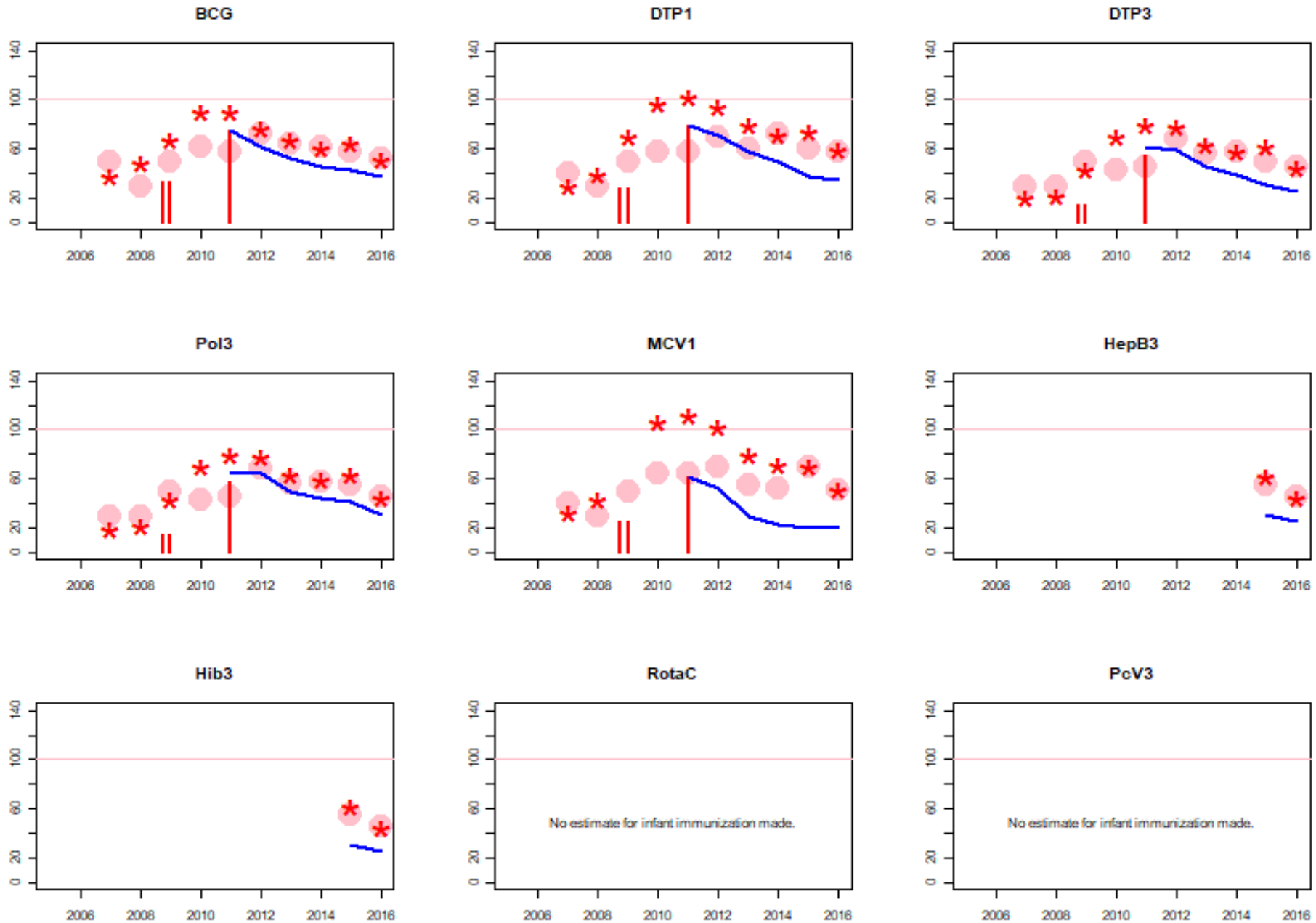


South Sudan: WHO and UNICEF estimates of immunization coverage: 2016 revision



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.

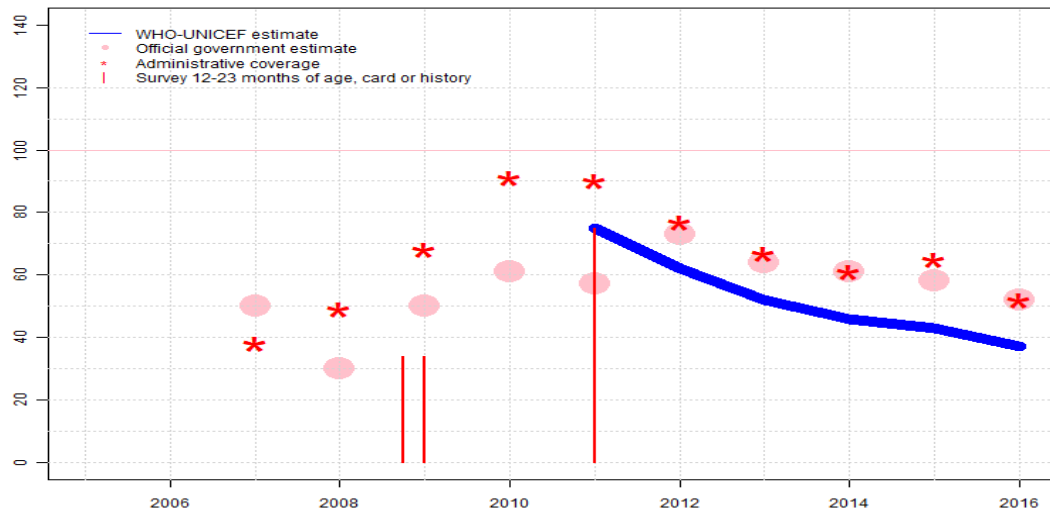
PcV3: percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect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

Disclaimer: All reasonable precautions have been taken by the World Health Organization and United Nations Children's Fund to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization or United Nations Children's Fund be liable for damages arising from its use.

