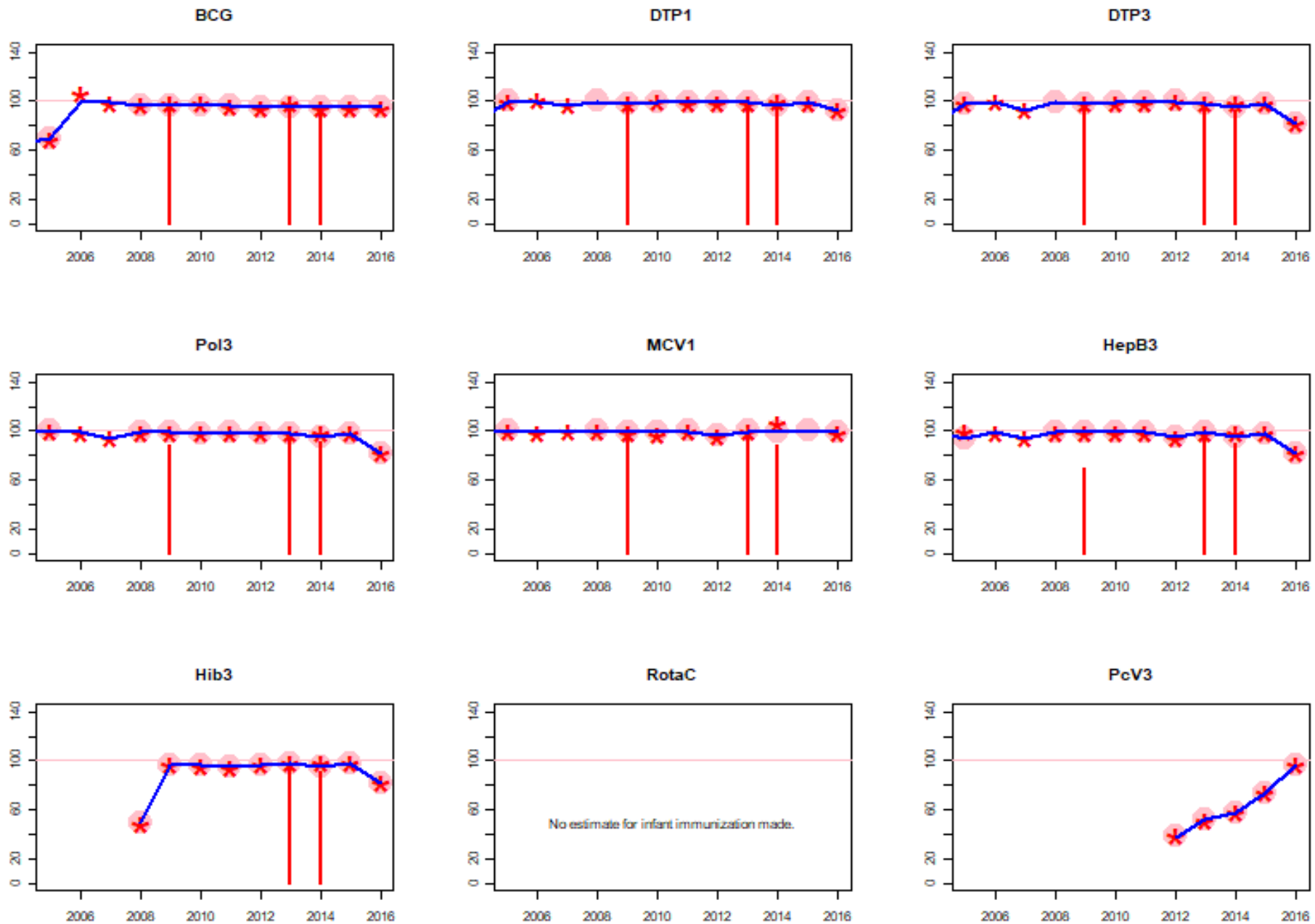


Kazakhstan: WHO and UNICEF estimates of immunization coverage: 2016 revision



**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.

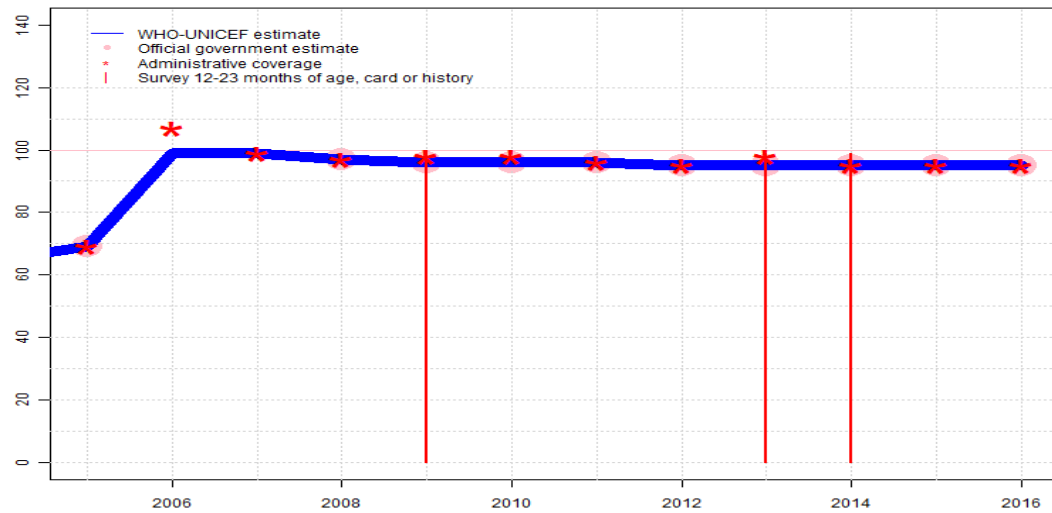
**PcV3:** percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect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

