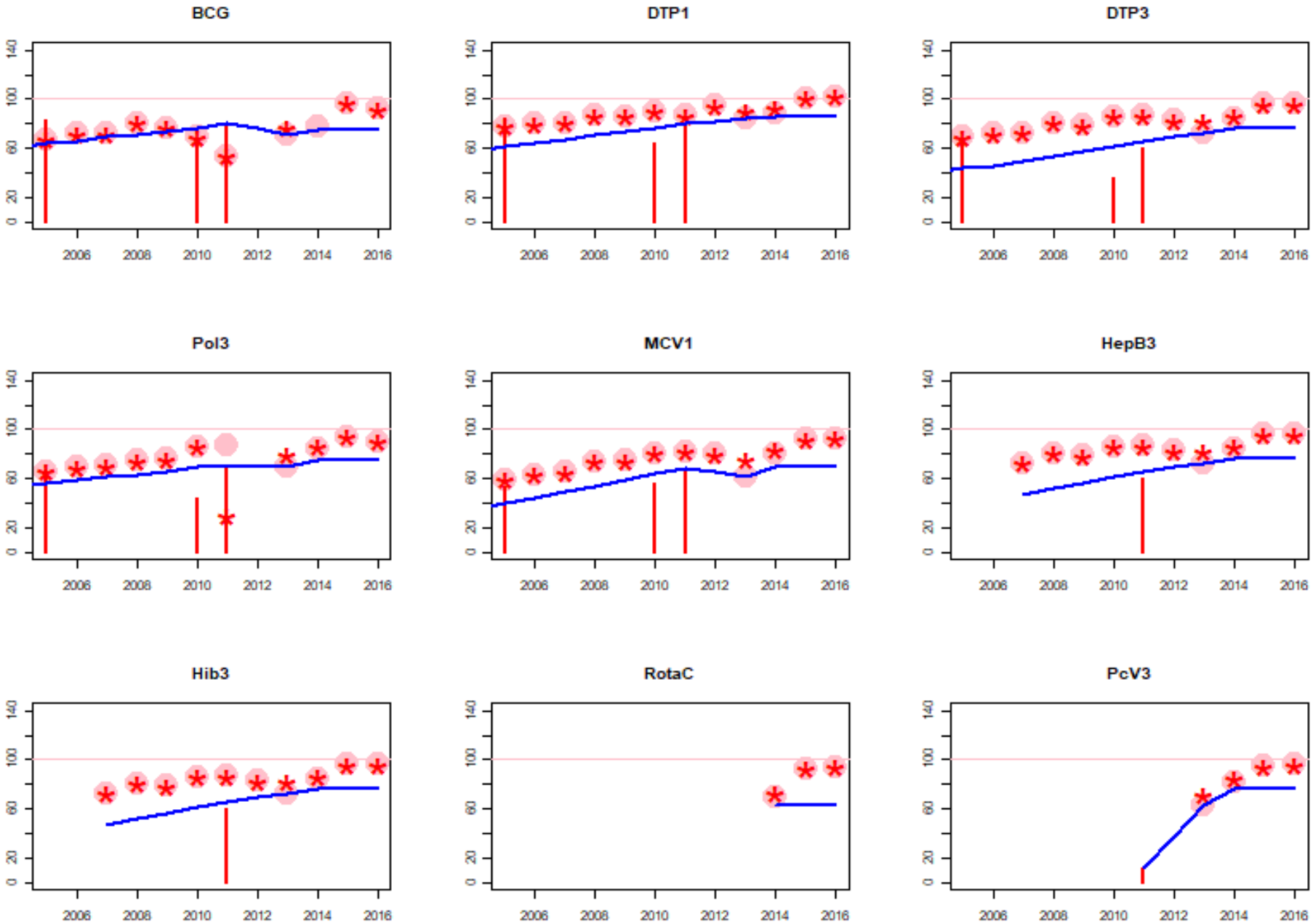

BCG
DTP1
DTP3
Pol3
MCV1
HepB3
Hib3
RotaC
PcV3
0
20
60
100
140
2006
2008
2010
2012
2014
2016

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

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

*Burton et al. 2009. WHO and UNICEF estimates of national infant immunization coverage: methods and processes.
*Burton et al. 2012. A formal representation of the WHO and UNICEF estimates of national immunization coverage: a computational logic approach.
*Brown et al. 2013. An introduction to the grade of confidence used to characterize uncertainty around the WHO and UNICEF estimates of national immunization coverage.

DATA SOURCES.

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

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

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

ABBREVIATIONS

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

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

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

IPV1: percentage of surviving infants who received at least one dose of inactivated polio vaccine. In countries utilizing an immunization schedule recommending either (i) a primary series of three doses of oral polio vaccine (OPV) plus at least one dose of IPV where OPV is included in routine immunization and/or campaign or (ii) a sequential schedule of IPV followed by OPV, WHO and UNICEF estimates for IPV1 reflect coverage with at least one routine dose of IPV among infants <1 year of age among countries. For countries utilizing IPV containing vaccine use only, i.e., no recommended dose of OPV, the WHO and UNICEF estimate for IPV1 corresponds to coverage for the 1st dose of IPV.

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

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

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

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

HepBB: percentage of births which received a dose of hepatitis B vaccine within 24 hours of delivery. Estimates of hepatitis B birth dose coverage are producted 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.