South Sudan - BCG

SSD - BCG



Description:

- 2016: Reported data calibrated to 2011 levels. The Republic of South Sudan continues to be challenged by ongoing civil conflict in several states. Population displacements both internally and across international borders continues to be problematic with more than an estimated one million South Sudanese projected to be refugees in neighboring countries (UNHCR). Not surprisingly given the current situation, concerns continue with regards to quality of recording and monitoring, timeliness and completeness of data. Reported administrative coverage data reflect reporting from 80 percent of total expected district reports. WHO and UNICEF encourage continued efforts to improve recording and monitoring while also increasing coverage. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2011 levels. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-S-
- 2012: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-S-
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 75 percent based on 1 survey(s). The Republic of South Sudan became an independent state, was admitted to the United Nations and became a WHO member state in July 2011. Access to health facilities is a problem in many parts of the country for five months out of the year. The official government estimates for 2011 are based on the number of children vaccinated (administrative reports) and the highest denominator possible as derived from the five birth cohorts reached in Polio SIAs. The resulting official estimate is much lower than the administrative estimates because of the marked differences in denominators used. Please note that the this method of official estimation of coverage in South Sudan was used because of the consistent under-estimation of the denominators derived from the 2008 housing and population census that were used in earlier years.. Official government estimate based on immunization programme targets. Estimate challenged by: D-R-

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | 75 | 62 | 52 | 46 | 43 | 37 |
| Estimate GoC | NA | NA | NA | NA | NA | NA | ● | ● | ● | ● | ● | ● |
| Official | NA | NA | 50 | 30 | 50 | 61 | 57 | 73 | 64 | 61 | 58 | 52 |
| Administrative | NA | NA | 38 | 49 | 68 | 91 | 90 | 77 | 67 | 61 | 65 | 52 |
| Survey | NA | NA | NA | NA | * | NA | 75 | NA | NA | NA | NA | NA |

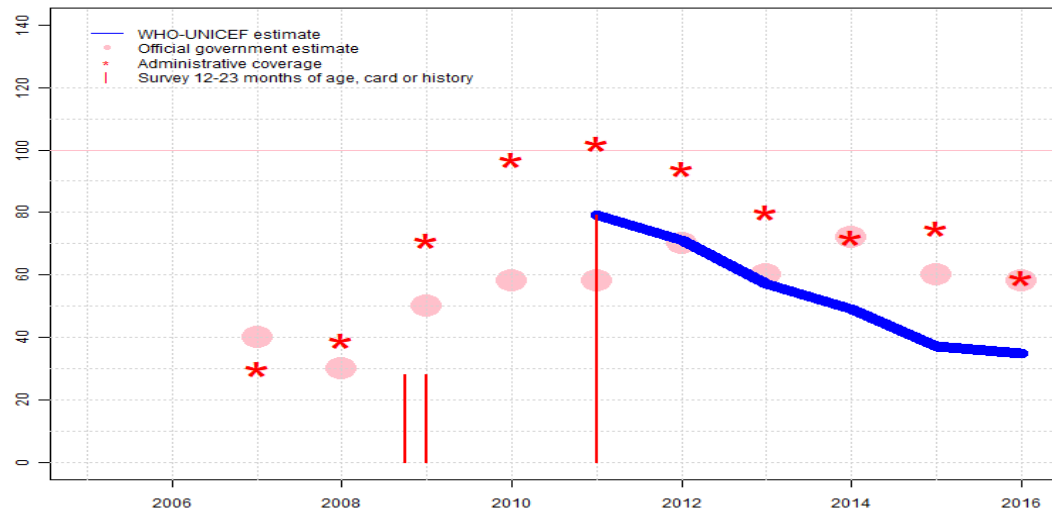
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

South Sudan - DTP1

SSD - DTP1



Description:

- 2016: Reported data calibrated to 2011 levels. The Republic of South Sudan continues to be challenged by ongoing civil conflict in several states. Population displacements both internally and across international borders continues to be problematic with more than an estimated one million South Sudanese projected to be refugees in neighboring countries (UNHCR). Not surprisingly given the current situation, concerns continue with regards to quality of recording and monitoring, timeliness and completeness of data. Reported administrative coverage data reflect reporting from 80 percent of total expected district reports. WHO and UNICEF encourage continued efforts to improve recording and monitoring while also increasing coverage. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2011 levels. Official government reported data reflects coverage derived from the DHIS2 system. Estimate of 37 percent changed from previous revision value of 49 percent. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-S-
- 2012: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 79 percent based on 1 survey(s). The Republic of South Sudan became an independent state, was admitted to the United Nations and became a WHO member state in July 2011. Access to health facilities is a problem in many parts of the country for five months out of the year. The official government estimates for 2011 are based on the number of children vaccinated (administrative reports) and the highest denominator possible as derived from the five birth cohorts reached in Polio SIAs. The resulting official estimate is much lower than the administrative estimates because of the marked differences in denominators used. Please note that the this method of official estimation of coverage in South Sudan was used because of the consistent under-estimation of the denominators derived from the 2008 housing and population census that were used in earlier years.. Official government estimate based on immunization programme targets. Estimate challenged by: D-R-

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | 79 | 71 | 57 | 49 | 37 | 35 |
| Estimate GoC | NA | NA | NA | NA | NA | NA | • | • | • | • | • | • |
| Official | NA | NA | 40 | 30 | 50 | 58 | 58 | 70 | 60 | 72 | 60 | 58 |
| Administrative | NA | NA | 30 | 39 | 71 | 97 | 102 | 94 | 80 | 72 | 75 | 59 |
| Survey | NA | NA | NA | NA | * | NA | 79 | NA | NA | NA | NA | NA |