- 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+
- 2009: Estimate based on coverage reported by national government supported by survey. Survey evidence of 100 percent based on 1 survey(s). GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on reported administrative data. GoC=R+ S+ D+
- 2006: MICH 2006 survey result represents catch-up following 2004-2005 stock out. Reported data excluded because 107 percent greater than 100 percent. Estimate challenged by: R-
- 2005: Decline is the result of five months of vaccine stock out. MICH 2006 survey result represents catch-up following 2004-2005 stock out. GoC=R+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	69	99	99	97	96	96	96	95	95	95	95	95
Estimate GoC	●●	●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
Official	69	NA	NA	97	96	96	96	95	95	95	95	95
Administrative	69	107	99	97	98	98	96	95	98	95	95	95
Survey	NA	NA	NA	NA	100	NA	NA	NA	99	99	NA	NA

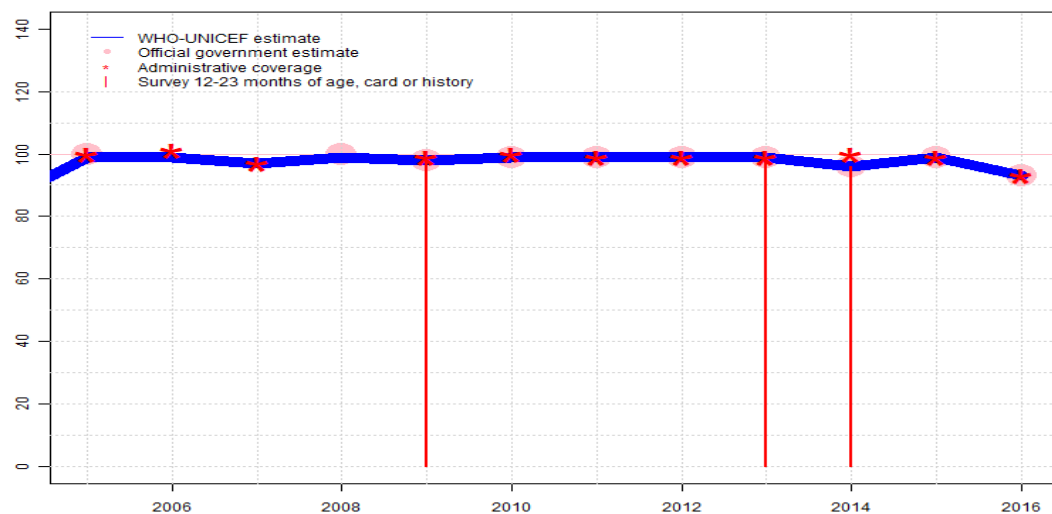
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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:

- 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 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+
- 2009: 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+
- 2008: Reported data calibrated to 1997 and 2009 levels. Estimate challenged by: R-
- 2007: Reported data calibrated to 1997 and 2009 levels. Estimate challenged by: R-
- 2006: DTP1 coverage estimated based on DTP3 coverage of 100. Reported data excluded because 101 percent greater than 100 percent. Estimate challenged by: R-
- 2005: Reported data calibrated to 1997 and 2009 levels. Estimate challenged by: R-

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	99	97	99	98	99	99	99	99	96	99	93
Estimate GoC	•	•	•	•	•••	•••	•••	•	•••	•••	•••	•••
Official	100	NA	NA	100	98	99	99	99	99	96	99	93
Administrative	100	101	97	NA	99	100	99	99	99	100	99	93
Survey	NA	NA	NA	NA	99	NA	NA	NA	98	96	NA	NA

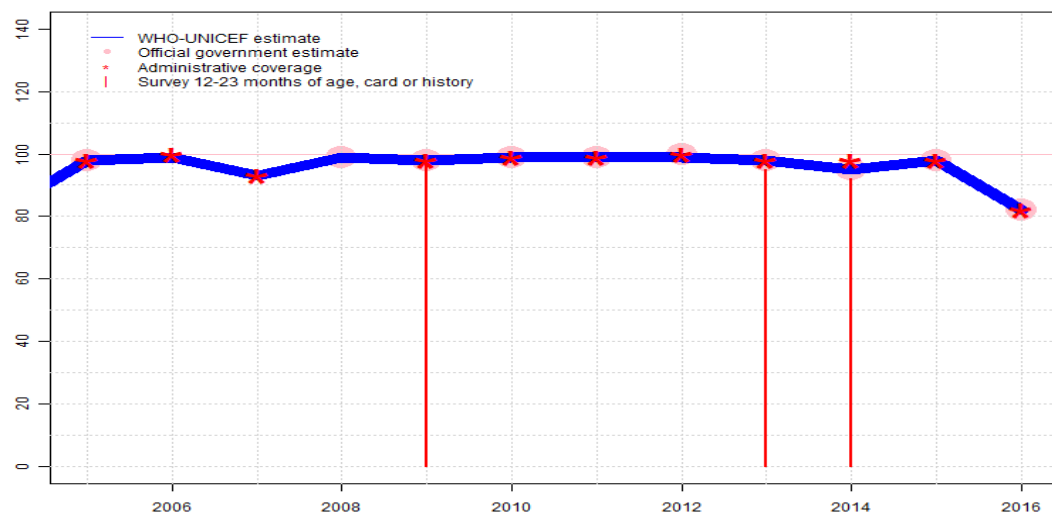
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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 - DTP3

