

BACKGROUND NOTE: Each year WHO and UNICEF jointly review reports submitted by Member States regarding national immunization coverage, finalized survey reports as well as data from the published and grey literature. Based on these data, with due consideration to potential biases and the views of local experts, WHO and UNICEF attempt to distinguish between situations where the available empirical data accurately reflect immunization system performance and those where the data are likely to be compromised and present a misleading view of immunization coverage while jointly estimating the most likely coverage levels for each country.

WHO and UNICEF estimates are country-specific; that is to say, each country's data are reviewed individually, and data are not borrowed from other countries in the absence of data. Estimates are not based on ad hoc adjustments to reported data; in some instances empirical data are available from a single source, usually the nationally reported coverage data. In cases where no data are available for a given country/vaccine/year combination, data are considered from earlier and later years and interpolated to estimate coverage for the missing year(s). In cases where data sources are mixed and show large variation, an attempt is made to identify the most likely estimate with consideration of the possible biases in available data. For methods see:

*Burton et al. 2009. WHO and UNICEF estimates of national infant immunization coverage: methods and processes.

*Burton et al. 2012. A formal representation of the WHO and UNICEF estimates of national immunization coverage: a computational logic approach.

*Brown et al. 2013. An introduction to the grade of confidence used to characterize uncertainty around the WHO and UNICEF estimates of national immunization coverage.

DATA SOURCES.

ADMINISTRATIVE coverage: Reported by national authorities and based on aggregated administrative reports from health service providers on the number of vaccinations administered during a given period (numerator data) and reported target population data (denominator data). May be biased by inaccurate numerator and/or denominator data.

OFFICIAL coverage: Estimated coverage reported by national authorities that reflects their assessment of the most likely coverage based on any combination of administrative coverage, survey-based estimates or other data sources or adjustments. Approaches to determine OFFICIAL coverage may differ across countries.

SURVEY coverage: Based on estimated coverage from population-based household surveys among children aged 12-23 months or 24-35 months following a review of survey methods and results. Information is based on the combination of vaccination history from documented evidence or caregiver recall. Survey results are considered for the appropriate birth cohort based on the period of data collection.

ABBREVIATIONS

BCG: percentage of births who received one dose of Bacillus Calmette Guerin vaccine.

DTP1 / DTP3: percentage of surviving infants who received the 1st / 3rd dose, respectively, of diphtheria and tetanus toxoid with pertussis containing vaccine.

Pol3: percentage of surviving infants who received the 3rd dose of polio containing vaccine. May be either oral or inactivated polio vaccine.

IPV1: percentage of surviving infants who received at least one dose of inactivated polio vaccine. In countries utilizing an immunization schedule recommending either (i) a primary series of three doses of oral polio vaccine (OPV) plus at least one dose of IPV where OPV is included in routine

immunization and/or campaign or (ii) a sequential schedule of IPV followed by OPV, WHO and UNICEF estimates for IPV1 reflect coverage with at least one routine dose of IPV among infants <1 year of age among countries. For countries utilizing IPV containing vaccine use only, i.e., no recommended dose of OPV, the WHO and UNICEF estimate for IPV1 corresponds to coverage for the 1st dose of IPV.

Production of IPV coverage estimates, which begins in 2015, results in no change of the estimated coverage levels for the 3rd dose of polio (Pol3). For countries recommending routine immunization with a primary series of three doses of IPV alone, WHO and UNICEF estimated Pol3 coverage is equivalent to estimated coverage with three doses of IPV. For countries with a sequential schedule, estimated Pol3 coverage is based on that for the 3rd dose of polio vaccine regardless of vaccine type.

MCV1: percentage of surviving infants who received the 1st dose of measles containing vaccine. In countries where the national schedule recommends the 1st dose of MCV at 12 months or later based on the epidemiology of disease in the country, coverage estimates reflect the percentage of children who received the 1st dose of MCV as recommended.

MCV2: percentage of children who received the 2nd dose of measles containing vaccine according to the nationally recommended schedule.

RCV1: percentage of surviving infants who received the 1st dose of rubella containing vaccine. Coverage estimates are based on WHO and UNICEF estimates of coverage for the dose of measles containing vaccine that corresponds to the first measles-rubella combination vaccine. Nationally reported coverage of RCV is not taken into consideration nor are the data represented in the accompanying graph and data table.

HepBB: percentage of births which received a dose of hepatitis B vaccine within 24 hours of delivery. Estimates of hepatitis B birth dose coverage are produced only for countries with a universal birth dose policy. Estimates are not produced for countries that recommend a birth dose to infants born to HepB virus-infected mothers only or where there is insufficient information to determine whether vaccination is within 24 hours of birth.

HepB3: percentage of surviving infants who received the 3rd dose of hepatitis B containing vaccine following the birth dose.

Hib3: percentage of surviving infants who received the 3rd dose of Haemophilus influenzae type b containing vaccine.

RotaC: percentage of surviving infants who received the final recommended dose of rotavirus vaccine, which can be either the 2nd or the 3rd dose depending on the vaccine.

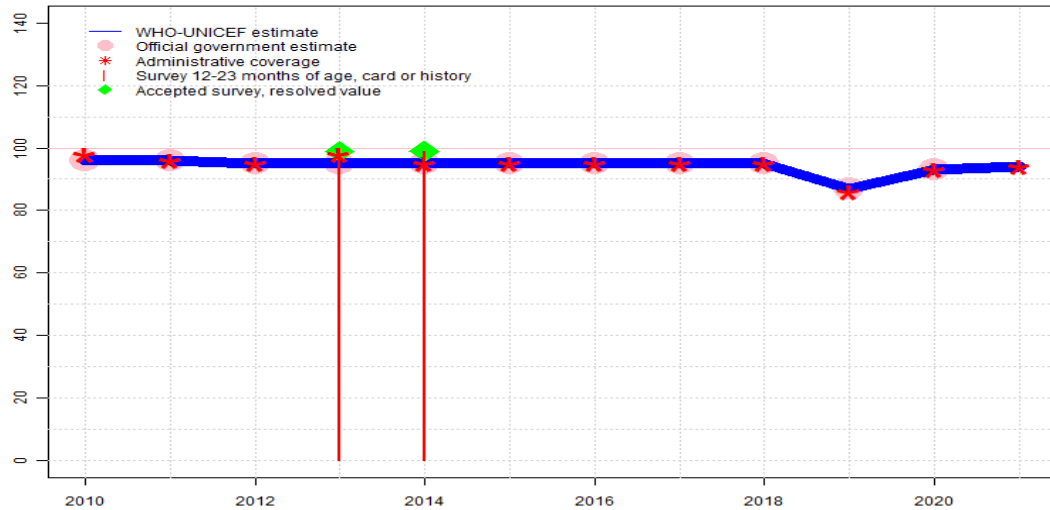
PcV3: percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect the percentage of surviving infants who received two doses of PcV prior to the 1st birthday.