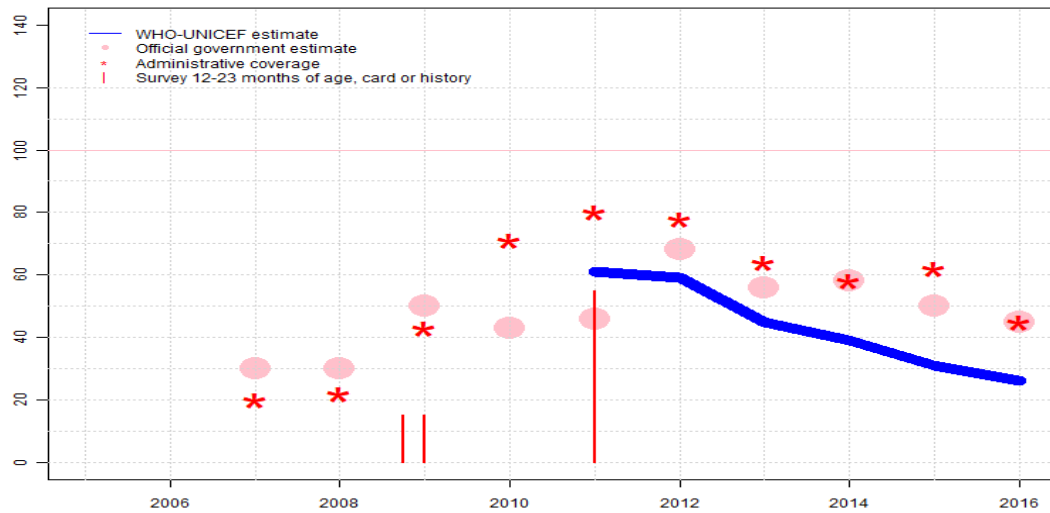
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

South Sudan - DTP3

SSD - DTP3



Description:

- 2016: Reported data calibrated to 2011 levels. The Republic of South Sudan continues to be challenged by ongoing civil conflict in several states. Population displacements both internally and across international borders continues to be problematic with more than an estimated one million South Sudanese projected to be refugees in neighboring countries (UNHCR). Not surprisingly given the current situation, concerns continue with regards to quality of recording and monitoring, timeliness and completeness of data. Reported administrative coverage data reflect reporting from 80 percent of total expected district reports. WHO and UNICEF encourage continued efforts to improve recording and monitoring while also increasing coverage. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2011 levels. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-S-
- 2012: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 61 percent based on 1 survey(s). Republic of South Sudan EPI Coverage Survey 2011-2012 card or history results of 55 percent modified for recall bias to 61 percent based on 1st dose card or history coverage of 79 percent, 1st dose card only coverage of 31 percent and 3d dose card only coverage of 24 percent. The Republic of South Sudan became an independent state, was admitted to the United Nations and became a WHO member state in July 2011. Access to health facilities is a problem in many parts of the country for five months out of the year. The official government estimates for 2011 are based on the number of children vaccinated (administrative reports) and the highest denominator possible as derived from the five birth cohorts reached in Polio SIAs. The resulting official estimate is much lower than the administrative estimates because of the marked differences in denominators used. Please note that the this method of official estimation of coverage in South Sudan was used because of the consistent under-estimation of the denominators derived from the 2008 housing and population census that were used in earlier years.. Official government estimate based on immunization programme targets. Estimate challenged by: D-R-

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | 61 | 59 | 45 | 39 | 31 | 26 |
| Estimate GoC | NA | NA | NA | NA | NA | NA | ● | ● | ● | ● | ● | ● |
| Official | NA | NA | 30 | 30 | 50 | 43 | 46 | 68 | 56 | 58 | 50 | 45 |
| Administrative | NA | NA | 20 | 22 | 43 | 71 | 80 | 78 | 64 | 58 | 62 | 45 |
| Survey | NA | NA | NA | NA | * | NA | 55 | NA | NA | NA | NA | NA |

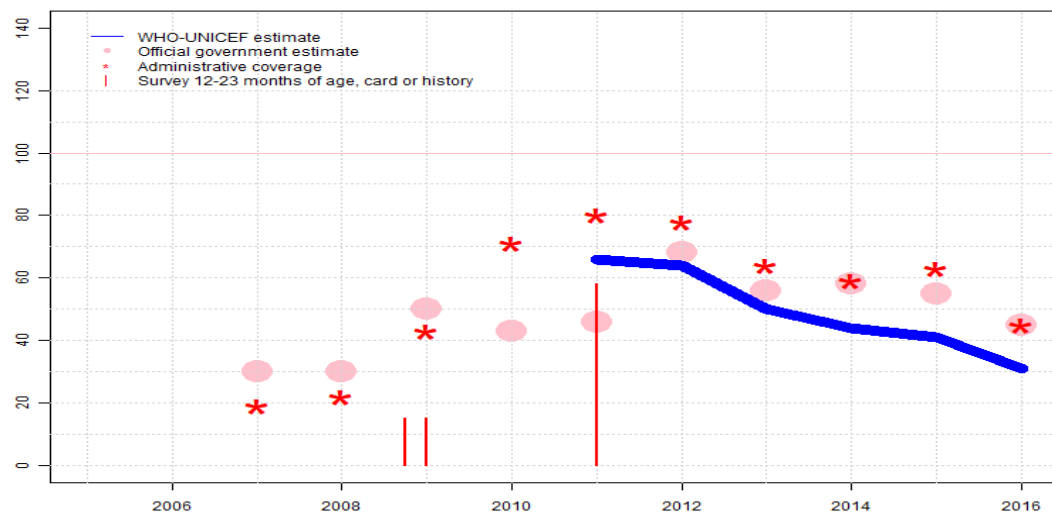
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

South Sudan - Pol3

SSD - Pol3



| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | 66 | 64 | 50 | 44 | 41 | 31 |
| Estimate GoC | NA | NA | NA | NA | NA | NA | ● | ● | ● | ● | ● | ● |
| Official | NA | NA | 30 | 30 | 50 | 43 | 46 | 68 | 56 | 58 | 55 | 45 |
| Administrative | NA | NA | 19 | 22 | 43 | 71 | 80 | 78 | 64 | 59 | 63 | 45 |
| Survey | NA | NA | NA | NA | * | NA | 58 | 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.