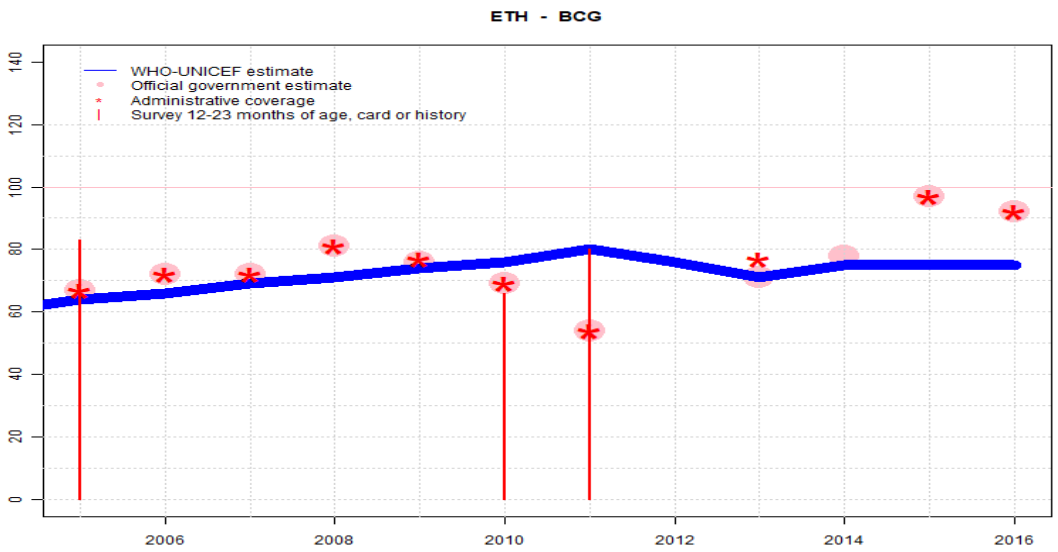
Hib3: percentage of surviving infants who received the 3rd dose of Haemophilus influenzae type b containing vaccine.

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.

Ethiopia - BCG



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	64	66	69	71	74	76	80	76	71	75	75	75
Estimate GoC	•	•	•	•	•	•	•	••	•	•	•	•
Official	67	72	72	81	76	69	54	NA	71	78	97	92
Administrative	67	72	72	81	77	69	54	NA	77	NA	97	92
Survey	83	NA	NA	NA	NA	66	80	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 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Preliminary results from the 2016 Demographic and Health Survey (DHS) suggest coverage of 69 percent. Estimate challenged by: D-R-

2015: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Unexplained increase of 19 percentage points in the reported coverage between 2014 and 2015. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates in recent years following drop in target population size between 2012 and 2013.

2014: Estimate of 75 percent assigned by working group. Estimate reflects the increase in coverage documented by the administrative system. 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. Consistency across antigens. Unexplained, inconsistent target population estimates during past four years.

2013: 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-

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-

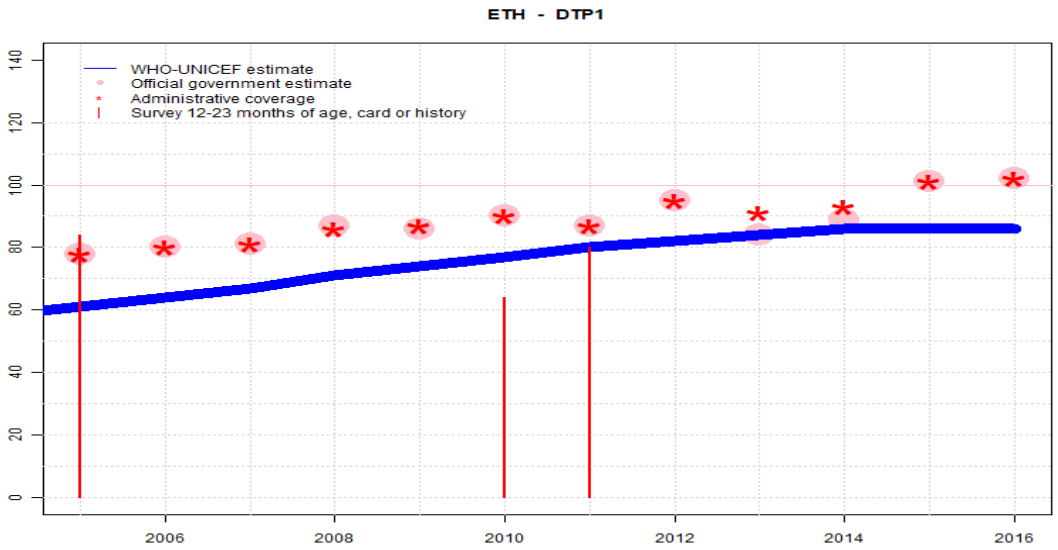
2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-

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-

2006: 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-

2005: Reported data calibrated to 2004 and 2011 levels. EPI Coverage Cluster Sampling Survey 2006 Ethiopia results ignored by working group. Survey results inconsistent with other data.Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-

Ethiopia - DTP1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	61	64	67	71	74	77	80	82	84	86	86	86
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	78	80	81	87	86	90	87	95	84	89	101	102
Administrative	78	80	81	86	87	90	87	95	91	93	101	102
Survey	84	NA	NA	NA	NA	64	80	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 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results.Reported data excluded because 102 percent greater than 100 percent. Preliminary results from the 2016 Demographic and Health Survey (DHS) suggest coverage of 73 percent. Estimate challenged by: D-R-

2015: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results.Reported data excluded because 101 percent greater than 100 percent. Estimate of 86 percent changed from previous revision value of 94 percent. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates in recent years following drop in target population size between 2012 and 2013.

2014: Estimate of 86 percent assigned by working group. Estimate reflects the increase in coverage documented by the administrative system. 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. Consistency across antigens. Unexplained, inconsistent target population estimates during past four years.

