

**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.

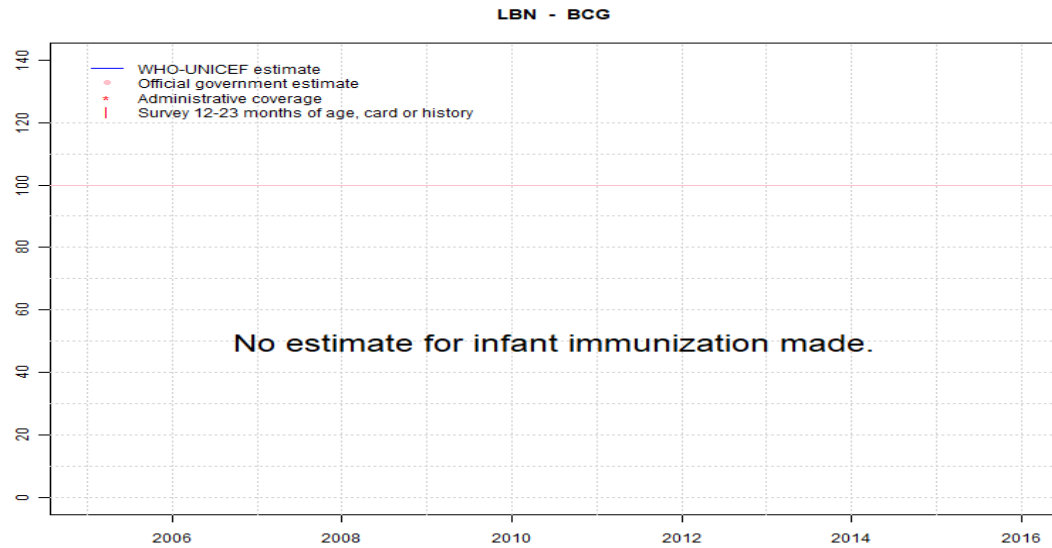
**RotaC:** percentage of surviving infants who received the final recommended dose of rotavirus vaccine, which can be either the 2nd or the 3rd dose depending on the vaccine.

**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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# Lebanon - 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

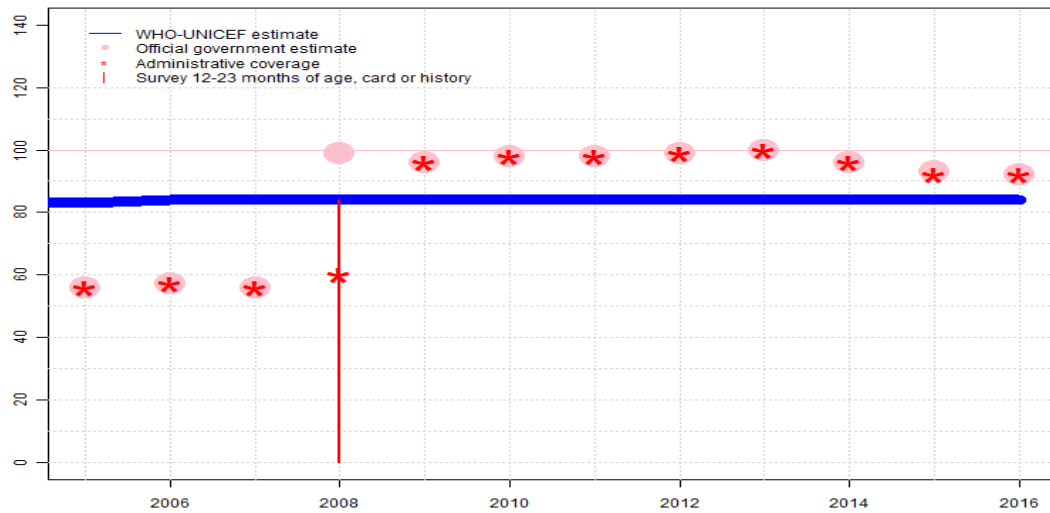
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

# Lebanon - DTP1

LBN - DTP1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	83	84	84	84	84	84	84	84	84	84	84	84
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	56	57	56	99	96	98	98	99	100	96	93	92
Administrative	56	57	56	60	96	98	98	99	100	96	92	92
Survey	NA	NA	NA	84	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 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-R-

2015: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-R-

2014: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. The influx of Syrian subpopulations into Lebanon during 2014 continued to increase potentially impacting reported coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. Estimate challenged by: R-

2013: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Beginning in the middle of 2013, there was an influx of displaced populations from Syria into Lebanon potentially impacting coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. A 2013 national EPI coverage survey suggests lower coverage levels among Syrian subpopulations living in Lebanon, particularly those who recently entered the country. Estimate challenged by: R-