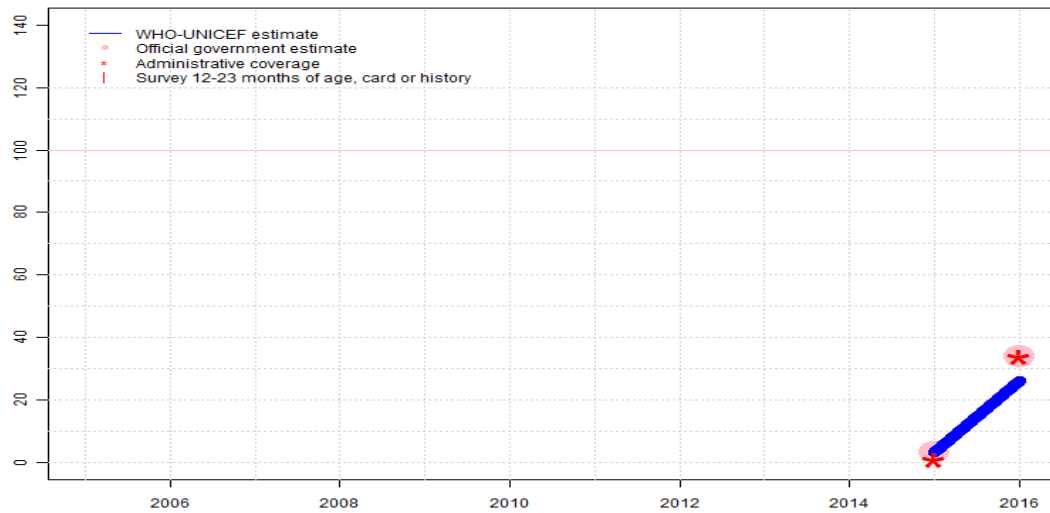
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

Description:

- 2016: Reported data calibrated to 2011 levels. The Republic of South Sudan continues to be challenged by ongoing civil conflict in several states. Population displacements both internally and across international borders continues to be problematic with more than an estimated one million South Sudanese projected to be refugees in neighboring countries (UNHCR). Not surprisingly given the current situation, concerns continue with regards to quality of recording and monitoring, timeliness and completeness of data. Reported administrative coverage data reflect reporting from 80 percent of total expected district reports. WHO and UNICEF encourage continued efforts to improve recording and monitoring while also increasing coverage. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2011 levels. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-S-
- 2012: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 66 percent based on 1 survey(s). Republic of South Sudan EPI Coverage Survey 2011-2012 card or history results of 58 percent modified for recall bias to 66 percent based on 1st dose card or history coverage of 80 percent, 1st dose card only coverage of 29 percent and 3d dose card only coverage of 24 percent. The Republic of South Sudan became an independent state, was admitted to the United Nations and became a WHO member state in July 2011. Access to health facilities is a problem in many parts of the country for five months out of the year. The official government estimates for 2011 are based on the number of children vaccinated (administrative reports) and the highest denominator possible as derived from the five birth cohorts reached in Polio SIAs. The resulting official estimate is much lower than the administrative estimates because of the marked differences in denominators used. Please note that the this method of official estimation of coverage in South Sudan was used because of the consistent under-estimation of the denominators derived from the 2008 housing and population census that were used in earlier years.. Official government estimate based on immunization programme targets. Estimate challenged by: D-R-

South Sudan - IPV1

SSD - IPV1



Description:

- 2016: Estimate is based on estimated DTP3 coverage. Estimate is likely an overestimate. Reported data excluded due to unexplained sudden change in coverage from 3 level to 34 percent. The Republic of South Sudan continues to be challenged by ongoing civil conflict in several states. Population displacements both internally and across international borders continues to be problematic with more than an estimated one million South Sudanese projected to be refugees in neighboring countries (UNHCR). Not surprisingly given the current situation, concerns continue with regards to quality of recording and monitoring, timeliness and completeness of data. Reported administrative coverage data reflect reporting from 80 percent of total expected district reports. WHO and UNICEF encourage continued efforts to improve recording and monitoring while also increasing coverage. Estimate challenged by: R-
- 2015: Estimate based on coverage reported by national government. Official government reported data reflects coverage derived from the DHIS2 system. IPV introduced during December 2015. GoC=Assigned by working group. Consistency with other vaccines.

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3 | 26 |
| Estimate GoC | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | • | • |
| Official | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 3 | 34 |
| Administrative | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 1 | 34 |
| Survey | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