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

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Kazakhstan - BCG

KAZ - BCG



Description:

- 2021: 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. Reported target population of live births is twenty-six percent higher than that of surviving infants, and also significantly higher than the live births projected by the United Nations Population Division. GoC=R+ D+
- 2020: Estimate based on coverage reported by national government. GoC=R+ D+
- 2019: Estimate based on coverage reported by national government. Programme reports one month vaccine stock-out. GoC=R+ D+
- 2018: Estimate based on coverage reported by national government. 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+ S+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2014: Estimate based on coverage reported by national government supported by survey. Survey evidence of 99 percent based on 1 survey(s). GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government supported by survey. Survey evidence of 99 percent based on 1 survey(s). GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2010: Estimate based on coverage reported by national government. GoC=R+ S+ D+

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	96	96	95	95	95	95	95	95	95	87	93	94
Estimate GoC	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●●	●●	●●	●●
Official	96	96	95	95	95	95	95	95	95	87	93	NA
Administrative	98	96	95	98	95	95	95	95	95	86	93	94
Survey	NA	NA	NA	99	99	NA	NA	NA	NA	NA	NA	NA

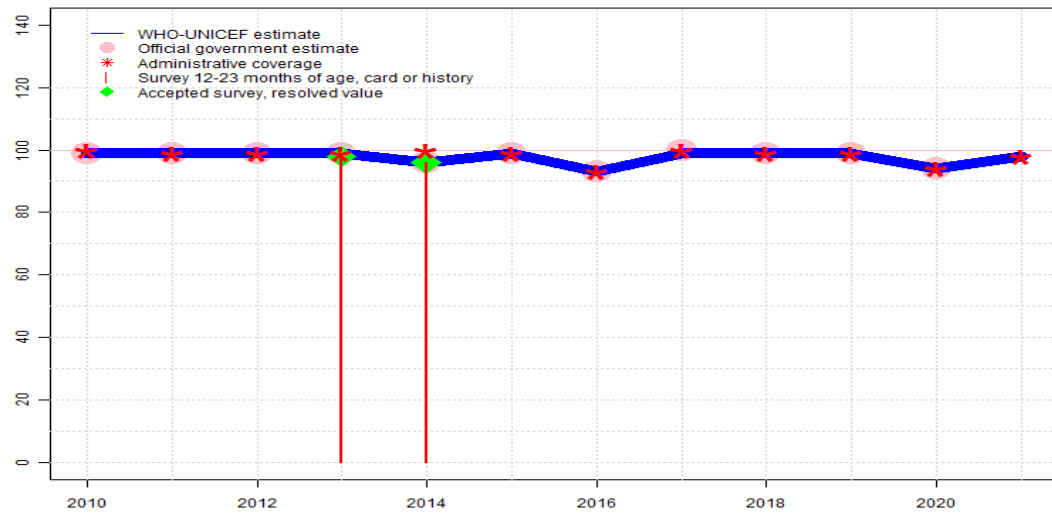
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

Kazakhstan - DTP1

KAZ - DTP1



Description:

2021: 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. Estimate challenged by: D-

2020: Estimate based on coverage reported by national government. Estimate challenged by: D-

2019: Estimate based on coverage reported by national government. Estimate challenged by: D-

2018: Estimate based on coverage reported by national government. Estimate challenged by: D-

2017: DTP1 coverage estimated based on DTP3 coverage of 101. Estimate challenged by: R-

2016: Estimate based on coverage reported by national government. Programme reports 5-month vaccine stock-out at national level. Estimate challenged by: D-

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

2014: Estimate based on coverage reported by national government supported by survey. Survey evidence of 96 percent based on 1 survey(s). GoC=R+ S+ D+

2013: Estimate based on coverage reported by national government supported by survey. Survey evidence of 98 percent based on 1 survey(s). GoC=R+ S+ D+

2012: DTP1 coverage estimated based on DTP3 coverage of 100. Estimate challenged by: R-

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

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

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	99	99	99	99	96	99	93	99	99	99	94	98
Estimate GoC	●●●	●●●	●	●●●	●●●	●●●	●	●	●	●	●	●
Official	99	99	99	99	96	99	93	100	99	99	94	NA
Administrative	100	99	99	99	100	99	93	100	99	99	94	98
Survey	NA	NA	NA	98	96	NA	NA	NA	NA	NA	NA	NA

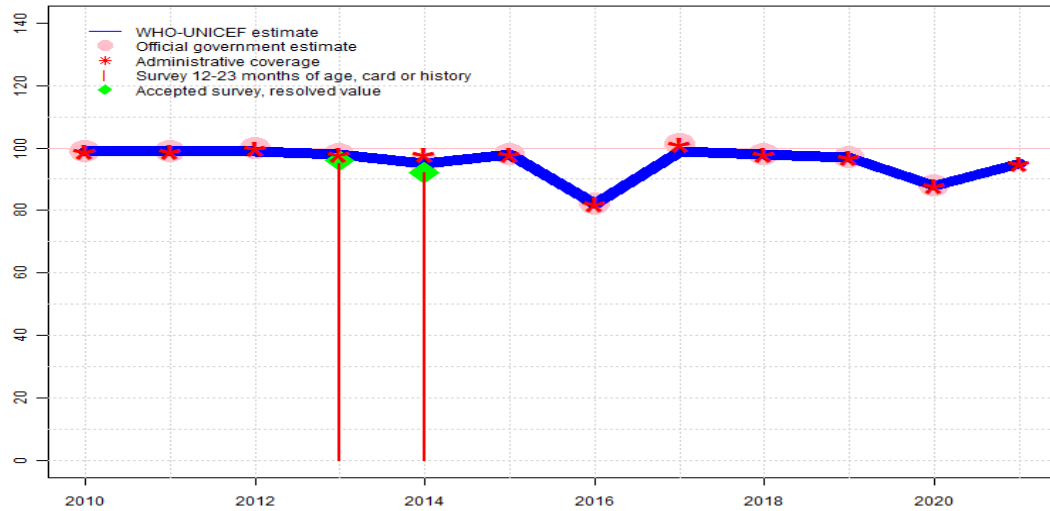
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

