South Sudan: WHO and UNICEF estimates of immunization coverage: 2020 revision

BCG

DTP1

DTP3

Pol3

MCV1

HepB3

Hib3

RotaC

PcV3

July 8, 2021; page 1

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022

data received as of July 6, 2021
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:

*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.

PcV3: percentage of surviving infants who received the 3rd dose of Haemophilus influenzae type b containing vaccine.

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

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Description:

2020: Estimate based on extrapolation from data reported by national government. Reported data excluded. Unexplained change in denominator from 2018 to 2019. Country reports that due to instability in the country, there is a large population movement in and out of the country which affects the denominator. Country also notes issues related to the accuracy of the numerator such as high turn over of vaccination staff coupled with limited capacity in tallying, recording and reporting of immunization data. WHO and UNICEF encourage continued efforts to improve recording and monitoring while the programme continues efforts to increase vaccination coverage. Estimate challenged by: D-

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Programme notes reported official coverage is based on results of the 2017 EPI coverage survey although values do not reflect survey results. Estimate challenged by: D-

2018: Estimate based on coverage reported by national government. Reported official coverage is based on results of the 2017 EPI coverage survey. Estimate challenged by: D-

2017: Estimate based on interpolation between data reported by national government. Reported data excluded. Programme acknowledges challenges with recording and reporting. Reporting represents 80 percent completeness and may includes campaign doses. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 52 percent based on 1 survey(s). As of 2016, the Republic of South Sudan is 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. GoC=Assigned by working group. GoC of one for consistency between vaccine doses and previous and later years.

2015: Reported data calibrated to 2011 and 2016 levels. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-

2014: Reported data calibrated to 2011 and 2016 levels. Estimate challenged by: D-R-

2013: Reported data calibrated to 2011 and 2016 levels. Official government estimate based on immunization programme targets. Estimate challenged by: D-R-S-

2012: Reported data calibrated to 2011 and 2016 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-S-

2011: 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 denomina-
tor 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-
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 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.

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2020: Estimate based on extrapolation from data reported by national government. Reported data excluded. Unexplained change in denominator from 2018 to 2019. Country reports that due to instability in the country, there is a large population movement in and out of the country which affects the denominator. Country also notes issues related to the accuracy of the numerator such as high turn over of vaccination staff coupled with limited capacity in tallying, recording and reporting of immunization data. Reported data excluded to sudden change in coverage from 58 percent to 74 percent. WHO and UNICEF encourage continued efforts to improve recording and monitoring while the programme continues efforts to increase vaccination coverage. Estimate challenged by: D-

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Programme notes reported official coverage is based on results of the 2017 EPI coverage survey although values do not reflect survey results. Estimate challenged by: D-

2018: Estimate based on coverage reported by national government. Reported official coverage is based on results of the 2017 EPI coverage survey. A review of reported number of doses administered between 2016 and 2018 suggests an increasing trend in spite of the decreasing trend in reported coverage. Estimate challenged by: D-

2017: Estimate based on interpolation between data reported by national government. Reported data excluded. Programme acknowledges challenges with recording and reporting. Reporting represents 80 percent completeness and may includes campaign doses. Reported data excluded due to an increase from 58 percent to 77 percent with decrease 51 percent. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 51 percent based on 1 survey(s). As of 2016, the Republic of South Sudan is 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. GoC=Assigned by working group. GoC of one for consistency between vaccine doses and previous and later years.

2015: Reported data calibrated to 2011 and 2016 levels. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-

2014: Reported data calibrated to 2011 and 2016 levels. Estimate challenged by: D-R-S-

2013: Reported data calibrated to 2011 and 2016 levels. . Official government estimate based on immunization programme targets. Estimate challenged by: D-R-S-

2012: Reported data calibrated to 2011 and 2016 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 data received as of July 6, 2021.
South Sudan - DTP1

evidence of 79 percent based on 1 survey(s). The Republic of South Sudan became an
declared 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 of the year. The official government estimates for 2011 are based on
the number of children vaccinated (administrative reports) and the highest denomina-
tor 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 - DTP3**

**Description:**

2020: Estimate based on extrapolation from data reported by national government. Reported data excluded. Unexplained change in denominator from 2018 to 2019. Country reports that due to instability in the country, there is a large population movement in and out of the country which affects the denominator. Country also notes issues related to the accuracy of the numerator such as high turn over of vaccination staff coupled with limited capacity in tallying, recording and reporting of immunization data. WHO and UNICEF encourage continued efforts to improve recording and monitoring while the programme continues efforts to increase vaccination coverage. Estimate challenged by: D-

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Programme notes reported official coverage is based on results of the 2017 EPI coverage survey although values do not reflect survey results. Estimate challenged by: D-

2018: Estimate based on coverage reported by national government. Reported official coverage is based on results of the 2017 EPI coverage survey. Estimate challenged by: D-

2017: Estimate based on interpolation between data reported by national government. Reported data excluded. Programme acknowledges challenges with recording and reporting. Reporting represents 80 percent completeness and may includes campaign doses. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 49 percent based on 1 survey(s). As of 2016, the Republic of South Sudan is 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 50 percent of total expected district reports. GoC= Assigned by working group. GoC of one for consistency between vaccine doses and previous and later years.