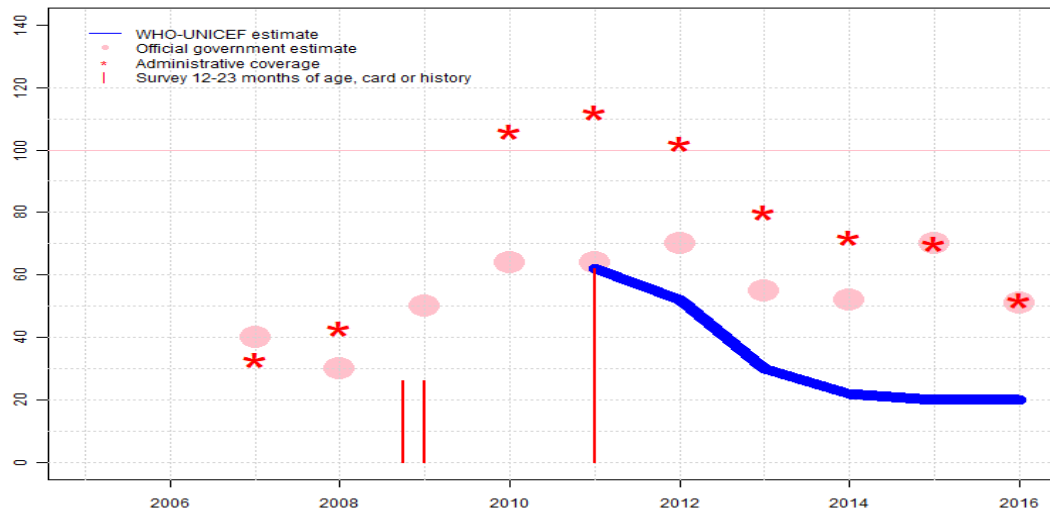
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

South Sudan - MCV1

SSD - MCV1



| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | 62 | 52 | 30 | 22 | 20 | 20 |
| Estimate GoC | NA | NA | NA | NA | NA | NA | • | • | • | • | • | • |
| Official | NA | NA | 40 | 30 | 50 | 64 | 64 | 70 | 55 | 52 | 70 | 51 |
| Administrative | NA | NA | 33 | 43 | NA | 106 | 112 | 102 | 80 | 72 | 70 | 52 |
| Survey | NA | NA | NA | NA | * | NA | 62 | 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.

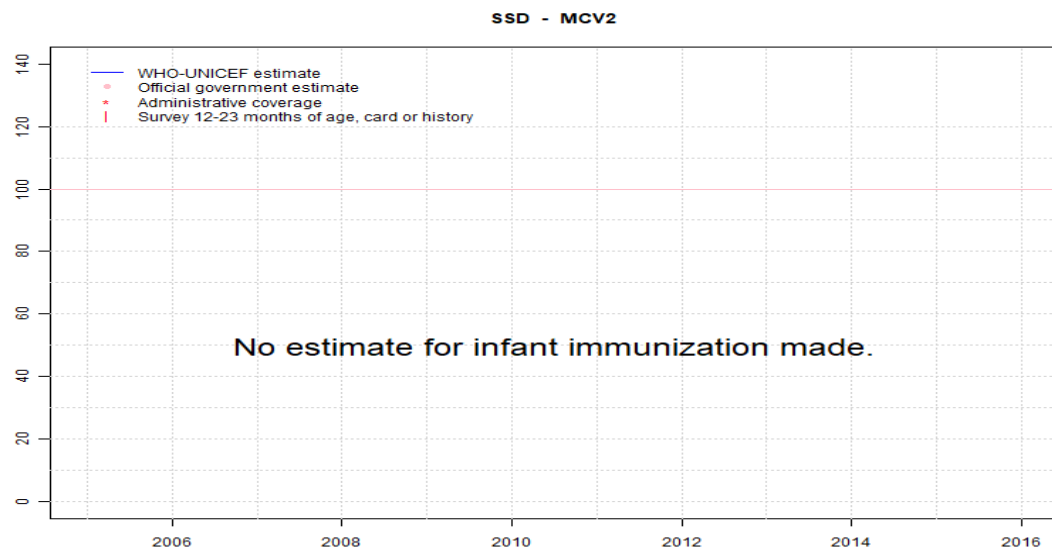
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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 2011 levels. Reported data excluded due to unexplained sudden change in coverage from 70 level to 51 percent. The Republic of South Sudan continues to be challenged by ongoing civil conflict in several states. Population displacements both internally and across international borders continues to be problematic with more than an estimated one million South Sudanese projected to be refugees in neighboring countries (UNHCR). Not surprisingly given the current situation, concerns continue with regards to quality of recording and monitoring, timeliness and completeness of data. Reported administrative coverage data reflect reporting from 80 percent of total expected district reports. WHO and UNICEF encourage continued efforts to improve recording and monitoring while also increasing coverage. Estimate is based on prior year estimate in spite of reported declines in coverage and reported number of children vaccinated. Estimate challenged by: D-R-
- 2015: Reported data calibrated to 2011 levels. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-
- 2014: Reported data calibrated to 2011 levels. No explanation provided for adjusted coverage level. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-S-
- 2012: Reported data calibrated to 2011 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-
- 2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 62 percent based on 1 survey(s). The Republic of South Sudan became an independent state, was admitted to the United Nations and became a WHO member state in July 2011. Access to health facilities is a problem in many parts of the country for five months out of the year. The official government estimates for 2011 are based on the number of children vaccinated (administrative reports) and the highest denominator possible as derived from the five birth cohorts reached in Polio SIAs. The resulting official estimate is much lower than the administrative estimates because of the marked differences in denominators used. Please note that the this method of official estimation of coverage in South Sudan was used because of the consistent under-estimation of the denominators derived from the 2008 housing and population census that were used in earlier years.. Official government estimate based on immunization programme targets. Estimate challenged by: D-R-