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Kazakhstan - DTP3

KAZ - DTP3



Description:

- 2021: 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. Estimate challenged by: D-
- 2020: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2019: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2018: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2017: Estimate based on coverage reported by national government. Programme reports 2 month vaccine stock-out at national level. GoC=R+ D+
- 2016: Estimate based on coverage reported by national government. Programme reports 5-month vaccine stock-out at national level. GoC=R+ S+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2014: Estimate based on coverage reported by national government supported by survey. Survey evidence of 92 percent based on 1 survey(s). GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government supported by survey. Survey evidence of 96 percent based on 1 survey(s). Kazakhstan Multiple Indicator Cluster Survey 2015 card or history results of 95 percent modified for recall bias to 96 percent based on 1st dose card or history coverage of 98 percent, 1st dose card only coverage of 95 percent and 3rd dose card only coverage of 93 percent. GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2010: Estimate based on coverage reported by national government. GoC=R+ S+ D+

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	99	99	99	98	95	98	82	99	98	97	88	95
Estimate GoC	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●	●	●	●
Official	99	99	100	98	95	98	82	101	98	97	88	NA
Administrative	99	99	100	98	98	98	82	101	98	97	88	95
Survey	NA	NA	NA	95	92	NA	NA	NA	NA	NA	NA	NA

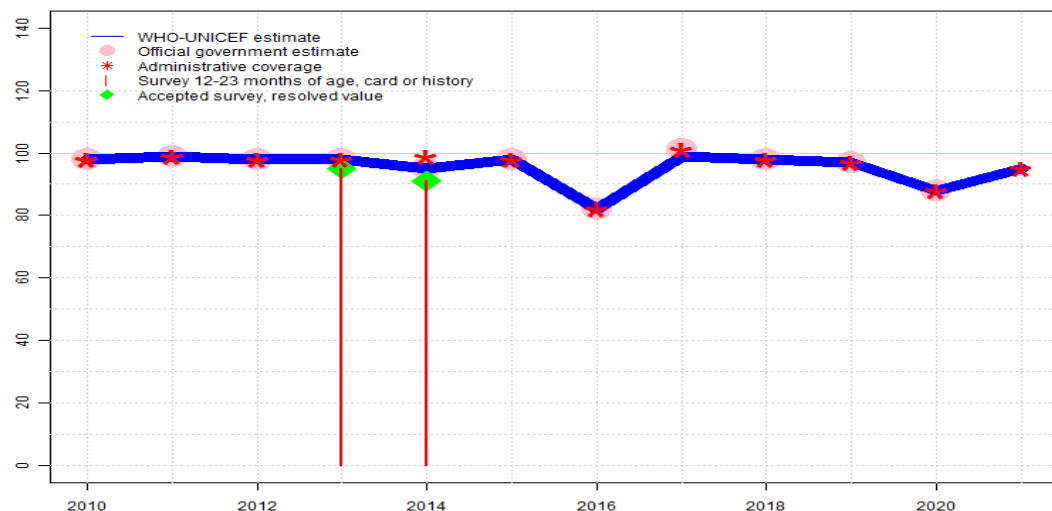
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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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- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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Kazakhstan - Pol3

KAZ - Pol3



Description:

- 2021: 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. Estimate challenged by: D-
- 2020: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2019: Estimate based on coverage reported by national government. Programme reports two month vaccine stock-out. Estimate challenged by: D-
- 2018: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2017: Estimate based on coverage reported by national government. Programme recovered from stock-out reported in prior year. GoC=R+ D+
- 2016: Estimate based on coverage reported by national government. Programme reports 5-month vaccine stock-out at national level. GoC=R+ S+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2014: Estimate based on coverage reported by national government supported by survey. Survey evidence of 91 percent based on 1 survey(s). GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government supported by survey. Survey evidence of 95 percent based on 1 survey(s). GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2010: Estimate based on coverage reported by national government. GoC=R+ S+ D+

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	99	98	98	95	98	82	99	98	97	88	95
Estimate GoC	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●	●	●	●	●
Official	98	99	98	98	95	98	82	101	98	97	88	NA
Administrative	98	99	98	98	99	98	82	101	98	97	88	95
Survey	NA	NA	NA	95	91	NA	NA	NA	NA	NA	NA	NA

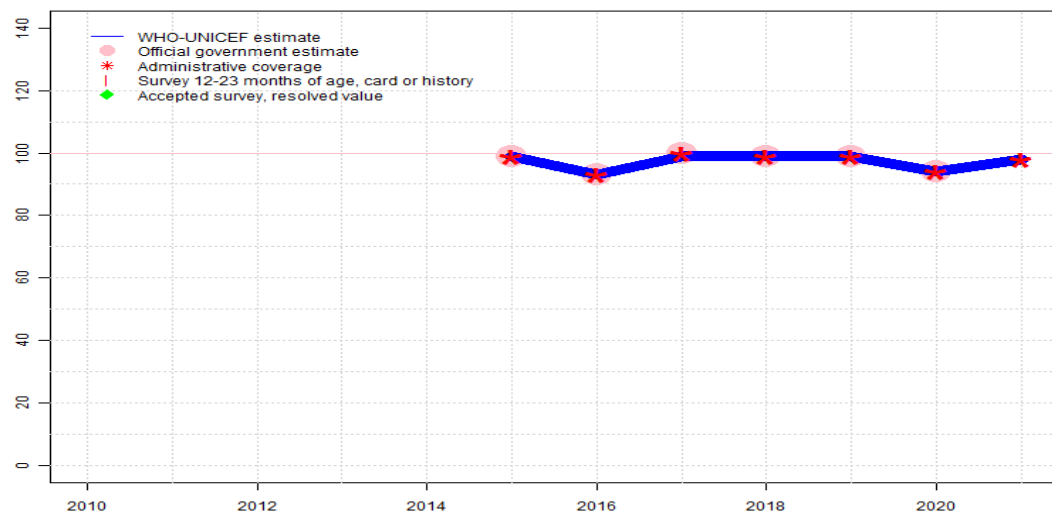
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

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Kazakhstan - IPV1

KAZ - 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).

