

**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.

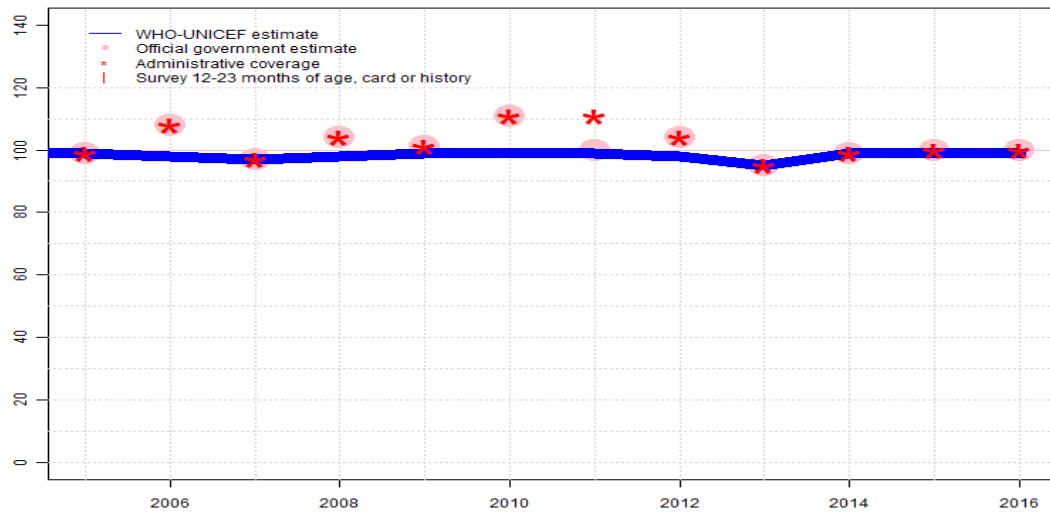
**PcV3:** percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect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

PAN - BCG



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	98	97	98	99	99	99	98	95	99	99	99
Estimate GoC	●●	●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	99	108	97	104	101	111	100	104	95	99	100	100
Administrative	99	108	97	104	101	111	111	104	95	99	100	100
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

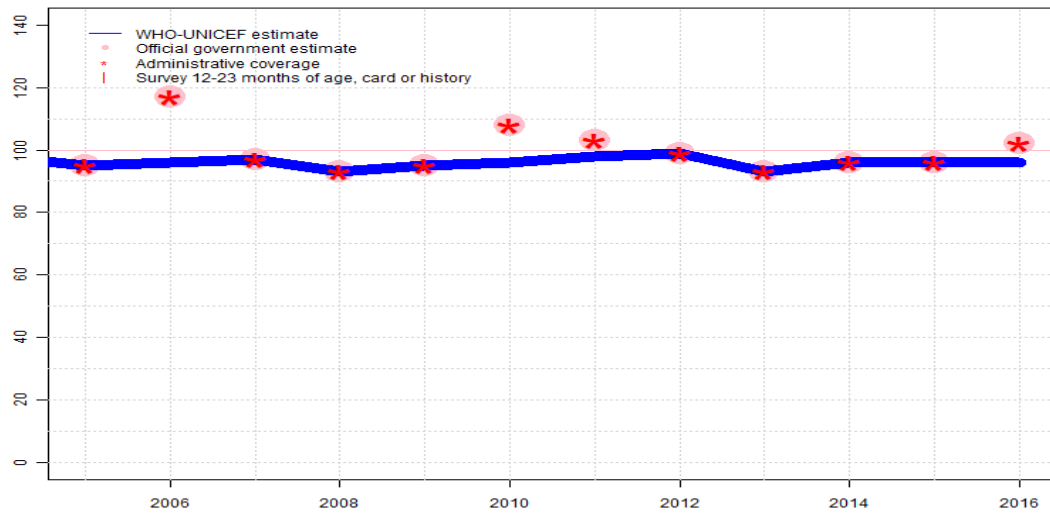
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on interpolation between data reported by national government. Reported data excluded because 104 percent greater than 100 percent. Results from the 2013 Multiple Indicator Cluster Survey for the 2012 birth cohort suggest coverage of 96 percent. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2010: Estimate based on interpolation between data reported by national government. Reported data excluded because 111 percent greater than 100 percent. GoC=R+ D+
- 2009: Estimate based on interpolation between data reported by national government. Reported data excluded because 101 percent greater than 100 percent. GoC=R+ D+
- 2008: Estimate based on interpolation between data reported by national government. Reported data excluded because 104 percent greater than 100 percent. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government. GoC=R+ D+
- 2006: Estimate based on interpolation between data reported by national government. Reported data excluded because 108 percent greater than 100 percent. Estimate challenged by: D-
- 2005: Estimate based on coverage reported by national government. GoC=R+ D+

# Panama - DTP1

PAN - DTP1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	95	96	97	93	95	96	98	99	93	96	96	96
Estimate GoC	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	95	117	97	93	95	108	103	99	93	96	96	102
Administrative	95	117	97	93	95	108	103	99	93	96	96	102
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

