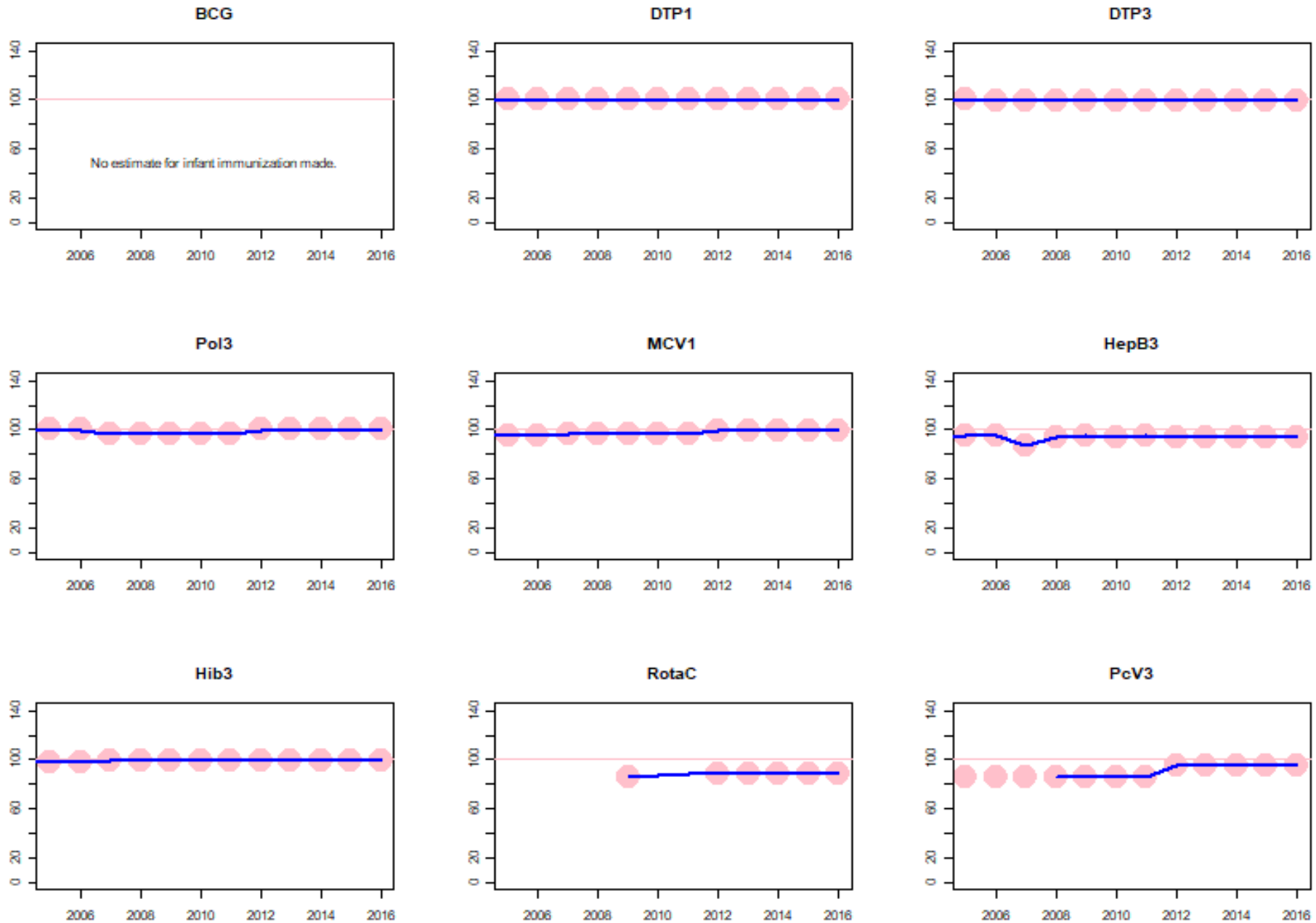


# Luxembourg: WHO and UNICEF estimates of immunization coverage: 2016 revision



# Luxembourg: 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.

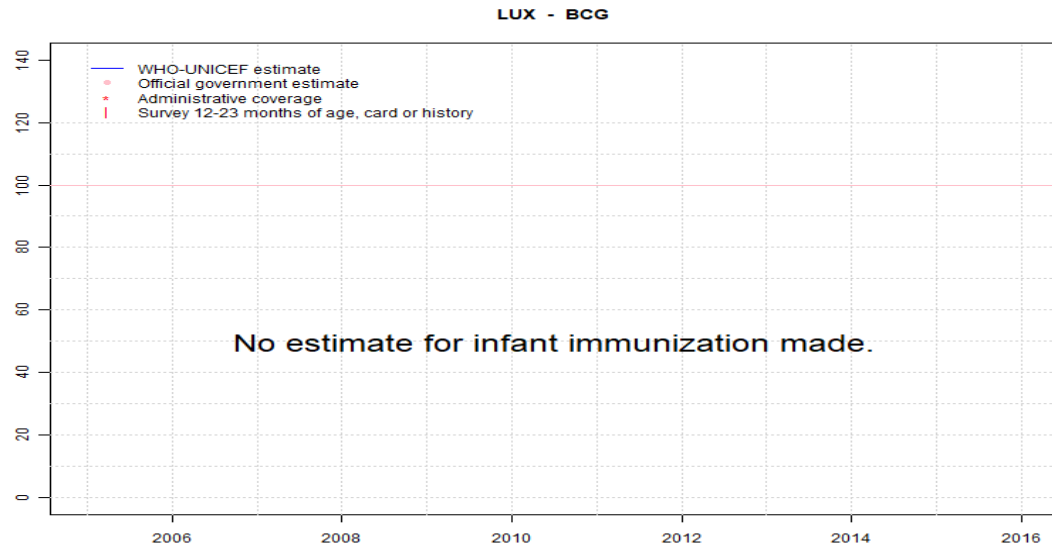
**RotaC:** percentage of surviving infants who received the final recommended dose of rotavirus vaccine, which can be either the 2nd or the 3rd dose depending on the vaccine.