2021: Estimate based on reported administrative estimate. 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. Estimate challenged by: D-

2020: Estimate based on coverage reported by national government. Estimate challenged by: D-

2019: Estimate based on coverage reported by national government. Estimate challenged by: D-

2018: Estimate based on coverage reported by national government. Estimate challenged by: D-

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

2016: Estimate based on coverage reported by national government. Programme reports 5-month vaccine stock-out at national level. Estimate challenged by: D-

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

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	NA	NA	NA	99	93	99	99	99	94	98
Estimate GoC	NA	NA	NA	NA	NA	●●	●	●●	●	●	●	●
Official	NA	NA	NA	NA	NA	99	93	100	99	99	94	NA
Administrative	NA	NA	NA	NA	NA	99	93	100	99	99	94	98
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

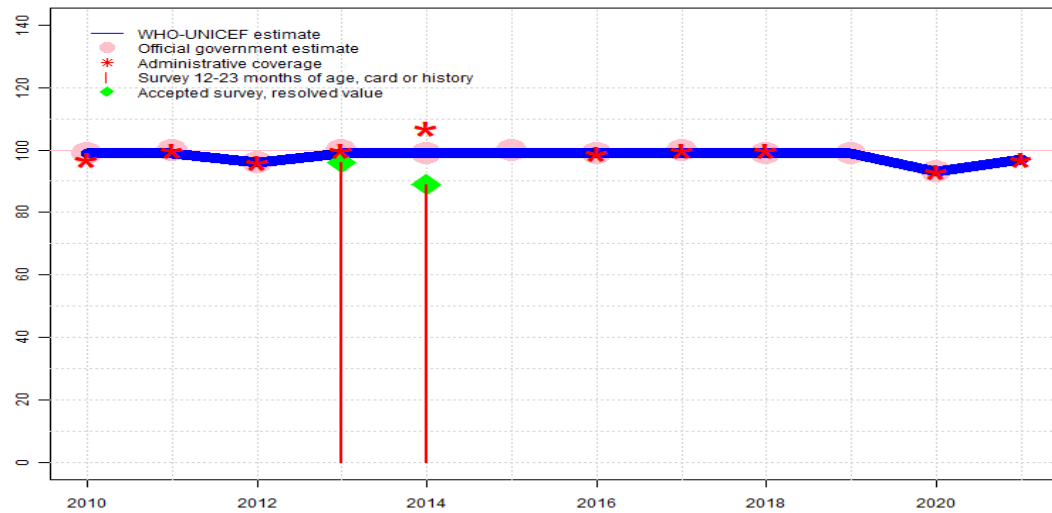
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- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While 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.

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Kazakhstan - MCV1

KAZ - MCV1



Description:

2021: 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. Estimate challenged by: D-

2020: Estimate based on coverage reported by national government. Estimate challenged by: D-

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

2018: Estimate based on coverage reported by national government. Estimate challenged by: D-

2017: Estimate based on coverage reported by national government. Estimate challenged by: D-

2016: Estimate based on coverage reported by national government. Estimate challenged by: D-

2015: Estimate based on coverage reported by national government. Estimate challenged by: S-

2014: Estimate based on coverage reported by national government supported by survey. Survey evidence of 89 percent based on 1 survey(s). GoC=R+ S+ D+

2013: Estimate based on coverage reported by national government supported by survey. Survey evidence of 96 percent based on 1 survey(s). Estimate challenged by: S-

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

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

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

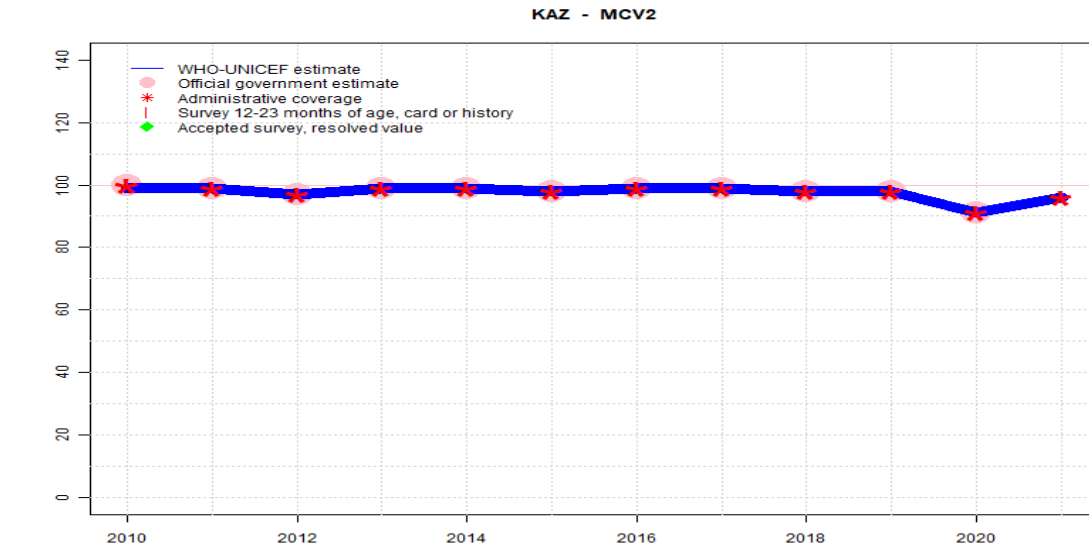
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	99	99	96	99	99	99	99	99	99	99	93	97
Estimate GoC	●●●	●●●	●●●	●	●●●	●	●	●	●	●●	●	●
Official	99	100	96	100	99	100	99	100	99	99	93	NA
Administrative	97	100	96	100	107	NA	99	100	100	NA	93	97
Survey	NA	NA	NA	96	89	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

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Kazakhstan - MCV2



Description:

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

2021: Estimate based on reported administrative estimate. 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. Estimate challenged by: D-