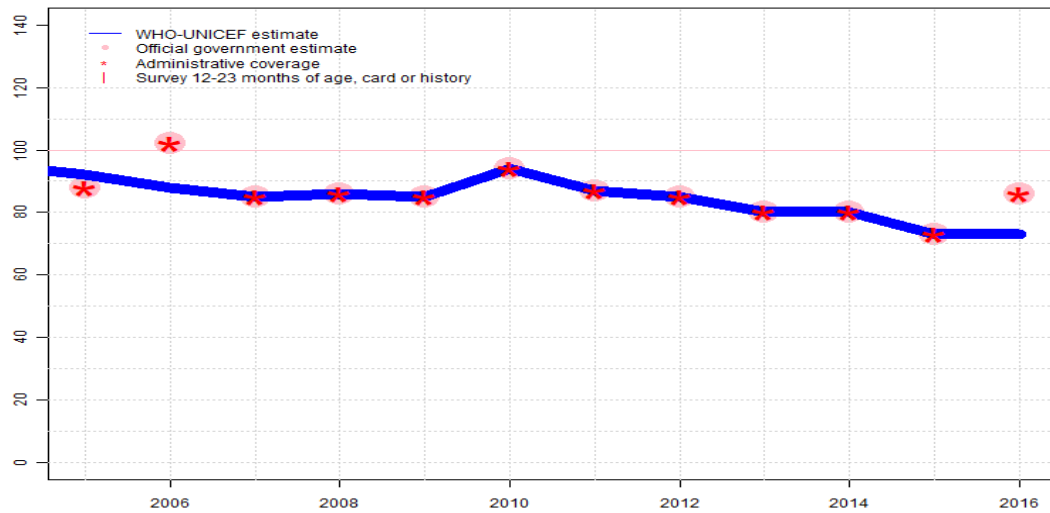
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on extrapolation from data reported by national government. Reported data excluded because 102 percent greater than 100 percent. Programme reports a one-month vaccine stockout in 2016. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. Results from the 2013 Multiple Indicator Cluster Survey for the 2012 birth cohort suggest coverage of 92 percent. GoC=R+ D+
- 2011: Estimate based on interpolation between data reported by national government. Reported data excluded because 103 percent greater than 100 percent. GoC=R+ D+
- 2010: Estimate based on interpolation between data reported by national government. Reported data excluded because 108 percent greater than 100 percent. GoC=R+ D+
- 2009: Estimate based on coverage reported by national government. GoC=R+ D+
- 2008: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2006: Estimate based on interpolation between data reported by national government. Reported data excluded because 117 percent greater than 100 percent. Reported data excluded due to an unexplained increase from 95 percent to 117 percent with decrease 97 percent. GoC=R+ D+
- 2005: Estimate based on interpolation between data reported by national government. Reported data excluded due to decline in reported coverage from 114 percent to 95 percent with increase to 117 percent. Denominator based on number of children receiving BCG. GoC=R+ D+

# Panama - DTP3

PAN - DTP3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	92	88	85	86	85	94	87	85	80	80	73	73
Estimate GoC	•	•	••	••	••	•	••	••	••	••	••	•
Official	88	102	85	86	85	94	87	85	80	80	73	86
Administrative	88	102	85	86	85	94	87	85	80	80	73	86
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

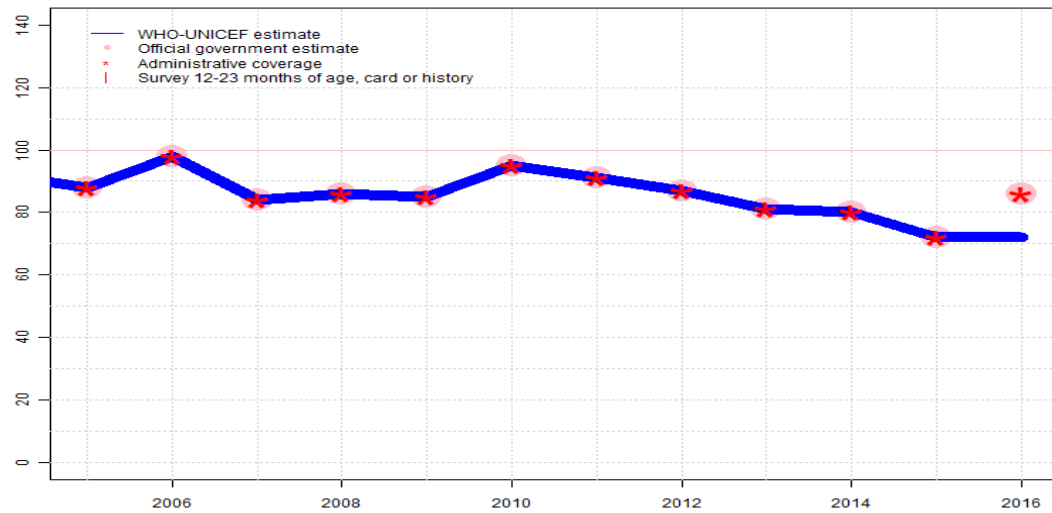
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on extrapolation from data reported by national government. Reported data excluded due to unexplained sudden change in coverage from 73 level to 86 percent. Programme reports a one-month vaccine stockout in 2016. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. Results from the 2013 Multiple Indicator Cluster Survey for the 2011 birth cohort supports reported coverage levels. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2010: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2009: Estimate based on coverage reported by national government. GoC=R+ D+
- 2008: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2006: Estimate based on interpolation between data reported by national government. Reported data excluded because 102 percent greater than 100 percent. Reported data excluded due to an unexplained increase from 88 percent to 102 percent with decrease 85 percent. Estimate challenged by: D-
- 2005: Estimate based on interpolation between data reported by national government. Reported data excluded due to decline in reported coverage from 106 percent to 88 percent with increase to 102 percent. Denominator based on number of children receiving BCG. Estimate challenged by: D-

