

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.

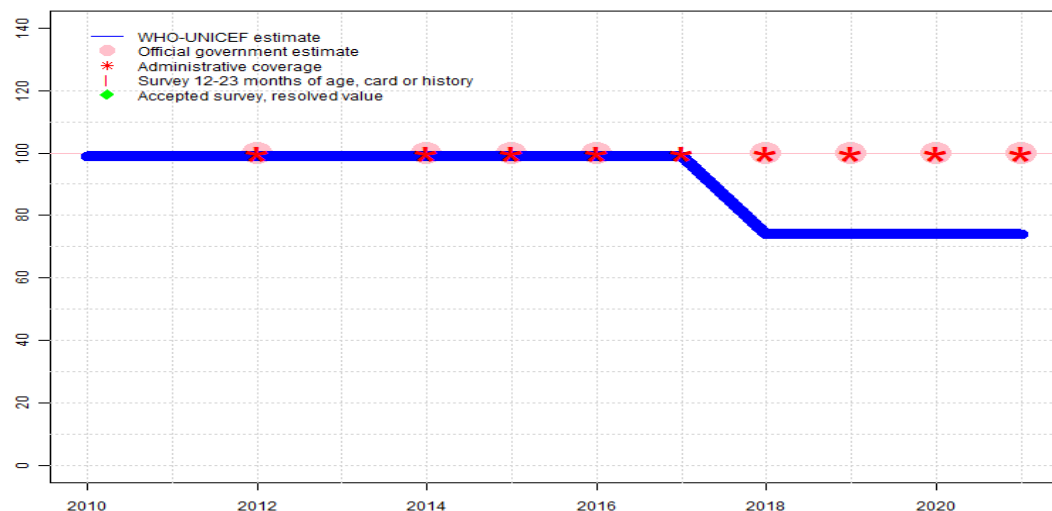
PcV3: percentage of surviving infants who received the 3rd dose of pneumococcal conjugate vaccine. In countries where the national schedule recommends two doses during infancy and a booster dose at 12 months or later based on the epidemiology of disease in the country, coverage estimates may reflect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

LBY - BCG



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	99	99	99	99	99	99	99	99	74	74	74	74
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	100	NA	100	100	100	NA	100	100	100	100
Administrative	NA	NA	100	NA	100	100	100	100	100	100	100	100
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Description:

2021: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage, as the situation permits. Programme reports two month vaccine stock out at national and subnational levels. Estimate challenged by: D-R-

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2017: Estimate based on reported administrative data. Estimate challenged by: D-

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

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2013: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data

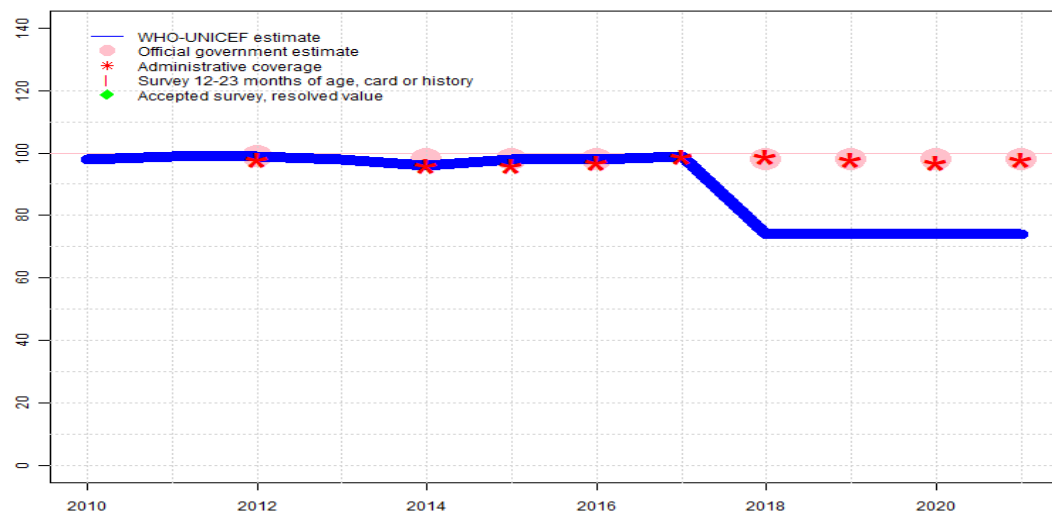
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Libya - BCG