2012: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: R-

2011: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

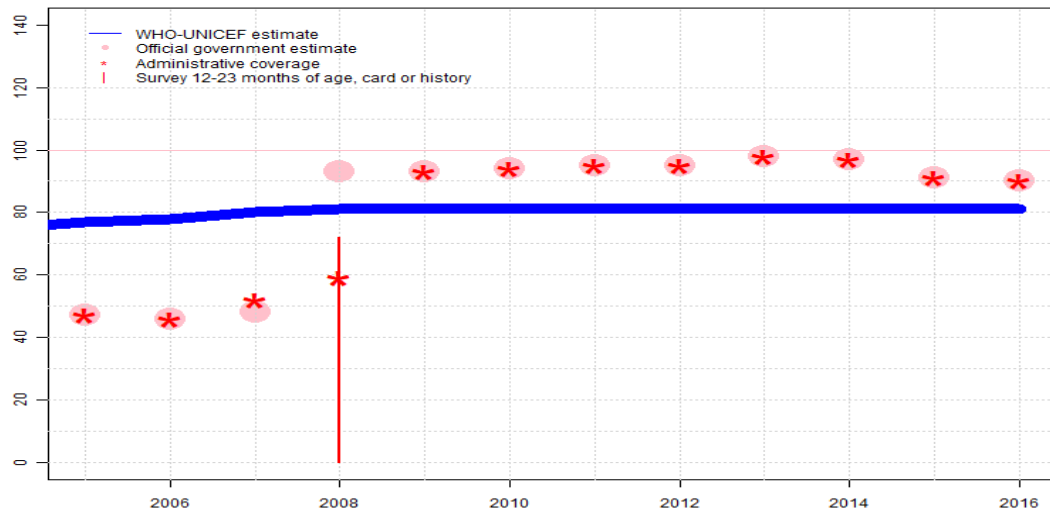
# Lebanon - DTP1

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- 2010: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Administrative data and government estimate includes both data reported by the public sector as well as for immunizations delivered in the private sector. The private sector provides immunization services for between 5 percent to 80 percent of all immunization services. Estimate challenged by: D-R-
- 2008: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 84 percent based on 1 survey(s). Reported data excluded. Reported data not consistent with survey results. Administrative data is based on immunizations provided in the public sector. The government estimate includes immunizations delivered in both the public and private sector. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Pentavalent DTP-HepB-Hib vaccine introduced in 2007. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2005: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

# Lebanon - DTP3

LBN - DTP3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	77	78	80	81	81	81	81	81	81	81	81	81
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	47	46	48	93	93	94	95	95	98	97	91	90
Administrative	47	46	52	59	93	94	95	95	98	97	91	90
Survey	NA	NA	NA	72	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 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-R-

2015: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-R-

2014: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. The influx of Syrian subpopulations into Lebanon during 2014 continued to increase potentially impacting reported coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. Estimate challenged by: R-

2013: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Beginning in the middle of 2013, there was an influx of displaced populations from Syria into Lebanon potentially impacting coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. A 2013 national EPI coverage survey suggests lower coverage levels among Syrian subpopulations living in Lebanon, particularly those who recently entered the country. Estimate challenged by: R-

2012: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. A national EPI coverage was conducted during 2013 among children aged 12-59 months and suggests that 90 percent of children received three doses of DTP containing vaccine by the 5th birthday. Coverage among children aged less than

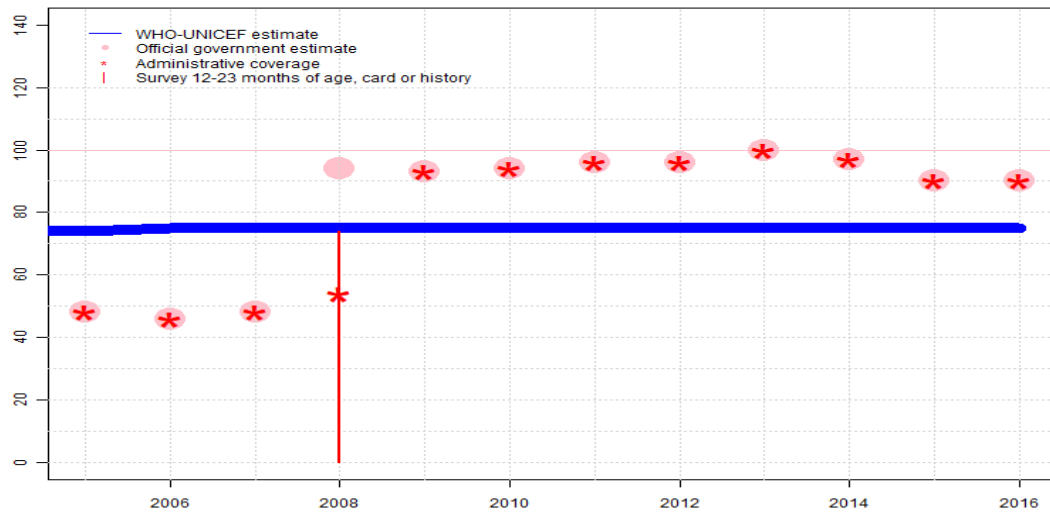
# Lebanon - DTP3

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- 12 months will be slightly lower. Estimate challenged by: R-
- 2011: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2010: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Administrative data and government estimate includes both data reported by the public sector as well as for immunizations delivered in the private sector. The private sector provides immunization services for between 5 percent to 80 percent of all immunization services. Estimate challenged by: D-R-
- 2008: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 81 percent based on 1 survey(s). Lebanon Multiple Indicator Cluster Survey 2009 card or history results of 72 percent modified for recall bias to 81 percent based on 1st dose card or history coverage of 84 percent, 1st dose card only coverage of 51 percent and 3d dose card only coverage of 49 percent. Reported data excluded. Reported data not consistent with survey results. Administrative data is based on immunizations provided in the public sector. The government estimate includes immunizations delivered in both the public and private sector. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Pentavalent DTP-HepB-Hib vaccine introduced in 2007. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2005: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

# Lebanon - Pol3

LBN - Pol3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	74	75	75	75	75	75	75	75	75	75	75	75
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	48	46	48	94	93	94	96	96	100	97	90	90
Administrative	48	46	48	54	93	94	96	96	100	97	90	90
Survey	NA	NA	NA	74	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 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-R-