# Panama - Pol3

PAN - Pol3



## Description:

- 2016: Estimate based on extrapolation from data reported by national government. Reported data excluded due to unexplained sudden change in coverage from 72 level to 86 percent. Programme reports a three-month vaccine stockout OPV and IPV in 2016. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. Results from the 2013 Multiple Indicator Cluster Survey for the 2012 birth cohort supports reported coverage levels. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2010: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2009: Estimate based on coverage reported by national government. GoC=R+ D+
- 2008: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2006: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2005: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	88	98	84	86	85	95	91	87	81	80	72	72
Estimate GoC	●●	●	●●	●●	●●	●	●●	●●	●●	●●	●●	●
Official	88	98	84	86	85	95	91	87	81	80	72	86
Administrative	88	98	84	86	85	95	91	87	81	80	72	86
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

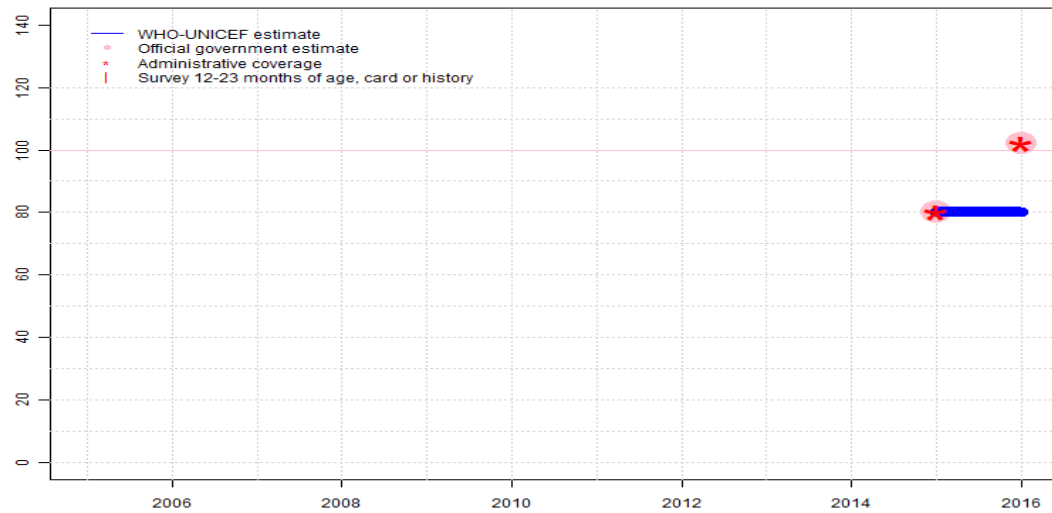
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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# Panama - IPV1

PAN - IPV1



## Description:

2016: Estimate based on extrapolation from data reported by national government. Reported data excluded because 102 percent greater than 100 percent. Reported data excluded due to unexplained sudden change in coverage from 80 level to 102 percent. Estimate challenged by: D-

2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	80
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●●	●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	102
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	102
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

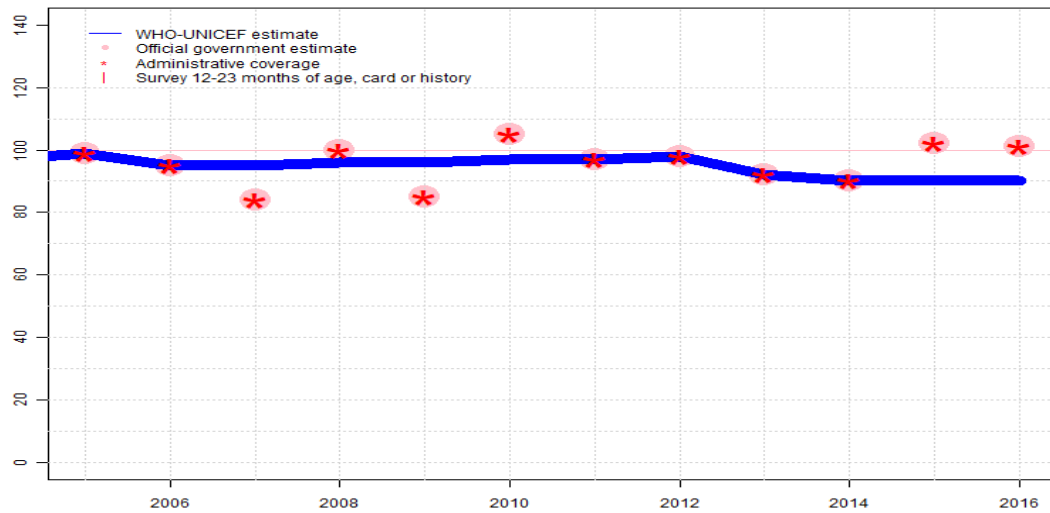
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- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