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Libya - DTP1

LBY - DTP1



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	99	99	98	96	98	98	99	74	74	74	74
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	99	NA	98	98	98	NA	98	98	98	98
Administrative	NA	NA	98	NA	96	96	97	99	99	98	97	98
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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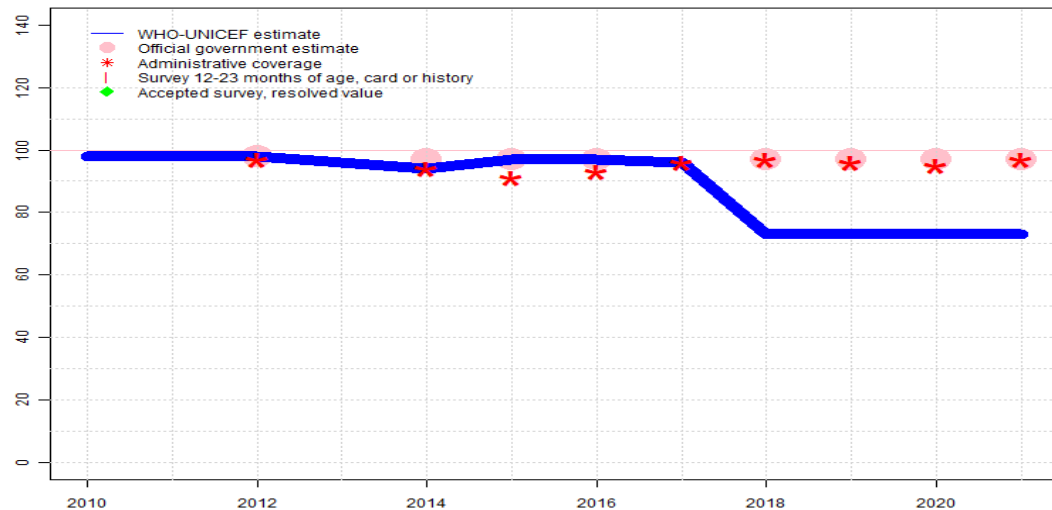
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- 2012: Estimate based on coverage reported by national government. Estimate challenged by: D-

Libya - DTP1

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- 2010: Estimate based on interpolation between data reported by national government. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data

Libya - DTP3

LBY - DTP3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	98	98	96	94	97	97	96	73	73	73	73
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	NA	NA	98	NA	97	97	97	NA	97	97	97	97
Administrative	NA	NA	97	NA	94	91	93	96	97	96	95	97
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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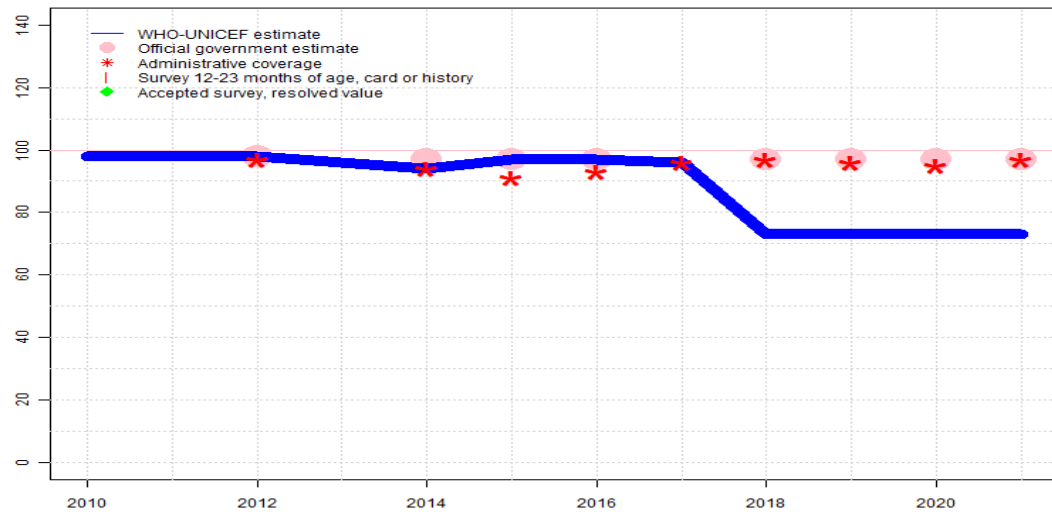
2012: Estimate based on coverage reported by national government. Estimate challenged by: D-