South Sudan - MCV2



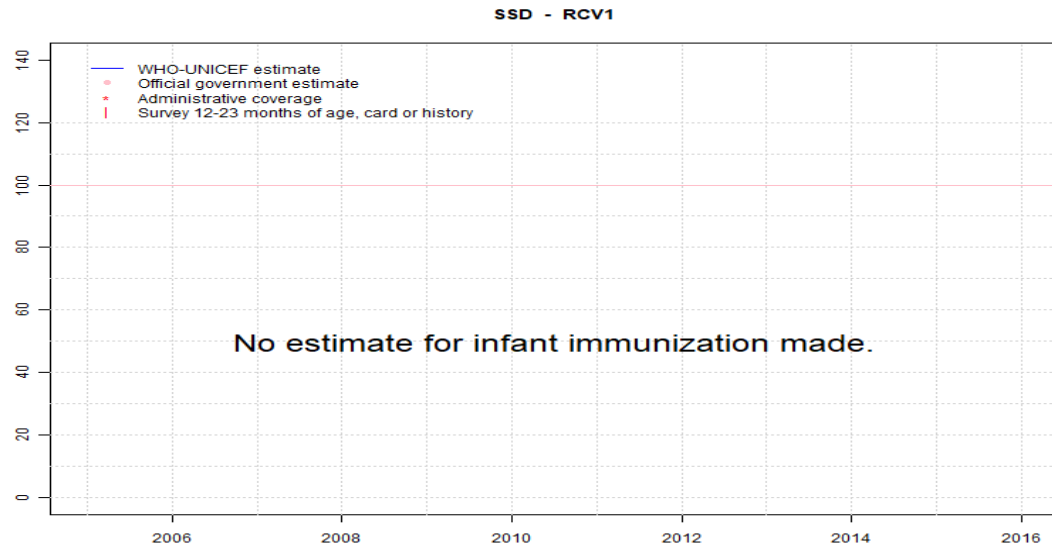
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Estimate GoC | NA | NA | NA | NA | 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.

South Sudan - RCV1



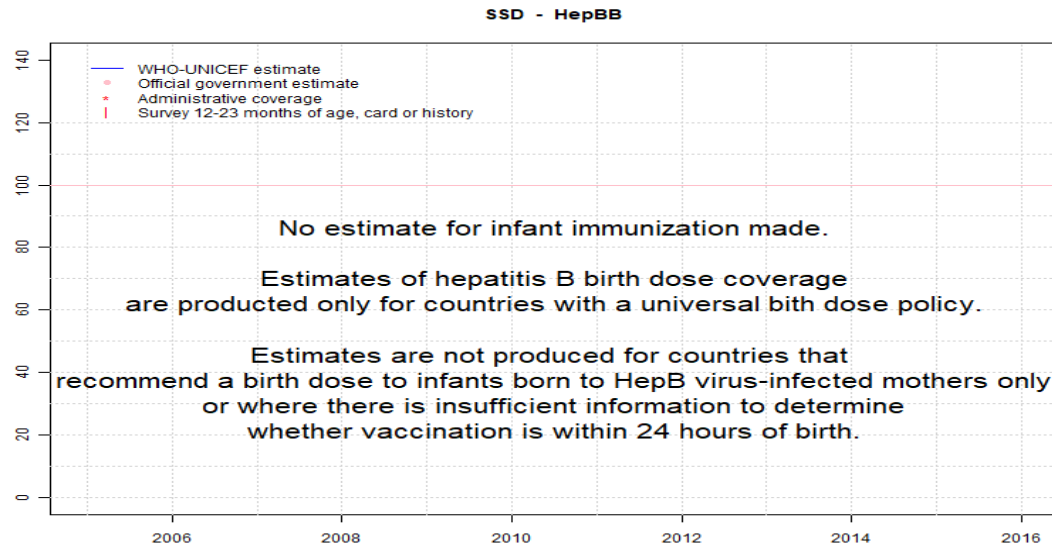
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Estimate GoC | NA | NA | NA | NA | 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.

South Sudan - 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 |

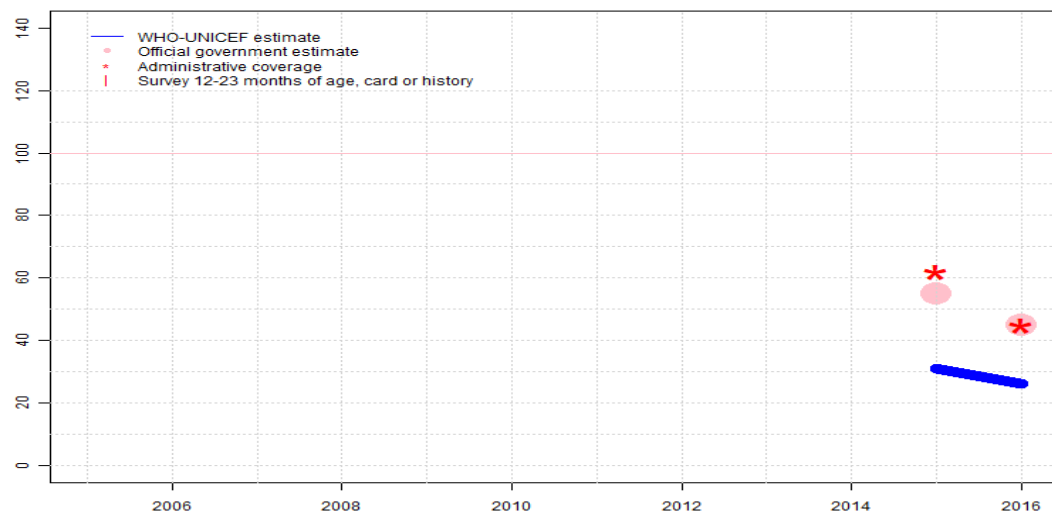
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

South Sudan - HepB3

SSD - HepB3



Description:

2016: Estimate is based on estimated DTP3 coverage. The Republic of South Sudan continues to be challenged by ongoing civil conflict in several states. Population displacements both internally and across international borders continues to be problematic with more than an estimated one million South Sudanese projected to be refugees in neighboring countries (UNHCR). Not surprisingly given the current situation, concerns continue with regards to quality of recording and monitoring, timeliness and completeness of data. Reported administrative coverage data reflect reporting from 80 percent of total expected district reports. WHO and UNICEF encourage continued efforts to improve recording and monitoring while also increasing coverage. Estimate challenged by: D-R-