2020: Estimate based on coverage reported by national government. Estimate challenged by: D-
2019: Estimate based on coverage reported by national government. Estimate challenged by: D-
2018: Estimate based on coverage reported by national government. Estimate challenged by: D-
2017: Estimate based on coverage reported by national government. Estimate challenged by: D-
2016: Estimate based on coverage reported by national government. Estimate challenged by: D-
2015: Estimate based on coverage reported by national government. Estimate challenged by: D-
2014: Estimate based on coverage reported by national government. Estimate challenged by: D-
2013: Estimate based on coverage reported by national government. Estimate challenged by: D-
2012: Estimate based on coverage reported by national government. Estimate challenged by: D-
2011: Estimate based on coverage reported by national government. Estimate challenged by: D-
2010: Estimate based on coverage reported by national government. Estimate challenged by: D-

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	99	99	97	99	99	98	99	99	98	98	91	96
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	100	99	97	99	99	98	99	99	98	98	91	NA
Administrative	100	99	97	99	99	98	99	99	98	98	91	96
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

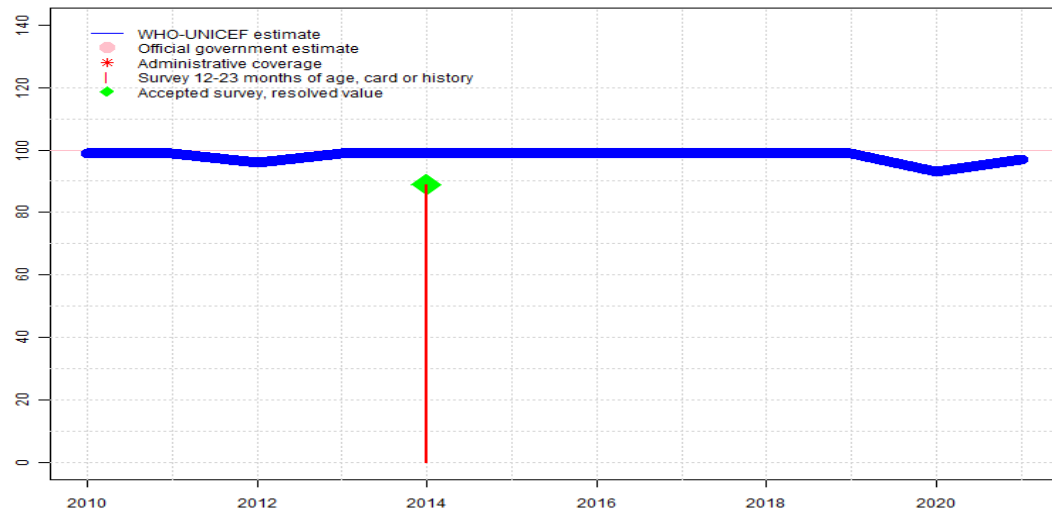
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

Kazakhstan - RCV1

KAZ - RCV1



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	99	99	96	99	99	99	99	99	99	99	93	97
Estimate GoC	●●●	●●●	●●●	●	●●●	●	●	●	●	●●	●	●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	89	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

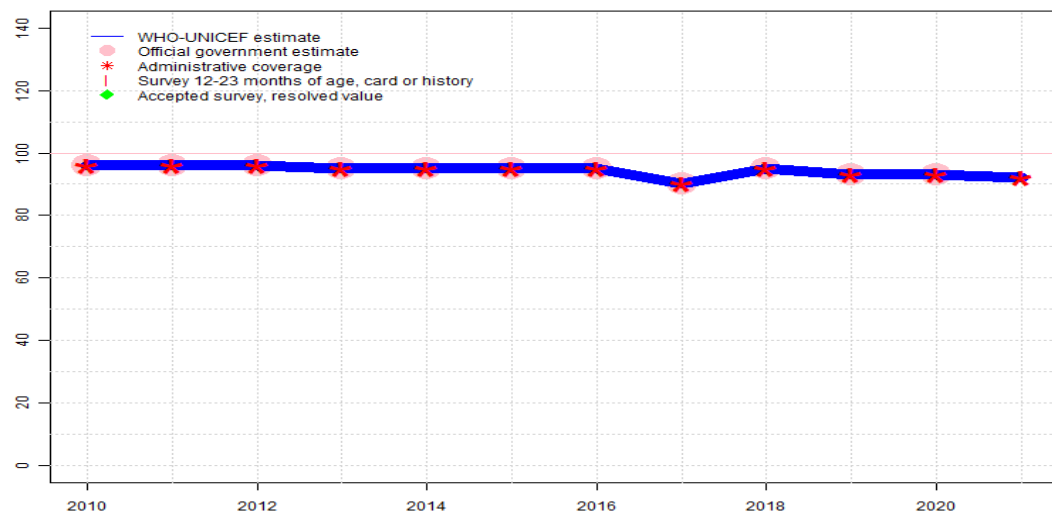
Description:

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 the accompanying graph and data table.

- 2021: 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. Estimate challenged by: D-
- 2020: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2019: Estimate based on estimated MCV1. GoC=R+
- 2018: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2017: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2016: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2015: Estimate based on estimated MCV1. Estimate challenged by: S-
- 2014: Estimate based on estimated MCV1. GoC=R+ S+ D+
- 2013: Estimate based on estimated MCV1. Estimate challenged by: S-
- 2012: Estimate based on estimated MCV1. GoC=R+ S+ D+
- 2011: Estimate based on estimated MCV1. GoC=R+ S+ D+
- 2010: Estimate based on estimated MCV1. GoC=R+ S+ D+

Kazakhstan - HepBB

KAZ - HepBB



Description:

2021: Estimate based on reported administrative estimate. 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. Reported target population of live births is twenty-six percent higher than that of surviving infants, and also significantly higher than the live births projected by the United Nations Population Division. GoC=R+ D+

2020: Estimate based on coverage reported by national government. GoC=R+ D+

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

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

2017: Estimate based on coverage reported by national government. Programme reports 4 month vaccine stock-out at national level. 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+ D+

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

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+ D+

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

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	96	96	96	95	95	95	95	90	95	93	93	92
Estimate GoC	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	96	96	96	95	95	95	95	90	95	93	93	NA
Administrative	96	96	96	95	95	95	95	90	95	93	93	92
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

