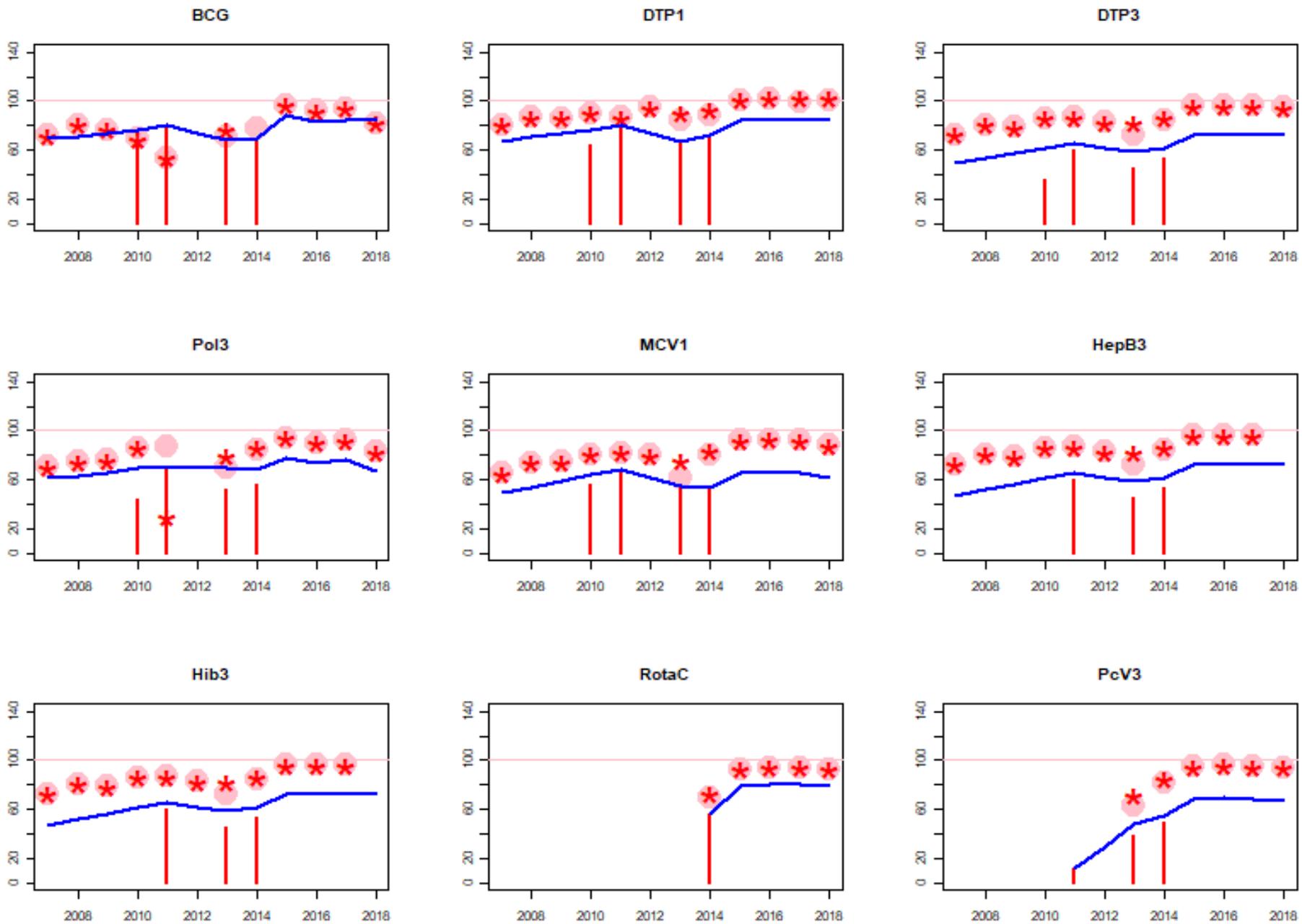


Ethiopia: WHO and UNICEF estimates of immunization coverage: 2018 revision



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

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

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

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

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

## DATA SOURCES.

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

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

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

## ABBREVIATIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

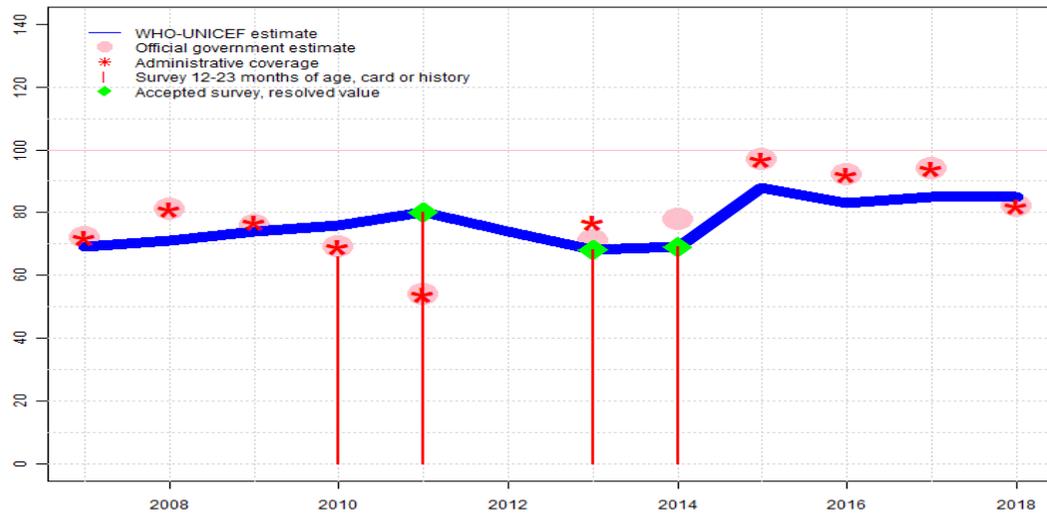
**PcV3:** percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect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

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

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# Ethiopia - BCG

ETH - BCG



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	69	71	74	76	80	74	68	69	88	83	85	85
Estimate GoC	•	•	•	•	•	••	•	•	•	•	•	•
Official	72	81	76	69	54	NA	71	78	97	92	94	82
Administrative	72	81	77	69	54	NA	77	NA	97	92	94	82
Survey	NA	NA	NA	66	80	NA	68	69	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: 2017 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:

- 2018: Reported data calibrated to 2014 levels. Reported data excluded due to sudden change in coverage from 94 level to 82 percent. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. Estimate challenged by: R-
- 2017: Reported data calibrated to 2014 levels. Estimate challenged by: R-
- 2016: Reported data calibrated to 2014 levels. Estimate challenged by: R-S-
- 2015: Reported data calibrated to 2014 levels. Unexplained increase of 19 percentage points in the reported coverage between 2014 and 2015. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Estimate of 69 percent assigned by working group. Estimate based on survey results. Beginning in 2013 and continuing through 2014, the national immunization programme has implemented a programme improvement plan. From 2013 to 2014, the number of health centers and health posts increased with more than 90 percent of health facilities providing immunization services. Intensified efforts were conducted in training on supportive supervision and immunization in practice with a focus on Reaching Every District. The government reports an increase in reporting completeness from 83 to 98 percent. The official government estimate is based on the application of a verification factor from a 2014 DQS applied to HMIS coverage levels. Observed increases between 2013 and 2014 in the reported official coverage are of such magnitude that additional supporting evidence of the increase is needed. Programme reports two month stock-out at national level. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2013: Estimate of 68 percent assigned by working group. National programme reports deficiencies in the accuracy of the administrative reporting system. An electronic HMIS was implemented in several regions during 2011-12 with national roll-out on-going in 2013. Reported coverage levels reflect an adjustment to the administrative coverage levels, based on the results of a DQS conducted in 2013. WHO and UNICEF encourage a revision of the reported time series of coverage data. During 2013, the national immunization programme has implemented a programme improvement plan. During 2013, the number of health centers and health posts increased as did the number of health extension workers in health posts. Observed decreases in the number of children vaccinated between 2012 and 2013 are believed to reflect improved recording and reporting rather than a true decline in service delivery. The official government estimate is based on the application of a verification factor from a 2013 DQS applied to HMIS coverage levels. GoC=Assigned by working group. .
- 2012: Reported data calibrated to 2011 and 2013 levels. GoC=S+
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 80 percent based on 1 survey(s). Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Information on child immunization was available from immunization cards for 47 percent of children aged 12-23 months, additional documented information was obtained through health facility review. Estimate challenged by: D-R-S-

