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.
* 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

ADMINISTRATIVE coverage:

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:

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.

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.

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.
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: 2022 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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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:

2021: Estimate based on extrapolation from data 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=No accepted empirical data

2020: Estimate based on coverage reported by national government. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=R+ D+

2019: Estimate based on interpolation between data reported by national government. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=No accepted empirical data

2018: Estimate based on coverage reported by national government. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=R+ D+

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

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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.

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2021: Reported data calibrated to 1997 levels. 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=No accepted empirical data

2020: Reported data calibrated to 1997 levels. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. Estimate challenged by: D-R-

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2011: Reported data calibrated to 1997 levels. GoC=No accepted empirical data

2010: Reported data calibrated to 1997 levels. GoC=No accepted empirical data

July 8, 2022; page 4

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2023

Data received as of July 7, 2022
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: 2022 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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2021: Estimate based on extrapolation from data 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=No accepted empirical data.

2020: Estimate based on reported administrative data. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. Estimate based on administrative coverage reported. Estimate challenged by: D-


2018: Estimate based on coverage reported by national government. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=R+ D+

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

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

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+ D+

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

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

July 8, 2022; page 5

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2023

data received as of July 7, 2022
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.

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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.

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**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).

2021: Estimate is based on estimated DTP1. 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=No accepted empirical data


2019: Estimate is based on estimated DTP1. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=No accepted empirical data

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

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

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Data received as of July 7, 2022
**Poland - MCV2**

### Description:

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

**2021:** Estimate based on extrapolation from data 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=No accepted empirical data.

**2020:** Estimate based on coverage reported by national government. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=R+ D+

**2019:** Estimate based on coverage estimated for 2019. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=No accepted empirical data.

**2018:** Estimate based on coverage reported by national government. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=R+ D+

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

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

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

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

**2013:** Estimate based on coverage reported by national government. GoC=R+ D+

**2012:** Estimate based on coverage reported by national government. Estimate challenged by: D-

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

**2010:** Estimate based on coverage reported by national government. Estimate challenged by: D-

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### Table: Coverage Estimates - MCV2

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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: 2022 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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Estimate is supported by reported data [R+] or by an independent denominator from the World Population Prospects: 2022 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.

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.

2021: 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=No accepted empirical data


2017: Estimate based on estimated MCV1. GoC=R+ D+

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

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

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

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. GoC=R+ D+

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: 2022 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.

### Poland - HepBB

#### Description:

- **2021**: Estimate based on extrapolation from prior year. 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=No accepted empirical data
- **2020**: Estimate based on reported administrative data. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. Estimate based on coverage estimated last year with data reported. Estimate challenged by: R-
- **2019**: Estimate of 93 percent assigned by working group. Estimate based on coverage estimated last year with data reported. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=No accepted empirical data
- **2018**: Reported data calibrated to 2019 levels. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=No accepted empirical data
- **2017**: Reported data calibrated to 2019 levels. GoC=No accepted empirical data
- **2016**: Reported data calibrated to 2019 levels. GoC=No accepted empirical data
- **2015**: Reported data calibrated to 2019 levels. GoC=No accepted empirical data
- **2014**: Reported data calibrated to 2019 levels. GoC=No accepted empirical data
- **2013**: Reported data calibrated to 2019 levels. GoC=No accepted empirical data
- **2012**: Reported data calibrated to 2019 levels. GoC=No accepted empirical data
- **2011**: Reported data calibrated to 2019 levels. GoC=No accepted empirical data
- **2010**: Reported data calibrated to 2019 levels. GoC=No accepted empirical data

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July 8, 2022; page 11

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2023

data received as of July 7, 2022
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: 2022 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:

2021: Estimate based on extrapolation from prior year. 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=No accepted empirical data


2018: Estimate based on coverage reported by national government. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=R+ D+

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

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

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

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

2013: Estimate based on coverage reported by national government. GoC=R+ D+

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

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

2010: 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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### Description:

- **2021:** Estimate based on extrapolation from prior year. 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=No accepted empirical data.

- **2020:** Estimate based on DTP3 coverage estimate. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. Estimate challenged by: D-R-

- **2019:** Estimate based on coverage estimated for 2019. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=No accepted empirical data.

- **2018:** Estimate based on coverage reported by national government. Vaccination coverage from the National Institute of Public Health are available at www.pzh.gov.pl. GoC=R+ D+

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

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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.

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Further information and estimates for previous years are available at:
https://data.unicef.org/topic/child-health/immunization/
https://immunizationdata.who.int/listing.html