

**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.

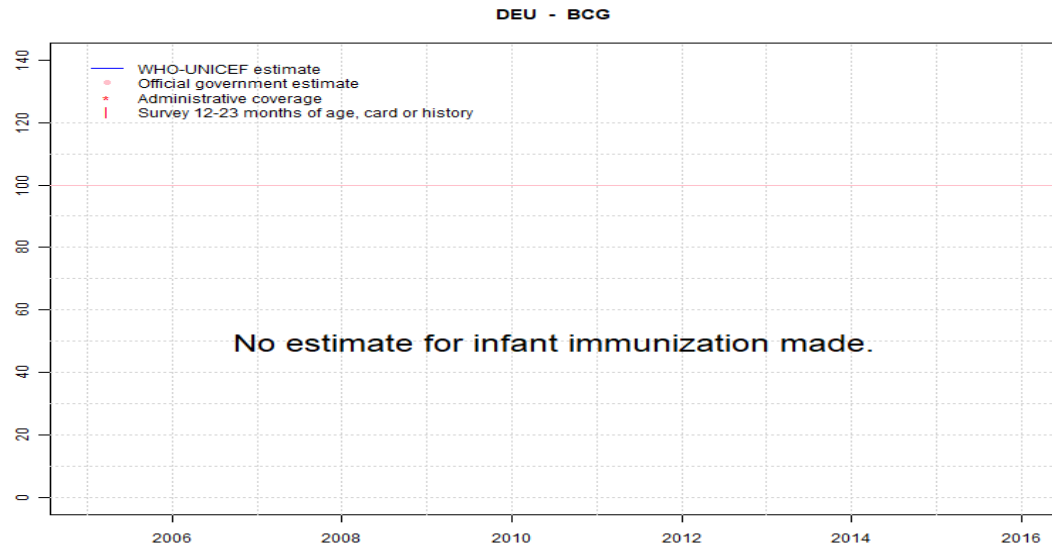
**RotaC:** percentage of surviving infants who received the final recommended dose of rotavirus vaccine, which can be either the 2nd or the 3rd dose depending on the vaccine.

**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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# Germany - BCG



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

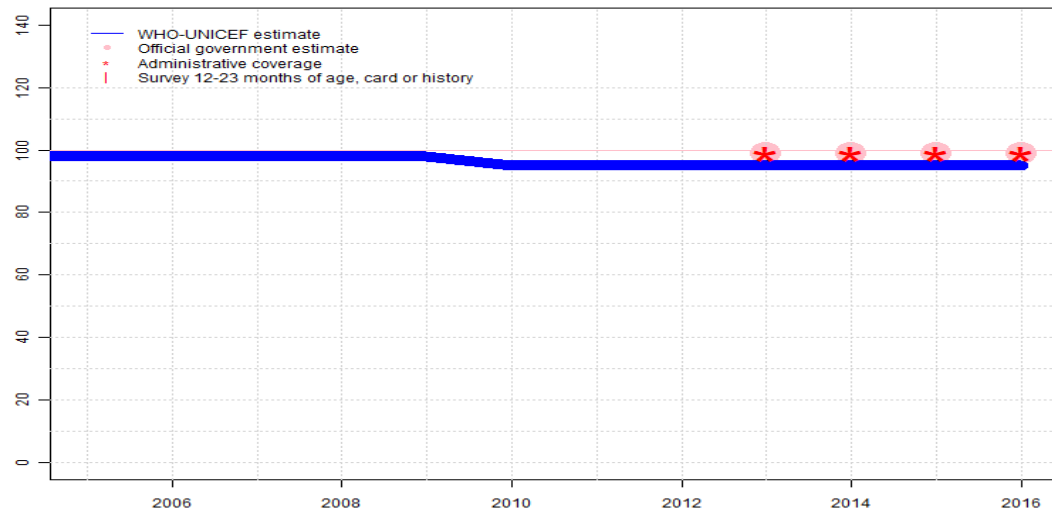
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

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

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

# Germany - DTP1

DEU - DTP1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	98	98	98	98	98	95	95	95	95	95	95	95
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	99	99	99	99
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	99	99	99	99
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.