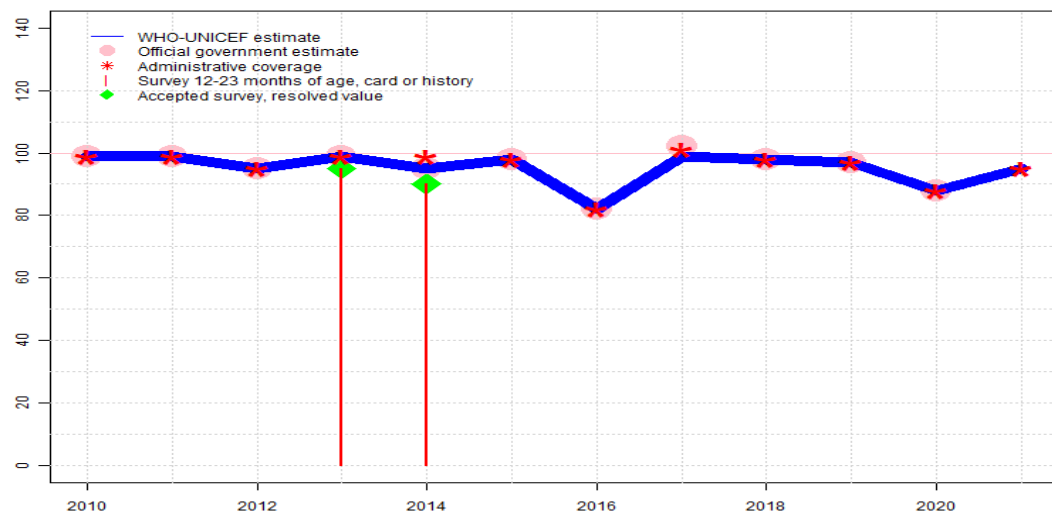
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

Kazakhstan - HepB3

KAZ - HepB3



Description:

- 2021: 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. Estimate challenged by: D-
- 2020: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2019: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2018: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2017: Estimate based on coverage reported by national government. Programme reports 2 month vaccine stock-out at national level. GoC=R+ D+
- 2016: Estimate based on coverage reported by national government. Programme reports 5-month vaccine stock-out at national level. GoC=R+ S+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2014: Estimate based on coverage reported by national government supported by survey. Survey evidence of 90 percent based on 1 survey(s). GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government supported by survey. Survey evidence of 95 percent based on 1 survey(s). GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2010: Estimate based on coverage reported by national government. GoC=R+ D+

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	99	99	95	99	95	98	82	99	98	97	88	95
Estimate GoC	••	•••	•••	•••	•••	•••	•••	••	•	•	•	•
Official	99	99	95	99	95	98	82	102	98	97	88	NA
Administrative	99	99	95	99	99	98	82	101	98	97	88	95
Survey	NA	NA	NA	95	90	NA	NA	NA	NA	NA	NA	NA

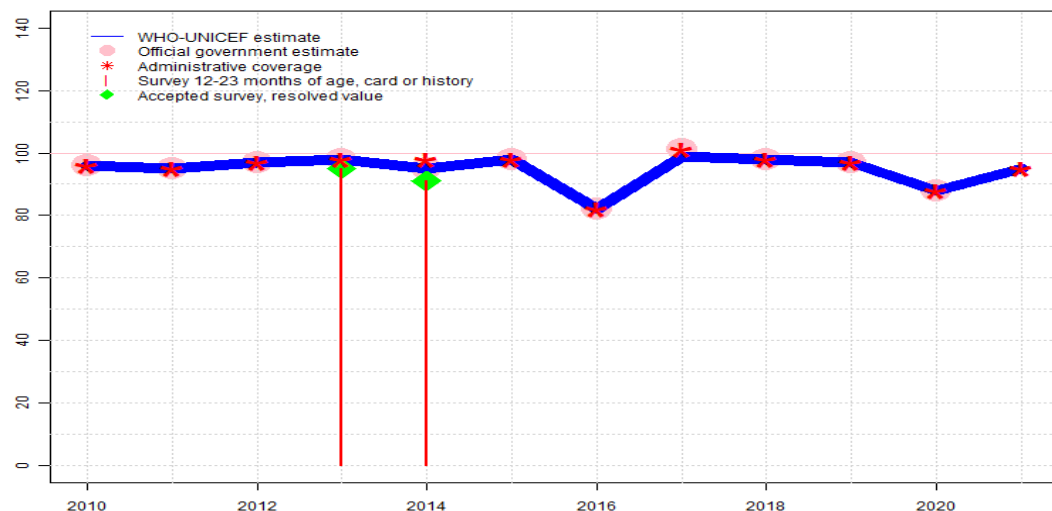
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

Kazakhstan - Hib3

KAZ - Hib3



Description:

- 2021: 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. Estimate challenged by: D-
- 2020: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2019: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2018: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2017: Estimate based on coverage reported by national government. Programme reports 2 month vaccine stock-out at national level. GoC=R+ D+
- 2016: Estimate based on coverage reported by national government. Programme reports 5-month vaccine stock-out at national level. GoC=R+ S+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2014: Estimate based on coverage reported by national government supported by survey. Survey evidence of 91 percent based on 1 survey(s). GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government supported by survey. Survey evidence of 95 percent based on 1 survey(s). GoC=R+ S+ D+
- 2012: Estimate based on reported data. GoC=R+ S+ D+
- 2011: Estimate based on reported data. GoC=R+ S+ D+
- 2010: Estimate based on reported data. GoC=R+ D+