**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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# Luxembourg - BCG



	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

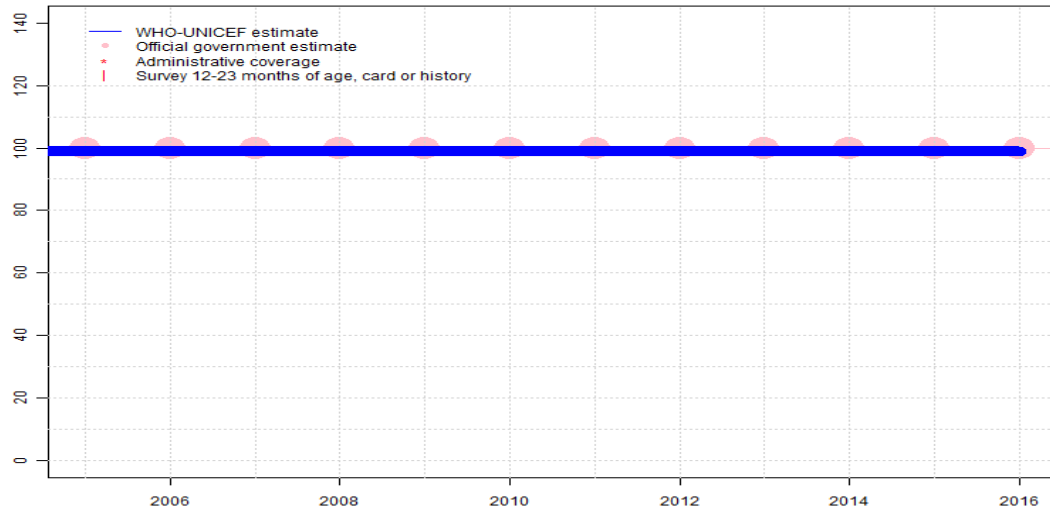
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

# Luxembourg - DTP1

LUX - DTP1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	99	99	99	99	99	99	99	99	99	99	99
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	100	100	100	100	100	100	100	100	100	100	100	100
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.

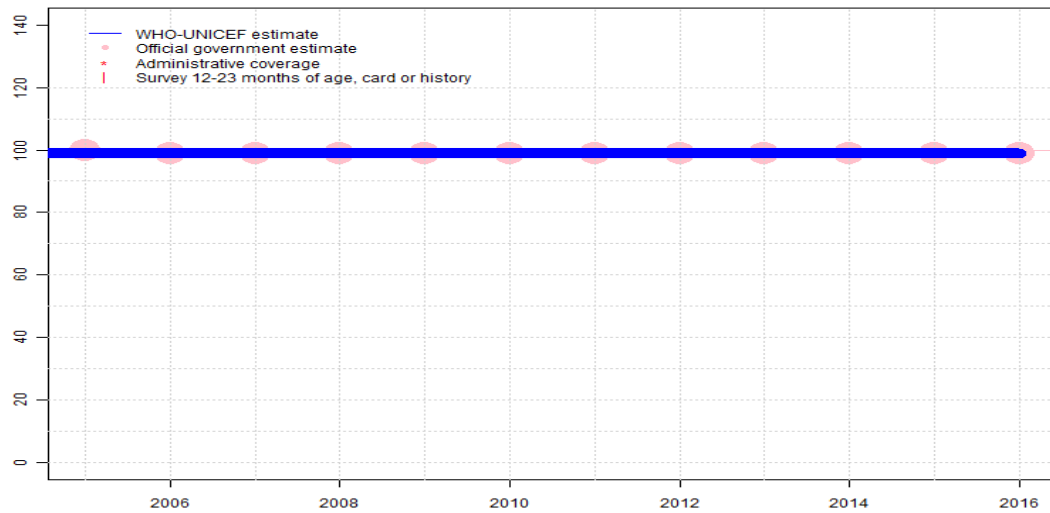
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Reported data calibrated to 1997 levels. Estimate challenged by: R-
- 2015: Reported data calibrated to 1997 levels. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. Estimate challenged by: R-
- 2014: Reported data calibrated to 1997 levels. Estimate challenged by: R-
- 2013: Reported data calibrated to 1997 levels. Estimate challenged by: R-
- 2012: Reported data calibrated to 1997 levels. Estimate challenged by: R-
- 2011: Reported data calibrated to 1997 levels. Estimate challenged by: R-
- 2010: Reported data calibrated to 1997 levels. High levels of coverage supported by a survey of 614 children aged 25-30 m which shows coverage of 100 percent. Estimate challenged by: R-
- 2009: Reported data calibrated to 1997 levels. Nationally reported data are based on the 2007-2008 vaccination coverage survey. Estimate challenged by: R-
- 2008: Reported data calibrated to 1997 levels. Nationally reported data are based on the 2007-2008 vaccination coverage survey. High levels of coverage are supported by a survey of 562 children 25-30 months of age, which shows coverage of 99.5 percent. Estimate challenged by: R-
- 2007: Reported data calibrated to 1997 levels. Estimate challenged by: R-
- 2006: Reported data calibrated to 1997 levels. Estimate challenged by: R-
- 2005: DTP1 coverage estimated based on DTP3 coverage of 100. Estimate challenged by: R-