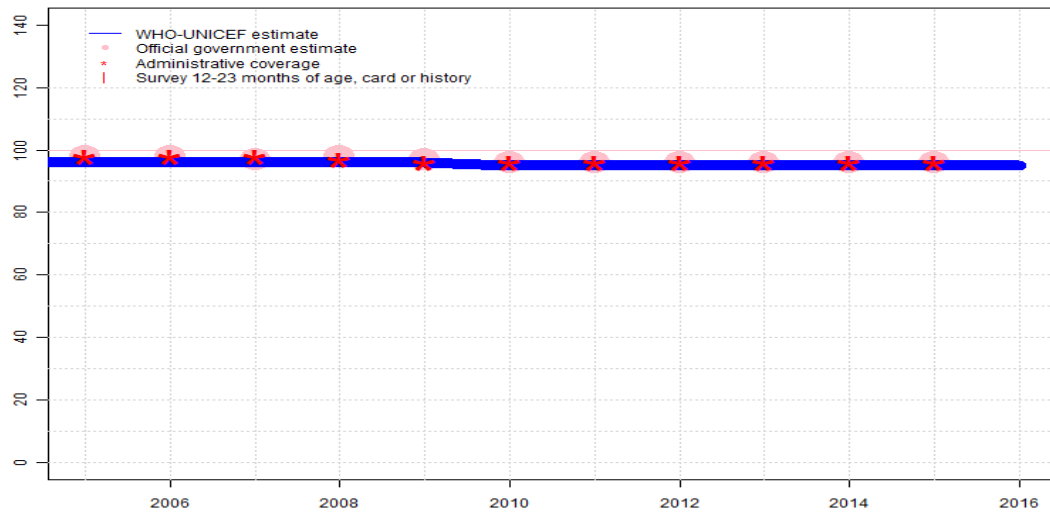
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Reported data calibrated to 1997 levels. Estimate challenged by: R-
- 2015: Reported data calibrated to 1997 levels. Estimate of 95 percent changed from previous revision value of 98 percent. Estimate challenged by: R-
- 2014: Reported data calibrated to 1997 levels. Estimate of 95 percent changed from previous revision value of 98 percent. Estimate challenged by: R-
- 2013: Reported data calibrated to 1997 levels. Estimate of 95 percent changed from previous revision value of 98 percent. Estimate challenged by: R-
- 2012: Reported data calibrated to 1997 levels. Estimate of 95 percent changed from previous revision value of 98 percent. GoC=No accepted empirical data
- 2011: Reported data calibrated to 1997 levels. Estimate of 95 percent changed from previous revision value of 98 percent. GoC=No accepted empirical data
- 2010: Reported data calibrated to 1997 levels. Estimate of 95 percent changed from previous revision value of 98 percent. GoC=No accepted empirical data
- 2009: DTP1 coverage estimated based on DTP3 coverage of 96. GoC=No accepted empirical data
- 2008: DTP1 coverage estimated based on DTP3 coverage of 96. GoC=No accepted empirical data
- 2007: DTP1 coverage estimated based on DTP3 coverage of 96. GoC=No accepted empirical data
- 2006: DTP1 coverage estimated based on DTP3 coverage of 96. GoC=No accepted empirical data
- 2005: DTP1 coverage estimated based on DTP3 coverage of 96. GoC=No accepted empirical data

# Germany - DTP3

DEU - DTP3



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

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

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

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

## Description:

- 2016: Estimate of 95 percent assigned by working group. See explanation above. Data reported by Germany reflect the immunization status of children 5-7 years of age collected on school entry for the 4th dose of DTP containing vaccine. Coverage levels are not reported for the 3rd dose of DTP containing vaccine. Estimates attributed to the birth cohort five years younger than the reporting year include immunizations given after one year of age and overestimate coverage during these years. The study by Rieck, et.al. suggest that coverage by 24 months of age is lower than that suggested by data reported on school entry. See <http://dx.doi.org/10.4161/hv.26986>. GoC=Assigned by working group. GoC reflects extrapolation of coverage from most recently available annual birth cohort.
- 2015: Estimate of 95 percent assigned by working group. See explanation above. Estimate of 95 percent changed from previous revision value of 96 percent. GoC=Assigned by working group. GoC reflects extrapolation of coverage from most recently available annual birth cohort.
- 2014: Estimate of 95 percent assigned by working group. See explanation above. Estimate of 95 percent changed from previous revision value of 96 percent. GoC=Assigned by working group. GoC reflects extrapolation of coverage from most recently available annual birth cohort.
- 2013: Estimate of 95 percent assigned by working group. See explanation above. Estimate of 95 percent changed from previous revision value of 96 percent. GoC=Assigned by working group. GoC reflects extrapolation of coverage from most recently available annual birth cohort.
- 2012: Estimate of 95 percent assigned by working group. See explanation above. Estimate of 95 percent changed from previous revision value of 96 percent. GoC=Assigned by working group. GoC reflects extrapolation of coverage from most recently available annual birth cohort.
- 2011: Estimate of 95 percent assigned by working group. See explanation above. Estimate of 95 percent changed from previous revision value of 96 percent. GoC=Assigned by working group. GoC reflects extrapolation of coverage from most recently available annual birth cohort.
- 2010: Estimate of 95 percent assigned by working group. See explanation above. Estimate of 95 percent changed from previous revision value of 96 percent. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2009: Estimate of 96 percent assigned by working group. See explanation above. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2008: Estimate of 96 percent assigned by working group. See explanation above. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2007: Estimate of 96 percent assigned by working group. See explanation above. DTP3 data not available. Germany monitors DTP4 coverage rather than DTP3 coverage. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