Libya - DTP3

- 2011: Estimate based on interpolation between data reported by national government. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data
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Libya - Pol3

LBY - Pol3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	98	98	96	94	97	97	96	73	73	73	73
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	98	NA	97	97	97	NA	97	97	97	97
Administrative	NA	NA	97	NA	94	91	93	96	97	96	95	97
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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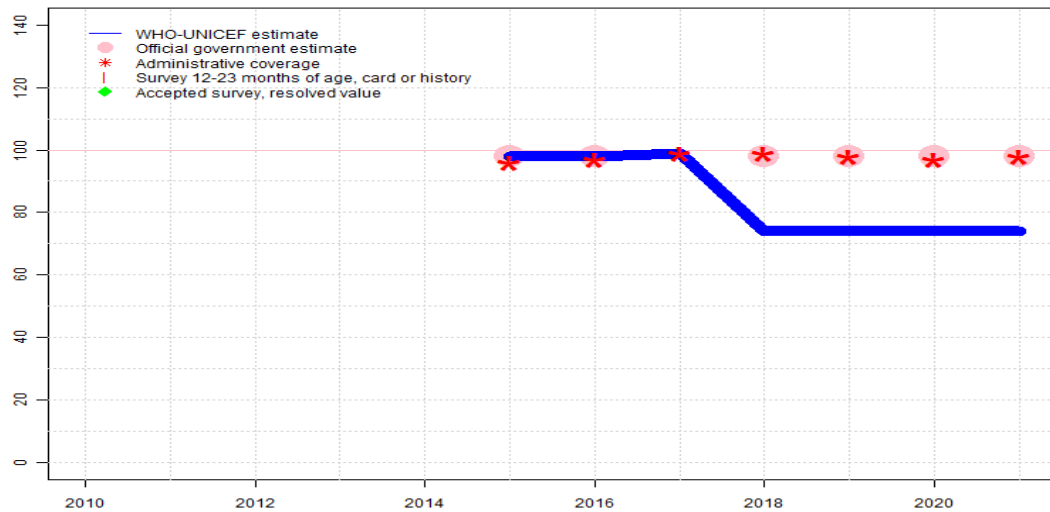
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Libya - IPV1

LBY - IPV1



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	NA	NA	NA	98	98	99	74	74	74	74
Estimate GoC	NA	NA	NA	NA	NA	•	•	•	•	•	•	•
Official	NA	NA	NA	NA	NA	98	98	NA	98	98	98	98
Administrative	NA	NA	NA	NA	NA	96	97	99	99	98	97	98
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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Description:

Estimates for a dose of inactivated polio vaccine (IPV) begin in 2015 following the Global Polio Eradication Initiative's Polio Eradication and Endgame Strategic Plan: 2013-2018 which recommended at least one full dose or two fractional doses of IPV into routine immunization schedules as a strategy to mitigate the potential consequences should any re-emergence of type 2 poliovirus occur following the planned withdrawal of Sabin type 2 strains from oral polio vaccine (OPV).

