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.

OFFICIAL coverage may differ across countries.

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 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 final recommended dose of PCV.
PcV2: percentage of children who received the 2nd dose of PCV.
Hib3: percentage of surviving infants who received the 3rd dose of Hib vaccine.
PcV1: percentage of surviving infants who received at least one dose of inactivated Polio 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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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: 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.
Czechia - DTP1

Description:

2019: Estimate based on DTP3 coverage of 97. No nationally representative independent assessment within the last 5 years. WHO and UNICEF recommend a high-quality independent empirical assessment to confirm reported levels of coverage. GoC=No accepted empirical data

2018: Estimate based on DTP3 coverage of 97. GoC=No accepted empirical data

2017: Estimate based on DTP3 coverage of 96. GoC=No accepted empirical data

2016: Estimate based on DTP3 coverage of 96. GoC=No accepted empirical data

2015: Estimate based on DTP3 coverage of 97. GoC=No accepted empirical data

2014: Estimate based on DTP3 coverage of 97. GoC=No accepted empirical data

2013: Estimate based on DTP3 coverage of 98. GoC=No accepted empirical data

2012: Estimate based on DTP3 coverage of 99. GoC=No accepted empirical data

2011: Estimate based on DTP3 coverage of 99. GoC=No accepted empirical data

2010: Estimate based on DTP3 coverage of 99. GoC=No accepted empirical data

2009: Estimate based on DTP3 coverage of 99. GoC=No accepted empirical data

July 8, 2021; page 4 WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022 data received as of July 6, 2021
The WHO and UNICEF estimates of national immunization coverage (vaccine) 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.

### Description:

- **2019:** Estimate based on reported administrative data. No nationally representative independent assessment within the last 5 years. WHO and UNICEF recommend a high-quality independent empirical assessment to confirm reported levels of coverage. GoC=R+
  - Programme reports 92 percent coverage for the fourth dose recommended at 5 years.
  - GoC=No accepted empirical data
- **2018:** Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data
- **2017:** Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data
- **2016:** Estimate based on coverage reported by national government. GoC=R+
- **2015:** Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data
- **2014:** Estimate based on coverage reported by national government. GoC=R+
- **2013:** Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data
- **2012:** Estimate based on coverage reported by national government. GoC=R+
  - Programme reports 92 percent coverage for the fourth dose recommended at 5 years.
  - GoC=No accepted empirical data
- **2011:** Estimate based on reported administrative data. GoC=R+
- **2010:** Estimate based on reported administrative data. GoC=R+
- **2009:** Estimate based on coverage reported by national government. GoC=R+

### Table:

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### Description:

2019: Estimate based on reported administrative data. No nationally representative independent assessment within the last 5 years. WHO and UNICEF recommend a high-quality independent empirical assessment to confirm reported levels of coverage. GoC=R+

2018: Estimate based on interpolation between data reported by national government. Programme reports 92 percent coverage for the fourth dose recommended at 5 years. GoC=No accepted empirical data

2017: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data

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

2015: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data

2014: Estimate based on coverage reported by national government. GoC=R+

2013: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data

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2011: Estimate based on reported administrative data. GoC=R+

2010: Estimate based on reported administrative data. GoC=R+

2009: Estimate based on coverage reported by national government. GoC=R+

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July 8, 2021; page 5

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022 data received as of July 6, 2021
Czechia - Pol3

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.

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2009: Estimate based on coverage reported by national government. GoC=R+

2010: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data

2011: Estimate based on coverage reported by national government. GoC=R+

2012: Estimate based on reported administrative data. GoC=R+

2013: Estimate based on reported administrative data. GoC=R+

2014: Estimate based on coverage reported by national government. GoC=R+

2015: Estimate based on coverage reported by national government. GoC=R+

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

2017: Estimate based on coverage reported by national government. GoC=R+

2018: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data

2019: Estimate based on coverage reported by national government. GoC=R+

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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
Czechia - IPV1

Description:

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

2019: Estimate based on estimated DTP1 coverage. No nationally representative independent assessment within the last 5 years. WHO and UNICEF recommend a high-quality independent empirical assessment to confirm reported levels of coverage. GoC=No accepted empirical data
2018: Estimate based on estimated DTP1 coverage. GoC=No accepted empirical data
2017: Estimate is based on estimated DTP1 coverage. GoC=No accepted empirical data
2016: Estimates based on DTP1 coverage GoC=No accepted empirical data
2015: Estimates based on DTP1 coverage GoC=No accepted empirical data

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.