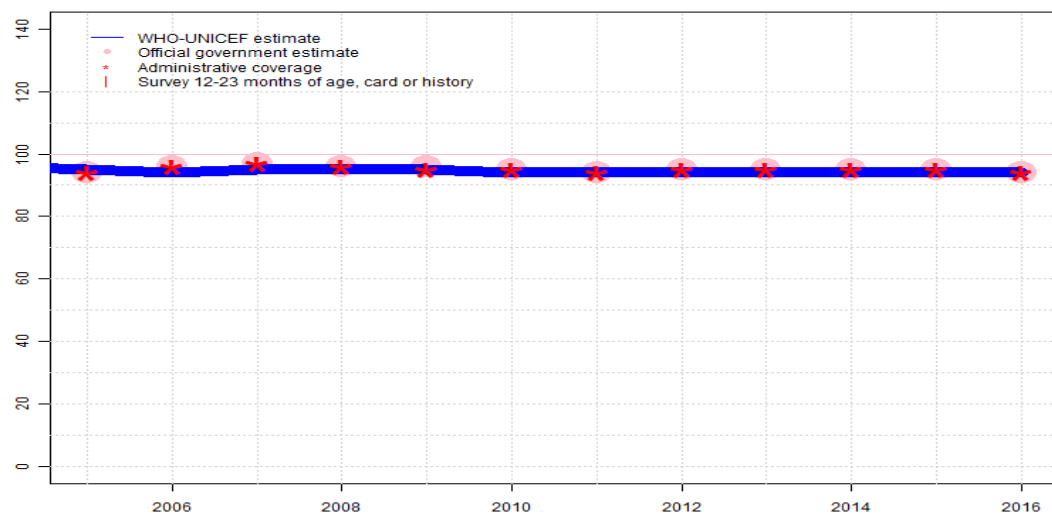
# Germany - DTP3

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- 2006: Estimate of 96 percent assigned by working group. See explanation above. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2005: Estimate of 96 percent assigned by working group. Estimates based on data reported by national government and reflects coverage for pertussis. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

# Germany - Pol3

DEU - Pol3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	95	94	95	95	95	94	94	94	94	94	94	94
Estimate GoC	●●	●●	●●	●●	●●	●●	●	●	●	●	●	●
Official	94	96	97	96	96	95	94	95	95	95	95	94
Administrative	94	96	97	96	95	95	94	95	95	95	95	94
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.

## Description:

- 2016: Estimate is based on reported data. Data reported by Germany reflect the immunization status of children 5-7 years of age collected on school entry for the 4th dose of polio vaccine. Coverage levels are not reported for the 3rd dose of polio vaccine. Estimates attributed to the birth cohort five years younger than the reporting year include immunizations given after one year of age and overestimate coverage during these years. The study by Rieck, et.al. suggest that coverage by 24 months of age is lower than that suggested by data reported on school entry. See <http://dx.doi.org/10.4161/hv.26986>. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2015: Estimate of 94 percent assigned by working group. Estimate is based on reported data. Estimate of 94 percent changed from previous revision value of 95 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2014: Estimate of 94 percent assigned by working group. Estimate is based on reported data. Estimate of 94 percent changed from previous revision value of 95 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2013: Estimate of 94 percent assigned by working group. Estimate is based on reported data. Estimate of 94 percent changed from previous revision value of 95 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2012: Estimate of 94 percent assigned by working group. Estimate is based on reported data. Estimate of 94 percent changed from previous revision value of 95 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2011: Estimate is based on reported data. Estimate of 94 percent changed from previous revision value of 95 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2010: Estimate of 94 percent assigned by working group. Estimate is based on reported data. Estimate of 94 percent changed from previous revision value of 95 percent. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2009: Estimate of 95 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2008: Estimate of 95 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2007: Estimate of 95 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2006: Estimate of 94 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2005: Estimate of 95 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school