KAZ - DTP3



## Description:

- 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 3d 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+
- 2009: Estimate based on coverage reported by national government supported by survey. Survey evidence of 98 percent based on 1 survey(s). Multiple Indicator Cluster Survey in the Republic of Kazakhstan 2010-2011 card or history results of 97 percent modified for recall bias to 98 percent based on 1st dose card or history coverage of 99 percent, 1st dose card only coverage of 95 percent and 3d dose card only coverage of 94 percent. GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ S+
- 2007: Estimate based on reported administrative data. GoC=R+ S+ D+
- 2006: Estimate based on reported administrative data. GoC=R+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	98	99	93	99	98	99	99	100	98	95	98	82
Estimate GoC	●●	●●	●●●	●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
Official	98	NA	NA	99	98	99	99	100	98	95	98	82
Administrative	98	100	93	NA	98	99	99	100	98	98	98	82
Survey	NA	NA	NA	NA	97	NA	NA	NA	95	92	NA	NA

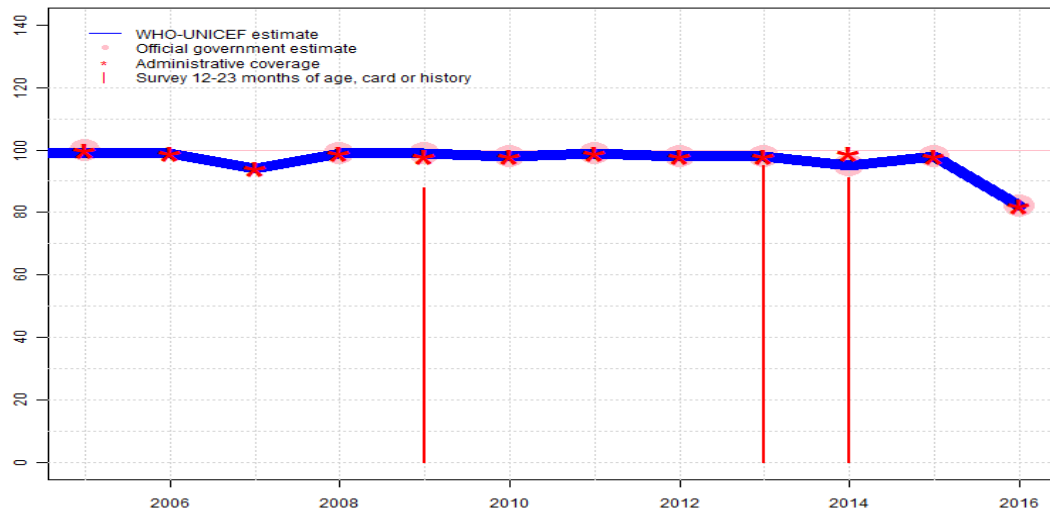
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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 - Pol3

KAZ - Pol3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	99	94	99	99	98	99	98	98	95	98	82
Estimate GoC	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●	●●●
Official	100	NA	NA	99	99	98	99	98	98	95	98	82
Administrative	100	99	94	99	98	98	99	98	98	99	98	82
Survey	NA	NA	NA	NA	88	NA	NA	NA	95	91	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: 2015 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.

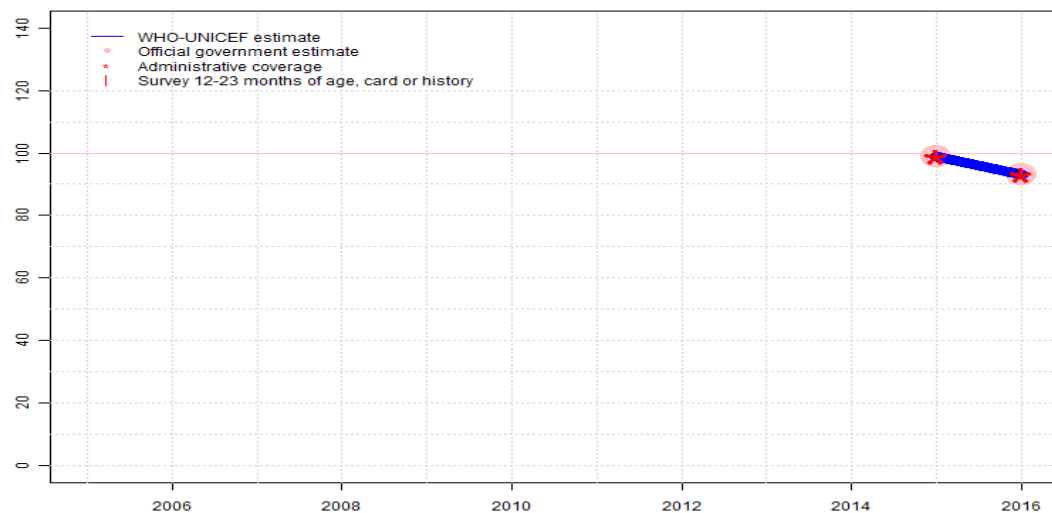
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 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+
- 2009: Estimate based on coverage reported by national government supported by survey. Survey evidence of 89 percent based on 1 survey(s). Multiple Indicator Cluster Survey in the Republic of Kazakhstan 2010-2011 card or history results of 88 percent modified for recall bias to 89 percent based on 1st dose card or history coverage of 99 percent, 1st dose card only coverage of 96 percent and 3d dose card only coverage of 86 percent. GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on reported administrative data. GoC=R+ S+ D+
- 2006: Estimate based on reported administrative data. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+