2013: 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. 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-

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-

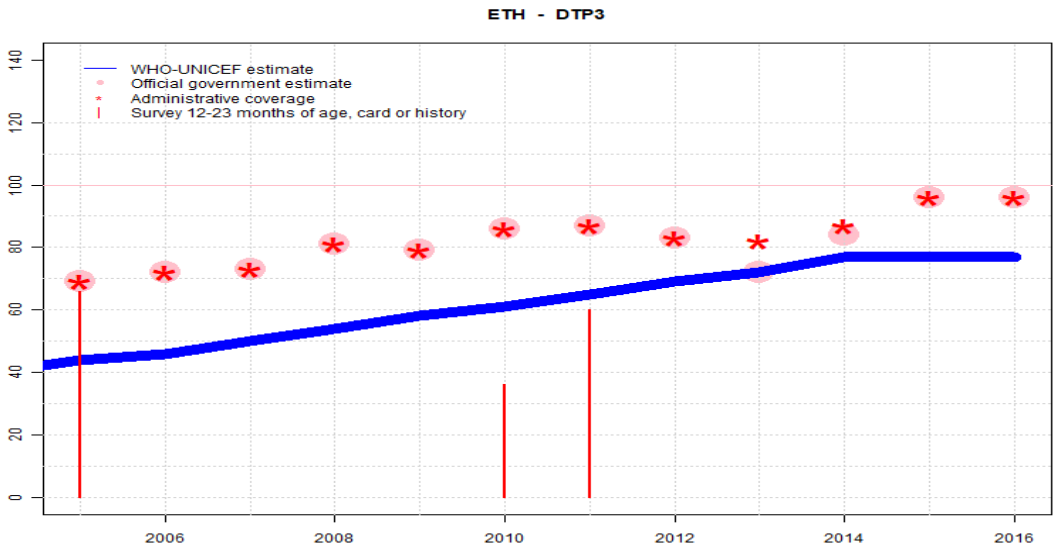
2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

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-

2006: 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-

2005: Reported data calibrated to 2004 and 2011 levels. EPI Coverage Cluster Sampling Survey 2006 Ethiopia results ignored by working group. Survey results inconsistent with other data.Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

Ethiopia - DTP3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	44	46	50	54	58	61	65	69	72	77	77	77
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	69	72	73	81	79	86	87	83	72	84	96	96
Administrative	69	72	73	81	79	86	87	83	82	87	96	96
Survey	66	NA	NA	NA	NA	36	60	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 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Preliminary results from the 2016 Demographic and Health Survey (DHS) suggest coverage of 53 percent. Estimate challenged by: D-R-

2015: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Estimate of 77 percent changed from previous revision value of 86 percent. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates in recent years following drop in target population size between 2012 and 2013.

2014: Estimate of 77 percent assigned by working group. Estimate reflects the increase in coverage documented by the administrative system. 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. Consistency across antigens. Unexplained, inconsistent target population estimates during past four years.

2013: 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. 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 modifed 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 3d dose card only coverage of 48 percent. 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-

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 modifed 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 3d 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-

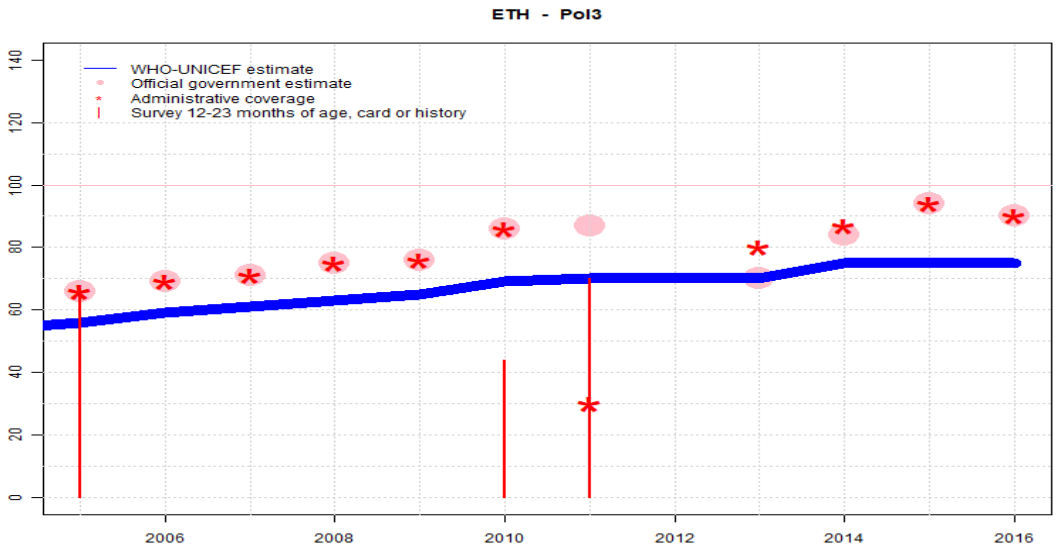
2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

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-

2006: 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-

2005: Reported data calibrated to 2004 and 2011 levels. EPI Coverage Cluster Sampling Survey 2006 Ethiopia results ignored by working group. Survey results inconsistent with other data.EPI Coverage Cluster Sampling Survey 2006 Ethiopia card or history results of 66 percent modifed for recall bias to 64 percent based on 1st dose card or history coverage of 84 percent, 1st dose card only coverage of 54 percent and 3d dose card only coverage of 41 percent. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

Ethiopia - Pol3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	56	59	61	63	65	69	70	70	70	75	75	75
Estimate GoC	•	•	•	•	•	•	•	••	•	•	•	•
Official	66	69	71	75	76	86	87	NA	70	84	94	90
Administrative	66	69	71	75	76	86	30	NA	80	87	94	90
Survey	67	NA	NA	NA	NA	44	70	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 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Preliminary results from the 2016 Demographic and Health Survey (DHS) suggest coverage of 56 percent. Estimate challenged by: D-R-

2015: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Estimate of 75 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates in recent years following drop in target population size between 2012 and 2013.