# Germany - Pol3

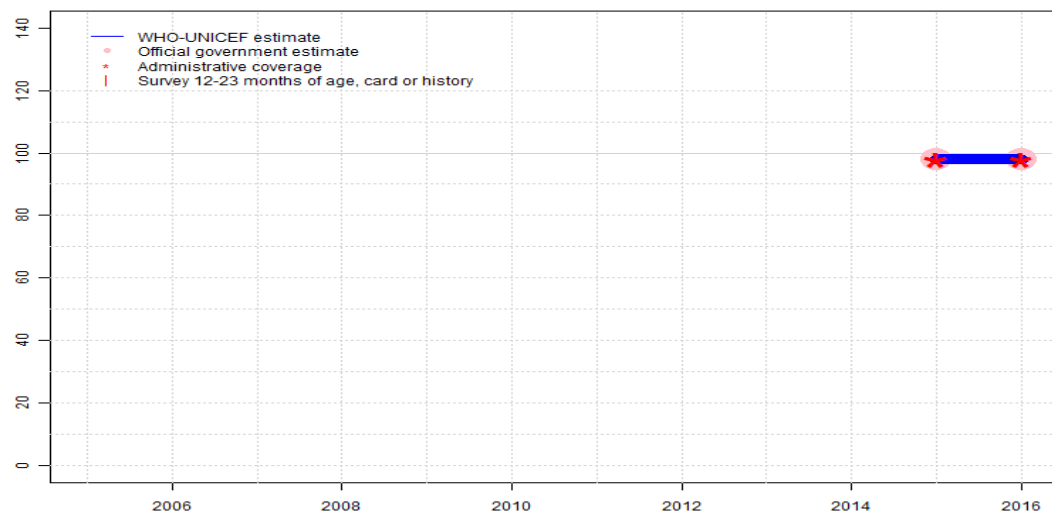
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entry.



# Germany - IPV1

DEU - IPV1



## Description:

2016: Estimate based on coverage reported by national government. Estimate challenged by: D-  
 2015: Estimate based on coverage reported by national government. Estimate challenged by: D-

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98	98
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●	●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98	98
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98	98
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

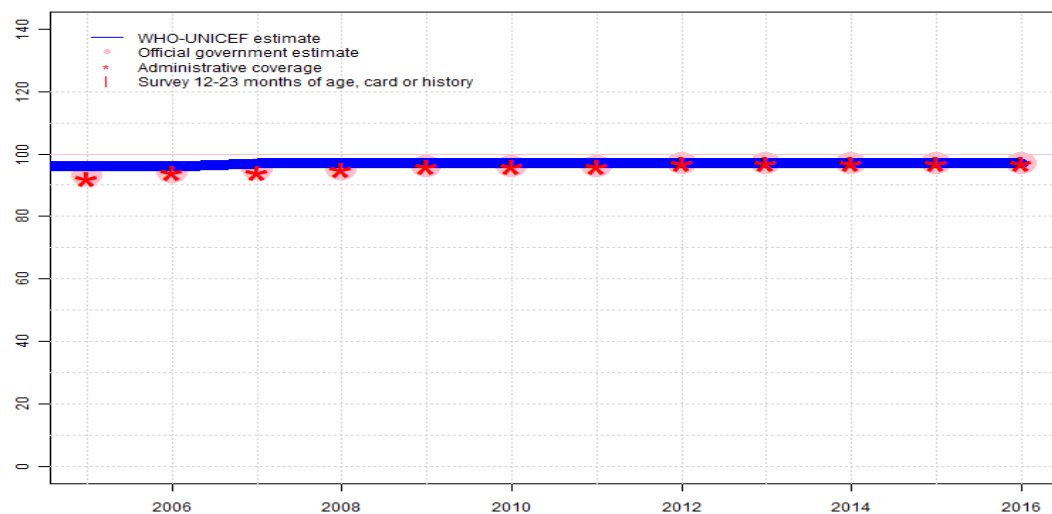
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- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While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

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# Germany - MCV1

DEU - MCV1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	96	96	97	97	97	97	97	97	97	97	97	97
Estimate GoC	●●	●●	●●	●●	●●	●●	●	●	●	●	●	●
Official	93	94	95	95	96	96	96	97	97	97	97	97
Administrative	92	94	94	95	96	96	96	97	97	97	97	97
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.

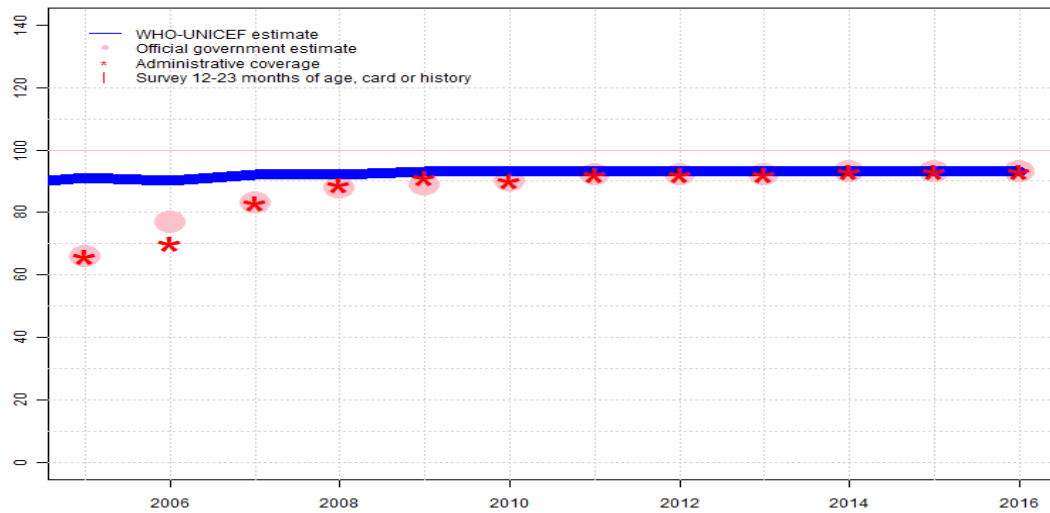
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## Description:

- 2016: Estimate is based on reported data. Data reported by Germany reflect the immunization status collected on school entry of children 5-7 years of age. Estimates are attributed to the birth cohort five years younger than the reporting year. The study by Rieck, et.al. suggest that coverage by 24 months of age is lower than that suggested by data reported on school entry. See <http://dx.doi.org/10.4161/hv.26986>. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2015: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2014: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2013: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2012: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2011: Estimate of 97 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2010: Estimate of 97 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2009: Estimate of 97 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2008: Estimate of 97 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2007: Estimate of 97 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2006: Estimate of 96 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2005: Estimate of 96 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

# Germany - MCV2

DEU - MCV2



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	91	90	92	92	93	93	93	93	93	93	93	93
Estimate GoC	●●	●●	●●	●●	●●	●●	●	●	●	●	●	●
Official	66	77	83	88	89	90	92	92	92	93	93	93
Administrative	66	70	83	89	91	90	92	92	92	93	93	93
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 is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.

2015: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.

2014: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.

2013: Estimate of 93 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.

2012: Estimate of 93 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.

2011: Estimate of 93 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.

2010: Estimate of 93 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

2009: Estimate of 93 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

2008: Estimate of 92 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

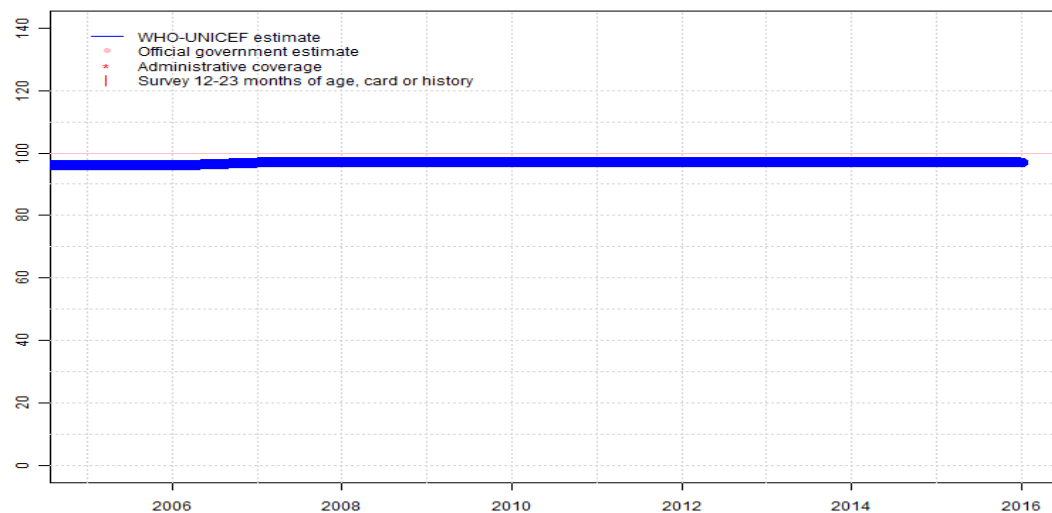
2007: Estimate of 92 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

2006: Estimate of 90 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

2005: Estimate of 91 percent assigned by working group. Estimate is based on reported data. Data reported by Germany reflect the immunization status collected on school entry of children 5-7 years of age. Estimates are attributed to the birth cohort five years younger than the reporting year. The study by Rieck, et.al. suggest that coverage by 24 months of age is lower than that suggested by data reported on school entry. See <http://dx.doi.org/10.4161/hv.26986>. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

# Germany - RCV1

DEU - RCV1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	96	96	97	97	97	97	97	97	97	97	97	97
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.