# Kazakhstan - IPV1

KAZ - IPV1



## Description:

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

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

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99	93
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●●	●●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99	93
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99	93
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

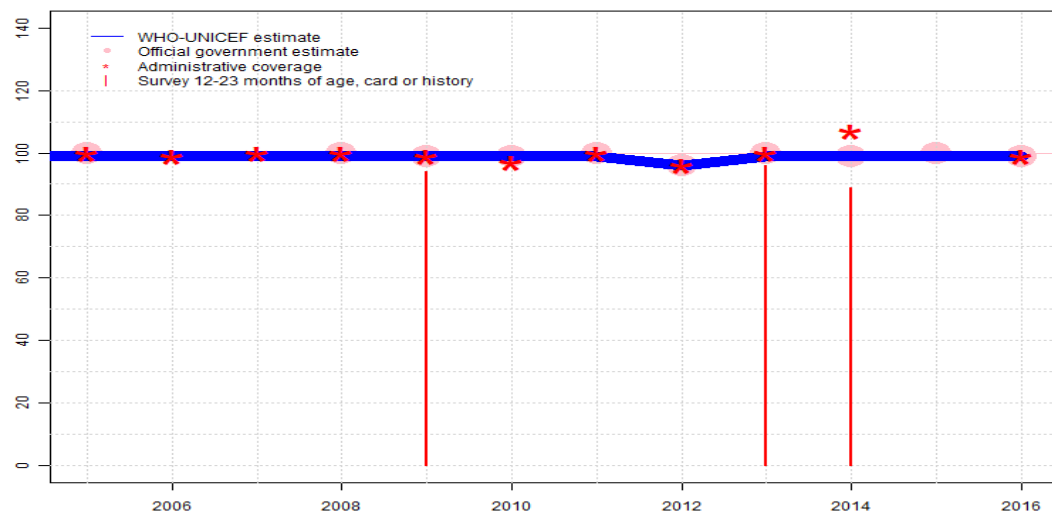
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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 - MCV1

KAZ - MCV1



## Description:

2016: Estimate based on coverage reported by national government. GoC=R+ S+ 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+  
 2009: Estimate based on coverage reported by national government supported by survey. Survey evidence of 94 percent based on 1 survey(s). GoC=R+ S+ D+  
 2008: Estimate based on coverage reported by national government. GoC=R+ S+ D+  
 2007: Estimate based on reported administrative data. Estimate challenged by: D-  
 2006: Estimate based on reported administrative data. Estimate challenged by: D-  
 2005: Estimate based on coverage reported by national government. Estimate challenged by: D-

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	99	99	99	99	99	99	96	99	99	99	99
Estimate GoC	•	•	•	•••	•••	•••	•••	•••	•	•••	•	•••
Official	100	NA	NA	100	99	99	100	96	100	99	100	99
Administrative	100	99	100	100	99	97	100	96	100	107	NA	99
Survey	NA	NA	NA	NA	94	NA	NA	NA	96	89	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.

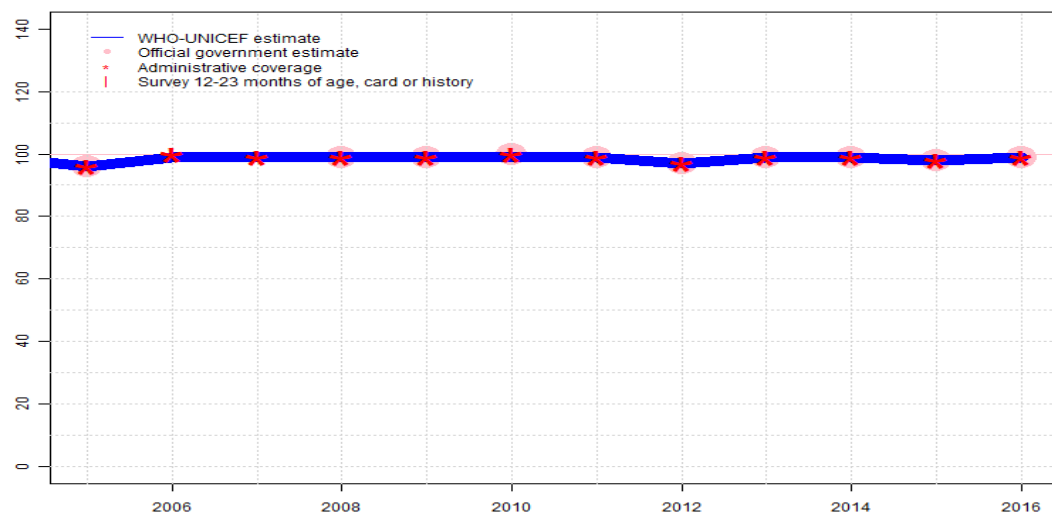
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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 - MCV2

KAZ - MCV2



## Description:

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

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

2009: Estimate based on coverage reported by national government. Estimate challenged by: D-

2008: Estimate based on coverage reported by national government. Estimate challenged by: D-

2007: Estimate based on reported administrative estimate. Estimate challenged by: D-

2006: Estimate based on reported administrative estimate. Estimate challenged by: D-

2005: Estimate based on coverage reported by national government. Estimate challenged by: D-