2014: Estimate of 75 percent assigned by working group. Estimate reflects the increase in coverage documented by the administrative system. 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. Consistency across antigens. Unexplained, inconsistent target population estimates during past four years.

2013: 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: Estimate of 70 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. 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. 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 modifed 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 3d 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-

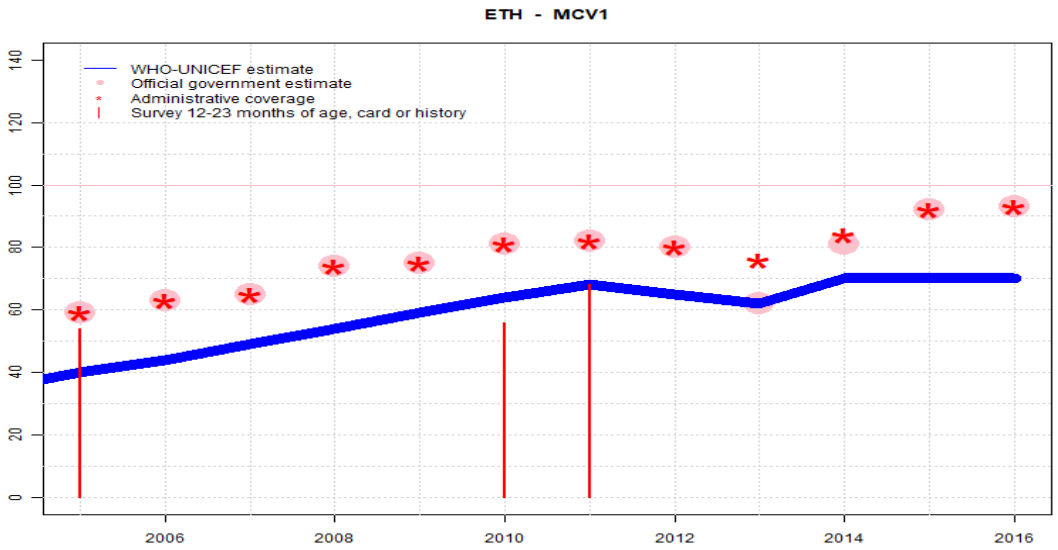
2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-

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-

2006: 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-

2005: Reported data calibrated to 2004 and 2011 levels. EPI Coverage Cluster Sampling Survey 2006 Ethiopia results ignored by working group. Survey results inconsistent with other data.EPI Coverage Cluster Sampling Survey 2006 Ethiopia card or history results of 67 percent modifed for recall bias to 64 percent based on 1st dose card or history coverage of 83 percent, 1st dose card only coverage of 52 percent and 3d dose card only coverage of 40 percent. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: R-

Ethiopia - MCV1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	40	44	49	54	59	64	68	65	62	70	70	70
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	59	63	65	74	75	81	82	80	62	81	92	93
Administrative	59	63	65	74	75	81	82	80	76	84	92	93
Survey	54	NA	NA	NA	NA	56	68	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 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Preliminary results from the 2016 Demographic and Health Survey (DHS) suggest coverage of 54 percent. Estimate challenged by: D-R-

2015: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Estimate of 70 percent changed from previous revision value of 78 percent. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates in recent years following drop in target population size between 2012 and 2013.

2014: Estimate of 70 percent assigned by working group. Estimate reflects the increase in coverage documented by the administrative system. 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. Consistency across antigens. Unexplained, inconsistent target population estimates during past four years.

2013: 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. 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 com-

ment 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.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-

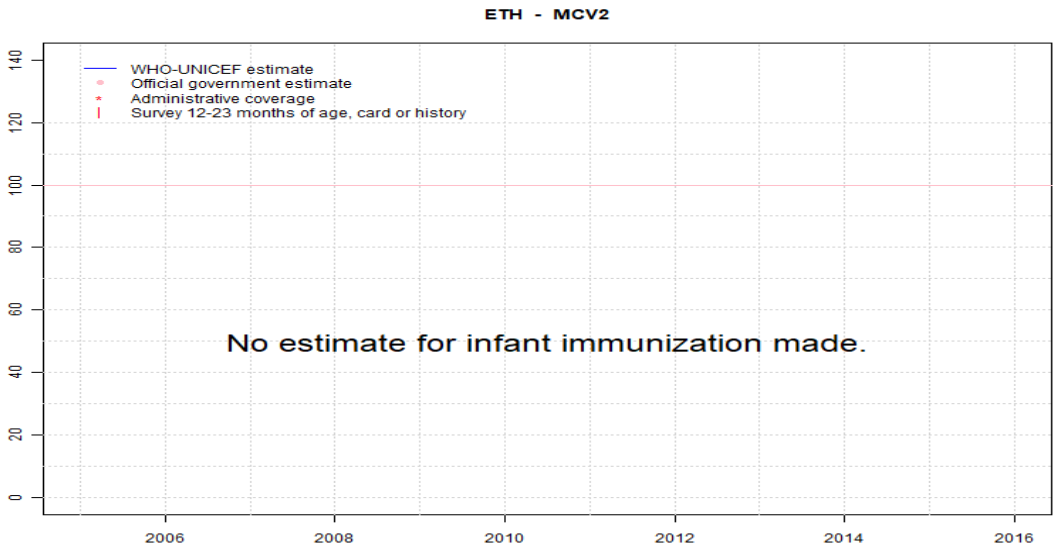
2008: Reported data calibrated to 2004 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

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-

2006: 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-

2005: Reported data calibrated to 2004 and 2011 levels. EPI Coverage Cluster Sampling Survey 2006 Ethiopia results ignored by working group. Survey results inconsistent with other data.Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

Ethiopia - MCV2



	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.