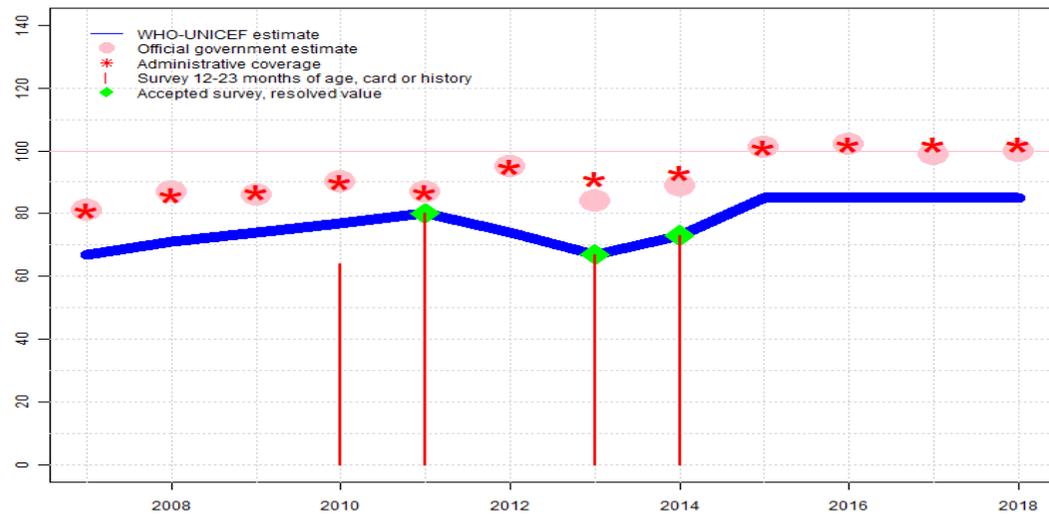
# Ethiopia - BCG

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- 2010: Reported data calibrated to 2004 and 2011 levels. Ethiopia Demographic and Health Survey 2011 results ignored by working group. Survey results do not include data obtained from health facility records. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-
- 2009: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-
- 2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-
- 2007: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-

# Ethiopia - DTP1

ETH - DTP1



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	67	71	74	77	80	74	67	73	85	85	85	85
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	81	87	86	90	87	95	84	89	101	102	99	100
Administrative	81	86	87	90	87	95	91	93	101	102	102	102
Survey	NA	NA	NA	64	80	NA	67	73	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: 2017 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:

- 2018: Reported data calibrated to 2015 levels. Reported data excluded because 102 percent greater than 100 percent. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. . Estimate challenged by: D-R-
- 2017: Reported data calibrated to 2015 levels. Reported data excluded because 102 percent greater than 100 percent. . Estimate challenged by: D-R-
- 2016: Reported data calibrated to 2015 levels. Reported data excluded because 102 percent greater than 100 percent. Estimate challenged by: D-R-S-
- 2015: Estimate of 85 percent assigned by working group. Estimate reflects the dropout rate from the DHS survey Reported data excluded because 101 percent greater than 100 percent. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 73 percent based on 1 survey(s). Beginning in 2013 and continuing through 2014, the national immunization programme has implemented a programme improvement plan. From 2013 to 2014, the number of health centers and health posts increased with more than 90 percent of health facilities providing immunization services. Intensified efforts were conducted in training on supportive supervision and immunization in practice with a focus on Reaching Every District. The government reports an increase in reporting completeness from 83 to 98 percent. The official government estimate is based on the application of a verification factor from a 2014 DQS applied to HMIS coverage levels. Observed increases between 2013 and 2014 in the reported official coverage are of such magnitude that additional supporting evidence of the increase is needed. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 67 percent based on 1 survey(s). During 2013, the national immunization programme has implemented a programme improvement plan. During 2013, the number of health centers and health posts increased as did the number of health extension workers in health posts. Observed decreases in the number of children vaccinated between 2012 and 2013 are believed to reflect improved recording and reporting rather than a true decline in service delivery. The official government estimate is based on the application of a verification factor from a 2013 DQS applied to HMIS coverage levels. GoC=Assigned by working group. .
- 2012: Reported data calibrated to 2011 and 2013 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2011: Estimate of 80 percent assigned by working group. . Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Information on child immunization was available from immunization cards for 47 percent of children aged 12-23 months, additional documented information was obtained through health facility review. Estimate challenged by: R-S-
- 2010: Reported data calibrated to 2004 and 2011 levels. Ethiopia Demographic and Health Survey 2011 results ignored by working group. Survey results do not include data obtained

# Ethiopia - DTP1

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from health facility records. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-

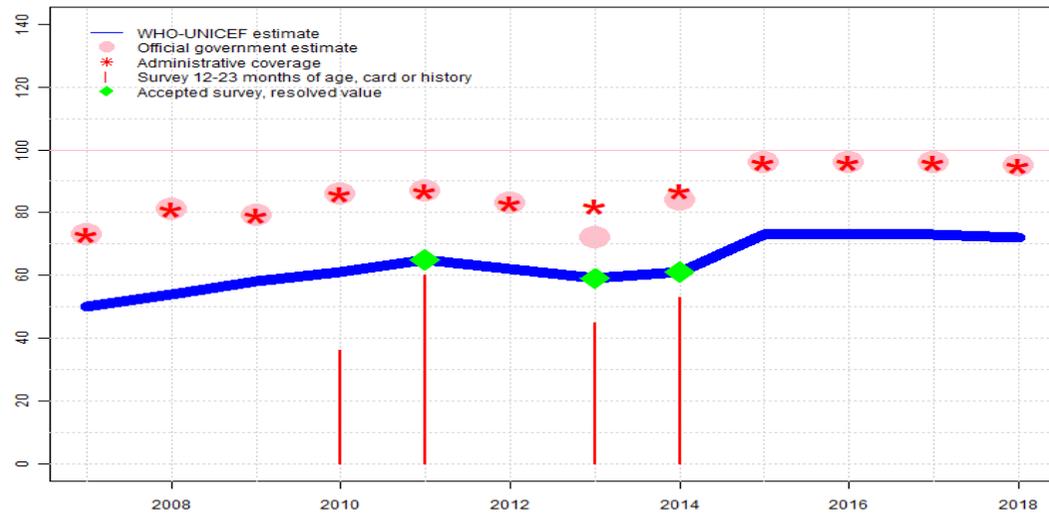
2009: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-

2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

2007: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

# Ethiopia - DTP3

ETH - DTP3



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	50	54	58	61	65	62	59	61	73	73	73	72
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	73	81	79	86	87	83	72	84	96	96	96	95
Administrative	73	81	79	86	87	83	82	87	96	96	96	95
Survey	NA	NA	NA	36	60	NA	45	53	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: 2017 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:

- 2018: Reported data calibrated to 2014 levels. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. Estimate challenged by: D-R-
- 2017: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-
- 2016: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-S-
- 2015: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 61 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 53 percent modified for recall bias to 61 percent based on 1st dose card or history coverage of 73 percent, 1st dose card only coverage of 57 percent and 3rd dose card only coverage of 48 percent. Beginning in 2013 and continuing through 2014, the national immunization programme has implemented a programme improvement plan. From 2013 to 2014, the number of health centers and health posts increased with more than 90 percent of health facilities providing immunization services. Intensified efforts were conducted in training on supportive supervision and immunization in practice with a focus on Reaching Every District. The government reports an increase in reporting completeness from 83 to 98 percent. The official government estimate is based on the application of a verification factor from a 2014 DQS applied to HMIS coverage levels. Observed increases between 2013 and 2014 in the reported official coverage are of such magnitude that additional supporting evidence of the increase is needed. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 59 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 45 percent modified for recall bias to 59 percent based on 1st dose card or history coverage of 67 percent, 1st dose card only coverage of 41 percent and 3rd dose card only coverage of 36 percent. During 2013, the national immunization programme has implemented a programme improvement plan. During 2013, the number of health centers and health posts increased as did the number of health extension workers in health posts. Observed decreases in the number of children vaccinated between 2012 and 2013 are believed to reflect improved recording and reporting rather than a true decline in service delivery. The official government estimate is based on the application of a verification factor from a 2013 DQS applied to HMIS coverage levels. GoC=Assigned by working group. .
- 2012: Reported data calibrated to 2011 and 2013 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2011: Estimate of 65 percent assigned by working group. . Ethiopian Immunization Coverage Survey 2012 card or history results of 60 percent modified for recall bias to 65 percent based on 1st dose card or history coverage of 80 percent, 1st dose card only coverage of 59 percent and 3rd dose card only coverage of 48 percent. Reported data excluded.