# Panama - MCV1

PAN - MCV1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	95	95	96	96	97	97	98	92	90	90	90
Estimate GoC	••	••	•	•	•	••	••	••	••	••	•	•
Official	99	95	84	100	85	105	97	98	92	90	102	101
Administrative	99	95	84	100	85	105	97	98	92	90	102	101
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

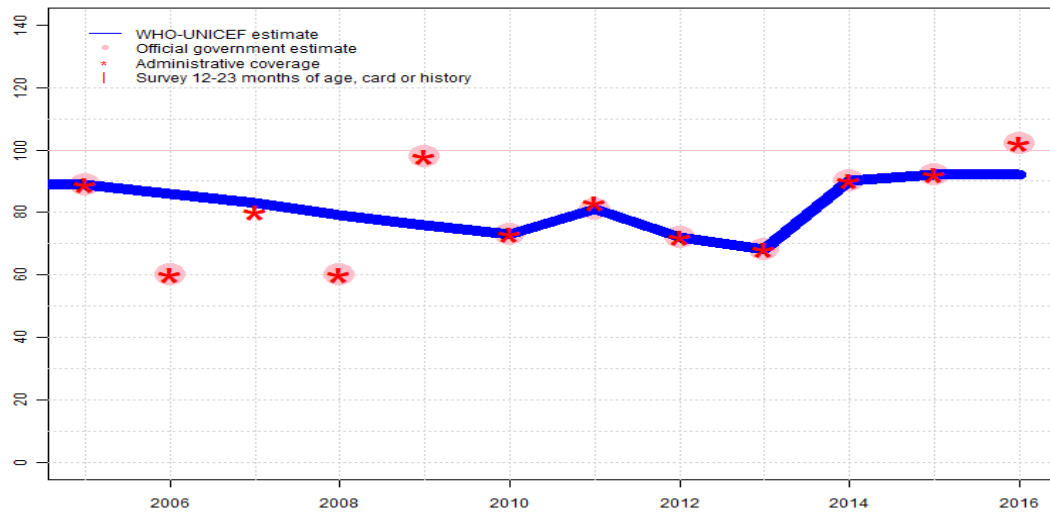
## Description:

- 2016: Estimate based on extrapolation from data reported by national government. Reported data excluded because 101 percent greater than 100 percent. Estimate challenged by: D-
- 2015: Estimate based on extrapolation from data reported by national government. Reported data excluded because 102 percent greater than 100 percent. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. Estimate challenged by: D-
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. Results from the 2013 Multiple Indicator Cluster Survey for the 2012 birth cohort suggest coverage of 87 percent. GoC=R+ D+
- 2010: Estimate based on interpolation between data reported by national government. Reported data excluded because 105 percent greater than 100 percent. GoC=R+ D+
- 2009: Estimate based on interpolation between data reported by national government. Reported data excluded due to decline in reported coverage from 100 percent to 85 percent with increase to 105 percent. Estimate challenged by: D-
- 2008: Estimate based on interpolation between data reported by national government. Reported data excluded due to an unexplained increase from 84 percent to 100 percent with decrease 85 percent. Denominator based on number of children receiving BCG. Estimate challenged by: D-
- 2007: Estimate based on interpolation between data reported by national government. Reported data excluded due to decline in reported coverage from 95 percent to 84 percent with increase to 100 percent. Denominator based on number of children receiving BCG. Estimate challenged by: D-
- 2006: Estimate based on coverage reported by national government. GoC=R+ D+
- 2005: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+



# Panama - MCV2

PAN - MCV2



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	89	86	83	79	76	73	81	72	68	90	92	92
Estimate GoC	•	•	•	•	•	••	••	••	••	•	••	•
Official	89	60	NA	60	98	73	81	72	68	90	92	102
Administrative	89	60	80	60	98	73	83	72	68	90	92	102
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

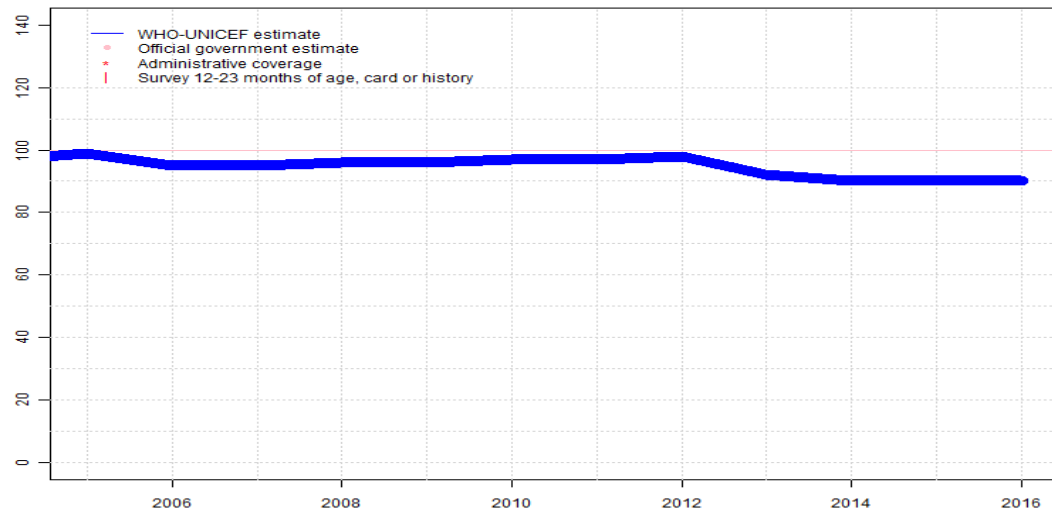
## Description:

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

- 2016: Estimate based on extrapolation from data reported by national government. Reported data excluded because 102 percent greater than 100 percent. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. Recommended age for the second dose of measles containing vaccine changed from 4 years of age to 18 months during 2014. Estimate challenged by: D-
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2010: Estimate based on coverage reported by national government. GoC=R+ D+
- 2009: Estimate based on interpolation between reported values. Reported data excluded due to an unexplained increase from 60 percent to 98 percent with decrease 73 percent. Estimate challenged by: D-
- 2008: Estimate based on interpolation between reported values. Reported data excluded due to decline in reported coverage from 80 percent to 60 percent with increase to 98 percent. Estimate challenged by: D-
- 2007: Estimate based on interpolation between reported values. Reported data excluded due to an unexplained increase from 60 percent to 80 percent with decrease 60 percent. Estimate challenged by: D-
- 2006: Estimate based on interpolation between reported values. Reported data excluded due to decline in reported coverage from 89 percent to 60 percent with increase to 80 percent. Estimate challenged by: D-
- 2005: Estimate based on coverage reported by national government. Estimate challenged by: D-

# Panama - RCV1

PAN - RCV1



## 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.

- 2016: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2015: Estimate based on estimated MCV1. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. Estimate challenged by: D-
- 2014: Estimate based on estimated MCV1. GoC=R+ D+
- 2013: Estimate based on estimated MCV1. GoC=R+ D+
- 2012: Estimate based on estimated MCV1. GoC=R+ D+
- 2011: Estimate based on estimated MCV1. GoC=R+ D+
- 2010: Estimate based on estimated MCV1. GoC=R+ D+
- 2009: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2008: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2007: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2006: Estimate based on estimated MCV1. GoC=R+ D+
- 2005: Estimate based on estimated MCV1. GoC=R+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	95	95	96	96	97	97	98	92	90	90	90
Estimate GoC	••	••	•	•	•	••	••	••	••	••	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

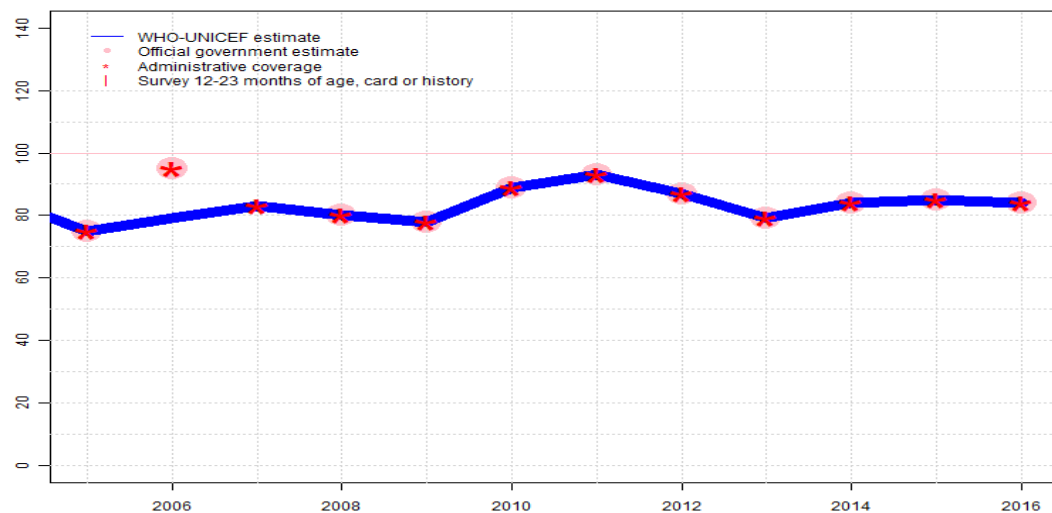
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

# Panama - HepBB

PAN - HepBB



## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2010: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2009: Estimate based on coverage reported by national government. GoC=R+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ D+
- 2007: Estimate based on reported administrative estimate. Estimate challenged by: D-
- 2006: Estimate based on interpolation between reported values. Reported data excluded due to an unexplained increase from 75 percent to 95 percent with decrease 83 percent. GoC=R+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	75	79	83	80	78	89	93	87	79	84	85	84
Estimate GoC	●●	●●	●	●●	●●	●	●●	●●	●●	●●	●●	●●
Official	75	95	NA	80	78	89	93	87	79	84	85	84
Administrative	75	95	83	80	78	89	93	87	79	84	85	84
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