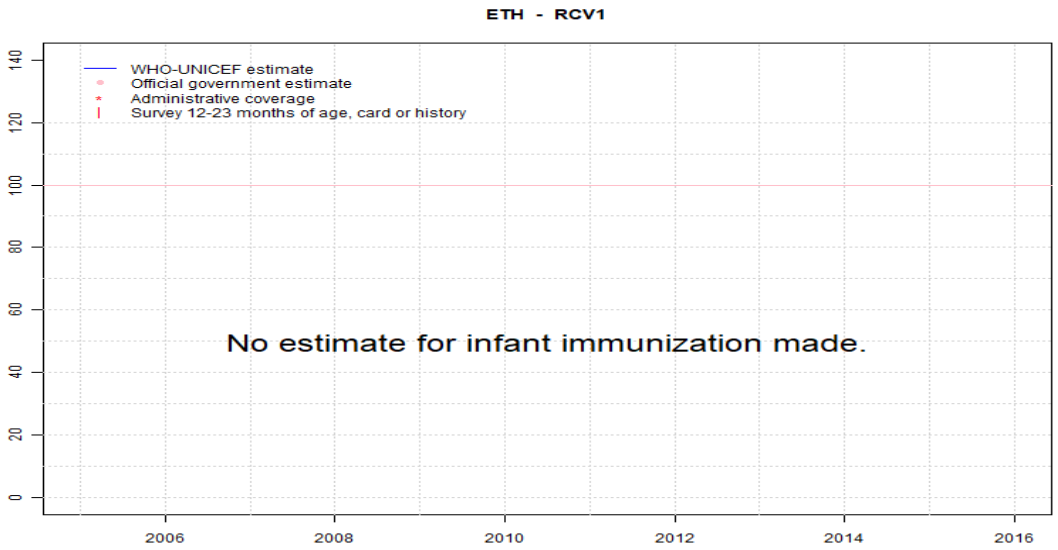
●●● Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

Ethiopia - RCV1



	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.

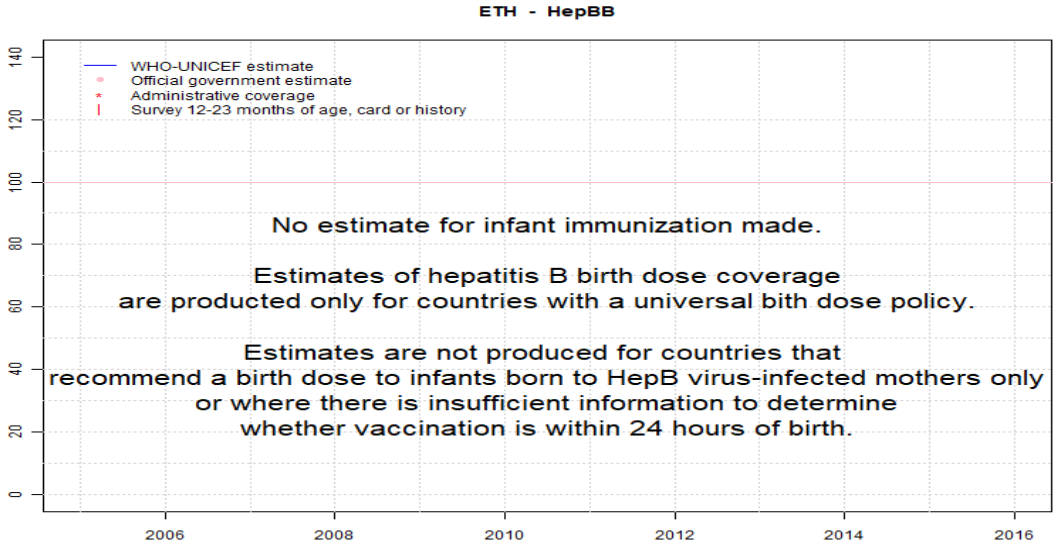
●●● Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

Ethiopia - 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.

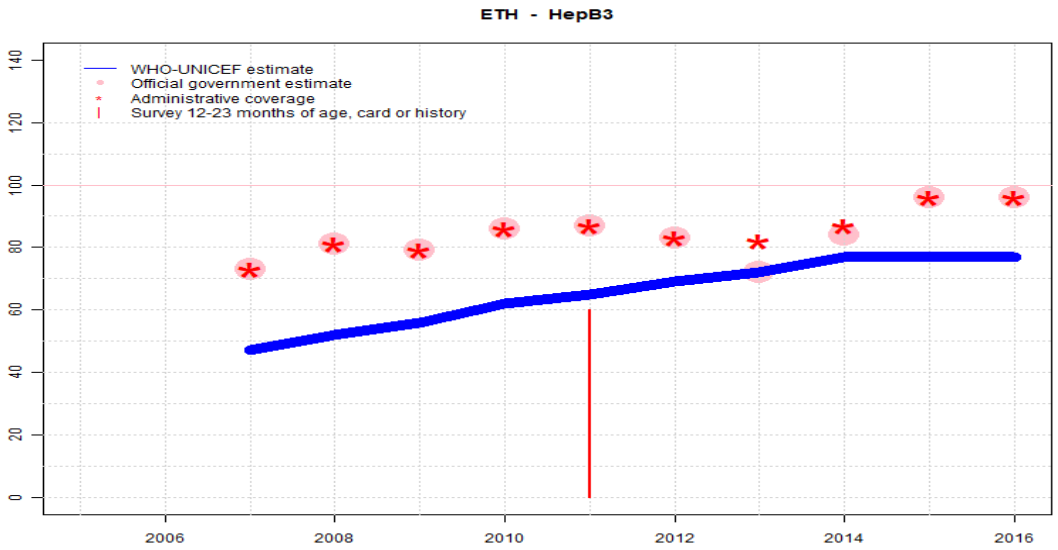
●●● Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