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	96	99	99	99	99	99	99	97	99	99	98	99
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	••
Official	96	NA	NA	99	99	100	99	97	99	99	98	99
Administrative	96	100	99	99	99	100	99	97	99	99	98	99
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

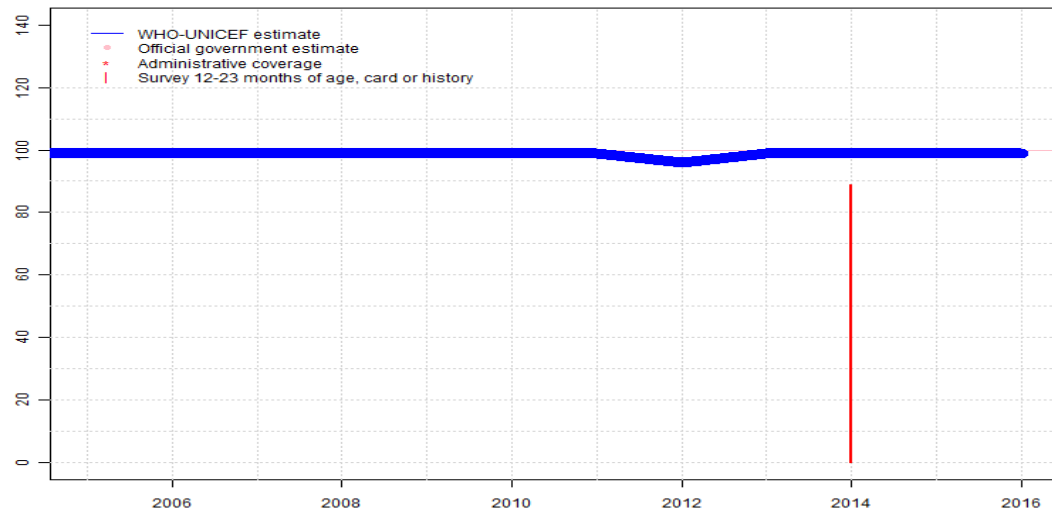
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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



## 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.

- 2016: Estimate based on estimated MCV1. GoC=R+ S+ 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+
- 2009: Estimate based on estimated MCV1. GoC=R+ S+ D+
- 2008: Estimate based on estimated MCV1. GoC=R+ S+ D+
- 2007: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2006: Estimate based on estimated MCV1. Estimate challenged by: D-
- 2005: Estimate based on estimated MCV1. Estimate challenged by: D-

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	99	99	99	99	99	99	96	99	99	99	99
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	NA	NA	NA	NA	NA	89	NA	NA

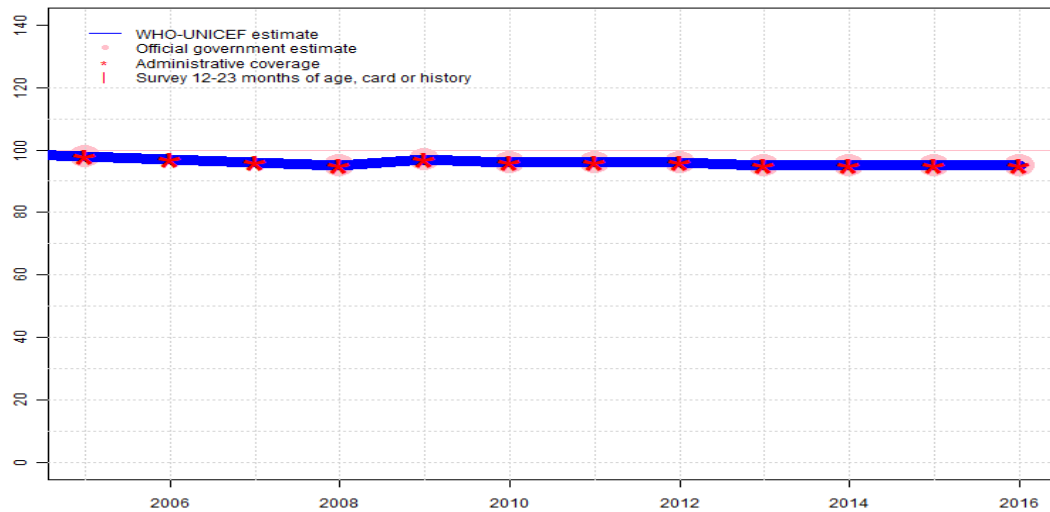
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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 - HepBB

KAZ - HepBB



## Description:

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+  
 2009: Estimate based on coverage reported by national government. GoC=R+ D+  
 2008: Estimate based on coverage reported by national government. GoC=R+ D+  
 2007: Estimate based on reported administrative estimate. GoC=R+ D+  
 2006: Estimate based on reported administrative estimate. GoC=R+ D+  
 2005: Estimate based on coverage reported by national government. GoC=R+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	98	97	96	95	97	96	96	96	95	95	95	95
Estimate GoC	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	98	NA	NA	95	97	96	96	96	95	95	95	95
Administrative	98	97	96	95	97	96	96	96	95	95	95	95
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