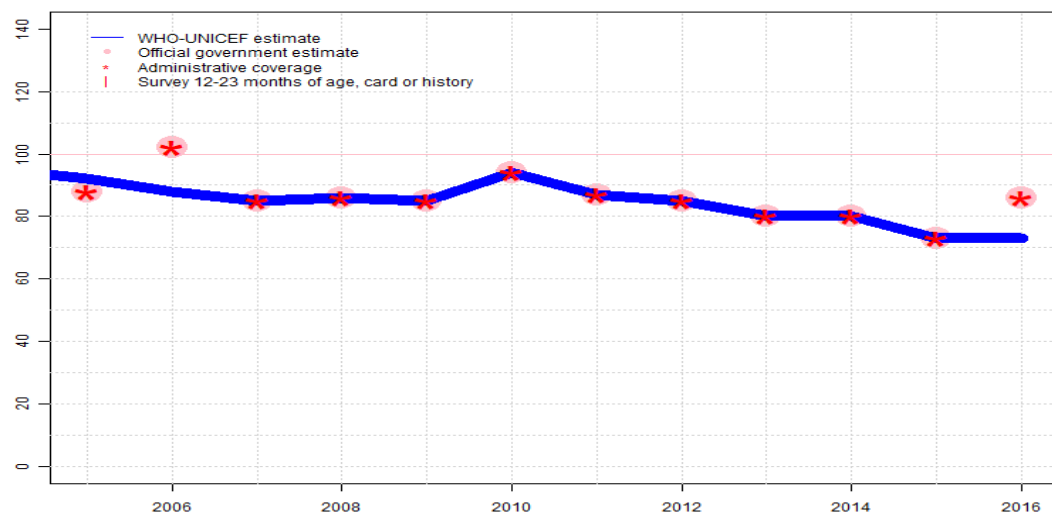
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

# Panama - HepB3

PAN - HepB3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	92	88	85	86	85	94	87	85	80	80	73	73
Estimate GoC	•	•	••	••	••	•	••	••	••	••	••	•
Official	88	102	85	86	85	94	87	85	80	80	73	86
Administrative	88	102	85	86	85	94	87	85	80	80	73	86
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

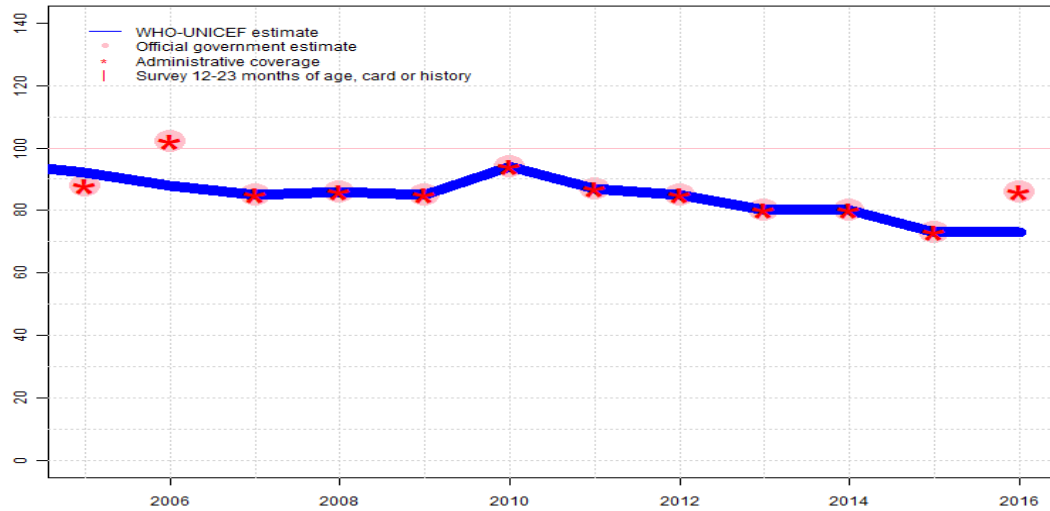
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on extrapolation from data reported by national government. Reported data excluded due to unexplained sudden change in coverage from 73 level to 86 percent. Programme reports a one-month vaccine stockout in 2016. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2010: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2009: Estimate based on coverage reported by national government. GoC=R+ D+
- 2008: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2006: Estimate based on interpolation between reported values. Reported data excluded because 102 percent greater than 100 percent. Reported data excluded due to an unexplained increase from 88 percent to 102 percent with decrease 85 percent. Estimate challenged by: D-
- 2005: Estimate based on interpolation between reported values. Reported data excluded due to decline in reported coverage from 106 percent to 88 percent with increase to 102 percent. Denominator based on number of children receiving BCG. Estimate challenged by: D-

# Panama - Hib3

PAN - Hib3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	92	88	85	86	85	94	87	85	80	80	73	73
Estimate GoC	•	•	••	••	••	•	••	••	••	••	••	•
Official	88	102	85	86	85	94	87	85	80	80	73	86
Administrative	88	102	85	86	85	94	87	85	80	80	73	86
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