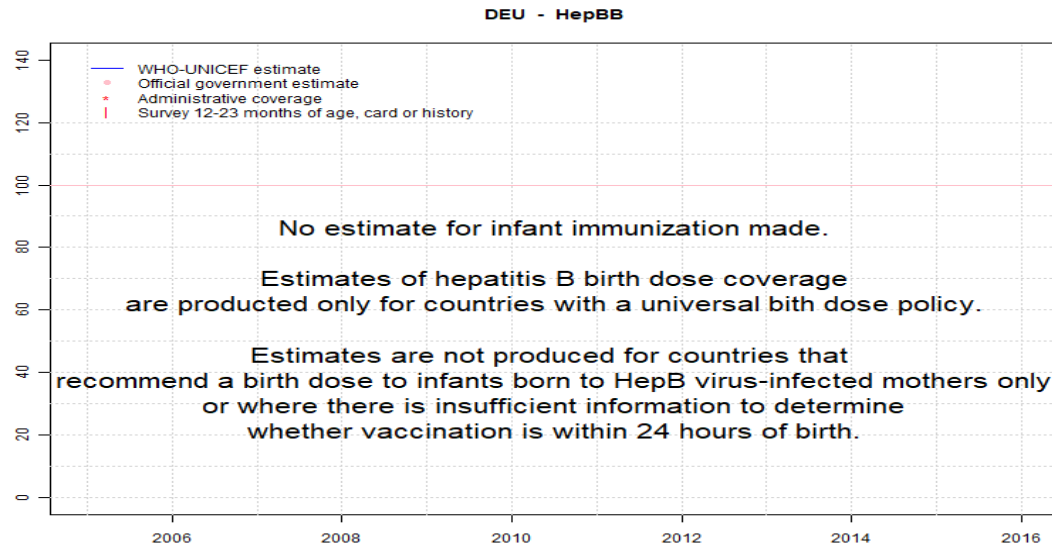
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## 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. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2015: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2014: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2013: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2012: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2011: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2010: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2009: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2008: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2007: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2006: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2005: Estimate based on estimated MCV1. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

# Germany - HepBB



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

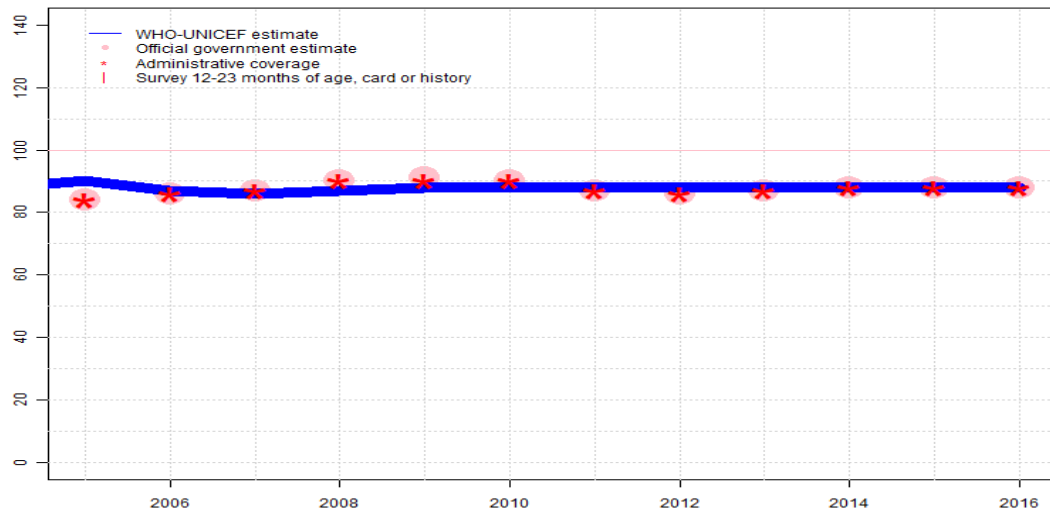
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

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

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

# Germany - HepB3

DEU - HepB3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	90	87	86	87	88	88	88	88	88	88	88	88
Estimate GoC	●●	●●	●●	●●	●●	●●	●	●	●	●	●	●
Official	84	86	87	90	91	90	87	86	87	88	88	88
Administrative	84	86	87	90	90	90	87	86	87	88	88	88
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.