Ethiopia - HepB3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	47	52	56	62	65	69	72	77	77	77
Estimate GoC	NA	NA	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	73	81	79	86	87	83	72	84	96	96
Administrative	NA	NA	73	81	79	86	87	83	82	87	96	96
Survey	NA	NA	NA	NA	NA	NA	60	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 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Preliminary results from the 2016 Demographic and Health Survey (DHS) suggest coverage of 53 percent. Estimate challenged by: D-R-

2015: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Estimate of 77 percent changed from previous revision value of 86 percent. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates in recent years following drop in target population size between 2012 and 2013.

2014: Estimate of 77 percent assigned by working group. Estimate reflects the increase in coverage documented by the administrative system. 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. Consistency across antigens. Unexplained, inconsistent target population estimates during past four years.

2013: 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. 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 modifed 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 3d dose card only coverage of 48 percent. 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-

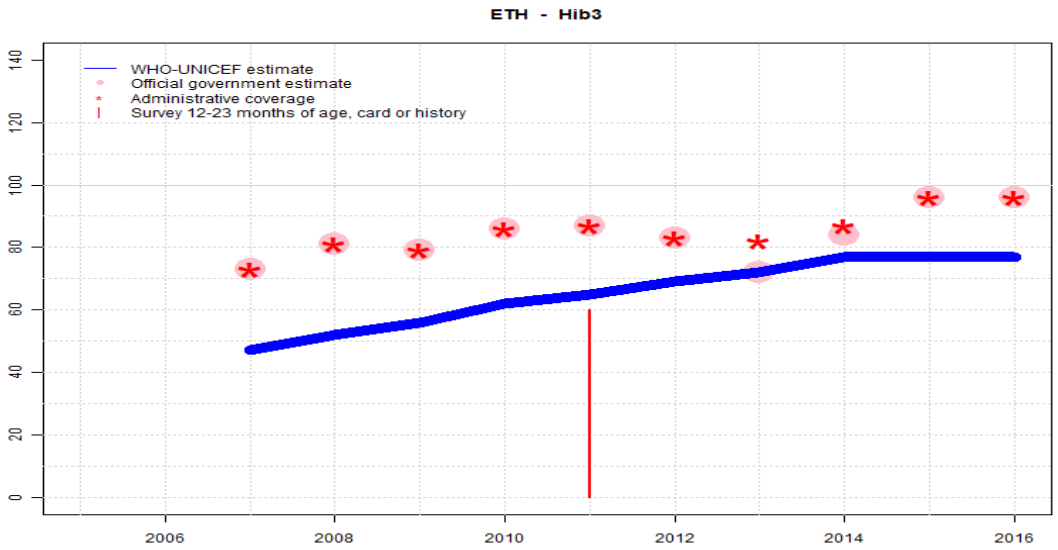
2010: Reported data calibrated to 2007 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

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



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	47	52	56	62	65	69	72	77	77	77
Estimate GoC	NA	NA	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	73	81	79	86	87	83	72	84	96	96
Administrative	NA	NA	73	81	79	86	87	83	82	87	96	96
Survey	NA	NA	NA	NA	NA	NA	60	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 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Preliminary results from the 2016 Demographic and Health Survey (DHS) suggest coverage of 53 percent. Estimate challenged by: D-R-

2015: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Estimate of 77 percent changed from previous revision value of 86 percent. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates in recent years following drop in target population size between 2012 and 2013.

2014: Estimate of 77 percent assigned by working group. Estimate reflects the increase in coverage documented by the administrative system. 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. Consistency across antigens. Unexplained, inconsistent target population estimates during past four years.

2013: 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. 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 modifed 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 3d dose card only coverage of 48 percent. 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-

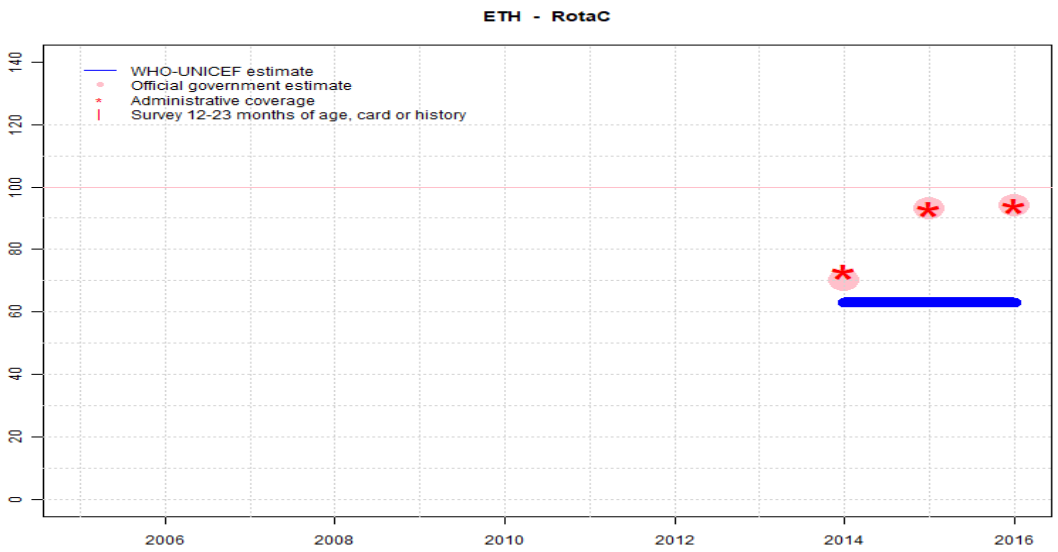
2010: Reported data calibrated to 2007 and 2011 levels. Reported data excluded. See comment in 2013 regarding deficiencies in administrative reporting system. Estimate challenged by: D-R-

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



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	63	63	63
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	70	93	94
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	73	93	94
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.

