	883	70
HepB1	Card or History	86.4	12-23 m	1254	70
HepB3	Card	53.3	12-23 m	883	70
HepB3	Card or History	64.6	12-23 m	1254	70
MCV1	Card	61.6	12-23 m	883	70
MCV1	Card or History	81.6	12-23 m	1254	70

Pol1	Card	64.9	12-23 m	883	70
Pol1	Card or History	87.4	12-23 m	1254	70
Pol3	Card	54.6	12-23 m	883	70
Pol3	Card or History	68.3	12-23 m	1254	70

2004 National Immunization Coverage Survey 2005-2006, Papua New Guinea

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	81.3	12-23 m	783	93
BCG	Card or History	90.3	12-23 m	783	93
BCG	History	9	12-23 m	783	93
DTP1	Card	81.8	12-23 m	776	93
DTP1	Card or History	87.5	12-23 m	776	93
DTP1	History	5.7	12-23 m	776	93
DTP3	Card	66.8	12-23 m	783	93
DTP3	Card or History	71	12-23 m	783	93
DTP3	History	4.2	12-23 m	783	93
HepB1	Card	82.1	12-23 m	774	93
HepB1	Card or History	88.1	12-23 m	774	93
HepB1	History	6	12-23 m	774	93
HepB3	Card	68.7	12-23 m	774	93
HepB3	Card or History	73.1	12-23 m	774	93
HepB3	History	4.4	12-23 m	774	93
MCV1	Card	71.9	12-23 m	776	93
MCV1	Card or History	77.9	12-23 m	776	93
MCV1	History	6	12-23 m	776	93
Pol1	Card	79.3	12-23 m	774	93
Pol1	Card or History	84.6	12-23 m	774	93
Pol1	History	5.3	12-23 m	774	93
Pol3	Card	64	12-23 m	776	93
Pol3	Card or History	68.7	12-23 m	776	93
Pol3	History	4.7	12-23 m	776	93

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