2015: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-R-

2014: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. The influx of Syrian subpopulations into Lebanon during 2014 continued to increase potentially impacting reported coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. Estimate challenged by: D-R-

2013: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Beginning in the middle of 2013, there was an influx of displaced populations from Syria into Lebanon potentially impacting coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. A 2013 national EPI coverage survey suggests lower coverage levels among Syrian subpopulations living in Lebanon, particularly those who recently entered the country. Estimate challenged by: D-R-

2012: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

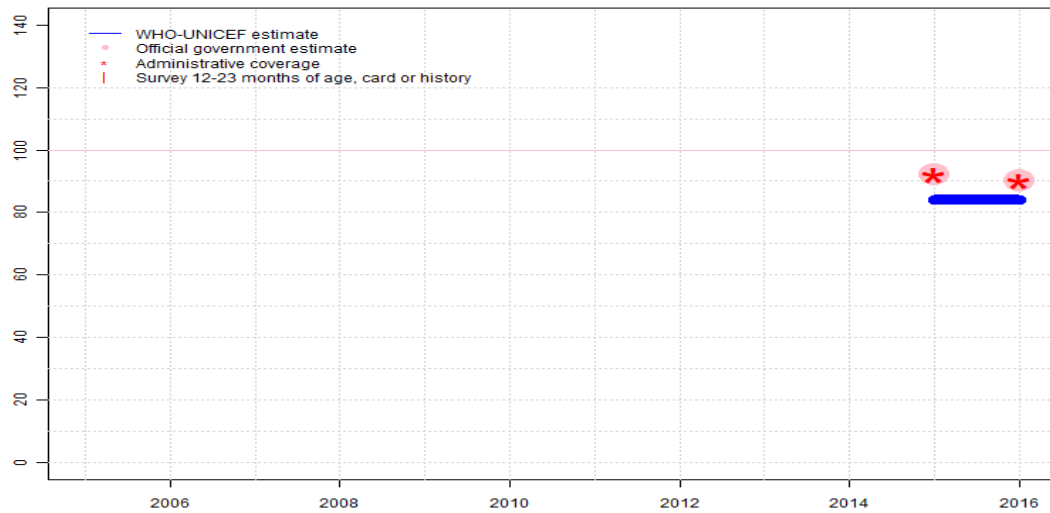
2011: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-



- 2010: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Administrative data and government estimate includes both data reported by the public sector as well as for immunizations delivered in the private sector. The private sector provides immunization services for between 5 percent to 80 percent of all immunization services. Estimate challenged by: D-R-
- 2008: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 75 percent based on 1 survey(s). Lebanon Multiple Indicator Cluster Survey 2009 card or history results of 74 percent modified for recall bias to 75 percent based on 1st dose card or history coverage of 86 percent, 1st dose card only coverage of 53 percent and 3d dose card only coverage of 46 percent. Reported data excluded. Reported data not consistent with survey results. Administrative data is based on immunizations provided in the public sector. The government estimate includes immunizations delivered in both the public and private sector. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2005: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

# Lebanon - IPV1

LBN - IPV1



## Description:

2016: Estimate based on DTP1 coverage level. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-R-

2015: IPV1 introduced during 2011. Estimate based on DTP1 coverage level. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-R-

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	84	84
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●	●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	92	90
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	92	90
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

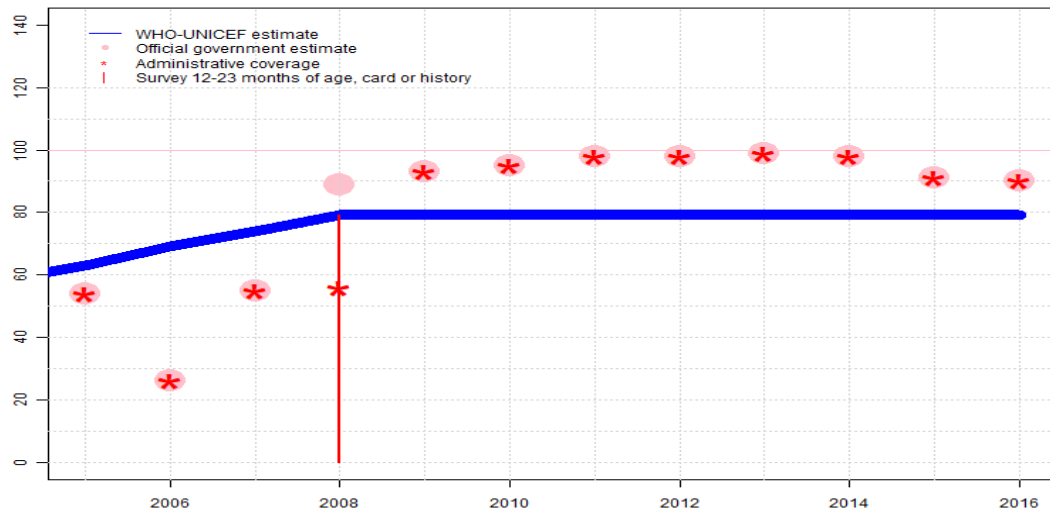
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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

# Lebanon - MCV1

LBN - MCV1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	63	69	74	79	79	79	79	79	79	79	79	79
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	54	26	55	89	93	95	98	98	99	98	91	90
Administrative	54	26	55	56	93	95	98	98	99	98	91	90
Survey	NA	NA	NA	79	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 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-R-