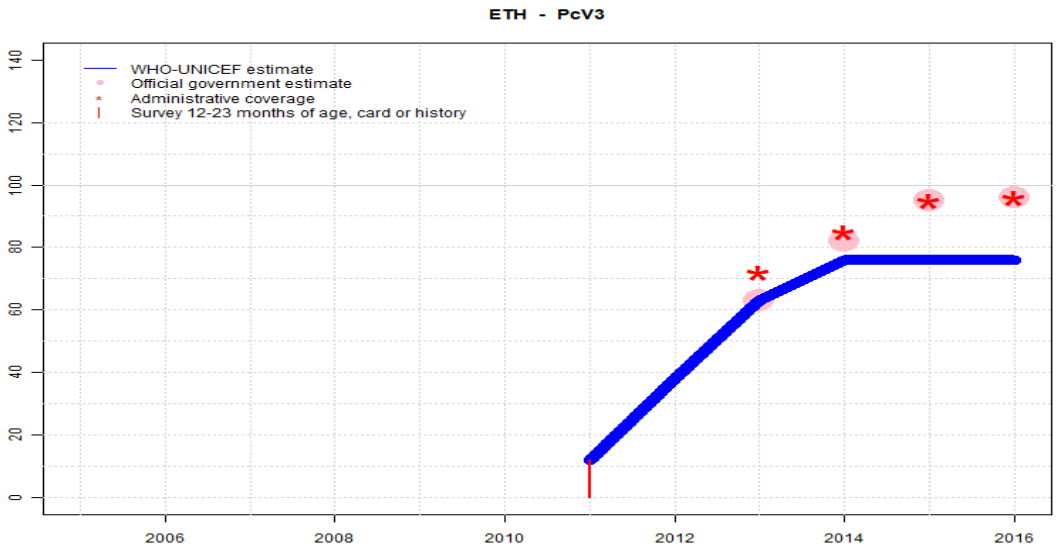
Description:

2016: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Preliminary results from the 2016 Demographic and Health Survey (DHS) suggest coverage of 56 percent. Estimate challenged by: D-R-

2015: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Estimate of 63 percent changed from previous revision value of 83 percent. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates in recent years following drop in target population size between 2012 and 2013.

2014: Estimate of 63 percent assigned by working group. Estimate reflects the difference between the estimate and reported adminiatrative coverage for DTP3. 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. Rotavirus vaccine introduced during November 2013 and reporting began during 2014. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates during past four years.

Ethiopia - PcV3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	12	38	63	76	76	76
Estimate GoC	NA	NA	NA	NA	NA	NA	•	•	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	63	82	95	96
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	72	85	95	96
Survey	NA	NA	NA	NA	NA	NA	12	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 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Preliminary results from the 2016 Demographic and Health Survey (DHS) suggest coverage of 49 percent. Estimate challenged by: D-R-

2015: Reported data calibrated to 2014 levels. Reported data excluded. Review of reported administrative data, numerator and denominator, over time alongside preliminary DHS results for 2015 birth cohort are inconsistent. WHO and UNICEF await final DHS results. Estimate of 76 percent changed from previous revision value of 85 percent. GoC=Assigned by working group. Consistency across antigens. Unexplained, inconsistent target population estimates in recent years following drop in target population size between 2012 and 2013.

2014: Estimate of 76 percent assigned by working group. Estimate reflects the increase in coverage documented by the administrative system. 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. Consistency across antigens. Unexplained, inconsistent target population estimates during past four years.

2013: 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. 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). 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. Pneumococcal conjugate vaccine (PCV) was introduced in 3rd quarter of 2011. PCV coverage is not include in the Health Management Information System. GoC=Assigned by working group. .

Ethiopia - survey details

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	80	12-23 m	3762	47
BCG	History	27	12-23 m	-	47
DTP1	Card	59	12-23 m	-	47
DTP1	Card or History	80	12-23 m	3762	47
DTP1	History	21	12-23 m	-	47
DTP3	Card	48	12-23 m	-	47
DTP3	Card or History	60	12-23 m	3762	47
DTP3	History	12	12-23 m	-	47
HepB1	Card	59	12-23 m	-	47
HepB1	Card or History	80	12-23 m	3762	47
HepB1	History	21	12-23 m	-	47
HepB3	Card	48	12-23 m	-	47
HepB3	Card or History	60	12-23 m	3762	47
HepB3	History	12	12-23 m	-	47
Hib1	Card	59	12-23 m	-	47
Hib1	Card or History	80	12-23 m	3762	47
Hib1	History	21	12-23 m	-	47
Hib3	Card	48	12-23 m	-	47
Hib3	Card or History	60	12-23 m	3762	47
Hib3	History	12	12-23 m	-	47
MCV1	Card	42	12-23 m	-	47
MCV1	Card or History	68	12-23 m	3762	47
MCV1	History	26	12-23 m	-	47
PcV1	Card or History	19	12-23 m	3762	47
PcV3	Card or History	12	12-23 m	3762	47
Pol1	Card	58	12-23 m	-	47
Pol1	Card or History	90	12-23 m	3762	47
Pol1	History	32	12-23 m	-	47
Pol3	Card	45	12-23 m	-	47
Pol3	Card or History	70	12-23 m	3762	47
Pol3	History	25	12-23 m	-	47