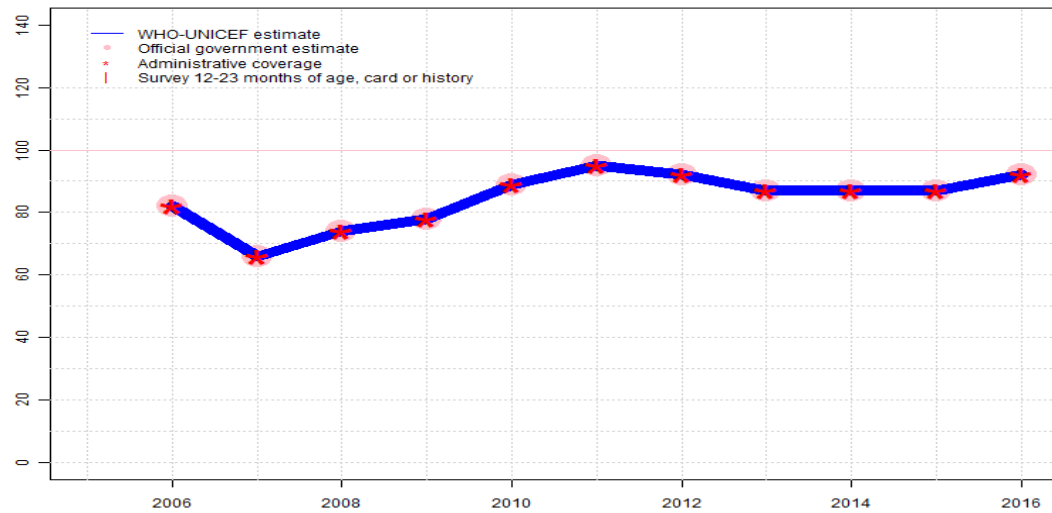
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on extrapolation from data reported by national government. Reported data excluded due to unexplained sudden change in coverage from 73 level to 86 percent. Programme reports a one-month vaccine stockout in 2016. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2010: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2009: Estimate based on coverage reported by national government. GoC=R+ D+
- 2008: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government. Denominator based on number of children receiving BCG. GoC=R+ D+
- 2006: Estimate based on interpolation between reported values. Reported data excluded because 102 percent greater than 100 percent. Reported data excluded due to an unexplained increase from 88 percent to 102 percent with decrease 85 percent. Estimate challenged by: D-
- 2005: Estimate based on interpolation between reported values. Reported data excluded due to decline in reported coverage from 106 percent to 88 percent with increase to 102 percent. Denominator based on number of children receiving BCG. Estimate challenged by: D-

# Panama - RotaC

PAN - RotaC



## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Estimate based on coverage reported by national government. Results from the 2013 Multiple Indicator Cluster Survey for the 2011 birth cohort suggest coverage of 78 percent. GoC=R+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ D+
- 2010: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2009: Estimate based on coverage reported by national government. GoC=R+ D+
- 2008: Estimate based on coverage reported by national government. Rotavirus vaccine introduced in 2006. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government. GoC=R+
- 2006: Estimate based on coverage reported by national government. GoC=R+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	82	66	74	78	89	95	92	87	87	87	92
Estimate GoC	NA	••	••	••	••	•	••	••	••	••	••	••
Official	NA	82	66	74	78	89	95	92	87	87	87	92
Administrative	NA	82	66	74	78	89	95	92	87	87	87	92
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

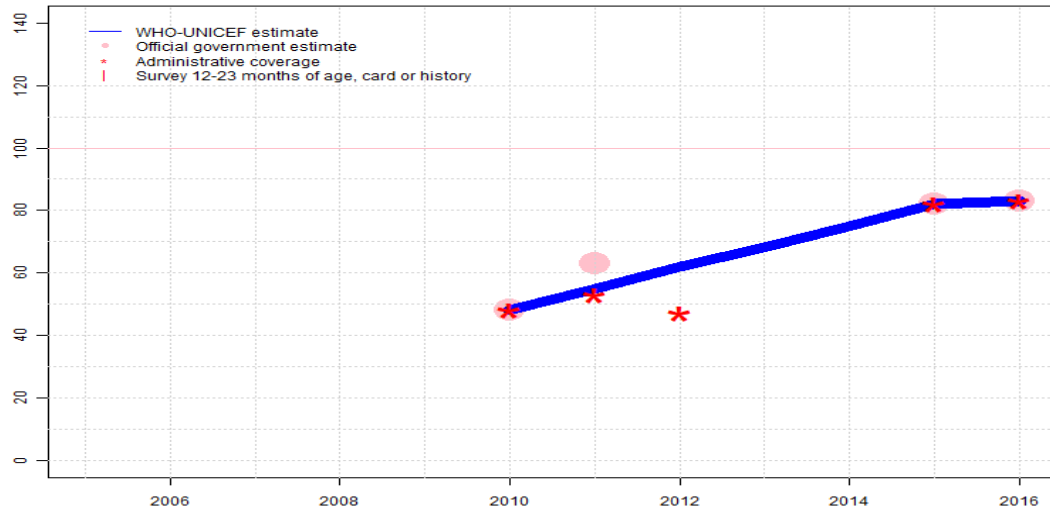
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

# Panama - PcV3

PAN - PcV3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	48	55	62	68	75	82	83
Estimate GoC	NA	NA	NA	NA	NA	••	••	•	•	•	••	••
Official	NA	NA	NA	NA	NA	48	63	NA	NA	NA	82	83
Administrative	NA	NA	NA	NA	NA	48	53	47	NA	NA	82	83
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