# Ethiopia - DTP3

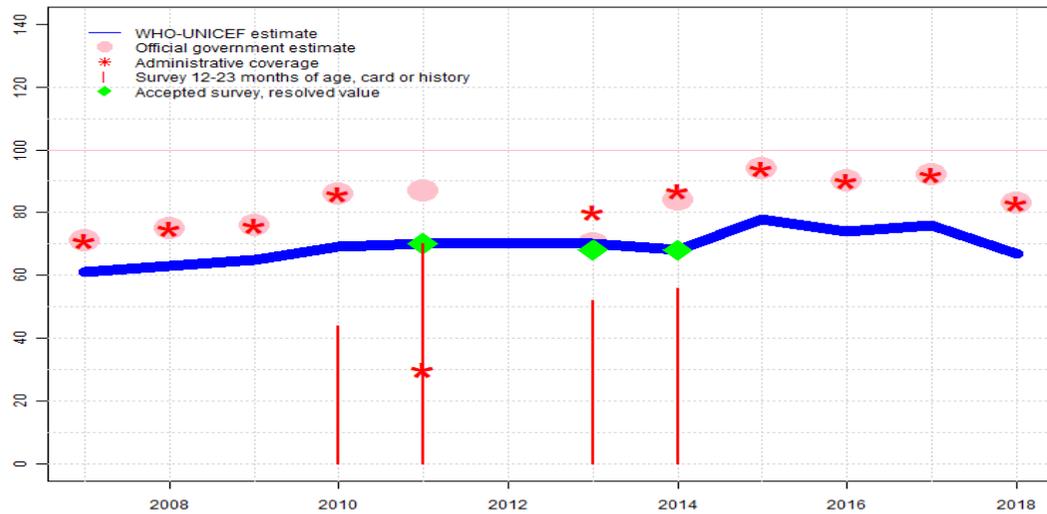
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See comment in 2013 regarding deficiencies in administrative reporting system. Information on child immunization was available from immunization cards for 47 percent of children aged 12-23 months, additional documented information was obtained through health facility review. Estimate challenged by: D-R-

- 2010: Reported data calibrated to 2004 and 2011 levels. Ethiopia Demographic and Health Survey 2011 results ignored by working group. Survey results do not include data obtained from health facility records. Ethiopia Demographic and Health Survey 2011 card or history results of 36 percent modified for recall bias to 50 percent based on 1st dose card or history coverage of 64 percent, 1st dose card only coverage of 28 percent and 3rd dose card only coverage of 22 percent. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

# Ethiopia - Pol3

ETH - Pol3



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	61	63	65	69	70	70	70	68	78	74	76	67
Estimate GoC	•	•	•	•	•	••	•	•	•	•	•	•
Official	71	75	76	86	87	NA	70	84	94	90	92	83
Administrative	71	75	76	86	30	NA	80	87	94	90	92	83
Survey	NA	NA	NA	44	70	NA	52	56	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: 2017 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:

2018: Reported data calibrated to 2014 levels. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. Estimate challenged by: D-R-  
 2017: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-  
 2016: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-  
 2015: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.

2014: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 68 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 56 percent modified for recall bias to 68 percent based on 1st dose card or history coverage of 81 percent, 1st dose card only coverage of 57 percent and 3rd dose card only coverage of 48 percent. Beginning in 2013 and continuing through 2014, the national immunization programme has implemented a programme improvement plan. From 2013 to 2014, the number of health centers and health posts increased with more than 90 percent of health facilities providing immunization services. Intensified efforts were conducted in training on supportive supervision and immunization in practice with a focus on Reaching Every District. The government reports an increase in reporting completeness from 83 to 98 percent. The official government estimate is based on the application of a verification factor from a 2014 DQS applied to HMIS coverage levels. Observed increases between 2013 and 2014 in the reported official coverage are of such magnitude that additional supporting evidence of the increase is needed. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.

2013: Estimate based on coverage reported by national government supported by survey. Survey evidence of 68 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 52 percent modified for recall bias to 68 percent based on 1st dose card or history coverage of 78 percent, 1st dose card only coverage of 41 percent and 3rd dose card only coverage of 36 percent. During 2013, the national immunization programme has implemented a programme improvement plan. During 2013, the number of health centers and health posts increased as did the number of health extension workers in health posts. Observed decreases in the number of children vaccinated between 2012 and 2013 are believed to reflect improved recording and reporting rather than a true decline in service delivery. The official government estimate is based on the application of a verification factor from a 2013 DQS applied to HMIS coverage levels. GoC=Assigned by working group. .

2012: Reported data calibrated to 2011 and 2013 levels. GoC=S+

2011: Estimate of 70 percent assigned by working group. . Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. OPV coverage is not include in the Health Management Information System and the third dose of DTP-HepB-Hib coverage is used as a proxy indicator for coverage of third dose of polio vaccine. Information on child immunization was available from immunization cards for 47 percent of children aged 12-23 months, additional documented information was obtained through

# Ethiopia - Pol3

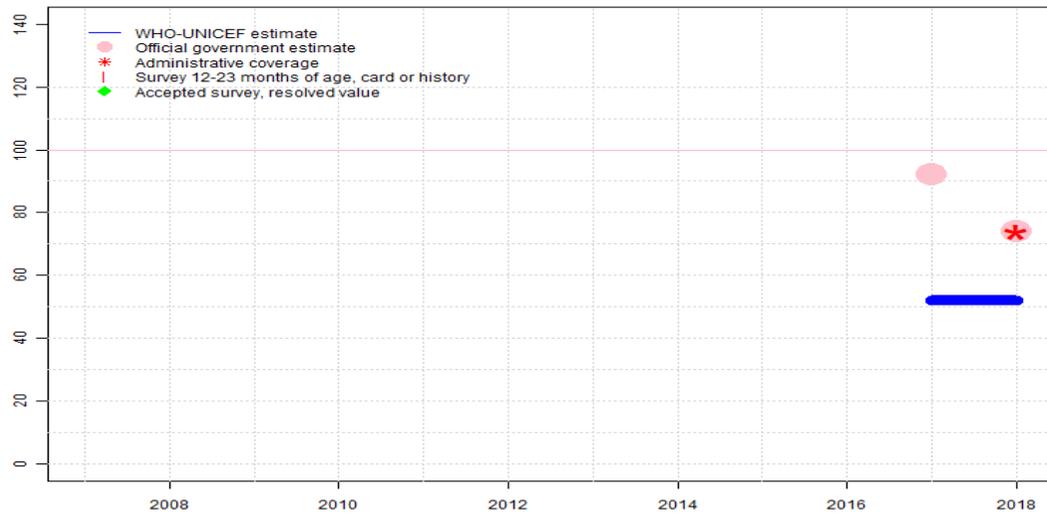
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health facility review. Estimate challenged by: D-R-

- 2010: Reported data calibrated to 2004 and 2011 levels. Ethiopia Demographic and Health Survey 2011 results ignored by working group. Survey results do not include data obtained from health facility records. Ethiopia Demographic and Health Survey 2011 card or history results of 44 percent modified for recall bias to 61 percent based on 1st dose card or history coverage of 82 percent, 1st dose card only coverage of 27 percent and 3rd dose card only coverage of 20 percent. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-
- 2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-
- 2007: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-

# Ethiopia - IPV1

ETH - IPV1



## Description:

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

2018: Estimate based on reported coverage adjusted for the difference between the reported and estimated DTP3. Reported data excluded due to sudden change in coverage from 92 level to 74 percent. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. Estimate challenged by: D-R-

2017: Inactivated polio vaccine introduced in December 2015 and reporting started in 2017. Information system does not capture IPV doses and official estimate is based on Pol3 levels. Estimate of 52 percent changed from previous revision value of 76 percent. Estimate challenged by: R-

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	NA	52	52									
Estimate GoC	NA	•	•									
Official	NA	92	74									
Administrative	NA	74										
Survey	NA											