# Luxembourg - DTP3

LUX - DTP3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	99	99	99	99	99	99	99	99	99	99	99
Estimate GoC	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	100	99	99	99	99	99	99	99	99	99	99	99
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

## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+
- 2015: Estimate based on coverage reported by national government. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. GoC=R+
- 2014: Estimate based on coverage reported by national government. GoC=R+
- 2013: Estimate based on coverage reported by national government. GoC=R+
- 2012: Estimate based on coverage reported by national government. GoC=R+
- 2011: Estimate based on coverage reported by national government. GoC=R+
- 2010: Estimate based on coverage reported by national government. High levels of coverage supported by a survey of 614 children aged 25-30 m which shows coverage of 99 percent. GoC=R+
- 2009: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. GoC=R+
- 2008: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. High levels of coverage are supported by a survey of 562 children 25-30 months of age, which shows coverage of 99.1 percent. GoC=R+
- 2007: Estimate based on coverage reported by national government. GoC=R+
- 2006: Estimate based on coverage reported by national government. GoC=R+
- 2005: Estimate based on coverage reported by national government. GoC=R+

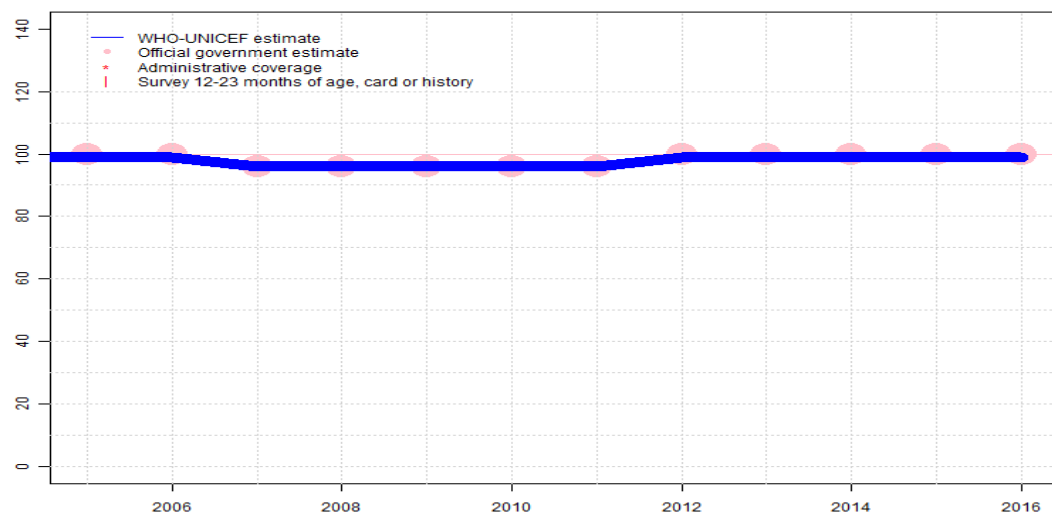
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

- 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.
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# Luxembourg - Pol3

LUX - Pol3



## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+
- 2015: Estimate based on coverage reported by national government. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. GoC=R+
- 2014: Estimate based on coverage reported by national government. GoC=R+
- 2013: Estimate based on coverage reported by national government. GoC=R+
- 2012: Estimate based on coverage reported by national government. GoC=R+
- 2011: Estimate based on coverage reported by national government. GoC=R+
- 2010: Estimate based on coverage reported by national government. High levels of coverage supported by a survey of 614 children aged 25-30 m which shows coverage of 100 percent. GoC=R+
- 2009: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. GoC=R+
- 2008: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. High levels of coverage are supported by a survey of 562 children 25-30 months of age, which shows coverage of 96.4 percent. GoC=R+
- 2007: Estimate based on coverage reported by national government. GoC=R+
- 2006: Estimate based on coverage reported by national government. GoC=R+
- 2005: Estimate based on coverage reported by national government. GoC=R+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	99	99	96	96	96	96	96	99	99	100	100	100
Estimate GoC	••	••	••	••	••	••	••	••	••	••	••	••
Official	100	100	96	96	96	96	96	100	100	100	100	100
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