## Description:

- 2016: Estimate based on coverage reported by national government. Programme reports a three-month vaccine stockout in 2016. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. GoC=R+ D+
- 2014: Estimate based on interpolation between reported values. Changes in PcV schedule affected data reporting and coverage calculation. The recommended age is 2, 4 and 12 months. Coverage for the second dose of PcV is 91 percent. Data are not reported for the third dose. GoC=No accepted empirical data
- 2013: Estimate based on interpolation between reported values. Changes in PcV schedule affected data reporting and coverage calculation. GoC=No accepted empirical data
- 2012: Estimate based on interpolation between reported values. Reported data excluded. Changes in PcV schedule affected data reporting and coverage calculation. Results from the 2013 Multiple Indicator Cluster Survey for the 2012 birth cohort suggest coverage of 78 percent. Estimate challenged by: D-
- 2011: Estimate based on interpolation between reported values. Reported data excluded due to an unexplained increase from 48 percent to 63 percent with decrease 47 percent. GoC=R+ D+
- 2010: Estimate based on coverage reported by national government. Pneumococcal conjugate vaccine introduced in 2010. GoC=R+ D+

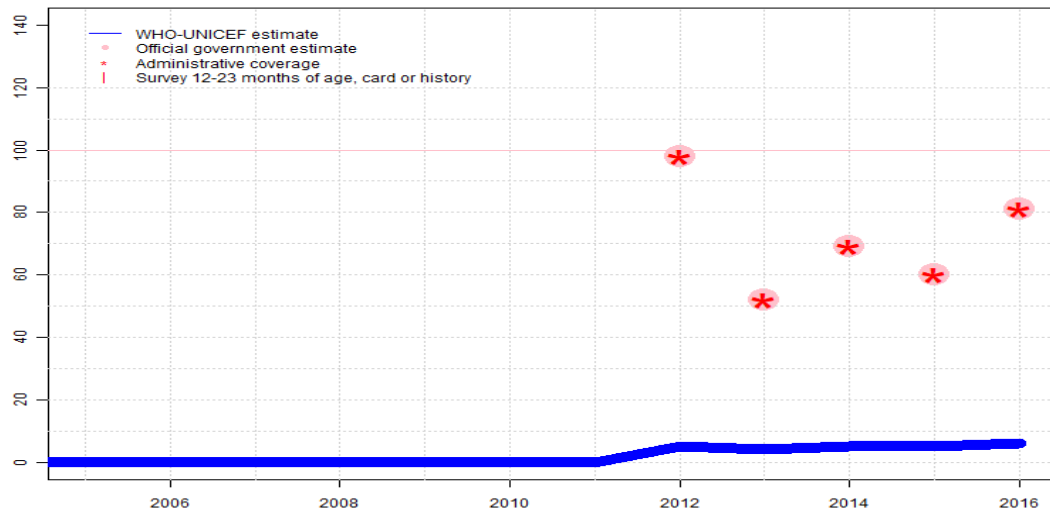
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

# Panama - YFV

PAN - YFV



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	0	0	0	0	0	0	0	5	4	5	5	6
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	98	52	69	60	81
Administrative	NA	NA	NA	NA	NA	NA	NA	98	52	69	60	81
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

## Description:

- 2016: Eighty-one percent coverage reached in eight percent of the national birth cohort. Estimate is based on annualized coverage among the total national birth cohort. Reported data excluded due to unexplained sudden change in coverage from 60 level to 81 percent. Estimate challenged by: R-
- 2015: Sixty percent coverage reached in eight percent of the national birth cohort. Estimate is based on annualized coverage among the total national birth cohort. WHO and UNICEF are aware of the conduct of the 2013 MICS and await the final results. Estimate challenged by: R-
- 2014: Sixty-nine percent coverage reached in eight percent of the national birth cohort. Estimate is based on annualized coverage among the total national birth cohort. GoC=Assigned by working group. .
- 2013: Fifty two percent coverage reached in seven percent of the national birth cohort. Reported data excluded due to decline in reported coverage from 98 percent to 52 percent with increase to 69 percent. GoC=Assigned by working group. .
- 2012: Ninety eight percent coverage achieved in five percent of the total population. Estimate is based on coverage achieved among the annualized total national birth cohort. GoC=Assigned by working group. .
- 2011: YFV introduced in 1974 for areas at risk. Data available are not sufficient to produce an estimate. Results from the 2013 Multiple Indicator Cluster Survey for the 2011 birth cohort suggest coverage of 80 percent. GoC=Assigned by working group. .
- 2010: YFV introduced in 1974 for areas at risk. Data available are not sufficient to produce an estimate. GoC=Assigned by working group. .
- 2009: YFV introduced in 1974 for areas at risk. Data available are not sufficient to produce an estimate. GoC=Assigned by working group. .
- 2008: YFV introduced in 1974 for areas at risk. Data available are not sufficient to produce an estimate. GoC=Assigned by working group. .
- 2007: YFV introduced in 1974 for areas at risk. Data available are not sufficient to produce an estimate. GoC=Assigned by working group. .
- 2006: YFV introduced in 1974 for areas at risk. Data available are not sufficient to produce an estimate. GoC=Assigned by working group. .
- 2005: YFV introduced in 1974 for areas at risk. Data available are not sufficient to produce an estimate. GoC=Assigned by working group. .



Further information and estimates for previous years are available at:

<http://www.data.unicef.org/child-health/immunization>

[http://www.who.int/immunization/monitoring\\_surveillance/routine/coverage/en/index4.html](http://www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index4.html)