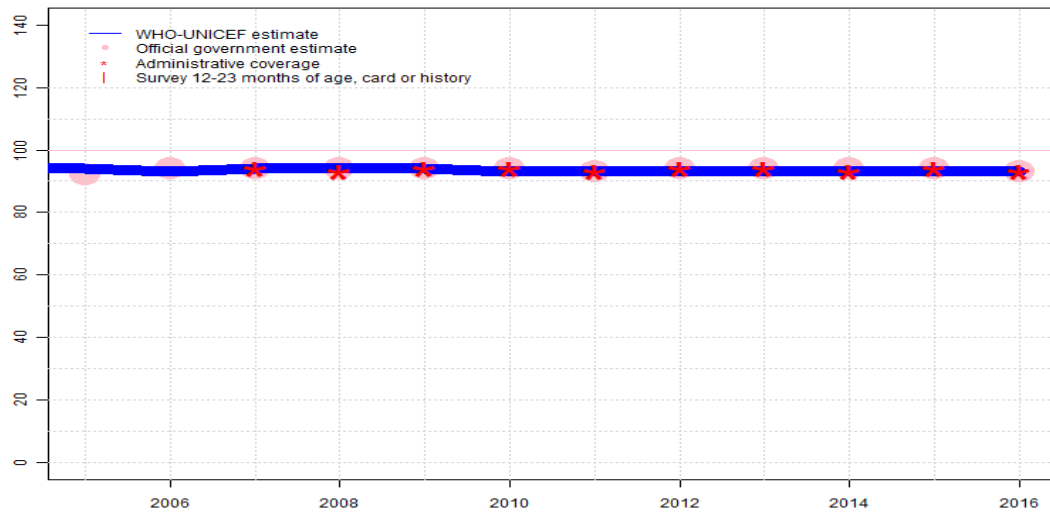
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate is based on reported data. Data reported by Germany reflect the immunization status of children 5-7 years of age collected on school entry for the 4th dose of Hepatitis B containing vaccine. Coverage levels are not reported for the 3rd dose of Hepatitis B containing vaccine. Estimates attributed to the birth cohort five years younger than the reporting year include immunizations given after one year of age and overestimate coverage during these years. The study by Rieck, et.al. suggest that coverage by 24 months of age is lower than that suggested by data reported on school entry. See <http://dx.doi.org/10.4161/hv.26986>. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2015: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2014: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2013: Estimate of 88 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2012: Estimate of 88 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2011: Estimate of 88 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2010: Estimate of 88 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2009: Estimate of 88 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2008: Estimate of 87 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2007: Estimate of 86 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2006: Estimate of 87 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2005: Estimate of 90 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

# Germany - Hib3

DEU - Hib3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	94	93	94	94	94	93	93	93	93	93	93	93
Estimate GoC	●●	●●	●●	●●	●●	●●	●	●	●	●	●	●
Official	92	94	94	94	94	94	93	94	94	94	94	93
Administrative	NA	NA	94	93	94	94	93	94	94	93	94	93
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.

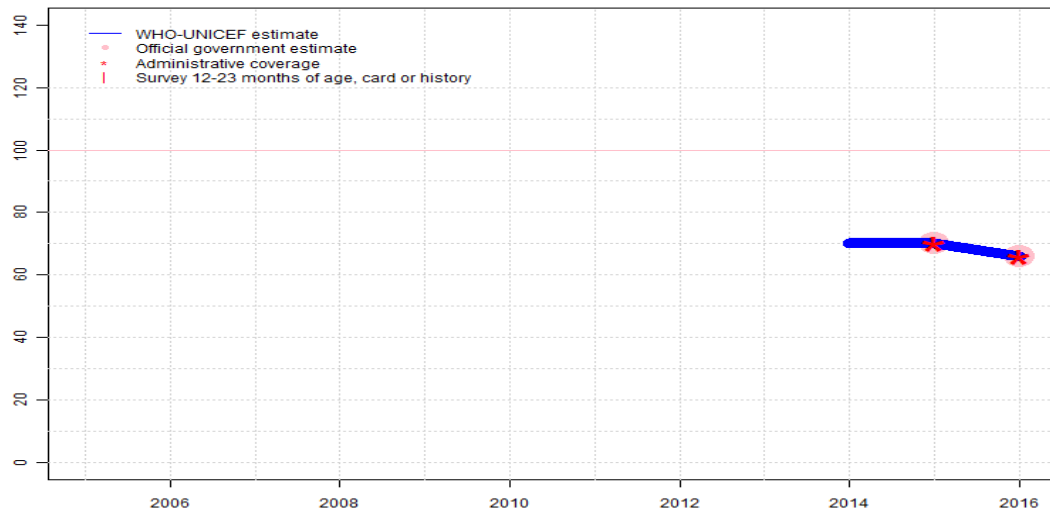
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate is based on reported data. Data reported by Germany reflect the immunization status of children 5-7 years of age collected on school entry for the 4th dose of Hib containing vaccine. Coverage levels are not reported for the 3rd dose of Hib containing vaccine. Estimates attributed to the birth cohort five years younger than the reporting year include immunizations given after one year of age and overestimate coverage during these years. The study by Rieck, et.al. suggest that coverage by 24 months of age is lower than that suggested by data reported on school entry. See <http://dx.doi.org/10.4161/hv.26986>. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2015: Estimate of 93 percent assigned by working group. Estimate is based on reported data. Estimate of 93 percent changed from previous revision value of 94 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2014: Estimate of 93 percent assigned by working group. Estimate is based on reported data. Estimate of 93 percent changed from previous revision value of 94 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2013: Estimate of 93 percent assigned by working group. Estimate is based on reported data. Estimate of 93 percent changed from previous revision value of 94 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2012: Estimate of 93 percent assigned by working group. Estimate is based on reported data. Estimate of 93 percent changed from previous revision value of 94 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2011: Estimate is based on reported data. Estimate of 93 percent changed from previous revision value of 94 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2010: Estimate of 93 percent assigned by working group. Estimate is based on reported data. Estimate of 93 percent changed from previous revision value of 94 percent. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2009: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2008: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2007: Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2006: Estimate of 93 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2005: Estimate of 94 percent assigned by working group. Estimate is based on reported data. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

# Germany - RotaC

DEU - RotaC



## Description:

2016: Estimate based on coverage reported by national government. Estimate challenged by: D-  
 2015: Estimate based on coverage reported by national government. Estimate challenged by: D-  
 2014: Estimate based on extrapolation from data reported by national government. GoC=No accepted empirical data

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	70	70	66
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	●	●	●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	70	66
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	70	66
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.