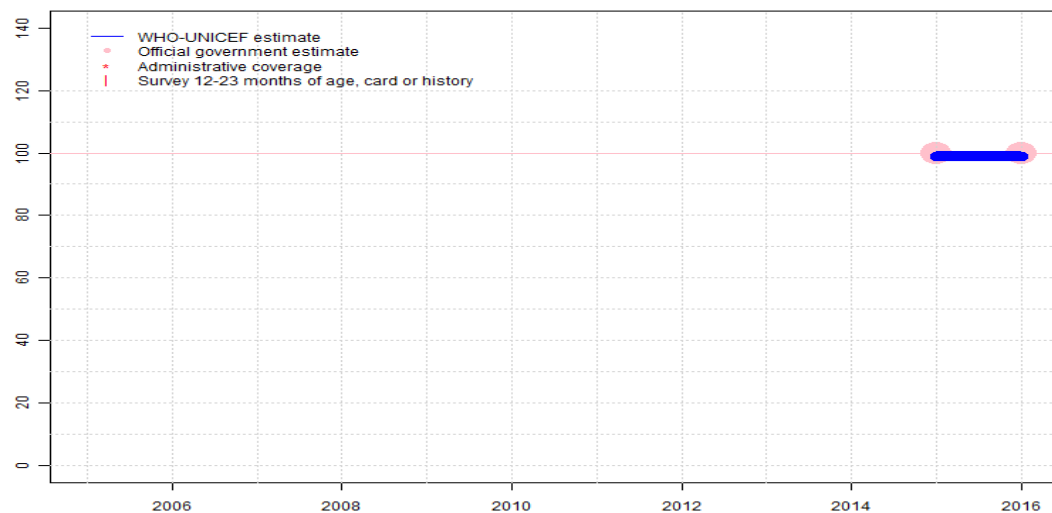
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- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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# Luxembourg - IPV1

LUX - IPV1



## Description:

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

2015: Estimate based on coverage reported by national government. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. GoC=R+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	99	99
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●●	●●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100	100
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

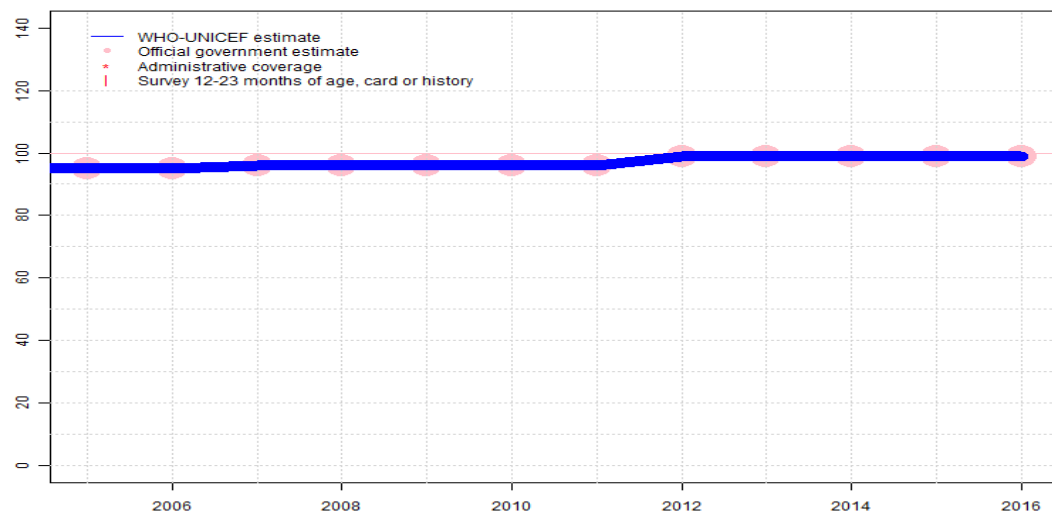
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- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While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

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# Luxembourg - MCV1

LUX - MCV1



## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+
- 2015: Estimate based on coverage reported by national government. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. GoC=R+
- 2014: Estimate based on coverage reported by national government. GoC=R+
- 2013: Estimate based on coverage reported by national government. GoC=R+
- 2012: Estimate based on coverage reported by national government. GoC=R+
- 2011: Estimate based on coverage reported by national government. GoC=R+
- 2010: Estimate based on coverage reported by national government. High levels of coverage supported by a survey of 614 children aged 25-30 m which shows coverage of 99 percent. GoC=R+
- 2009: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. GoC=R+
- 2008: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. High levels of coverage are supported by a survey of 562 children 25-30 months of age, which shows coverage of 96.2 percent. GoC=R+
- 2007: Estimate based on coverage reported by national government. GoC=R+
- 2006: Estimate based on coverage reported by national government. GoC=R+
- 2005: Estimate based on coverage reported by national government. GoC=R+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	95	95	96	96	96	96	96	99	99	99	99	99
Estimate GoC	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	95	95	96	96	96	96	96	99	99	99	99	99
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.