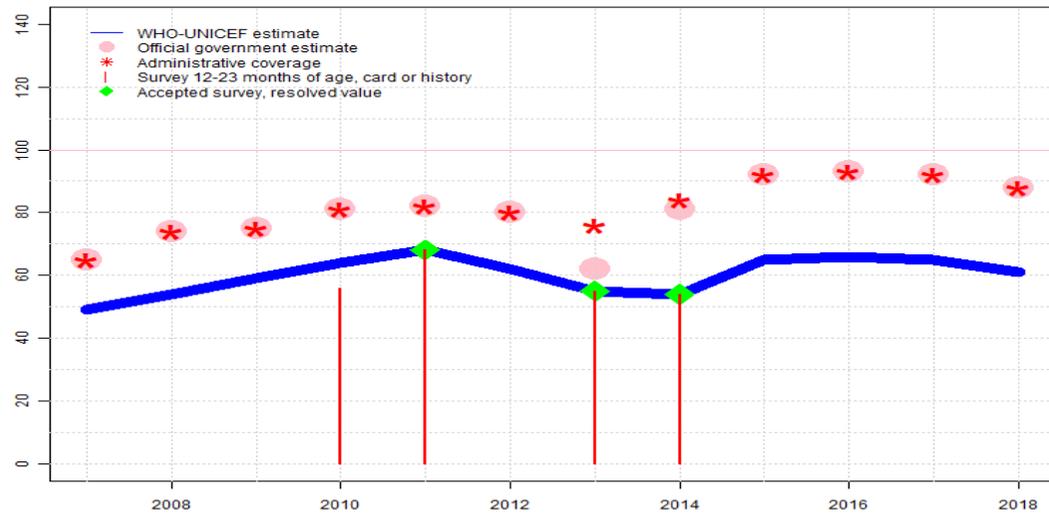
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2017 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.

# Ethiopia - MCV1

ETH - MCV1



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	49	54	59	64	68	62	55	54	65	66	65	61
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	65	74	75	81	82	80	62	81	92	93	92	88
Administrative	65	74	75	81	82	80	76	84	92	93	92	88
Survey	NA	NA	NA	56	68	NA	55	54	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: 2017 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:

- 2018: Reported data calibrated to 2014 levels. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. Estimate challenged by: D-R-
- 2017: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-
- 2016: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-S-
- 2015: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 54 percent based on 1 survey(s). Beginning in 2013 and continuing through 2014, the national immunization programme has implemented a programme improvement plan. From 2013 to 2014, the number of health centers and health posts increased with more than 90 percent of health facilities providing immunization services. Intensified efforts were conducted in training on supportive supervision and immunization in practice with a focus on Reaching Every District. The government reports an increase in reporting completeness from 83 to 98 percent. The official government estimate is based on the application of a verification factor from a 2014 DQS applied to HMIS coverage levels. Observed increases between 2013 and 2014 in the reported official coverage are of such magnitude that additional supporting evidence of the increase is needed. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2013: Estimate of 55 percent assigned by working group. Estimate based on survey results. During 2013, the national immunization programme has implemented a programme improvement plan. During 2013, the number of health centers and health posts increased as did the number of health extension workers in health posts. Observed decreases in the number of children vaccinated between 2012 and 2013 are believed to reflect improved recording and reporting rather than a true decline in service delivery. The official government estimate is based on the application of a verification factor from a 2013 DQS applied to HMIS coverage levels. GoC=Assigned by working group. .
- 2012: Reported data calibrated to 2011 and 2013 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2011: Estimate of 68 percent assigned by working group. . Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Information on child immunization was available from immunization cards for 47 percent of children aged 12-23 months, additional documented information was obtained through health facility review. Estimate challenged by: R-S-
- 2010: Reported data calibrated to 2004 and 2011 levels. Ethiopia Demographic and Health Survey 2011 results ignored by working group. Survey results do not include data obtained from health facility records. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-

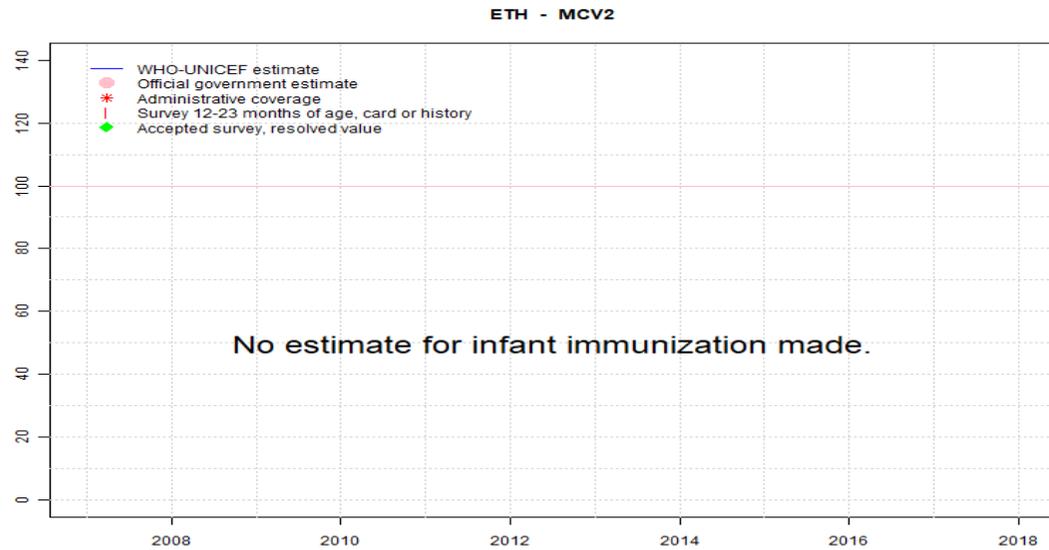
# Ethiopia - MCV1

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2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

2007: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

# Ethiopia - MCV2



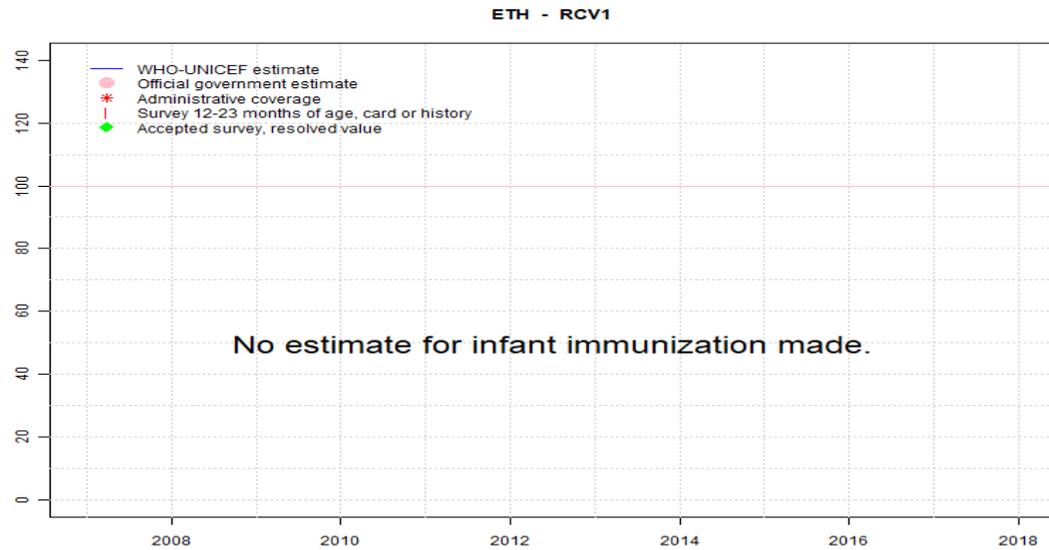
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	NA											
Estimate GoC	NA											
Official	NA											
Administrative	NA											
Survey	NA											

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: 2017 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.