2015: DTP-HepB-Hib vaccine introduced in July 2014. Reporting began during 2015. Estimate based on DTP3 level. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 31 | 26 |
| Estimate GoC | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ● | ● |
| Official | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 55 | 45 |
| Administrative | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 62 | 45 |
| Survey | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |

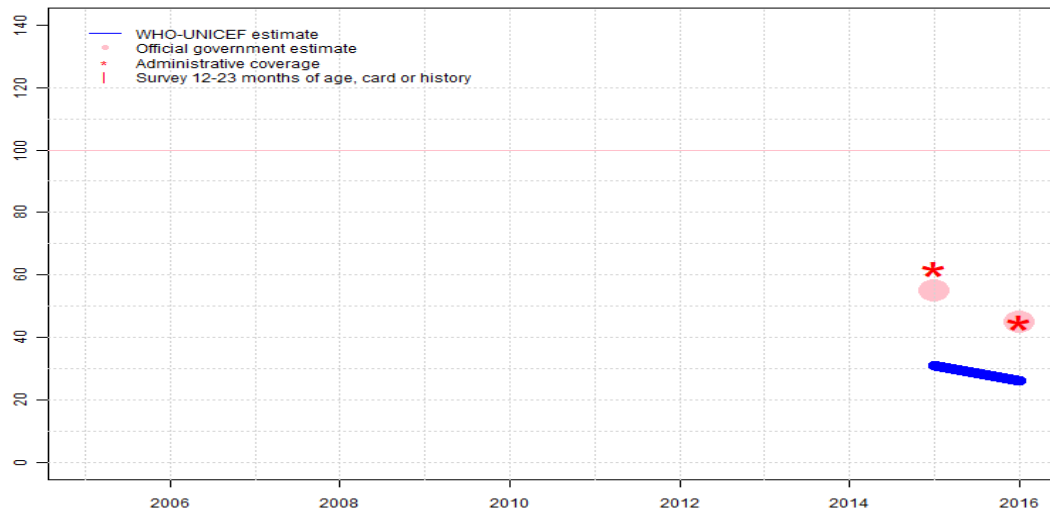
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

South Sudan - Hib3

SSD - Hib3



Description:

2016: Estimate is based on estimated DTP3 coverage. The Republic of South Sudan continues to be challenged by ongoing civil conflict in several states. Population displacements both internally and across international borders continues to be problematic with more than an estimated one million South Sudanese projected to be refugees in neighboring countries (UNHCR). Not surprisingly given the current situation, concerns continue with regards to quality of recording and monitoring, timeliness and completeness of data. Reported administrative coverage data reflect reporting from 80 percent of total expected district reports. WHO and UNICEF encourage continued efforts to improve recording and monitoring while also increasing coverage. Estimate challenged by: D-R-

2015: DTP-HepB-Hib vaccine introduced in July 2014. Reporting began during 2015. Estimate based on DTP3 level. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-

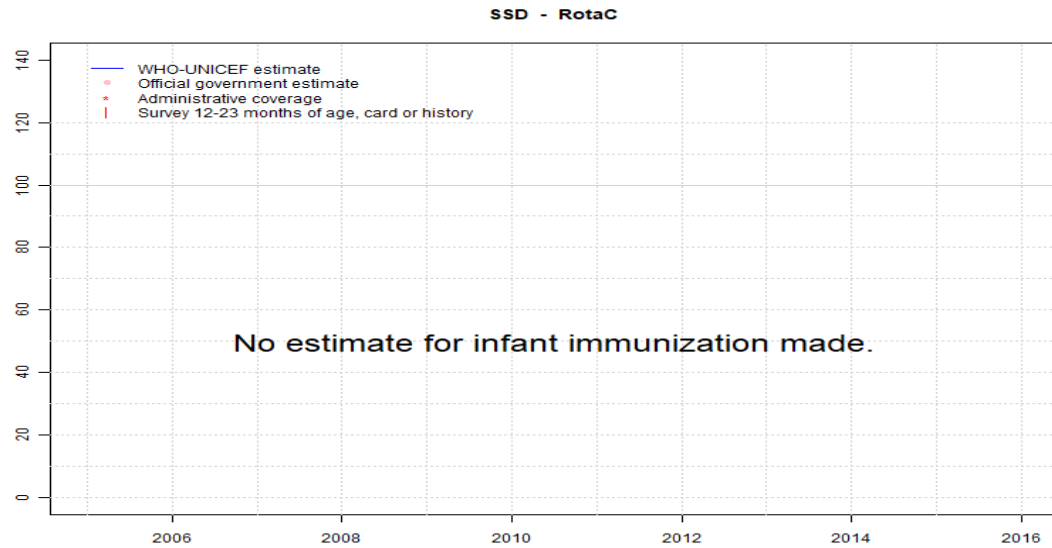
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 31 | 26 |
| Estimate GoC | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | ● | ● |
| Official | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 55 | 45 |
| Administrative | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | 62 | 45 |
| 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.