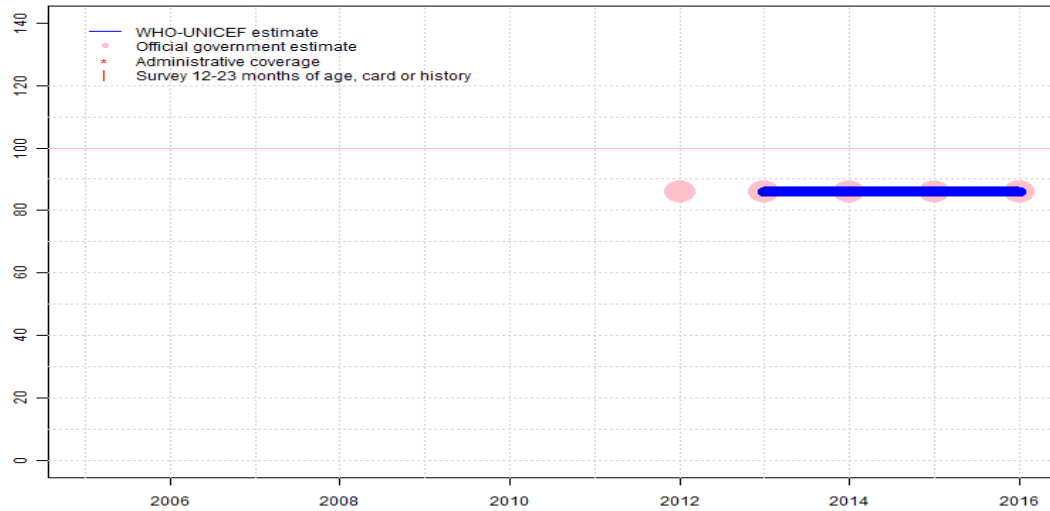
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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



# Luxembourg - MCV2

LUX - 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+

2015: Estimate based on coverage reported by national government. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. GoC=R+

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

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

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	86	86	86	86
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	••	••	••	••
Official	NA	NA	NA	NA	NA	NA	NA	86	86	86	86	86
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

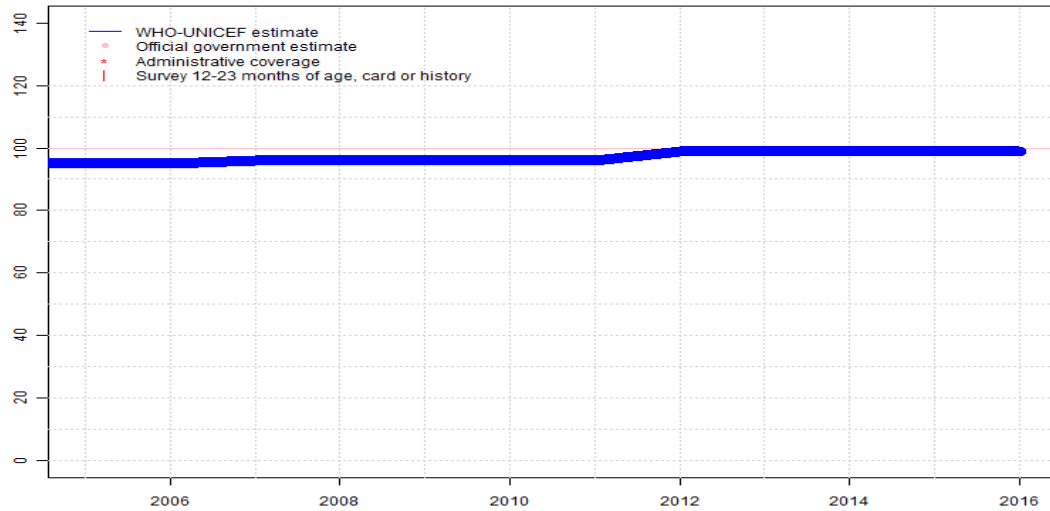
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

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# Luxembourg - RCV1

LUX - 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+
- 2015: Estimate based on estimated MCV1. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. GoC=R+
- 2014: Estimate based on estimated MCV1. GoC=R+
- 2013: Estimate based on estimated MCV1. GoC=R+
- 2012: Estimate based on estimated MCV1. GoC=R+
- 2011: Estimate based on estimated MCV1. GoC=R+
- 2010: Estimate based on estimated MCV1. GoC=R+
- 2009: Estimate based on estimated MCV1. Nationally reported data are based on the 2007-2008 vaccination coverage survey. GoC=R+
- 2008: Estimate based on estimated MCV1. Nationally reported data are based on the 2007-2008 vaccination coverage survey. GoC=R+
- 2007: Estimate based on estimated MCV1. GoC=R+
- 2006: Estimate based on estimated MCV1. GoC=R+
- 2005: Estimate based on estimated MCV1. GoC=R+