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Czechia - MCV1

### Description:

2019: Estimate based on coverage reported by national government. No nationally representative independent assessment within the last 5 years. WHO and UNICEF recommend a high-quality independent empirical assessment to confirm reported levels of coverage. GoC=R+

2018: Estimate based on coverage reported by national government. GoC=R+

2017: Estimate based on coverage reported by national government. GoC=R+ D+

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

2015: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data

2014: Estimate based on reported administrative data. GoC=R+

2013: Estimate based on reported administrative data. GoC=R+

2012: Estimate based on reported administrative data. GoC=R+

2011: Estimate based on reported administrative data. GoC=R+

2010: Estimate based on coverage reported by national government. GoC=R+

2009: Estimate based on reported administrative data. GoC=R+

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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.
Czechia - MCV2

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.

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

2019: Estimate based on extrapolation from data reported by national government. No nationally representative independent assessment within the last 5 years. WHO and UNICEF recommend a high-quality independent empirical assessment to confirm reported levels of coverage. Data will be available in the years 2020-21 due to a legislative change in January 2018 whereby the 2nd dose of measles containing vaccine (MMR) is recommended for administration in the 5th to 6th year of life. GoC=No accepted empirical data

2018: Estimate based on coverage reported by national government. GoC=R+

2017: Estimate based on coverage reported by national government. GoC=R+

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

2015: Estimate based on coverage reported by national government. GoC=R+

2014: Estimate based on coverage reported by national government. GoC=R+

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2012: Estimate based on coverage reported by national government. GoC=R+

2011: Estimate based on coverage reported by national government. GoC=R+

2010: Estimate based on coverage reported by national government. GoC=R+

2009: Estimate based on coverage reported by national government. GoC=R+

### Description:

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

#### July 8, 2021; page 9

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022
data received as of July 6, 2021
Czechia - RCV1

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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</table>

Estimate: 2019: Estimate based on estimated MCV1. No nationally representative independent assessment within the last 5 years. WHO and UNICEF recommend a high-quality independent empirical assessment to confirm reported levels of coverage. GoC=R+
2018: Estimate based on estimated MCV1. GoC=R+
2017: Estimate based on estimated MCV1. GoC=R+ D+
2016: Estimate based on estimated MCV1. GoC=R+
2015: Estimate based on estimated MCV1. GoC=No accepted empirical data
2014: Estimate based on estimated MCV1. GoC=R+
2013: Estimate based on estimated MCV1. GoC=R+
2012: Estimate based on estimated MCV1. GoC=R+
2011: Estimate based on estimated MCV1. GoC=R+
2010: Estimate based on estimated MCV1. GoC=R+
2009: Estimate based on estimated MCV1. GoC=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.

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- 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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Czechia - HepB3

Description:

2019: Estimate based on coverage reported by national government. No nationally representative independent assessment within the last 5 years. WHO and UNICEF recommend a high-quality independent empirical assessment to confirm reported levels of coverage. GoC=R+

2018: Estimate based on interpolation between reported values. GoC=No accepted empirical data

2017: Estimate based on coverage reported by national government. GoC=R+ D+

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

2015: Estimate based on coverage reported by national government. GoC=R+

2014: Estimate based on reported administrative estimate. GoC=R+

2013: Estimate based on reported administrative estimate. GoC=R+

2012: Estimate based on reported administrative estimate. GoC=R+

2011: Estimate based on reported administrative estimate. GoC=R+

2010: Estimate based on coverage reported by national government. GoC=R+

2009: Estimate based on coverage reported by national government. GoC=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.

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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.

### Czechia - Hib3

**Description:**

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2018: Estimate based on interpolation between reported values. GoC=No accepted empirical data

2017: Estimate based on coverage reported by national government. GoC=R+ D+

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

2015: Estimate based on coverage reported by national government. GoC=R+

2014: Estimate based on reported administrative estimate. GoC=R+

2013: Estimate based on reported administrative estimate. GoC=R+

2012: Estimate based on reported administrative estimate. GoC=R+

2011: Estimate based on reported administrative estimate. GoC=R+

2010: Estimate based on reported administrative estimate. GoC=R+

2009: Estimate based on coverage reported by national government. GoC=R+

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Further information and estimates for previous years are available at:
http://www.data.unicef.org/child-health/immunization