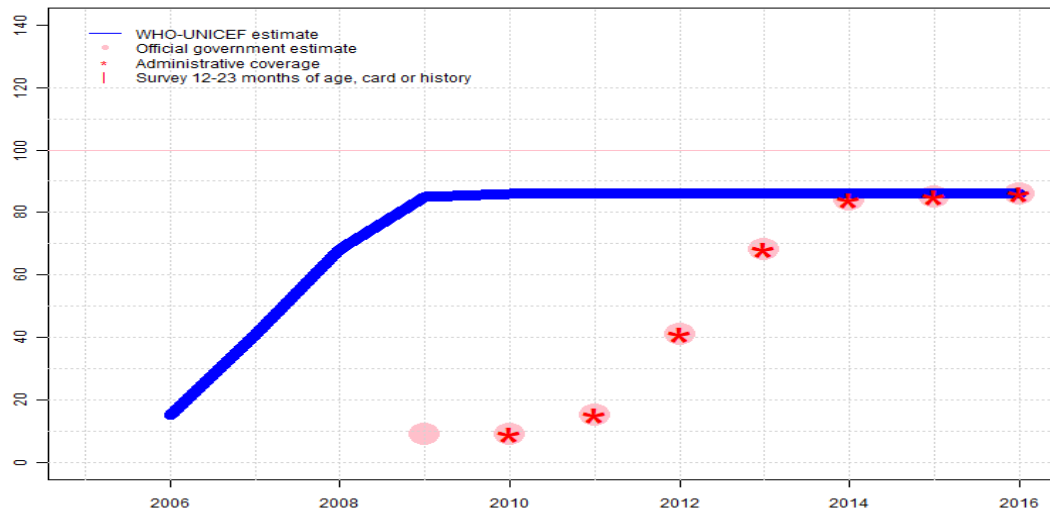
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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



# Germany - PcV3

DEU - PcV3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	15	41	68	85	86	86	86	86	86	86	86
Estimate GoC	NA	••	••	••	••	••	•	•	•	•	•	•
Official	NA	NA	NA	NA	9	9	15	41	68	84	85	86
Administrative	NA	NA	NA	NA	NA	9	15	41	68	84	85	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: Estimates based on extrapolation from data reported by national government. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2015: Estimate of 86 percent assigned by working group. Estimates based on extrapolation from data reported by national government. Estimate of 86 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2014: Estimate of 86 percent assigned by working group. Estimates based on extrapolation from data reported by national government. Estimate of 86 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2013: Estimate of 86 percent assigned by working group. Estimates based on extrapolation from data reported by national government. Estimate of 86 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2012: Estimate of 86 percent assigned by working group. Estimates based on extrapolation from data reported by national government. Estimate of 86 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2011: Estimate of 86 percent assigned by working group. Estimates based on extrapolation from data reported by national government. Estimate of 86 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. GoC reflects extrapolation from most recent annual birth cohort.
- 2010: Estimate of 86 percent assigned by working group. Estimates based on extrapolation from data reported by national government. Estimate of 86 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2009: Estimate of 85 percent assigned by working group. Estimates based on extrapolation from data reported by national government. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2008: Estimate of 68 percent assigned by working group. Estimates based on extrapolation from data reported by national government. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2007: Estimate of 41 percent assigned by working group. See explanation above. Estimates based on extrapolation from data reported by national government. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.
- 2006: Estimate of 15 percent assigned by working group. Data reported by Germany reflect the immunization status collected on school entry of children 5-7 years of age. Estimates are attributed to the birth cohort five years younger than the reporting year. The study by Rieck, et.al. suggest that coverage by 24 months of age is lower than that suggested by data reported on school entry. See <http://dx.doi.org/10.4161/hv.26986>. Pneumococcal

# Germany - PcV3

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conjugate vaccine was introduced in 2006. Data reported by Germany reflect the immunization status of children 5-7 years of age collected on school entry. Estimates attributed to the birth cohort five years younger than the reporting year include immunizations given after one year of age and overestimate coverage during these years. The study by Rieck, et.al. suggest that coverage by 24 months of age is higher than suggested by data reported on school entry. See <http://dx.doi.org/10.4161/hv.26986>. GoC=Assigned by working group. GoC reflects coverage data for birth cohort on school entry.

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)