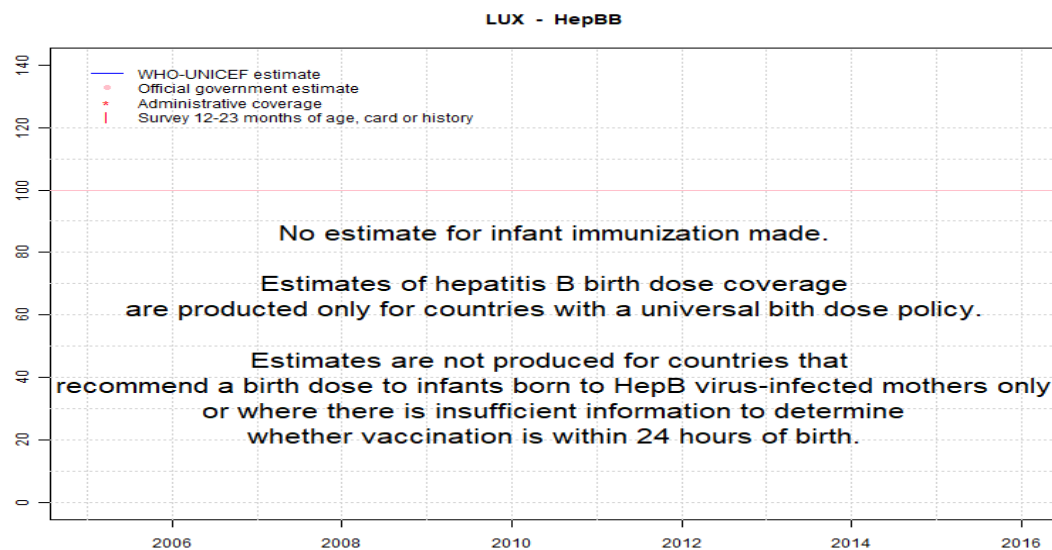
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	95	95	96	96	96	96	96	99	99	99	99	99
Estimate GoC	••	••	••	••	••	••	••	••	••	••	••	••
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.

# Luxembourg - HepBB



	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

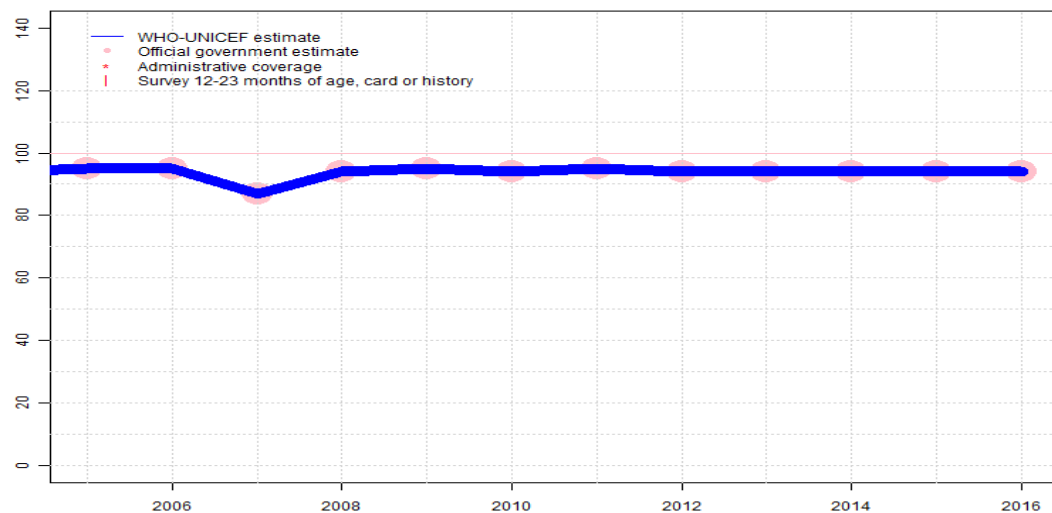
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

# Luxembourg - HepB3

LUX - HepB3



## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+
- 2015: Estimate based on coverage reported by national government. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. Estimate of 94 percent changed from previous revision value of 99 percent. GoC=R+
- 2014: Estimate based on coverage reported by national government. GoC=R+
- 2013: Estimate based on coverage reported by national government. GoC=R+
- 2012: Estimate based on coverage reported by national government. GoC=R+
- 2011: Estimate based on coverage reported by national government. GoC=R+
- 2010: Estimate based on coverage reported by national government. High levels of coverage supported by a survey of 614 children aged 25-30 m which shows coverage of 94 percent. GoC=R+
- 2009: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. GoC=R+
- 2008: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. High levels of coverage are supported by a survey of 562 children 25-30 months of age, which shows coverage of 94.5 percent. GoC=R+
- 2007: Estimate based on coverage reported by national government. GoC=R+
- 2006: Estimate based on coverage reported by national government. GoC=R+
- 2005: Estimate based on coverage reported by national government. GoC=R+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	95	95	87	94	95	94	95	94	94	94	94	94
Estimate GoC	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	95	95	87	94	95	94	95	94	94	94	94	94
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