2015: Reported data calibrated to 2011 and 2016 levels. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-

2014: Reported data calibrated to 2011 and 2016 levels. Estimate challenged by: D-R-

2013: Reported data calibrated to 2011 and 2016 levels. Official government estimate based on immunization programme targets. Estimate challenged by: D-R-

2012: Reported data calibrated to 2011 and 2016 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 3rd 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

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**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: 2020 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.
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-
Description:

2020: Estimate based on extrapolation from data reported by national government. Reported data excluded. Unexplained change in denominator from 2018 to 2019. Country reports that due to instability in the country, there is a large population movement in and out of the country which affects the denominator. Country also notes issues related to the accuracy of the numerator such as high turn over of vaccination staff coupled with limited capacity in tallying, recording and reporting of immunization data. Reported data excluded due to sudden change in coverage from 50% level to 68 percent. WHO and UNICEF encourage continued efforts to improve recording and monitoring while the programme continues efforts to increase vaccination coverage. Estimate challenged by: D-

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Programme notes reported official coverage is based on results of the 2017 EPI coverage survey although values do not reflect survey results. Estimate challenged by: D-

2018: Estimate based on coverage reported by national government. Reported official coverage is based on results of the 2017 EPI coverage survey. Estimate challenged by: D-

2017: Estimate based on interpolation between data reported by national government. Reported data excluded. Programme acknowledges challenges with recording and reporting. Reporting represents 80 percent completeness and may includes campaign doses. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 50 percent based on 1 survey(s). As of 2016, the Republic of South Sudan is 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. GoC=Assigned by working group. GoC of one for consistency between vaccine doses and previous and later years.

2015: Reported data calibrated to 2011 and 2016 levels. Official government reported data reflects coverage derived from the DHIS2 system. Estimate challenged by: D-R-

2014: Reported data calibrated to 2011 and 2016 levels. Estimate challenged by: D-R-

2013: Reported data calibrated to 2011 and 2016 levels. Official government estimate based on immunization programme targets. Estimate challenged by: D-R-

2012: Reported data calibrated to 2011 and 2016 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

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: 2020 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.
29 percent and 3rd 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-
Estimates for a dose of inactivated polio vaccine (IPV) begin in 2015 following the Global Polio Eradication Initiative's Polio Eradication and Endgame Strategic Plan: 2013-2018 which recommended at least one full dose or two fractional doses of IPV into routine immunization schedules as a strategy to mitigate the potential consequences should any re-emergence of type 2 poliovirus occur following the planned withdrawal of Sabin type 2 strains from oral polio vaccine (OPV).

2020: Estimate based on extrapolation from data reported by national government. Reported data excluded. Unexplained change in denominator from 2018 to 2019. Country reports that due to instability in the country, there is a large population movement in and out of the country which affects the denominator. Country also notes issues related to the accuracy of the numerator such as high turnover of vaccination staff coupled with limited capacity in tallying, recording and reporting of immunization data. WHO and UNICEF encourage continued efforts to improve recording and monitoring while the programme continues efforts to increase vaccination coverage. Estimate challenged by: D-

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Programme notes reported official coverage is based on results of the 2017 EPI coverage survey although values do not reflect survey results. Estimate challenged by: D-

2018: Estimate based on coverage reported by national government. Reported official coverage is based on results of the 2017 EPI coverage survey. Estimate challenged by: D-

2017: Estimate based on interpolation between data reported by national government. Reported data excluded. Programme acknowledges challenges with recording and reporting. Reporting represents 80% completeness and may include campaign doses. Reported data excludes due to an increase from 34 percent to 54 percent with decrease 39 percent. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 39 percent based on 1 survey(s). As of 2016, the Republic of South Sudan is challenged by ongoing civil conflict in several states. Population displacements both internally and across international borders continues to be problematic with more than 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. GoC=Assigned by working group. GoC of one for consistency between vaccine doses and previous and later years.

2015: Estimate based on reported data. Official government reported data reflects coverage derived from the DHIS2 system. Inactivated polio vaccine during December 2015. GoC=Assigned by working group. GoC assigned to maintain consistency across vaccines.

### Description:

The WHO and UNICEF estimates of national immunization coverage (vucnic) 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: 2020 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.
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information which 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: 2020 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.