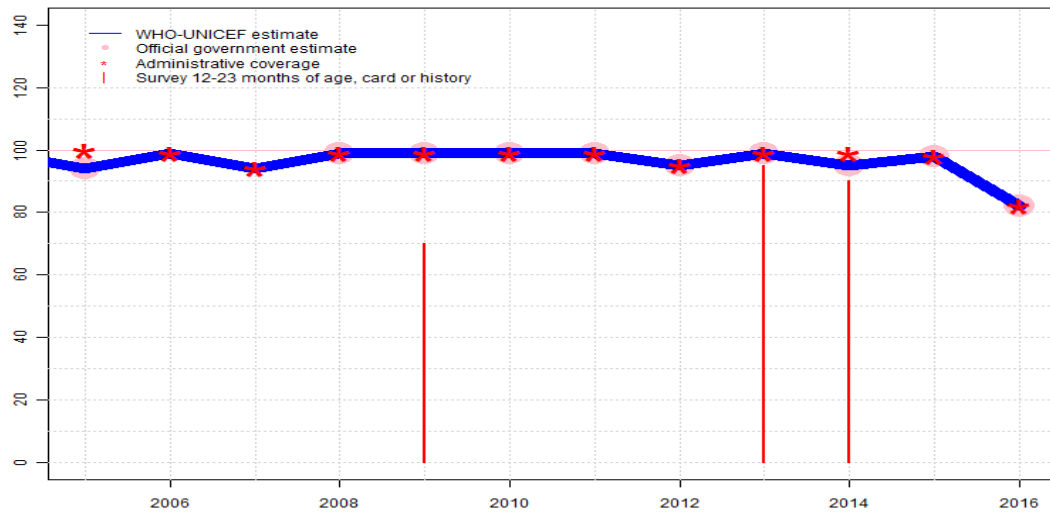
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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:

- 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+
- 2009: Estimate based on coverage reported by national government. Multiple Indicator Cluster Survey in the Republic of Kazakhstan 2010-2011 results ignored by working group. Survey result may not reflect successful introduction of DTP-HepB-Hib introduction. Multiple Indicator Cluster Survey in the Republic of Kazakhstan 2010-2011 card or history results of 70 percent modified for recall bias to 80 percent based on 1st dose card or history coverage of 97 percent, 1st dose card only coverage of 76 percent and 3d dose card only coverage of 63 percent. GoC=R+ D+
- 2008: Estimate based on coverage reported by national government. GoC=R+ D+
- 2007: Estimate based on reported administrative data. GoC=R+ D+
- 2006: Estimate based on reported administrative data. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ S+ D+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	94	99	94	99	99	99	99	95	99	95	98	82
Estimate GoC	●●●	●●●	●●	●●	●●	●●	●●●	●●●	●●●	●●●	●●●	●●●
Official	94	NA	NA	99	99	99	99	95	99	95	98	82
Administrative	100	99	94	99	99	99	99	95	99	99	98	82
Survey	NA	NA	NA	NA	70	NA	NA	NA	95	90	NA	NA

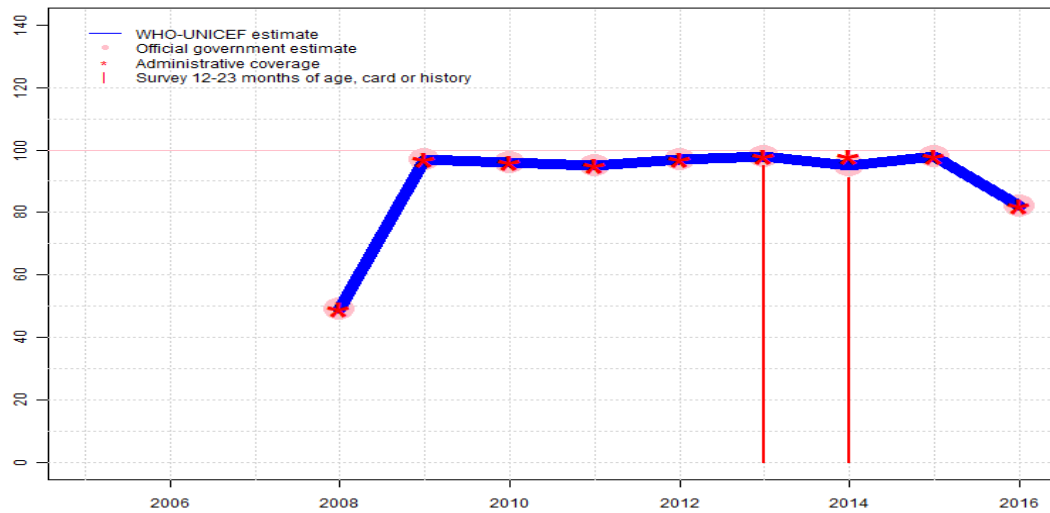
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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:

- 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+
- 2009: Estimate based on reported data. Increase attributed to successful introduction. GoC=R+ D+
- 2008: Estimate based on reported data. Hib vaccine introduced in 2008. GoC=R+ D+