# Ethiopia - RCV1



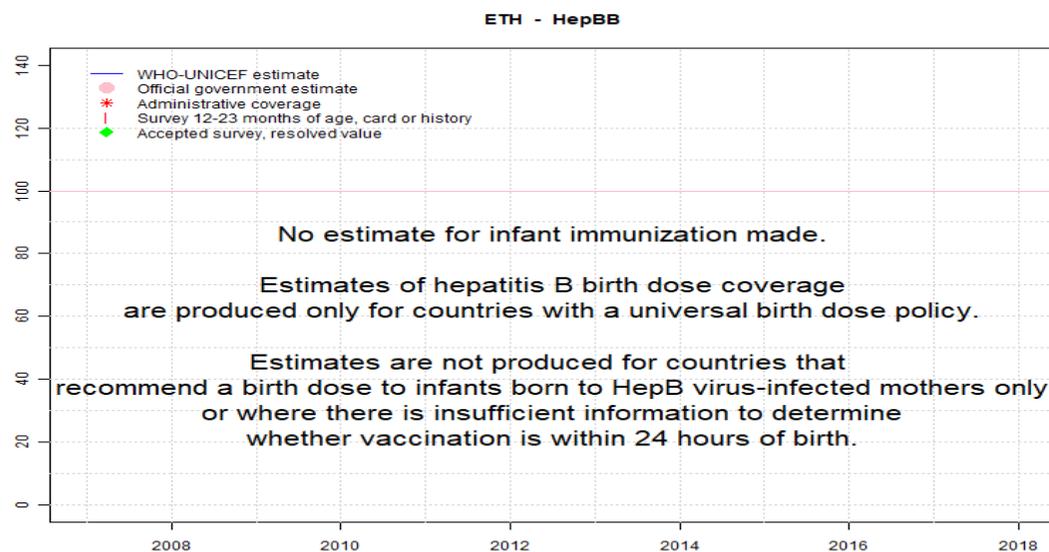
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	NA											
Estimate GoC	NA											
Official	NA											
Administrative	NA											
Survey	NA											

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: 2017 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.

# Ethiopia - HepBB



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	NA											
Estimate GoC	NA											
Official	NA											
Administrative	NA											
Survey	NA											

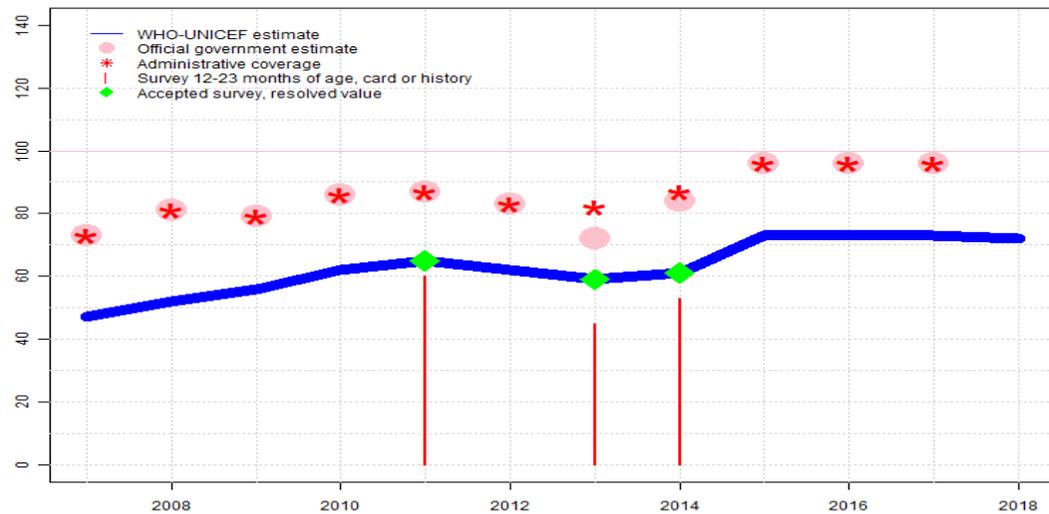
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2017 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.

# Ethiopia - HepB3

ETH - HepB3



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	47	52	56	62	65	62	59	61	73	73	73	72
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	73	81	79	86	87	83	72	84	96	96	96	NA
Administrative	73	81	79	86	87	83	82	87	96	96	96	NA
Survey	NA	NA	NA	NA	60	NA	45	53	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: 2017 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:

- 2018: Estimate based on estimated DTP3 coverage. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. GoC=No accepted empirical data
- 2017: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-
- 2016: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-S-
- 2015: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 61 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 53 percent modified for recall bias to 61 percent based on 1st dose card or history coverage of 73 percent, 1st dose card only coverage of 57 percent and 3rd dose card only coverage of 48 percent. Beginning in 2013 and continuing through 2014, the national immunization programme has implemented a programme improvement plan. From 2013 to 2014, the number of health centers and health posts increased with more than 90 percent of health facilities providing immunization services. Intensified efforts were conducted in training on supportive supervision and immunization in practice with a focus on Reaching Every District. The government reports an increase in reporting completeness from 83 to 98 percent. The official government estimate is based on the application of a verification factor from a 2014 DQS applied to HMIS coverage levels. Observed increases between 2013 and 2014 in the reported official coverage are of such magnitude that additional supporting evidence of the increase is needed. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 59 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 45 percent modified for recall bias to 59 percent based on 1st dose card or history coverage of 67 percent, 1st dose card only coverage of 41 percent and 3rd dose card only coverage of 36 percent. During 2013, the national immunization programme has implemented a programme improvement plan. During 2013, the number of health centers and health posts increased as did the number of health extension workers in health posts. Observed decreases in the number of children vaccinated between 2012 and 2013 are believed to reflect improved recording and reporting rather than a true decline in service delivery. The official government estimate is based on the application of a verification factor from a 2013 DQS applied to HMIS coverage levels. GoC=Assigned by working group. .
- 2012: Reported data calibrated to 2011 and 2013 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2011: Estimate of 65 percent assigned by working group. . Ethiopian Immunization Coverage Survey 2012 card or history results of 60 percent modified for recall bias to 65 percent based on 1st dose card or history coverage of 80 percent, 1st dose card only coverage of 59 percent and 3rd dose card only coverage of 48 percent. Reported data excluded.

# Ethiopia - HepB3

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See comment in 2013 regarding deficiencies in administrative reporting system. Information on child immunization was available from immunization cards for 47 percent of children aged 12-23 months, additional documented information was obtained through health facility review. Estimate challenged by: D-R-

2010: Reported data calibrated to 2007 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

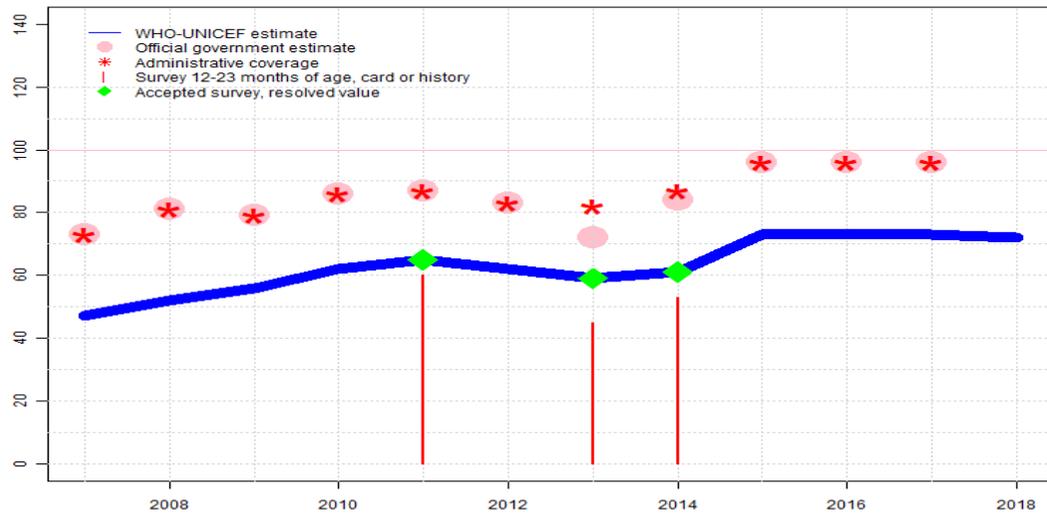
2009: Reported data calibrated to 2007 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

2008: Reported data calibrated to 2007 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

2007: Estimate of 47 percent assigned by working group. Estimate based on DTP3 value. HepB vaccine introduced in 2007. Vaccine presentation is DTP-HepB-Hib. Estimate challenged by: D-R-

# Ethiopia - Hib3

ETH - Hib3



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	47	52	56	62	65	62	59	61	73	73	73	72
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	73	81	79	86	87	83	72	84	96	96	96	NA
Administrative	73	81	79	86	87	83	82	87	96	96	96	NA
Survey	NA	NA	NA	NA	60	NA	45	53	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: 2017 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:

- 2018: Estimate based on estimated DTP3 coverage. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. GoC=No accepted empirical data
- 2017: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-
- 2016: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-S-
- 2015: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 61 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 53 percent modified for recall bias to 61 percent based on 1st dose card or history coverage of 73 percent, 1st dose card only coverage of 57 percent and 3rd dose card only coverage of 48 percent. Beginning in 2013 and continuing through 2014, the national immunization programme has implemented a programme improvement plan. From 2013 to 2014, the number of health centers and health posts increased with more than 90 percent of health facilities providing immunization services. Intensified efforts were conducted in training on supportive supervision and immunization in practice with a focus on Reaching Every District. The government reports an increase in reporting completeness from 83 to 98 percent. The official government estimate is based on the application of a verification factor from a 2014 DQS applied to HMIS coverage levels. Observed increases between 2013 and 2014 in the reported official coverage are of such magnitude that additional supporting evidence of the increase is needed. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 59 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 45 percent modified for recall bias to 59 percent based on 1st dose card or history coverage of 67 percent, 1st dose card only coverage of 41 percent and 3rd dose card only coverage of 36 percent. During 2013, the national immunization programme has implemented a programme improvement plan. During 2013, the number of health centers and health posts increased as did the number of health extension workers in health posts. Observed decreases in the number of children vaccinated between 2012 and 2013 are believed to reflect improved recording and reporting rather than a true decline in service delivery. The official government estimate is based on the application of a verification factor from a 2013 DQS applied to HMIS coverage levels. GoC=Assigned by working group. .
- 2012: Reported data calibrated to 2011 and 2013 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-
- 2011: Estimate of 65 percent assigned by working group. . Ethiopian Immunization Coverage Survey 2012 card or history results of 60 percent modified for recall bias to 65 percent based on 1st dose card or history coverage of 80 percent, 1st dose card only coverage of 59 percent and 3rd dose card only coverage of 48 percent. Reported data excluded.

# Ethiopia - Hib3

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See comment in 2013 regarding deficiencies in administrative reporting system. Information on child immunization was available from immunization cards for 47 percent of children aged 12-23 months, additional documented information was obtained through health facility review. Estimate challenged by: D-R-

2010: Reported data calibrated to 2007 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

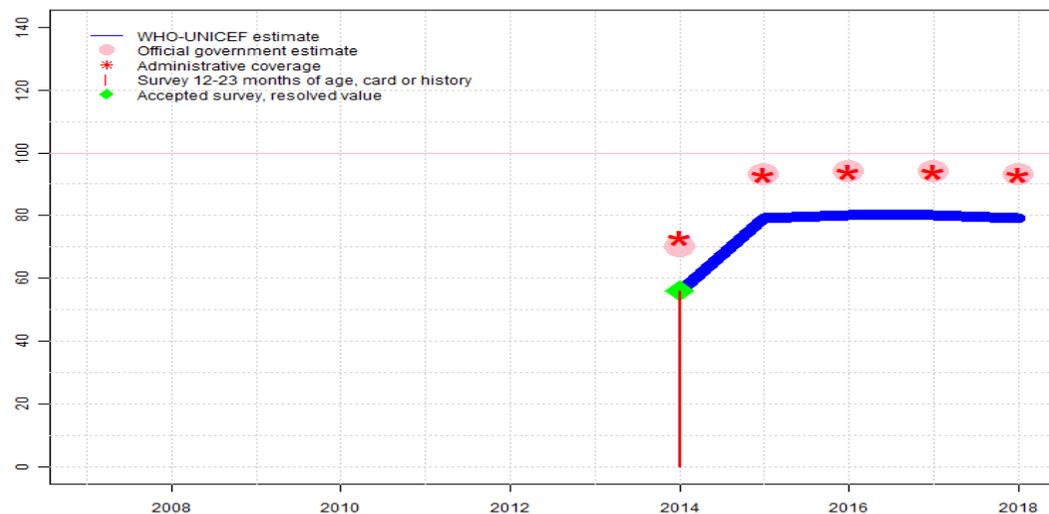
2009: Reported data calibrated to 2007 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

2008: Reported data calibrated to 2007 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

2007: Estimate of 47 percent assigned by working group. Estimate based on DTP3 value. Hib vaccine introduced in 2007 Vaccine presentation is DTP-HepB-Hib. Estimate challenged by: D-R-

# Ethiopia - RotaC

ETH - RotaC



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	NA	56	79	80	80	79						
Estimate GoC	NA	•	•	•	•	•						
Official	NA	70	93	94	94	93						
Administrative	NA	73	93	94	94	93						
Survey	NA	56	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: 2017 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.

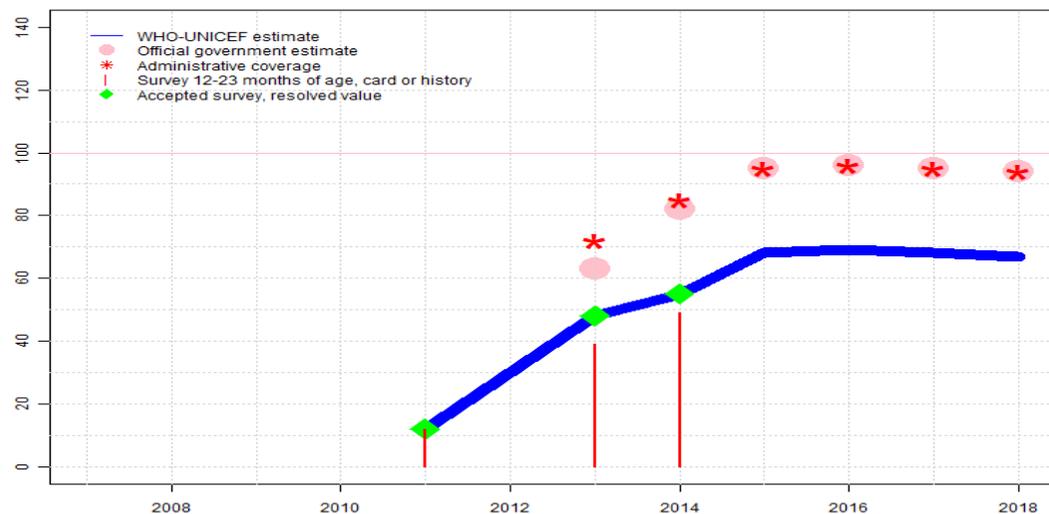
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2018: Reported data calibrated to 2014 levels. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. Estimate challenged by: R-
- 2017: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-
- 2016: Reported data calibrated to 2014 levels. Estimate challenged by: R-S-
- 2015: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 56 percent based on 1 survey(s). Rotavirus vaccine introduced during November 2013 and reporting began during 2014. Beginning in 2013 and continuing through 2014, the national immunization programme has implemented a programme improvement plan. From 2013 to 2014, the number of health centers and health posts increased with more than 90 percent of health facilities providing immunization services. Intensified efforts were conducted in training on supportive supervision and immunization in practice with a focus on Reaching Every District. The government reports an increase in reporting completeness from 83 to 98 percent. The official government estimate is based on the application of a verification factor from a 2014 DQS applied to HMIS coverage levels. Observed increases between 2013 and 2014 in the reported official coverage are of such magnitude that additional supporting evidence of the increase is needed. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.

# Ethiopia - PcV3

ETH - PcV3



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Estimate	NA	NA	NA	NA	12	30	48	55	68	69	68	67
Estimate GoC	NA	NA	NA	NA	•	•	•	•	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	63	82	95	96	95	94
Administrative	NA	NA	NA	NA	NA	NA	72	85	95	96	95	94
Survey	NA	NA	NA	NA	12	NA	39	49	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: 2017 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:

- 2018: Reported data calibrated to 2014 levels. WHO and UNICEF are aware of an ongoing 2019 DHS survey and await results. Estimate challenged by: D-R-
- 2017: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-
- 2016: Reported data calibrated to 2014 levels. Estimate challenged by: D-R-S-
- 2015: Reported data calibrated to 2014 levels. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2014: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 55 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 49 percent modified for recall bias to 55 percent based on 1st dose card or history coverage of 67 percent, 1st dose card only coverage of 54 percent and 3rd dose card only coverage of 44 percent. Beginning in 2013 and continuing through 2014, the national immunization programme has implemented a programme improvement plan. From 2013 to 2014, the number of health centers and health posts increased with more than 90 percent of health facilities providing immunization services. Intensified efforts were conducted in training on supportive supervision and immunization in practice with a focus on Reaching Every District. The government reports an increase in reporting completeness from 83 to 98 percent. The official government estimate is based on the application of a verification factor from a 2014 DQS applied to HMIS coverage levels. Observed increases between 2013 and 2014 in the reported official coverage are of such magnitude that additional supporting evidence of the increase is needed. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.
- 2013: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 48 percent based on 1 survey(s). Ethiopia Demographic and Health Survey 2016 card or history results of 39 percent modified for recall bias to 48 percent based on 1st dose card or history coverage of 59 percent, 1st dose card only coverage of 38 percent and 3rd dose card only coverage of 31 percent. During 2013, the national immunization programme has implemented a programme improvement plan. During 2013, the number of health centers and health posts increased as did the number of health extension workers in health posts. Observed decreases in the number of children vaccinated between 2012 and 2013 are believed to reflect improved recording and reporting rather than a true decline in service delivery. The official government estimate is based on the application of a verification factor from a 2013 DQS applied to HMIS coverage levels. GoC=Assigned by working group. .
- 2012: Reported data calibrated to 2011 and 2013 levels. Estimate challenged by: S-
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 12 percent based on 1 survey(s). Pneumococcal conjugate vaccine (PCV) was introduced in 3rd quarter of 2011. PCV coverage is not include in the Health Management Information System. Information on child immunization was available from immunization cards for 47 percent of children aged 12-23 months, additional documented information was obtained through health facility review. GoC=Assigned by working group. .

# Ethiopia - survey details

## 2014 Ethiopia Demographic and Health Survey 2016

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	67.9	12-23 m	2004	34
BCG	Card	51.4	12-23 m	1152	34
BCG	Card or History	69.2	12-23 m	2004	34
BCG	History	17.7	12-23 m	852	34
DTP1	C or H <12 months	56.7	12-23 m	2004	34
DTP1	Card	56.8	12-23 m	1152	34
DTP1	Card or History	73.2	12-23 m	2004	34
DTP1	History	16.4	12-23 m	852	34
DTP3	C or H <12 months	32.2	12-23 m	2004	34
DTP3	Card	47.7	12-23 m	1152	34
DTP3	Card or History	53.2	12-23 m	2004	34
DTP3	History	5.5	12-23 m	852	34
HepB1	C or H <12 months	56.7	12-23 m	2004	34
HepB1	Card	56.8	12-23 m	1152	34
HepB1	Card or History	73.2	12-23 m	2004	34
HepB1	History	16.4	12-23 m	852	34
HepB3	C or H <12 months	32.2	12-23 m	2004	34
HepB3	Card	47.7	12-23 m	1152	34
HepB3	Card or History	53.2	12-23 m	2004	34
HepB3	History	5.5	12-23 m	852	34
Hib1	C or H <12 months	56.7	12-23 m	2004	34
Hib1	Card	56.8	12-23 m	1152	34
Hib1	Card or History	73.2	12-23 m	2004	34
Hib1	History	16.4	12-23 m	852	34
Hib3	C or H <12 months	32.2	12-23 m	2004	34
Hib3	Card	47.7	12-23 m	1152	34
Hib3	Card or History	53.2	12-23 m	2004	34
Hib3	History	5.5	12-23 m	852	34
MCV1	C or H <12 months	47.4	12-23 m	2004	34
MCV1	Card	42	12-23 m	1152	34
MCV1	Card or History	54.3	12-23 m	2004	34
MCV1	History	12.4	12-23 m	852	34
PCV1	C or H <12 months	65.8	12-23 m	2004	34
PCV1	Card	54	12-23 m	1152	34
PCV1	Card or History	67	12-23 m	2004	34
PCV1	History	13	12-23 m	852	34
PCV3	C or H <12 months	47.6	12-23 m	2004	34

PCV3	Card	43.9	12-23 m	1152	34
PCV3	Card or History	49.1	12-23 m	2004	34
PCV3	History	5.3	12-23 m	852	34
Pol1	C or H <12 months	79.1	12-23 m	2004	34
Pol1	Card	56.8	12-23 m	1152	34
Pol1	Card or History	80.6	12-23 m	2004	34
Pol1	History	23.8	12-23 m	852	34
Pol3	C or H <12 months	54.4	12-23 m	2004	34
Pol3	Card	48.1	12-23 m	1152	34
Pol3	Card or History	56.4	12-23 m	2004	34
Pol3	History	8.3	12-23 m	852	34
RotaC	C or H <12 months	54.1	12-23 m	2004	34
RotaC	Card	46.3	12-23 m	1152	34
RotaC	Card or History	56	12-23 m	2004	34
RotaC	History	9.7	12-23 m	852	34

\* coverage levels confirmed by card include evidence of vaccination from cards as well as information obtained from a review of health facility records.

## 2013 Ethiopia Demographic and Health Survey 2016

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	62.9	24-35 m	1944	34
BCG	Card	40.4	24-35 m	812	34
BCG	Card or History	67.9	24-35 m	1944	34
BCG	History	27.6	24-35 m	1132	34
DTP1	C or H <12 months	44.8	24-35 m	1944	34
DTP1	Card	41.2	24-35 m	812	34
DTP1	Card or History	67.1	24-35 m	1944	34
DTP1	History	26	24-35 m	1132	34
DTP3	C or H <12 months	23.5	24-35 m	1944	34
DTP3	Card	36.1	24-35 m	812	34
DTP3	Card or History	44.9	24-35 m	1944	34
DTP3	History	8.8	24-35 m	1132	34
HepB1	C or H <12 months	44.8	24-35 m	1944	34
HepB1	Card	41.2	24-35 m	812	34
HepB1	Card or History	67.1	24-35 m	1944	34
HepB1	History	26	24-35 m	1132	34
HepB3	C or H <12 months	23.5	24-35 m	1944	34
HepB3	Card	36.1	24-35 m	812	34
HepB3	Card or History	44.9	24-35 m	1944	34
HepB3	History	8.8	24-35 m	1132	34

# Ethiopia - survey details

Hib1	C or H <12 months	44.8	24-35 m	1944	34	DTP3	Card or History	59.5	12-23 m	3762	47
Hib1	Card	41.2	24-35 m	812	34	DTP3	History	11.9	12-23 m	-	47
Hib1	Card or History	67.1	24-35 m	1944	34	HepB1	Card	58.8	12-23 m	-	47
Hib1	History	26	24-35 m	1132	34	HepB1	Card or History	80	12-23 m	3762	47
Hib3	C or H <12 months	23.5	24-35 m	1944	34	HepB1	History	21.2	12-23 m	-	47
Hib3	Card	36.1	24-35 m	812	34	HepB3	Card	47.7	12-23 m	-	47
Hib3	Card or History	44.9	24-35 m	1944	34	HepB3	Card or History	59.5	12-23 m	3762	47
Hib3	History	8.8	24-35 m	1132	34	HepB3	History	11.9	12-23 m	-	47
MCV1	C or H <12 months	41.8	24-35 m	1944	34	Hib1	Card	58.8	12-23 m	-	47
MCV1	Card	34.7	24-35 m	812	34	Hib1	Card or History	80	12-23 m	3762	47
MCV1	Card or History	54.6	24-35 m	1944	34	Hib1	History	21.2	12-23 m	-	47
MCV1	History	20	24-35 m	1132	34	Hib3	Card	47.7	12-23 m	-	47
PCV1	C or H <12 months	56.2	24-35 m	1944	34	Hib3	Card or History	59.5	12-23 m	3762	47
PCV1	Card	37.7	24-35 m	812	34	Hib3	History	11.9	12-23 m	-	47
PCV1	Card or History	58.9	24-35 m	1944	34	MCV1	Card	41.8	12-23 m	-	47
PCV1	History	21.3	24-35 m	1132	34	MCV1	Card or History	68.2	12-23 m	3762	47
PCV3	C or H <12 months	35.3	24-35 m	1944	34	MCV1	History	26.4	12-23 m	-	47
PCV3	Card	31	24-35 m	812	34	PcV1	Card or History	19.3	12-23 m	3762	47
PCV3	Card or History	38.8	24-35 m	1944	34	PcV3	Card or History	11.6	12-23 m	3762	47
PCV3	History	7.7	24-35 m	1132	34	Pol1	Card	58.2	12-23 m	-	47
Pol1	C or H <12 months	73	24-35 m	1944	34	Pol1	Card or History	90.1	12-23 m	3762	47
Pol1	Card	41.1	24-35 m	812	34	Pol1	History	31.9	12-23 m	-	47
Pol1	Card or History	77.6	24-35 m	1944	34	Pol3	Card	45.4	12-23 m	-	47
Pol1	History	36.4	24-35 m	1132	34	Pol3	Card or History	70.5	12-23 m	3762	47
Pol3	C or H <12 months	46.7	24-35 m	1944	34	Pol3	History	25.1	12-23 m	-	47
Pol3	Card	35.8	24-35 m	812	34						
Pol3	Card or History	51.6	24-35 m	1944	34						
Pol3	History	15.8	24-35 m	1132	34						

\* coverage levels confirmed by card include evidence of vaccination from cards as well as information obtained from a review of health facility records.