2015: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-R-

2014: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. The influx of Syrian subpopulations into Lebanon during 2014 continued to increase potentially impacting reported coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. Estimate challenged by: R-

2013: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Beginning in the middle of 2013, there was an influx of displaced populations from Syria into Lebanon potentially impacting coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. A 2013 national EPI coverage survey suggests lower coverage levels among Syrian subpopulations living in Lebanon, particularly those who recently entered the country. Estimate challenged by: R-

2012: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

2011: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

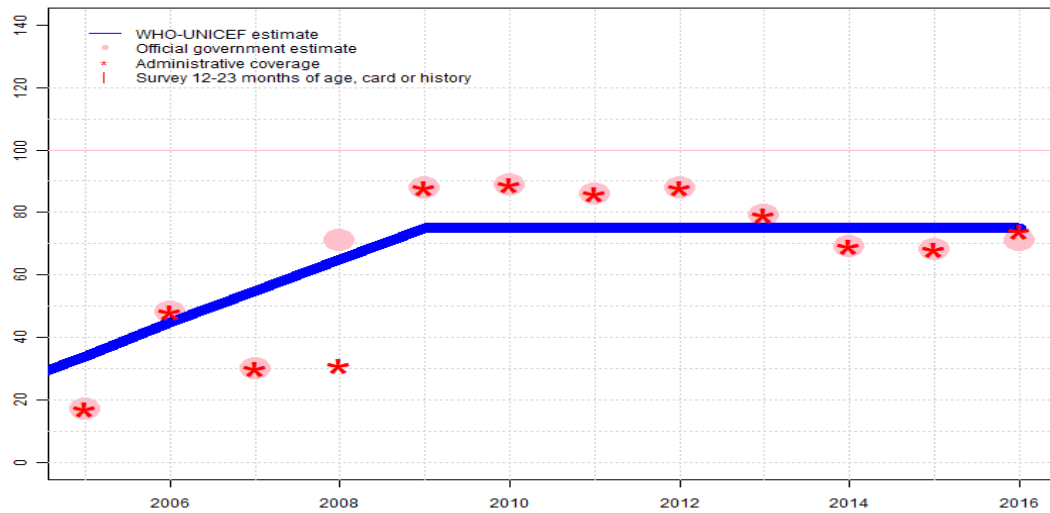
# Lebanon - MCV1

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- 2010: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Administrative data and government estimate includes both data reported by the public sector as well as for immunizations delivered in the private sector. The private sector provides immunization services for between 5 percent to 80 percent of all immunization services. Estimate challenged by: D-R-
- 2008: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 79 percent based on 1 survey(s). Reported data excluded. Reported data not consistent with survey results. Administrative data is based on immunizations provided in the public sector. The government estimate includes immunizations delivered in both the public and private sector. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: R-
- 2006: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Reported data excluded due to decline in reported coverage from 54 percent to 26 percent with increase to 55 percent. Estimate challenged by: R-
- 2005: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: R-

# Lebanon - MCV2

LBN - MCV2



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	34	45	55	65	75	75	75	75	75	75	75	75
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	17	48	30	71	88	89	86	88	79	69	68	71
Administrative	17	48	30	31	88	89	86	88	79	69	68	74
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:

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

2016: Reported data calibrated to 2009 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-R-

2015: Reported data calibrated to 2009 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-R-

2014: Reported data calibrated to 2009 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. The influx of Syrian subpopulations into Lebanon during 2014 continued to increase potentially impacting reported coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. Estimate challenged by: D-R-

2013: Reported data calibrated to 2009 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Beginning in the middle of 2013, there was an influx of displaced populations from Syria into Lebanon potentially impacting coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. A 2013 national EPI coverage survey suggests lower coverage levels among Syrian subpopulations living in Lebanon, particularly those who recently entered the country. Estimate challenged by: R-

2012: Reported data calibrated to 2009 levels. Reported data excluded. Reported data not