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• 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:

2020: Estimate based on extrapolation from data reported by national government. Reported data excluded. Unexplained change in denominator from 2018 to 2019. Country reports that due to instability in the country, there is a large population movement in and out of the country which affects the denominator. Country also notes issues related to the accuracy of the numerator such as high turn over of vaccination staff coupled with limited capacity in tallying, recording and reporting of immunization data. Reported data excluded due to sudden change in coverage from 42 percent to 53 percent. WHO and UNICEF encourage continued efforts to improve recording and monitoring while the programme continues efforts to increase vaccination coverage. Estimate challenged by: D-

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Programme notes official coverage is based on results of the 2017 EPI coverage survey although values do not reflect survey results. Estimate challenged by: D-

2018: Estimate based on coverage reported by national government. Reported official coverage is based on results of the 2017 EPI coverage survey. Estimate challenged by: D-

2017: Estimate based on interpolation between data reported by national government. Reported data excluded. Programme acknowledges challenges with recording and reporting. Reporting represents 80 percent completeness and may include campaign doses. Reported data excluded due to an increase from 51 percent to 75 percent with decrease 49 percent. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 49 percent based on 1 survey(s). As of 2016, the Republic of South Sudan is 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. Estimate is based on prior year estimate in spite of reported declines in coverage and reported number of children vaccinated. GoC=Assigned by working group. GoC of one for consistency between vaccine doses and previous and later years.

2015: Estimate based on interpolation between 2011 and 2016 levels. During the period 2011-2015, programme reports conducting multiple measles campaigns and mop-up activities. Based on a review of reported numerator data, it is unclear whether any of this activity may be reflected in the RI data. Official government reported data reflects coverage derived from the DHISS2 system. Estimate challenged by: D-R-

2014: Estimate based on interpolation between 2011 and 2016 levels. During the period 2011-2015, programme reports conducting multiple measles campaigns and mop-up activities. Based on a review of reported numerator data, it is unclear whether any of this activity may be reflected in the RI data. No explanation provided for adjusted coverage level.
Estimate challenged by: D-R-

2013: Estimate based on interpolation between 2011 and 2016 levels. During the period 2011-2015, programme reports conducting multiple measles campaigns and mop-up activities. Based on a review of reported numerator data, it is unclear whether any of this activity may be reflected in the RI data. Official government estimate based on immunization programme targets. Estimate challenged by: D-R-

2012: Estimate based on interpolation between 2011 and 2016 levels. During the period 2011-2015, programme reports conducting multiple measles campaigns and mop-up activities. Based on a review of reported numerator data, it is unclear whether any of this activity may be reflected in the RI data. 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-
The WHO and UNICEF estimates of national immunization coverage (wunec) 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: 2020 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.

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July 8, 2021; page 14 WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022 data received as of July 6, 2021
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**Description:**

2020: Estimate based on extrapolation from data reported by national government. Reported data excluded. Unexplained change in denominator from 2018 to 2019. Country reports that due to instability in the country, there is a large population movement in and out of the country which affects the denominator. Country also notes issues related to the accuracy of the numerator such as high turn over of vaccination staff coupled with limited capacity in tallying, recording and reporting of immunization data. Reported data excluded due to sudden change in coverage from 50 level to 69 percent. WHO and UNICEF encourage continued efforts to improve recording and monitoring while the programme continues efforts to increase vaccination coverage. Estimate challenged by: D-

2019: Estimate based on extrapolation from data reported by national government. Reported data excluded. Programme notes reported official coverage is based on results of the 2017 EPI coverage survey although values do not reflect survey results. Estimate challenged by: D-

2018: Estimate based on coverage reported by national government. Reported official coverage is based on results of the 2017 EPI coverage survey. Estimate challenged by: D-

2017: Estimate based on interpolation between data reported by national government. Reported data excluded. Programme acknowledges challenges with recording and monitoring. Reporting represents 80 percent completeness and may includes campaign doses. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 49 percent based on 1 survey(s). As of 2016, the Republic of South Sudan is 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. GoC=Assigned by working group. GoC of one for consistency between vaccine doses and previous and later years.

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## South Sudan - survey details

### 2016 South Sudan EPI Coverage Survey 2017

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Confirmation method</th>
<th>Coverage Age cohort</th>
<th>Sample</th>
<th>Cards seen</th>
</tr>
</thead>
<tbody>
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### 2011 Republic of South Sudan EPI Coverage Survey 2011-2012

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<th>Vaccine</th>
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### 2009 The Republic of South Sudan: The Sudan Household Health Survey 2010

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Confirmation method</th>
<th>Coverage Age cohort</th>
<th>Sample</th>
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</thead>
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<td>Card or History</td>
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<td>1704</td>
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WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022 data received as of July 6, 2021
Further information and estimates for previous years are available at:
http://www.data.unicef.org/child-health/immunization