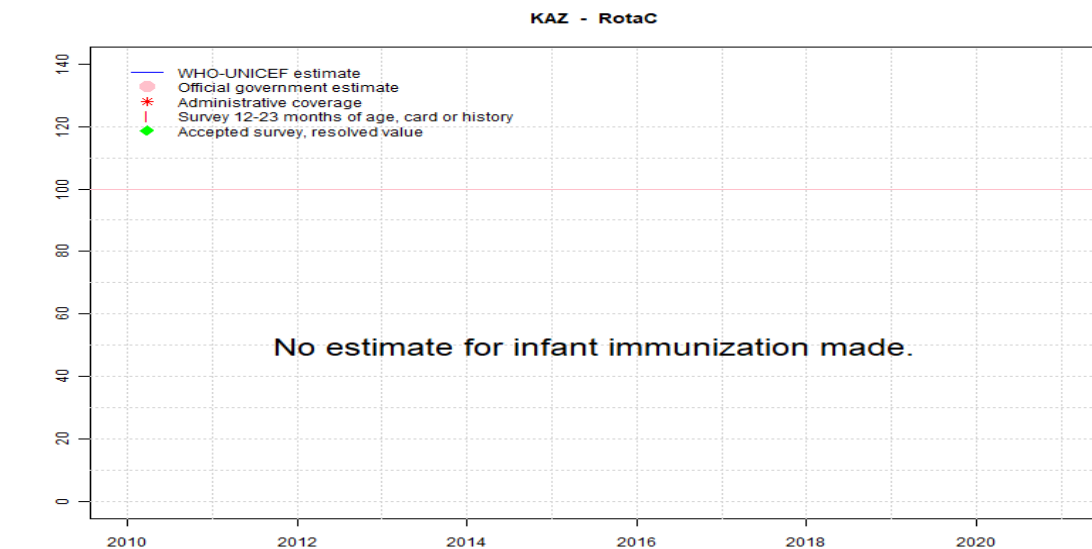
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	96	95	97	98	95	98	82	99	98	97	88	95
Estimate GoC	••	•••	•••	•••	•••	•••	•••	••	•	•	•	•
Official	96	95	97	98	95	98	82	101	98	97	88	NA
Administrative	96	95	97	98	98	98	82	101	98	97	88	95
Survey	NA	NA	NA	95	91	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

Kazakhstan - RotaC



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

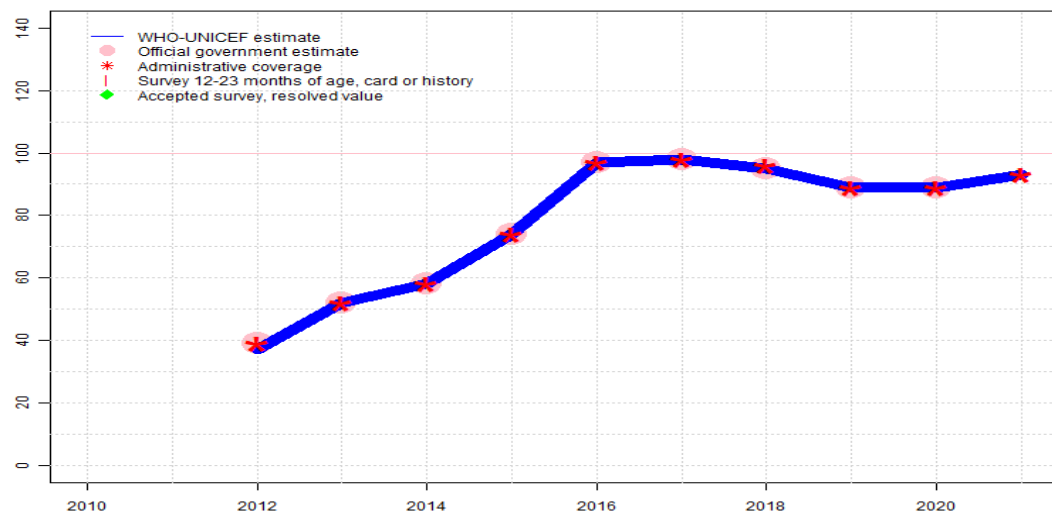
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

Kazakhstan - PcV3

KAZ - PcV3



Description:

- 2021: Estimate based on reported administrative estimate. 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. Estimate challenged by: D-
- 2020: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2019: Estimate based on coverage reported by national government. Programme reports three month vaccine stock-out. Estimate challenged by: D-
- 2018: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2017: Estimate based on coverage reported by national government. GoC=R+ D+
- 2016: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ D+
- 2012: Coverage of 39 percent achieved in 96 percent of the population. Estimate is based on annualized coverage for the national birth cohort. Estimate challenged by: R-

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	37	52	58	74	97	98	95	89	89	93
Estimate GoC	NA	NA	•	••	••	••	•	••	•	•	•	•
Official	NA	NA	39	52	58	74	97	98	95	89	89	NA
Administrative	NA	NA	39	52	58	74	97	98	96	89	89	93
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 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.

Kazakhstan - survey details

2014 Kazakhstan Multiple Indicator Cluster Survey 2015

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	98.5	12-23 m	1071	98
BCG	Card	97.3	12-23 m	1071	98
BCG	Card or History	98.8	12-23 m	1071	98
DTP1	C or H <12 months	95.6	12-23 m	1071	98
DTP1	Card	94.3	12-23 m	1071	98
DTP1	Card or History	95.9	12-23 m	1071	98
DTP3	C or H <12 months	89.7	12-23 m	1071	98
DTP3	Card	89.8	12-23 m	1071	98
DTP3	Card or History	92.4	12-23 m	1071	98
HepB1	C or H <12 months	97.6	12-23 m	1071	98
HepB1	Card	96.1	12-23 m	1071	98
HepB1	Card or History	97.7	12-23 m	1071	98
HepB3	C or H <12 months	88.4	12-23 m	1071	98
HepB3	Card	87.6	12-23 m	1071	98
HepB3	Card or History	90	12-23 m	1071	98
Hib1	C or H <12 months	94.7	12-23 m	1071	98
Hib1	Card	92.9	12-23 m	1071	98
Hib1	Card or History	95	12-23 m	1071	98
Hib3	C or H <12 months	89.3	12-23 m	1071	98
Hib3	Card	88.6	12-23 m	1071	98
Hib3	Card or History	91.4	12-23 m	1071	98
MCV1	Card	82.7	12-23 m	1071	98
MCV1	Card or History	89.4	12-23 m	1071	98
Pol1	C or H <12 months	95.6	12-23 m	1071	98
Pol1	Card	94.1	12-23 m	1071	98
Pol1	Card or History	95.9	12-23 m	1071	98
Pol3	C or H <12 months	89.7	12-23 m	1071	98
Pol3	Card	89.2	12-23 m	1071	98
Pol3	Card or History	91.3	12-23 m	1071	98

2013 Kazakhstan Multiple Indicator Cluster Survey 2015

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	98.4	24-35 m	1045	98
BCG	Card	96.5	24-35 m	1045	98

