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 immunization coverage: a computational logic approach.

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 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.

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

- Estimate is supported by reported data \([R+]\), coverage recalculated with an independent denominator from the World Population Prospects: 2017 revision from the UN Population Division \([D+]\), and at least one supporting survey within 2 years \([S+]\). While well supported, the estimate still carries a risk of being wrong.

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WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2019
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data received as of July 4, 2018
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2017: Estimate based on coverage reported by national government. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government. GoC=R+ D+

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- **1985:** Estimate based on coverage reported by national government. Reported data may underrepresent immunization due to incomplete reporting by private care providers. Declines in 2004-2008 may be attributable to the failure to recall apparent defaulters during the installation of new database systems. GoC=R+ D+
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- **1982:** Estimate based on coverage reported by national government. Reported data may underrepresent immunization due to incomplete reporting by private care providers. Declines in 2004-2008 may be attributable to the failure to recall apparent defaulters during the installation of new database systems. GoC=R+ D+
- **1981:** Estimate based on coverage reported by national government. Reported data may underrepresent immunization due to incomplete reporting by private care providers. Declines in 2004-2008 may be attributable to the failure to recall apparent defaulters during the installation of new database systems. GoC=R+ D+
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Malta - IPV1

Description:

Estimates for a dose of IPV begin in 2015 following the Global Polio Eradication Initiative’s Polio Eradication and Endgame Strategic Plan: 2013-2018 which recommended at least one dose of inactivated polio vaccine (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).

2017: Estimate based on coverage reported by national government. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government. GoC=R+ D+

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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.

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July 7, 2018; page 7 WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2019 data received as of July 4, 2018
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.

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Description:

- Coverage estimates for the second dose of measles containing vaccine are for children by the nationally recommended age.

2017: Estimate based on coverage reported by national government. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. GoC=R+ D+

2016: Estimate based on coverage reported by national government. GoC=R+ D+

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2011: Estimate based on coverage reported by national government. . Estimate challenged by: D-

2010: Estimate based on interpolation between reported values. Reported data excluded due to an increase from 85 percent to 97 percent with decrease 85 percent. Reported data may under-represent immunization due to incomplete reporting by private care providers. Estimate challenged by: D-

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### Description:

For this revision, coverage estimates for the first dose of rubella containing vaccine are based on WHO and UNICEF estimates of coverage of measles containing vaccine. Nationally reported coverage of rubella containing vaccine is not taken into consideration nor are they represented in the accompanying graph and data table.

- **2017:** Estimate based on estimated MCV1. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. GoC=R+ D+

- **2016:** Estimate based on estimated MCV1. GoC=R+ D+

- **2015:** Estimate based on estimated MCV1. GoC=R+ D+

- **2014:** Estimate based on estimated MCV1. GoC=R+ D+

- **2013:** Estimate based on estimated MCV1. GoC=R+ D+

- **2012:** Estimate based on estimated MCV1. GoC=R+ D+

- **2011:** Estimate based on estimated MCV1. GoC=R+ D+

- **2010:** Estimate based on estimated MCV1. Reported data may under-represent immunization due to incomplete reporting by private care providers. GoC=R+ D+

- **2009:** Estimate based on estimated MCV1. Reported data may under-represent immunization due to incomplete reporting by private care providers. GoC=R+ D+

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July 7, 2018; page 14

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2019

data received as of July 4, 2018
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Further information and estimates for previous years are available at:
http://www.data.unicef.org/child-health/immunization