## 2010 Ethiopia Demographic and Health Survey 2011

## 2011 Ethiopian Immunization Coverage Survey 2012

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	53	12-23 m	-	47
BCG	Card or History	79.6	12-23 m	3762	47
BCG	History	26.6	12-23 m	-	47
DTP1	Card	58.8	12-23 m	-	47
DTP1	Card or History	80	12-23 m	3762	47
DTP1	History	21.2	12-23 m	-	47
DTP3	Card	47.7	12-23 m	-	47

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	65.2	12-23 m	1927	29
BCG	Card	25.5	12-23 m	1927	29
BCG	Card or History	66.3	12-23 m	1927	29
BCG	History	40.8	12-23 m	1927	29
DTP1	C or H <12 months	62.2	12-23 m	1927	29
DTP1	Card	28.1	12-23 m	1927	29
DTP1	Card or History	63.5	12-23 m	1927	29
DTP1	History	35.5	12-23 m	1927	29
DTP3	C or H <12 months	34.7	12-23 m	1927	29
DTP3	Card	21.9	12-23 m	1927	29

# Ethiopia - survey details

DTP3	Card or History	36.5	12-23 m	1927	29
DTP3	History	14.6	12-23 m	1927	29
MCV1	C or H <12 months	49.3	12-23 m	1927	29
MCV1	Card	22	12-23 m	1927	29
MCV1	Card or History	55.7	12-23 m	1927	29
MCV1	History	33.8	12-23 m	1927	29
Pol1	C or H <12 months	80.9	12-23 m	1927	29
Pol1	Card	27.4	12-23 m	1927	29
Pol1	Card or History	82.3	12-23 m	1927	29
Pol1	History	54.9	12-23 m	1927	29
Pol3	C or H <12 months	43.1	12-23 m	1927	29
Pol3	Card	20.5	12-23 m	1927	29
Pol3	Card or History	44.3	12-23 m	1927	29
Pol3	History	23.8	12-23 m	1927	29

## 2005 EPI Coverage Cluster Sampling Survey 2006 Ethiopia

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	58.2	12-23 m	6903	60
BCG	Card or History	83.4	12-23 m	6903	60
DTP1	Card	53.8	12-23 m	6903	60
DTP1	Card or History	84.3	12-23 m	6903	60
DTP3	Card	41.1	12-23 m	6903	60
DTP3	Card or History	66	12-23 m	6903	60
MCV1	Card	27.2	12-23 m	6903	60
MCV1	Card or History	54.3	12-23 m	6903	60
Pol1	Card	51.8	12-23 m	6903	60
Pol1	Card or History	82.8	12-23 m	6903	60
Pol3	Card	39.5	12-23 m	6903	60
Pol3	Card or History	66.8	12-23 m	6903	60

## 2004 Ethiopia Demographic and Health Survey 2005

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	57.4	12-23 m	1877	37
BCG	Card	33.4	12-23 m	1877	37
BCG	Card or History	60.4	12-23 m	1877	37

BCG	History	27	12-23 m	1877	37
DTP1	C or H <12 months	54.9	12-23 m	1877	37
DTP1	Card	36.5	12-23 m	1877	37
DTP1	Card or History	58.2	12-23 m	1877	37
DTP1	History	21.7	12-23 m	1877	37
DTP3	C or H <12 months	29	12-23 m	1877	37
DTP3	Card	25.1	12-23 m	1877	37
DTP3	Card or History	31.9	12-23 m	1877	37
DTP3	History	6.7	12-23 m	1877	37
MCV1	C or H <12 months	28.5	12-23 m	1877	37
MCV1	Card	22.2	12-23 m	1877	37
MCV1	Card or History	34.9	12-23 m	1877	37
MCV1	History	12.6	12-23 m	1877	37
Pol1	C or H <12 months	70	12-23 m	1877	37
Pol1	Card	35.8	12-23 m	1877	37
Pol1	Card or History	74.3	12-23 m	1877	37
Pol1	History	38.5	12-23 m	1877	37
Pol3	C or H <12 months	41	12-23 m	1877	37
Pol3	Card	24.9	12-23 m	1877	37
Pol3	Card or History	44.7	12-23 m	1877	37
Pol3	History	19.8	12-23 m	1877	37

## 2003 Ethiopia Welfare Monitoring Survey 2004

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	NA	57	12-23 m	1949368	-
DTP1	NA	59.1	12-23 m	1949368	-
DTP3	NA	50.3	12-23 m	1949368	-
MCV1	NA	59.5	12-23 m	1949368	-
Pol1	NA	64.1	12-23 m	1949368	-
Pol3	NA	55.6	12-23 m	1949368	-

## 2000 National EPI Coverage Survey, Ethiopia 2000, 2001

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	75.9	12-23 m	3564	52
DTP1	Card or History	74.1	12-23 m	3564	52

# Ethiopia - survey details

DTP3	Card or History	56.3	12-23 m	3564	52
MCV1	Card or History	51.9	12-23 m	3564	52
Pol1	Card or History	74	12-23 m	3564	52
Pol3	Card or History	57	12-23 m	3564	52

## 1999 Ethiopia Demographic and Health Survey 2000, 2001

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	40.7	12-23 m	2143	27
BCG	Card	23.9	12-23 m	2143	27
BCG	Card or History	45.6	12-23 m	2143	27
BCG	History	21.7	12-23 m	2143	27
DTP1	C or H <12 months	39.8	12-23 m	2143	27
DTP1	Card	26.5	12-23 m	2143	27
DTP1	Card or History	44.4	12-23 m	2143	27
DTP1	History	17.9	12-23 m	2143	27
DTP3	C or H <12 months	18.1	12-23 m	2143	27
DTP3	Card	16.5	12-23 m	2143	27
DTP3	Card or History	20.7	12-23 m	2143	27
DTP3	History	4.2	12-23 m	2143	27
MCV1	C or H <12 months	20.6	12-23 m	2143	27
MCV1	Card	17.1	12-23 m	2143	27
MCV1	Card or History	26.6	12-23 m	2143	27
MCV1	History	9.5	12-23 m	2143	27
Pol1	C or H <12 months	74.4	12-23 m	2143	27
Pol1	Card	26.5	12-23 m	2143	27
Pol1	Card or History	82.7	12-23 m	2143	27
Pol1	History	56.2	12-23 m	2143	27
Pol3	C or H <12 months	30.4	12-23 m	2143	27
Pol3	Card	18	12-23 m	2143	27
Pol3	Card or History	34.6	12-23 m	2143	27
Pol3	History	16.5	12-23 m	2143	27

## 1998 Ethiopia Demographic and Health Survey 2000, 2001

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	43	24-35 m	2084	27
DTP1	C or H <12 months	40.9	24-35 m	2084	27
DTP3	C or H <12 months	21.4	24-35 m	2084	27
MCV1	C or H <12 months	21.7	24-35 m	2084	27
Pol1	C or H <12 months	71.8	24-35 m	2084	27
Pol3	C or H <12 months	39.7	24-35 m	2084	27

## 1997 Ethiopia Demographic and Health Survey 2000, 2001

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	42.9	36-47 m	2260	27
DTP1	C or H <12 months	38.7	36-47 m	2260	27
DTP3	C or H <12 months	21.9	36-47 m	2260	27
MCV1	C or H <12 months	19.8	36-47 m	2260	27
Pol1	C or H <12 months	71	36-47 m	2260	27
Pol3	C or H <12 months	42.8	36-47 m	2260	27

## 1997 Ethiopia, Report on the 1998 Health and Nutrition Survey, 1999

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	52.5	12-23 m	-	-
DTP3	Card or History	53.3	12-23 m	-	-
MCV1	Card or History	48.7	12-23 m	-	-
Pol3	Card or History	81.8	12-23 m	-	-

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)