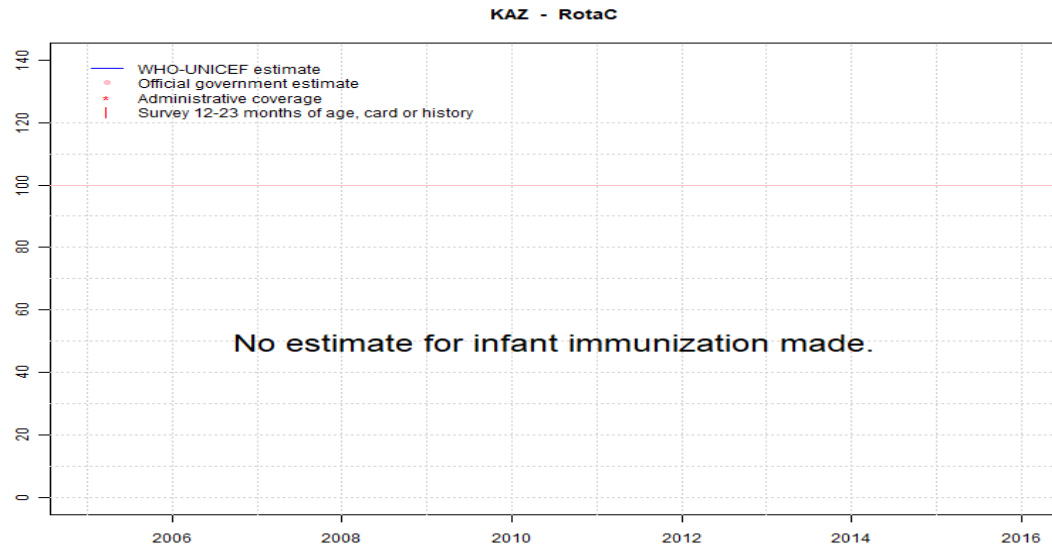
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	49	97	96	95	97	98	95	98	82
Estimate GoC	NA	NA	NA	••	••	••	•••	•••	•••	•••	•••	•••
Official	NA	NA	NA	49	97	96	95	97	98	95	98	82
Administrative	NA	NA	NA	49	97	96	95	97	98	98	98	82
Survey	NA	NA	NA	NA	NA	NA	NA	NA	95	91	NA	NA

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: 2015 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



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
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

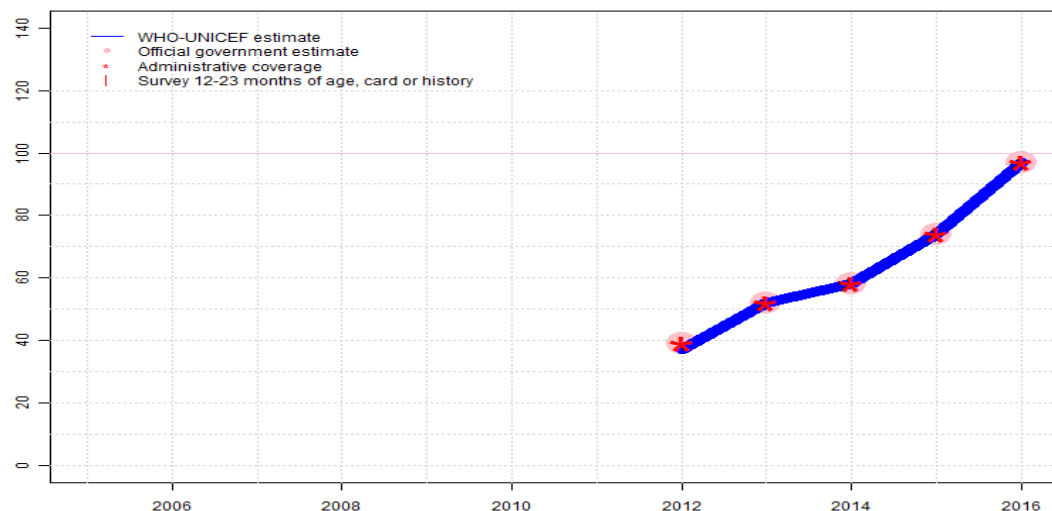
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability 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: 2015 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:

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: 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-

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	37	52	58	74	97
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	•	••	••	••	••
Official	NA	NA	NA	NA	NA	NA	NA	39	52	58	74	97
Administrative	NA	NA	NA	NA	NA	NA	NA	39	52	58	74	97
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: 2015 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	12-23 m	1071	98
BCG	Card	97	12-23 m	1071	98
BCG	Card or History	99	12-23 m	1071	98
DTP1	C or H <12 months	96	12-23 m	1071	98
DTP1	Card	94	12-23 m	1071	98
DTP1	Card or History	96	12-23 m	1071	98
DTP3	C or H <12 months	90	12-23 m	1071	98
DTP3	Card	90	12-23 m	1071	98
DTP3	Card or History	92	12-23 m	1071	98
HepB1	C or H <12 months	98	12-23 m	1071	98
HepB1	Card	96	12-23 m	1071	98
HepB1	Card or History	98	12-23 m	1071	98
HepB3	C or H <12 months	88	12-23 m	1071	98
HepB3	Card	88	12-23 m	1071	98
HepB3	Card or History	90	12-23 m	1071	98
Hib1	C or H <12 months	95	12-23 m	1071	98
Hib1	Card	93	12-23 m	1071	98
Hib1	Card or History	95	12-23 m	1071	98
Hib3	C or H <12 months	89	12-23 m	1071	98
Hib3	Card	89	12-23 m	1071	98
Hib3	Card or History	91	12-23 m	1071	98
MCV1	Card	83	12-23 m	1071	98
MCV1	Card or History	89	12-23 m	1071	98
Pol1	C or H <12 months	96	12-23 m	1071	98
Pol1	Card	94	12-23 m	1071	98
Pol1	Card or History	96	12-23 m	1071	98
Pol3	C or H <12 months	90	12-23 m	1071	98
Pol3	Card	89	12-23 m	1071	98
Pol3	Card or History	91	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	24-35 m	1045	98
BCG	Card	96	24-35 m	1045	98