South Sudan - RotaC



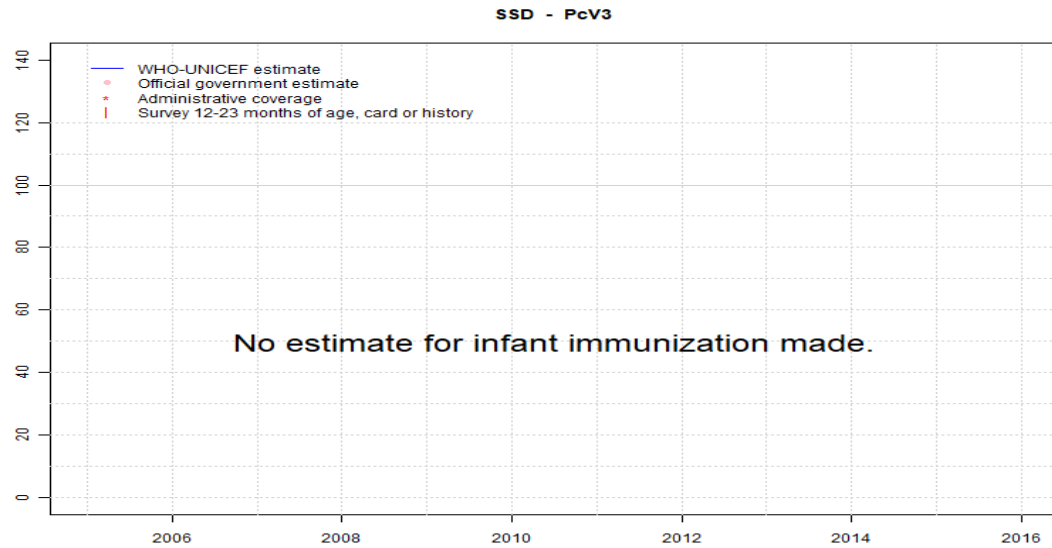
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Estimate | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Estimate GoC | NA | NA | NA | NA | 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.

South Sudan - PcV3



| | 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.

South Sudan - survey details

2011 Republic of South Sudan EPI Coverage Survey 2011-2012

| Vaccine | Confirmation method | Coverage | Age cohort | Sample | Cards seen |
|---------|---------------------|----------|------------|--------|------------|
| BCG | C or H <12 months | 71 | 12-23 m | 2246 | 50 |
| BCG | Card | 30 | 12-23 m | - | 50 |
| BCG | Card or History | 75 | 12-23 m | 2246 | 50 |
| DTP1 | C or H <12 months | 73 | 12-23 m | 2246 | 50 |
| DTP1 | Card | 31 | 12-23 m | - | 50 |
| DTP1 | Card or History | 79 | 12-23 m | 2246 | 50 |
| DTP3 | C or H <12 months | 46 | 12-23 m | 2246 | 50 |
| DTP3 | Card | 24 | 12-23 m | - | 50 |
| DTP3 | Card or History | 55 | 12-23 m | 2246 | 50 |
| MCV1 | C or H <12 months | 46 | 12-23 m | 2246 | 50 |
| MCV1 | Card | 23 | 12-23 m | - | 50 |
| MCV1 | Card or History | 62 | 12-23 m | 2246 | 50 |
| Pol1 | C or H <12 months | 73 | 12-23 m | 2246 | 50 |
| Pol1 | Card | 29 | 12-23 m | - | 50 |
| Pol1 | Card or History | 80 | 12-23 m | 2246 | 50 |
| Pol3 | C or H <12 months | 46 | 12-23 m | 2246 | 50 |
| Pol3 | Card | 24 | 12-23 m | - | 50 |
| Pol3 | Card or History | 58 | 12-23 m | 2246 | 50 |

| | | | | | |
|------|-------------------|----|---------|------|----|
| DTP1 | Card | 7 | 12-23 m | - | 10 |
| DTP1 | Card or History | 28 | 12-23 m | 1704 | 10 |
| DTP1 | History | 21 | 12-23 m | - | 10 |
| DTP3 | C or H <12 months | 13 | 12-23 m | 1704 | 10 |
| DTP3 | Card | 5 | 12-23 m | - | 10 |
| DTP3 | Card or History | 15 | 12-23 m | 1704 | 10 |
| DTP3 | History | 10 | 12-23 m | - | 10 |
| MCV1 | C or H <12 months | 20 | 12-23 m | 1704 | 10 |
| MCV1 | Card | 6 | 12-23 m | - | 10 |
| MCV1 | Card or History | 26 | 12-23 m | 1704 | 10 |
| MCV1 | History | 20 | 12-23 m | - | 10 |
| Pol1 | C or H <12 months | 35 | 12-23 m | 1704 | 10 |
| Pol1 | Card | 8 | 12-23 m | - | 10 |
| Pol1 | Card or History | 36 | 12-23 m | 1704 | 10 |
| Pol1 | History | 29 | 12-23 m | - | 10 |
| Pol3 | C or H <12 months | 13 | 12-23 m | 1704 | 10 |
| Pol3 | Card | 6 | 12-23 m | - | 10 |
| Pol3 | Card or History | 15 | 12-23 m | 1704 | 10 |
| Pol3 | History | 9 | 12-23 m | - | 10 |

2009 The Republic of South Sudan: The Sudan Household Health Survey 2010

2009 South Sudan Household Health Survey 2010 (SHHS 2)

| Vaccine | Confirmation method | Coverage | Age cohort | Sample | Cards seen |
|---------|---------------------|----------|------------|--------|------------|
| BCG | C or H <12 months | 31 | 12-23 m | 1704 | 10 |
| BCG | Card | 9 | 12-23 m | - | 10 |
| BCG | Card or History | 34 | 12-23 m | 1704 | 10 |
| BCG | History | 26 | 12-23 m | - | 10 |
| DTP1 | C or H <12 months | 25 | 12-23 m | 1704 | 10 |

| Vaccine | Confirmation method | Coverage | Age cohort | Sample | Cards seen |
|---------|---------------------|----------|------------|--------|------------|
| BCG | Card or History | 34 | 12-23 m | 1704 | 10 |
| DTP1 | Card or History | 28 | 12-23 m | 1704 | 10 |
| DTP3 | Card or History | 15 | 12-23 m | 1704 | 10 |
| MCV1 | Card or History | 26 | 12-23 m | 1704 | 10 |
| Pol1 | Card or History | 36 | 12-23 m | 1704 | 10 |
| Pol3 | Card or History | 15 | 12-23 m | 1704 | 10 |

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