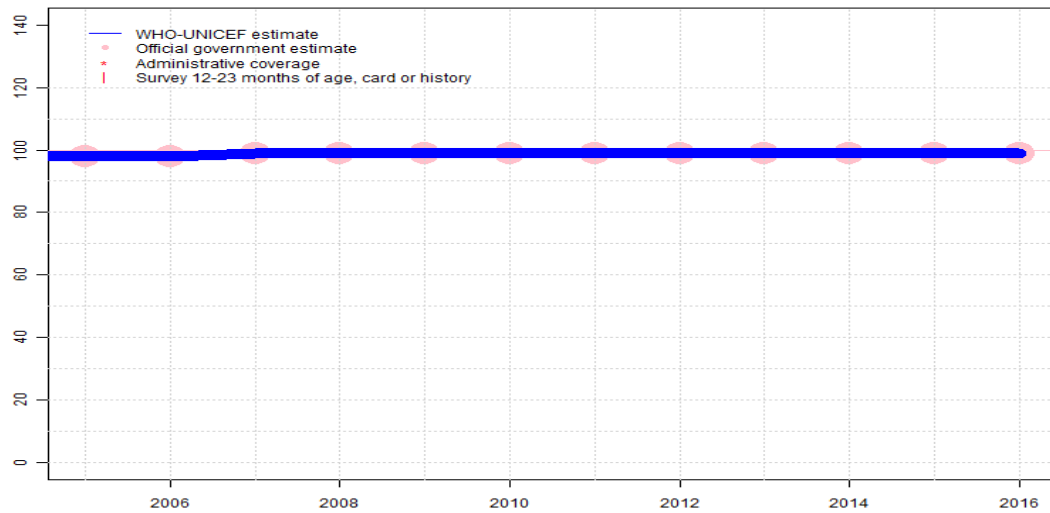
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

# Luxembourg - Hib3

LUX - Hib3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	98	98	99	99	99	99	99	99	99	99	99	99
Estimate GoC	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●	●●
Official	98	98	99	99	99	99	99	99	99	99	99	99
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.

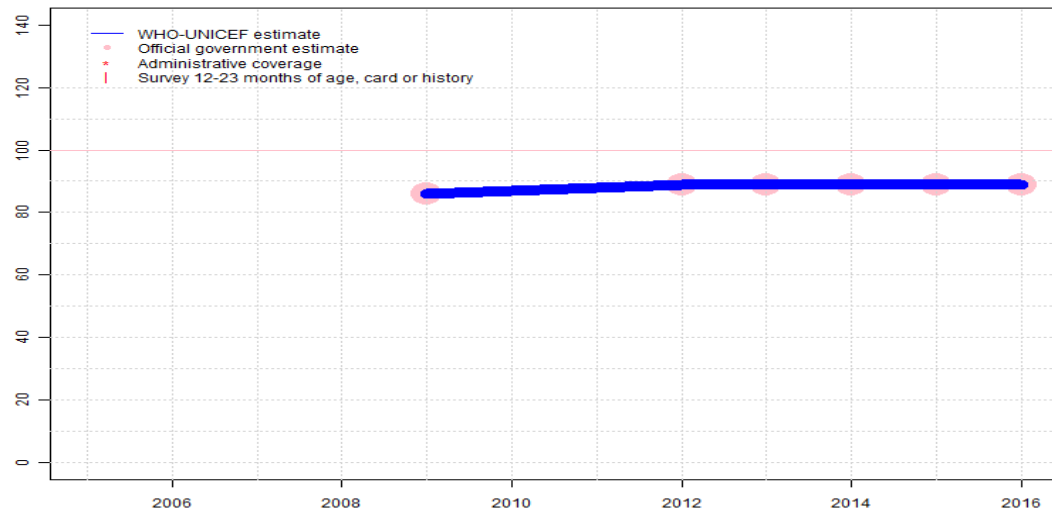
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+
- 2015: Estimate based on coverage reported by national government. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. GoC=R+
- 2014: Estimate based on coverage reported by national government. GoC=R+
- 2013: Estimate based on coverage reported by national government. GoC=R+
- 2012: Estimate based on coverage reported by national government. GoC=R+
- 2011: Estimate based on coverage reported by national government. GoC=R+
- 2010: Estimate based on coverage reported by national government. High levels of coverage supported by a survey of 614 children aged 25-30 m which shows coverage of 99 percent. GoC=R+
- 2009: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. GoC=R+
- 2008: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. High levels of coverage are supported by a survey of 562 children 25-30 months of age, which shows coverage of 98.5 percent. GoC=R+
- 2007: Estimate based on coverage reported by national government. GoC=R+
- 2006: Estimate based on coverage reported by national government. GoC=R+
- 2005: Estimate based on coverage reported by national government. GoC=R+