BCG	Card or History	98.9	24-35 m	1045	98
DTP1	C or H <12 months	96.1	24-35 m	1045	98
DTP1	Card	94.6	24-35 m	1045	98
DTP1	Card or History	97.5	24-35 m	1045	98
DTP3	C or H <12 months	91	24-35 m	1045	98
DTP3	Card	92.6	24-35 m	1045	98
DTP3	Card or History	95.4	24-35 m	1045	98
HepB1	C or H <12 months	98.6	24-35 m	1045	98
HepB1	Card	96.3	24-35 m	1045	98
HepB1	Card or History	98.6	24-35 m	1045	98
HepB3	C or H <12 months	90.9	24-35 m	1045	98
HepB3	Card	92.5	24-35 m	1045	98
HepB3	Card or History	95	24-35 m	1045	98
Hib1	C or H <12 months	95.8	24-35 m	1045	98
Hib1	Card	93.8	24-35 m	1045	98
Hib1	Card or History	97.3	24-35 m	1045	98
Hib3	C or H <12 months	90.7	24-35 m	1045	98
Hib3	Card	92.3	24-35 m	1045	98
Hib3	Card or History	95.1	24-35 m	1045	98
MCV1	C or H <12 months	95.1	24-35 m	1045	98
MCV1	Card	92.7	24-35 m	1045	98
MCV1	Card or History	95.6	24-35 m	1045	98
Pol1	C or H <12 months	96.7	24-35 m	1045	98
Pol1	Card	95.5	24-35 m	1045	98
Pol1	Card or History	97.9	24-35 m	1045	98
Pol3	C or H <12 months	91.2	24-35 m	1045	98
Pol3	Card	93.2	24-35 m	1045	98
Pol3	Card or History	95.3	24-35 m	1045	98

2009 Multiple Indicator Cluster Survey in the Republic of Kazakhstan 2010-2011

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	99.2	15-26 m	-	66
BCG	Card	96	15-26 m	-	66
BCG	Card or History	99.5	15-26 m	1076	66
BCG	History	3.4	15-26 m	-	66
DTP1	C or H <12 months	98.4	15-26 m	-	66
DTP1	Card	95.3	15-26 m	-	66

Kazakhstan - survey details

DTP1	Card or History	98.8	15-26 m	1076	66
DTP1	History	3.5	15-26 m	-	66
DTP3	C or H <12 months	93	15-26 m	-	66
DTP3	Card	94.2	15-26 m	-	66
DTP3	Card or History	96.8	15-26 m	1076	66
DTP3	History	2.6	15-26 m	-	66
HepB1	C or H <12 months	95.9	15-26 m	-	66
HepB1	Card	76.1	15-26 m	-	66
HepB1	Card or History	96.6	15-26 m	1076	66
HepB1	History	20.4	15-26 m	-	66
HepB3	C or H <12 months	67	15-26 m	-	66
HepB3	Card	63.1	15-26 m	-	66
HepB3	Card or History	70.2	15-26 m	1076	66
HepB3	History	7.1	15-26 m	-	66
MCV1	C or H <12 months	89	15-26 m	-	66
MCV1	Card	90.5	15-26 m	-	66
MCV1	Card or History	93.9	15-26 m	1076	66
MCV1	History	3.4	15-26 m	-	66
Pol1	C or H <12 months	98.9	15-26 m	-	66
Pol1	Card	95.5	15-26 m	-	66
Pol1	Card or History	99.1	15-26 m	1076	66
Pol1	History	3.6	15-26 m	-	66
Pol3	C or H <12 months	81.3	15-26 m	-	66
Pol3	Card	86.3	15-26 m	-	66
Pol3	Card or History	88.4	15-26 m	1076	66
Pol3	History	2.1	15-26 m	-	66

DTP1	History	4	15-26 m	991	95
DTP3	C or H <12 months	91.7	15-26 m	991	95
DTP3	Card	95.7	15-26 m	991	95
DTP3	Card or History	98	15-26 m	991	95
DTP3	History	2.4	15-26 m	991	95
HepB1	C or H <12 months	94.3	15-26 m	991	95
HepB1	Card	95.1	15-26 m	991	95
HepB1	Card or History	95.1	15-26 m	991	95
HepB1	History	0	15-26 m	991	95
HepB3	C or H <12 months	92.3	15-26 m	991	95
HepB3	Card	95.1	15-26 m	991	95
HepB3	Card or History	95.1	15-26 m	991	95
HepB3	History	0	15-26 m	991	95
MCV1	C or H <12 months	94.7	15-26 m	991	95
MCV1	Card	95.6	15-26 m	991	95
MCV1	Card or History	99.4	15-26 m	991	95
MCV1	History	3.8	15-26 m	991	95
Pol1	C or H <12 months	99	15-26 m	991	95
Pol1	Card	95.2	15-26 m	991	95
Pol1	Card or History	99.5	15-26 m	991	95
Pol1	History	4.3	15-26 m	991	95
Pol3	C or H <12 months	93.9	15-26 m	991	95
Pol3	Card	95.3	15-26 m	991	95
Pol3	Card or History	96.7	15-26 m	991	95
Pol3	History	1.4	15-26 m	991	95

2004 Kazakhstan Multiple Indicator Cluster Survey 2006

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	97.9	15-26 m	991	95
BCG	Card	95.1	15-26 m	991	95
BCG	Card or History	99.6	15-26 m	991	95
BCG	History	4.5	15-26 m	991	95
DTP1	C or H <12 months	97.9	15-26 m	991	95
DTP1	Card	95.5	15-26 m	991	95
DTP1	Card or History	99.4	15-26 m	991	95

1998 Kazakhstan Demographic and Health Survey 1999, 2000

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	90.2	12-23 m	244	-
DTP1	Card	90.3	12-23 m	244	-
DTP3	Card	88.9	12-23 m	244	-
MCV1	Card	78.7	12-23 m	244	-
Pol1	Card	89.9	12-23 m	244	-
Pol3	Card	83.3	12-23 m	244	-

Kazakhstan - survey details

Further information and estimates for previous years are available at:

<https://data.unicef.org/topic/child-health/immunization/>

<https://immunizationdata.who.int/listing.html>