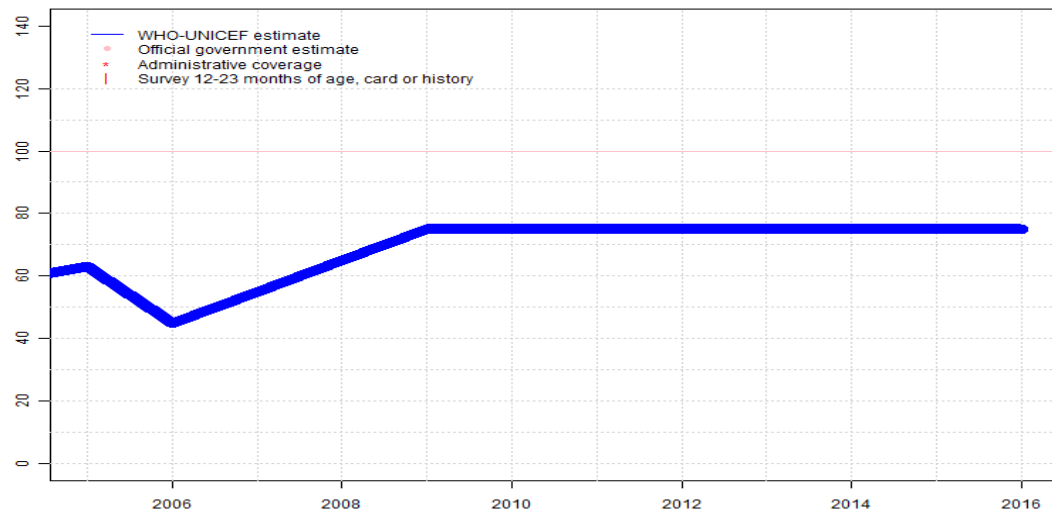
## Lebanon - MCV2

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- consistent with survey results. Estimate challenged by: R-
- 2011: Reported data calibrated to 2009 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2010: Reported data calibrated to 2009 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2009: Estimate of 75 percent assigned by working group. Measles second dose is adjusted from reported MCV first dose coverage levels. Reported data excluded. Reported data not consistent with survey results. Administrative data and government estimate includes both data reported by the public sector as well as for immunizations delivered in the private sector. The private sector provides immunization services for between 5 percent to 80 percent of all immunization services. Estimate challenged by: D-R-
- 2008: Reported data calibrated to 2003 and 2009 levels. Reported data excluded. Reported data not consistent with survey results. Administrative data is based on immunizations provided in the public sector. The government estimate includes immunizations delivered in both the public and private sector. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2003 and 2009 levels. Reported data excluded. Reported data not consistent with survey results. Reported data excluded due to decline in reported coverage from 48 percent to 30 percent with increase to 71 percent. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2003 and 2009 levels. Reported data excluded. Reported data not consistent with survey results. Reported data excluded due to an unexplained increase from 17 percent to 48 percent with decrease 30 percent. Estimate challenged by: D-R-
- 2005: Reported data calibrated to 2003 and 2009 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

# Lebanon - RCV1

LBN - RCV1



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	63	45	55	65	75	75	75	75	75	75	75	75
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.

## 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: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-R-

2015: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-R-

2014: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate The influx of Syrian subpopulations into Lebanon during 2014 continued to increase potentially impacting reported coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. Estimate challenged by: D-R-

2013: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Beginning in the middle of 2013, there was an influx of displaced populations from Syria into Lebanon potentially impacting coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. A 2013 national EPI coverage survey suggests lower coverage levels among Syrian subpopulations living in Lebanon, particularly those who recently entered the country. Estimate challenged by: R-

2012: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Estimate challenged by: R-

2011: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Estimate challenged by: D-R-

2010: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Estimate challenged by: D-R-

2009: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Estimate challenged by: D-R-

# Lebanon - RCV1

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mate based on MCV2 estimate Administrative data and government estimate includes both data reported by the public sector as well as for immunizations delivered in the private sector. The private sector provides immunization services for between 5 percent to 80 percent of all immunization services. Estimate challenged by: D-R-

2008: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Administrative data is based on immunizations provided in the public sector. The government estimate includes immunizations delivered in both the public and private sector. Estimate challenged by: D-R-

2007: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Estimate challenged by: D-R-

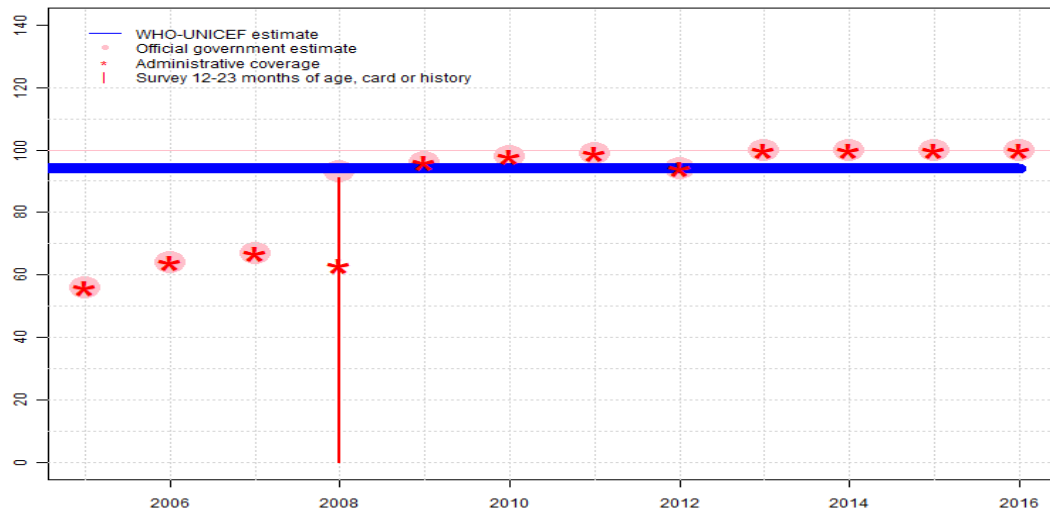
2006: First dose of rubella vaccine given with second dose of measles containing vaccine. Estimate based on MCV2 estimate Estimate challenged by: D-R-

2005: Estimate based on estimated MCV1. Estimate challenged by: R-



# Lebanon - HepBB

LBN - HepBB



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	94	94	94	94	94	94	94	94	94	94	94	94
Estimate GoC	•	•	•	•	•	•	••	••	••	••	•	•
Official	56	64	67	93	96	98	99	94	100	100	100	100
Administrative	56	64	67	63	96	98	99	94	100	100	100	100
Survey	NA	NA	NA	91	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 extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-

2015: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-

2014: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. The influx of Syrian subpopulations into Lebanon during 2014 continued to increase potentially impacting reported coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. GoC=R+ D+

2013: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Beginning in the middle of 2013, there was an influx of displaced populations from Syria into Lebanon potentially impacting coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. A 2013 national EPI coverage survey suggests lower coverage levels among Syrian subpopulations living in Lebanon, particularly those who recently entered the country. GoC=R+ D+