# Luxembourg - RotaC

LUX - RotaC



## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+
- 2015: Estimate based on coverage reported by national government. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. GoC=R+
- 2014: Estimate based on coverage reported by national government. GoC=R+
- 2013: Estimate based on coverage reported by national government. GoC=R+
- 2012: Estimate based on coverage reported by national government. GoC=R+
- 2011: Estimate based on interpolation between reported values. GoC=No accepted empirical data
- 2010: Estimate based on interpolation between reported values. GoC=No accepted empirical data
- 2009: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. GoC=R+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	86	87	88	89	89	89	89	89
Estimate GoC	NA	NA	NA	NA	••	•	•	••	••	••	••	••
Official	NA	NA	NA	NA	86	NA	NA	89	89	89	89	89
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

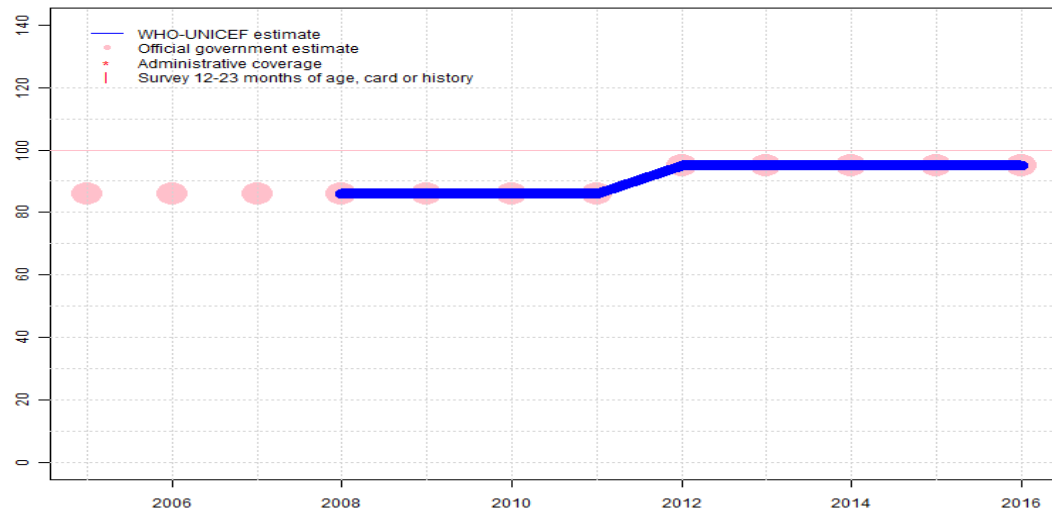
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

# Luxembourg - PcV3

LUX - PcV3



## Description:

- 2016: Estimate based on coverage reported by national government. GoC=R+
- 2015: Estimate based on coverage reported by national government. Official estimates are derived from the latest vaccination coverage survey of children aged 25-30 months. GoC=R+
- 2014: Estimate based on coverage reported by national government. GoC=R+
- 2013: Estimate based on coverage reported by national government. GoC=R+
- 2012: Estimate based on coverage reported by national government. GoC=R+
- 2011: Estimate based on coverage reported by national government. GoC=R+
- 2010: Estimate based on coverage reported by national government. High levels of coverage supported by a survey of 614 children aged 25-30 m which shows coverage of 95 percent. GoC=R+
- 2009: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. GoC=R+
- 2008: Estimate based on coverage reported by national government. Nationally reported data are based on the 2007-2008 vaccination coverage survey. Pneumococcal conjugate vaccine introduced in 2005 reporting started in 2008. High levels of coverage are supported by a survey of 562 children 25-30 months of age, which shows coverage of 85.6 percent. GoC=R+

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	86	86	86	86	95	95	95	95	95
Estimate GoC	NA	NA	NA	••	••	••	••	••	••	••	••	••
Official	86	86	86	86	86	86	86	95	95	95	95	95
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.

# Luxembourg - survey details

## 2010 Enquête de couverture vaccinale au Grand-Duché de Luxembourg 2012

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
DTP1	Card	100	25-30 m	614	99
DTP3	Card	99	25-30 m	614	99
HepB3	Card	94	25-30 m	614	99
Hib3	Card	99	25-30 m	614	99
MCV1	Card	99	25-30 m	614	99
PcV3	Card	95	25-30 m	614	99
Pol3	Card	100	25-30 m	614	99

## 2005 Enquête de couverture vaccinale au Grand-duché de Luxembourg, octobre 2007-mars 2008

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
DTP1	Card	100	25-30 m	562	98
DTP3	Card	99	25-30 m	562	98
HepB3	Card	94	25-30 m	562	98
Hib3	Card	99	25-30 m	562	98

MCV1	Card	96	25-30 m	562	98
PcV3	Card	86	25-30 m	562	98
Pol3	Card	96	25-30 m	562	98

## 1999 Enquête de couverture vaccinale au Grand-Duché de Luxembourg Janvier-février 2002

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	21	25-30 m	504	94
DTP1	Card	100	25-30 m	504	94
DTP3	Card	99	25-30 m	504	94
HepB1	Card	96	25-30 m	504	94
HepB3	Card	94	25-30 m	504	94
Hib1	Card	99	25-30 m	504	94
Hib3	Card	98	25-30 m	504	94
MCV1	Card	95	25-30 m	504	94
Pol1	Card	100	25-30 m	504	94
Pol3	Card	100	25-30 m	504	94

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)