BCG	Card or History	99	24-35 m	1045	98
DTP1	C or H <12 months	96	24-35 m	1045	98
DTP1	Card	95	24-35 m	1045	98
DTP1	Card or History	98	24-35 m	1045	98
DTP3	C or H <12 months	91	24-35 m	1045	98
DTP3	Card	93	24-35 m	1045	98
DTP3	Card or History	95	24-35 m	1045	98
HepB1	C or H <12 months	99	24-35 m	1045	98
HepB1	Card	96	24-35 m	1045	98
HepB1	Card or History	99	24-35 m	1045	98
HepB3	C or H <12 months	91	24-35 m	1045	98
HepB3	Card	92	24-35 m	1045	98
HepB3	Card or History	95	24-35 m	1045	98
Hib1	C or H <12 months	96	24-35 m	1045	98
Hib1	Card	94	24-35 m	1045	98
Hib1	Card or History	97	24-35 m	1045	98
Hib3	C or H <12 months	91	24-35 m	1045	98
Hib3	Card	92	24-35 m	1045	98
Hib3	Card or History	95	24-35 m	1045	98
MCV1	C or H <12 months	95	24-35 m	1045	98
MCV1	Card	93	24-35 m	1045	98
MCV1	Card or History	96	24-35 m	1045	98
Pol1	C or H <12 months	97	24-35 m	1045	98
Pol1	Card	96	24-35 m	1045	98
Pol1	Card or History	98	24-35 m	1045	98
Pol3	C or H <12 months	91	24-35 m	1045	98
Pol3	Card	93	24-35 m	1045	98
Pol3	Card or History	95	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	15-26 m	-	66
BCG	Card	96	15-26 m	-	66
BCG	Card or History	100	15-26 m	1076	66
BCG	History	3	15-26 m	-	66
DTP1	C or H <12 months	98	15-26 m	-	66
DTP1	Card	95	15-26 m	-	66



# Kazakhstan - survey details

DTP1	Card or History	99	15-26 m	1076	66	DTP1	History	4	15-26 m	991	95
DTP1	History	4	15-26 m	-	66	DTP3	C or H <12 months	92	15-26 m	991	95
DTP3	C or H <12 months	93	15-26 m	-	66	DTP3	Card	96	15-26 m	991	95
DTP3	Card	94	15-26 m	-	66	DTP3	Card or History	98	15-26 m	991	95
DTP3	Card or History	97	15-26 m	1076	66	DTP3	History	2	15-26 m	991	95
DTP3	History	3	15-26 m	-	66	HepB1	C or H <12 months	94	15-26 m	991	95
HepB1	C or H <12 months	96	15-26 m	-	66	HepB1	Card	95	15-26 m	991	95
HepB1	Card	76	15-26 m	-	66	HepB1	Card or History	95	15-26 m	991	95
HepB1	Card or History	97	15-26 m	1076	66	HepB1	History	0	15-26 m	991	95
HepB1	History	20	15-26 m	-	66	HepB3	C or H <12 months	92	15-26 m	991	95
HepB3	C or H <12 months	67	15-26 m	-	66	HepB3	Card	95	15-26 m	991	95
HepB3	Card	63	15-26 m	-	66	HepB3	Card or History	95	15-26 m	991	95
HepB3	Card or History	70	15-26 m	1076	66	HepB3	History	0	15-26 m	991	95
HepB3	History	7	15-26 m	-	66	MCV1	C or H <12 months	95	15-26 m	991	95
MCV1	C or H <12 months	89	15-26 m	-	66	MCV1	Card	96	15-26 m	991	95
MCV1	Card	90	15-26 m	-	66	MCV1	Card or History	99	15-26 m	991	95
MCV1	Card or History	94	15-26 m	1076	66	MCV1	History	4	15-26 m	991	95
MCV1	History	3	15-26 m	-	66	Pol1	C or H <12 months	99	15-26 m	991	95
Pol1	C or H <12 months	99	15-26 m	-	66	Pol1	Card	95	15-26 m	991	95
Pol1	Card	96	15-26 m	-	66	Pol1	Card or History	100	15-26 m	991	95
Pol1	Card or History	99	15-26 m	1076	66	Pol1	History	4	15-26 m	991	95
Pol1	History	4	15-26 m	-	66	Pol3	C or H <12 months	94	15-26 m	991	95
Pol3	C or H <12 months	81	15-26 m	-	66	Pol3	Card	95	15-26 m	991	95
Pol3	Card	86	15-26 m	-	66	Pol3	Card or History	97	15-26 m	991	95
Pol3	Card or History	88	15-26 m	1076	66	Pol3	History	1	15-26 m	991	95
Pol3	History	2	15-26 m	-	66						

## 2004 Kazakhstan Multiple Indicator Cluster Survey 2006

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	98	15-26 m	991	95
BCG	Card	95	15-26 m	991	95
BCG	Card or History	100	15-26 m	991	95
BCG	History	4	15-26 m	991	95
DTP1	C or H <12 months	98	15-26 m	991	95
DTP1	Card	96	15-26 m	991	95
DTP1	Card or History	99	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	12-23 m	244	-
DTP1	Card	90	12-23 m	244	-
DTP3	Card	89	12-23 m	244	-
MCV1	Card	79	12-23 m	244	-
Pol1	Card	90	12-23 m	244	-
Pol3	Card	83	12-23 m	244	-

# Kazakhstan - survey details

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Further information and estimates for previous years are available at:

<http://www.data.unicef.org/child-health/immunization>

[http://www.who.int/immunization/monitoring\\_surveillance/routine/coverage/en/index4.html](http://www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index4.html)