2012: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with survey results. GoC=R+ D+

2011: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with survey results. GoC=R+ D+

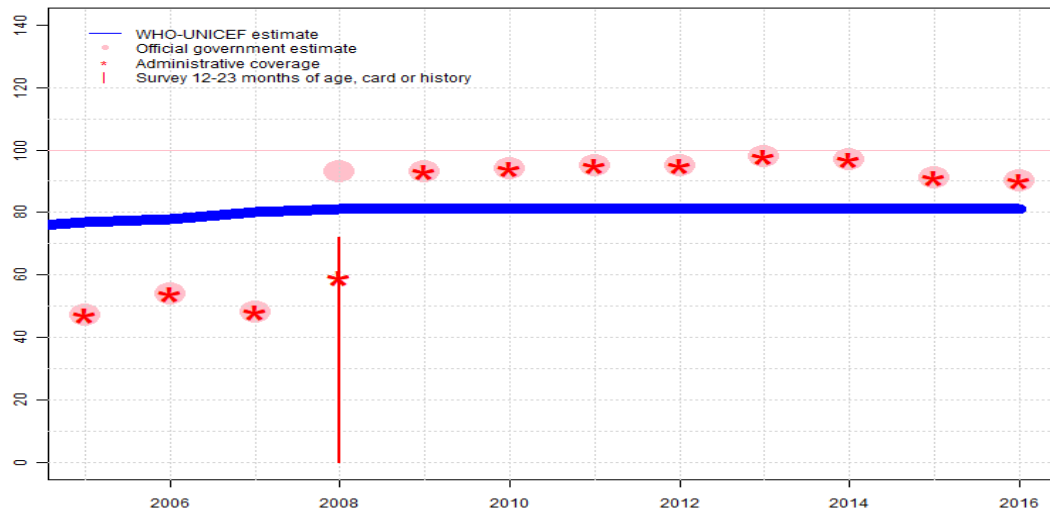
# Lebanon - HepBB

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- 2010: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-
- 2009: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with survey results. Administrative data and government estimate includes both data reported by the public sector as well as for immunizations delivered in the private sector. The private sector provides immunization services for between 5 percent to 80 percent of all immunization services. Estimate challenged by: D-
- 2008: Estimate based on extrapolation from data reported by national government supported by survey. Survey evidence of 91 percent based on 1 survey(s). Reported data excluded. Reported data not consistent with survey results. Administrative data is based on immunizations provided in the public sector. The government estimate includes immunizations delivered in both the public and private sector. Estimate challenged by: D-
- 2007: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-
- 2006: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-
- 2005: Estimate based on extrapolation from data reported by national government. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-

# Lebanon - HepB3

LBN - HepB3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	77	78	80	81	81	81	81	81	81	81	81	81
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	47	54	48	93	93	94	95	95	98	97	91	90
Administrative	47	54	48	59	93	94	95	95	98	97	91	90
Survey	NA	NA	NA	72	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 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-R-

2015: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-R-

2014: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. The influx of Syrian subpopulations into Lebanon during 2014 continued to increase potentially impacting reported coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. Estimate challenged by: R-

2013: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Beginning in the middle of 2013, there was an influx of displaced populations from Syria into Lebanon potentially impacting coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. A 2013 national EPI coverage survey suggests lower coverage levels among Syrian subpopulations living in Lebanon, particularly those who recently entered the country. Estimate challenged by: R-

2012: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: R-

2011: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

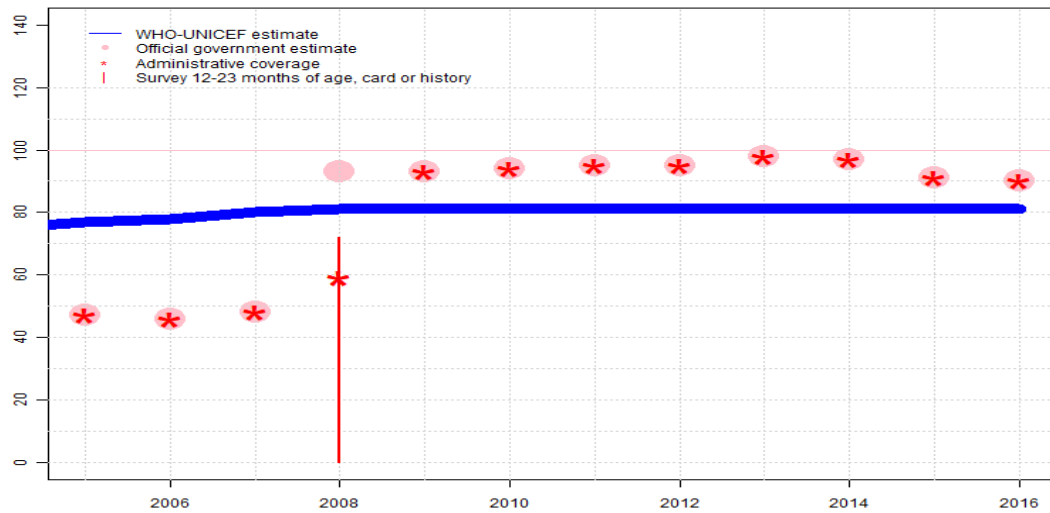
# Lebanon - HepB3

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- 2010: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Administrative data and government estimate includes both data reported by the public sector as well as for immunizations delivered in the private sector. The private sector provides immunization services for between 5 percent to 80 percent of all immunization services. Estimate challenged by: D-R-
- 2008: Estimate of 81 percent assigned by working group. Estimate based on DTP3 coverage estimates. Lebanon Multiple Indicator Cluster Survey 2009 card or history results of 72 percent modified for recall bias to 81 percent based on 1st dose card or history coverage of 84 percent, 1st dose card only coverage of 51 percent and 3d dose card only coverage of 49 percent. Reported data excluded. Reported data not consistent with survey results. Administrative data is based on immunizations provided in the public sector. The government estimate includes immunizations delivered in both the public and private sector. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Pentavalent DTP-HepB-Hib vaccine introduced in 2007. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2005: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