* 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

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	65	12-23 m	1927	29
BCG	Card	26	12-23 m	1927	29
BCG	Card or History	66	12-23 m	1927	29
BCG	History	41	12-23 m	1927	29
DTP1	C or H <12 months	62	12-23 m	1927	29
DTP1	Card	28	12-23 m	1927	29
DTP1	Card or History	64	12-23 m	1927	29
DTP1	History	36	12-23 m	1927	29
DTP3	C or H <12 months	35	12-23 m	1927	29
DTP3	Card	22	12-23 m	1927	29
DTP3	Card or History	36	12-23 m	1927	29
DTP3	History	15	12-23 m	1927	29
MCV1	C or H <12 months	49	12-23 m	1927	29
MCV1	Card	22	12-23 m	1927	29
MCV1	Card or History	56	12-23 m	1927	29
MCV1	History	34	12-23 m	1927	29
Pol1	C or H <12 months	81	12-23 m	1927	29
Pol1	Card	27	12-23 m	1927	29
Pol1	Card or History	82	12-23 m	1927	29
Pol1	History	55	12-23 m	1927	29
Pol3	C or H <12 months	43	12-23 m	1927	29
Pol3	Card	20	12-23 m	1927	29
Pol3	Card or History	44	12-23 m	1927	29
Pol3	History	24	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	12-23 m	6903	60
BCG	Card or History	83	12-23 m	6903	60
DTP1	Card	54	12-23 m	6903	60
DTP1	Card or History	84	12-23 m	6903	60
DTP3	Card	41	12-23 m	6903	60
DTP3	Card or History	66	12-23 m	6903	60
MCV1	Card	27	12-23 m	6903	60
MCV1	Card or History	54	12-23 m	6903	60
Pol1	Card	52	12-23 m	6903	60
Pol1	Card or History	83	12-23 m	6903	60

Pol3	Card	40	12-23 m	6903	60
Pol3	Card or History	67	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	12-23 m	1877	37
BCG	Card	33	12-23 m	1877	37
BCG	Card or History	60	12-23 m	1877	37
BCG	History	27	12-23 m	1877	37
DTP1	C or H <12 months	55	12-23 m	1877	37
DTP1	Card	36	12-23 m	1877	37
DTP1	Card or History	58	12-23 m	1877	37
DTP1	History	22	12-23 m	1877	37
DTP3	C or H <12 months	29	12-23 m	1877	37
DTP3	Card	25	12-23 m	1877	37
DTP3	Card or History	32	12-23 m	1877	37
DTP3	History	7	12-23 m	1877	37
MCV1	C or H <12 months	28	12-23 m	1877	37
MCV1	Card	22	12-23 m	1877	37
MCV1	Card or History	35	12-23 m	1877	37
MCV1	History	13	12-23 m	1877	37
Pol1	C or H <12 months	70	12-23 m	1877	37
Pol1	Card	36	12-23 m	1877	37
Pol1	Card or History	74	12-23 m	1877	37
Pol1	History	38	12-23 m	1877	37
Pol3	C or H <12 months	41	12-23 m	1877	37
Pol3	Card	25	12-23 m	1877	37
Pol3	Card or History	45	12-23 m	1877	37
Pol3	History	20	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	12-23 m	1949368	-
DTP3	NA	50	12-23 m	1949368	-
MCV1	NA	60	12-23 m	1949368	-
Pol1	NA	64	12-23 m	1949368	-
Pol3	NA	56	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	76	12-23 m	3564	52
DTP1	Card or History	74	12-23 m	3564	52
DTP3	Card or History	56	12-23 m	3564	52
MCV1	Card or History	52	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	41	12-23 m	2143	27
BCG	Card	24	12-23 m	2143	27
BCG	Card or History	46	12-23 m	2143	27
BCG	History	22	12-23 m	2143	27
DTP1	C or H <12 months	40	12-23 m	2143	27
DTP1	Card	26	12-23 m	2143	27
DTP1	Card or History	44	12-23 m	2143	27
DTP1	History	18	12-23 m	2143	27
DTP3	C or H <12 months	18	12-23 m	2143	27
DTP3	Card	16	12-23 m	2143	27
DTP3	Card or History	21	12-23 m	2143	27
DTP3	History	4	12-23 m	2143	27
MCV1	C or H <12 months	21	12-23 m	2143	27
MCV1	Card	17	12-23 m	2143	27
MCV1	Card or History	27	12-23 m	2143	27
MCV1	History	10	12-23 m	2143	27
Pol1	C or H <12 months	74	12-23 m	2143	27
Pol1	Card	26	12-23 m	2143	27
Pol1	Card or History	83	12-23 m	2143	27
Pol1	History	56	12-23 m	2143	27

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Pol3	C or H <12 months	30	12-23 m	2143	27
Pol3	Card	18	12-23 m	2143	27
Pol3	Card or History	35	12-23 m	2143	27
Pol3	History	16	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	41	24-35 m	2084	27
DTP3	C or H <12 months	21	24-35 m	2084	27
MCV1	C or H <12 months	22	24-35 m	2084	27
Pol1	C or H <12 months	72	24-35 m	2084	27
Pol3	C or H <12 months	40	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	43	36-47 m	2260	27
DTP1	C or H <12 months	39	36-47 m	2260	27
DTP3	C or H <12 months	22	36-47 m	2260	27
MCV1	C or H <12 months	20	36-47 m	2260	27
Pol1	C or H <12 months	71	36-47 m	2260	27
Pol3	C or H <12 months	43	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	12-23 m	-	-
DTP3	Card or History	53	12-23 m	-	-
MCV1	Card or History	49	12-23 m	-	-
Pol3	Card or History	82	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