# Lebanon - Hib3

LBN - Hib3



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	77	78	80	81	81	81	81	81	81	81	81	81
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	47	46	48	93	93	94	95	95	98	97	91	90
Administrative	47	46	48	59	93	94	95	95	98	97	91	90
Survey	NA	NA	NA	72	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 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government of Lebanon does not concur with the WHO and UNICEF estimates of vaccination coverage. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. WHO and UNICEF are aware of an EPI cluster coverage evaluation survey 2016 and await the final report with results. Estimate challenged by: D-R-

2015: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Government reports target population estimates reflect estimated number of Lebanese and non-Lebanese children. Programme also reports increases in number of children vaccinated. Estimate challenged by: D-R-

2014: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. The influx of Syrian subpopulations into Lebanon during 2014 continued to increase potentially impacting reported coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. Beginning in 2015 a stream of work has begun to further understand recent patterns in coverage across recommended vaccines in Lebanon, including a review of administrative recording and reporting systems as well as immunization coverage among displaced populations. Estimate challenged by: R-

2013: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with 2013 EPI coverage evaluation survey results across all vaccines. Survey results not presented in a standard format; activity to address results presentation is on-going. Beginning in the middle of 2013, there was an influx of displaced populations from Syria into Lebanon potentially impacting coverage levels in the country. In spite of reports from UNHCR, reported target population estimates from the national immunization programme do not reflect increases beyond the expected year-to-year population growth. A 2013 national EPI coverage survey suggests lower coverage levels among Syrian subpopulations living in Lebanon, particularly those who recently entered the country. Programme reports Hib containing vaccine stockout for 5 months in 26 districts. Estimate challenged by: R-

2012: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: R-

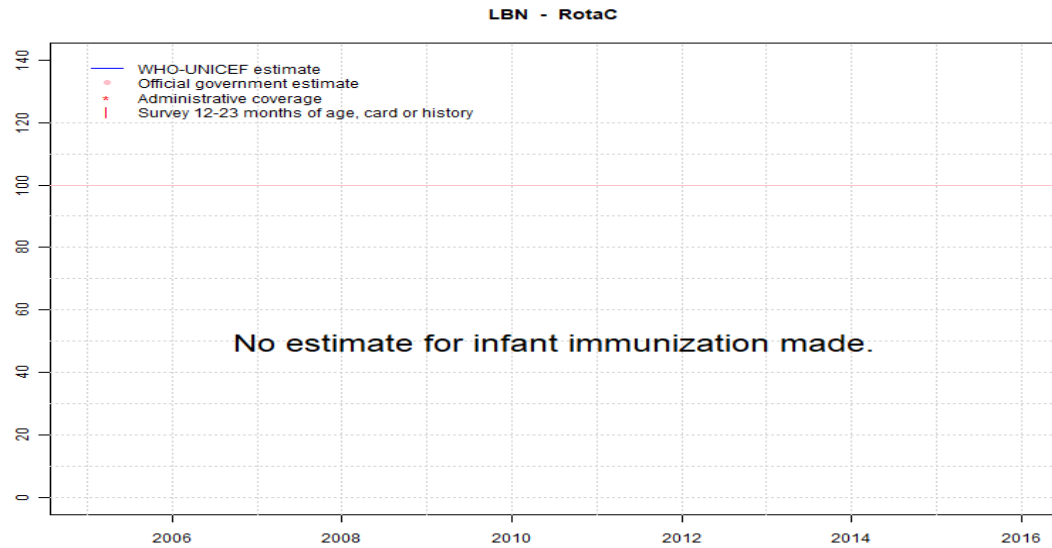
2011: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not

## Lebanon - Hib3

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- consistent with survey results. Estimate challenged by: D-R-
- 2010: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2009: Reported data calibrated to 2008 levels. Reported data excluded. Reported data not consistent with survey results. Administrative data and government estimate includes both data reported by the public sector as well as for immunizations delivered in the private sector. The private sector provides immunization services for between 5 percent to 80 percent of all immunization services. Estimate challenged by: D-R-
- 2008: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 81 percent based on 1 survey(s). Lebanon Multiple Indicator Cluster Survey 2009 card or history results of 72 percent modified for recall bias to 81 percent based on 1st dose card or history coverage of 84 percent, 1st dose card only coverage of 51 percent and 3d dose card only coverage of 49 percent. Reported data excluded. Reported data not consistent with survey results. Administrative data is based on immunizations provided in the public sector. The government estimate includes immunizations delivered in both the public and private sector. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Pentavalent DTP-HepB-Hib vaccine introduced in 2007. Estimate challenged by: D-R-
- 2006: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-
- 2005: Reported data calibrated to 2003 and 2008 levels. Reported data excluded. Reported data not consistent with survey results. Estimate challenged by: D-R-

# Lebanon - RotaC



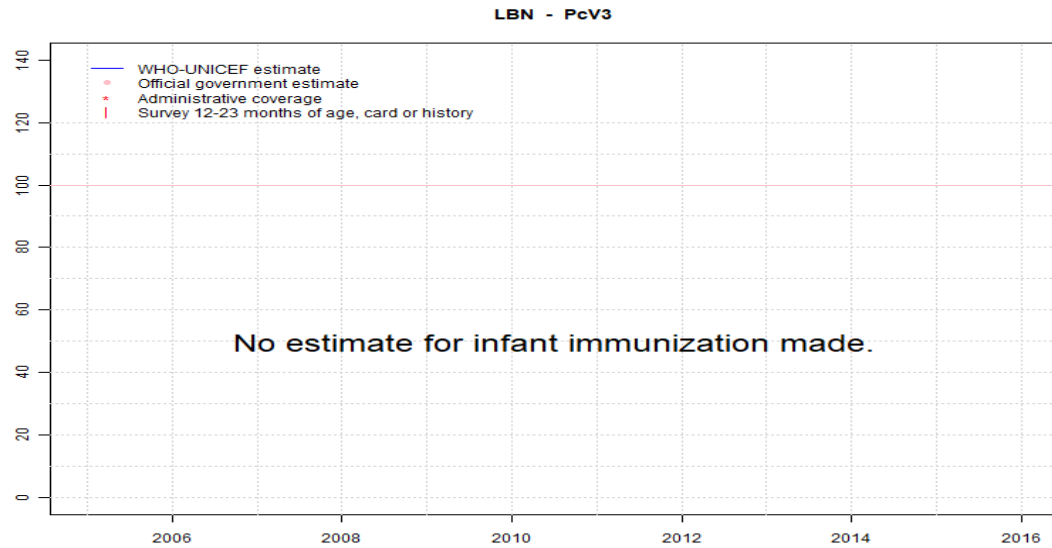
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.

# Lebanon - PcV3



	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.



# Lebanon - survey details

## 2010 Expanded Programme of Immunization (EPI) Study - Lebanon: A Cluster Based Survey, 2013

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
DTP3	Card	90	12-59 m	5303	61
HepB3	Card	93	12-59 m	5303	61
HepBB	Card	90	12-59 m	5303	61
Hib3	Card	89	12-59 m	5303	61
MCV1	Card	89	12-59 m	5303	61
MCV2	Card	62	12-59 m	5303	61
Pol3	Card	89	12-59 m	5303	61

## 2008 Lebanon Multiple Indicator Cluster Survey 2009

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
DTP1	C or H <12 months	83	12-23 m	626	55
DTP1	Card	51	12-23 m	626	55
DTP1	Card or History	84	12-23 m	626	55
DTP1	History	33	12-23 m	626	55
DTP3	C or H <12 months	71	12-23 m	626	55
DTP3	Card	49	12-23 m	626	55
DTP3	Card or History	72	12-23 m	626	55
DTP3	History	23	12-23 m	626	55
HepB1	C or H <12 months	83	12-23 m	626	55
HepB1	Card	51	12-23 m	626	55
HepB1	Card or History	84	12-23 m	626	55
HepB1	History	33	12-23 m	626	55
HepB3	C or H <12 months	71	12-23 m	626	55
HepB3	Card	49	12-23 m	626	55
HepB3	Card or History	72	12-23 m	626	55
HepB3	History	23	12-23 m	626	55
HepBB	C or H <12 months	91	12-23 m	626	55
HepBB	Card	51	12-23 m	626	55
HepBB	Card or History	91	12-23 m	626	55
HepBB	History	39	12-23 m	626	55
Hib1	C or H <12 months	83	12-23 m	626	55
Hib1	Card	51	12-23 m	626	55
Hib1	Card or History	84	12-23 m	626	55

Hib1	History	33	12-23 m	626	55
Hib3	C or H <12 months	71	12-23 m	626	55
Hib3	Card	49	12-23 m	626	55
Hib3	Card or History	72	12-23 m	626	55
Hib3	History	23	12-23 m	626	55
MCV1	C or H <12 months	71	12-23 m	626	55
MCV1	Card	44	12-23 m	626	55
MCV1	Card or History	79	12-23 m	626	55
MCV1	History	35	12-23 m	626	55
Pol1	C or H <12 months	85	12-23 m	626	55
Pol1	Card	53	12-23 m	626	55
Pol1	Card or History	86	12-23 m	626	55
Pol1	History	33	12-23 m	626	55
Pol3	C or H <12 months	72	12-23 m	626	55
Pol3	Card	46	12-23 m	626	55
Pol3	Card or History	74	12-23 m	626	55
Pol3	History	28	12-23 m	626	55

## 2003 Lebanon Family Health Survey (PAPFAM) 2004

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
DTP1	Card or History	83	12-23 m	3365	62
DTP3	Card or History	74	12-23 m	3365	62
MCV1	Card or History	53	12-23 m	3365	62
Pol1	Card or History	83	12-23 m	3365	62
Pol3	Card or History	74	12-23 m	3365	62
YFV	Card or History	50	12-23 m	3365	62

## 1999 Preliminary Report on the Multiple Cluster Survey on the Situation of Children in Lebanon, 2001

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
DTP3	Card or History	90	12-23 m	-	59
MCV1	Card or History	88	12-23 m	-	59
Pol3	Card or History	90	12-23 m	-	59

# Lebanon - 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)