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2018: Programme reports three month vaccine stock-out at national and sub-national levels. Estimate is based on a reduction in coverage consistent with an extreme assumption of no service delivery during the three month vaccine stock-out. Estimate challenged by: D-R-

2017: Estimate based on reported administrative estimate. Estimate challenged by: D-

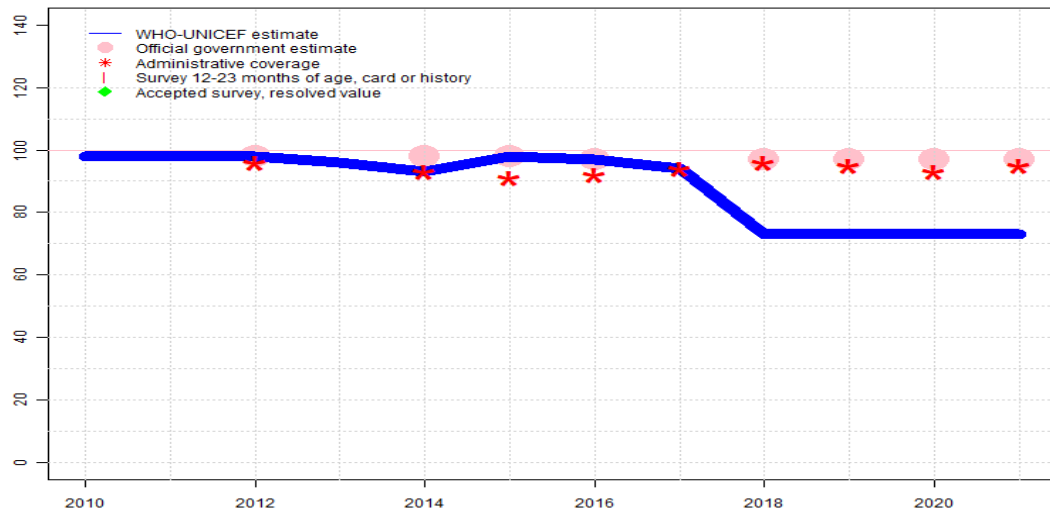
2016: Estimate based on coverage reported by national government. Estimate challenged by: D-

Libya - IPV1

2015: Estimate based on coverage reported by national government. Inactivated polio vaccine introduced in April 2014. Reporting began in 2015. Vaccine presentation is DTP-HepB-Hib-IPV. Estimate challenged by: D-

Libya - MCV1

LBY - MCV1



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	98	98	96	93	98	97	94	73	73	73	73
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	98	NA	98	98	97	NA	97	97	97	97
Administrative	NA	NA	96	NA	93	91	92	94	96	95	93	95
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

Description:

2021: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage, as the situation permits. Programme reports two month vaccine stock out at national and subnational levels. Estimate challenged by: D-R-

2020: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2019: WHO and UNICEF have highlighted the impact of ongoing civil conflict and instability on children, particularly those residing in Tripoli, Derna and urban areas in the west and south (see UN News, <https://news.un.org/en/story/2020/01/1055492>). WHO and UNICEF have noted severe disruptions to the health system, including immunization service delivery and availability of essential medicines (see Lancet. 2014;387:1363 and Lancet. 2018;391:824-5). While reports suggest these disruptions have been ongoing for several years, unfortunately, available data that quantifies the magnitude and onset of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. Using this information and a strong assumption that immunization services were severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2018: Programme reports three month vaccine stock-out at national and sub-national levels. Estimate is based on a reduction in coverage consistent with an extreme assumption of no service delivery during the three month vaccine stock-out. Estimate challenged by: D-R-

2017: Estimate based on reported administrative data. Estimate challenged by: D-

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

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

2014: Estimate based on reported administrative data. Programme does not provide an explanation for adjustment of government official coverage from administrative reported data. Estimate challenged by: D-

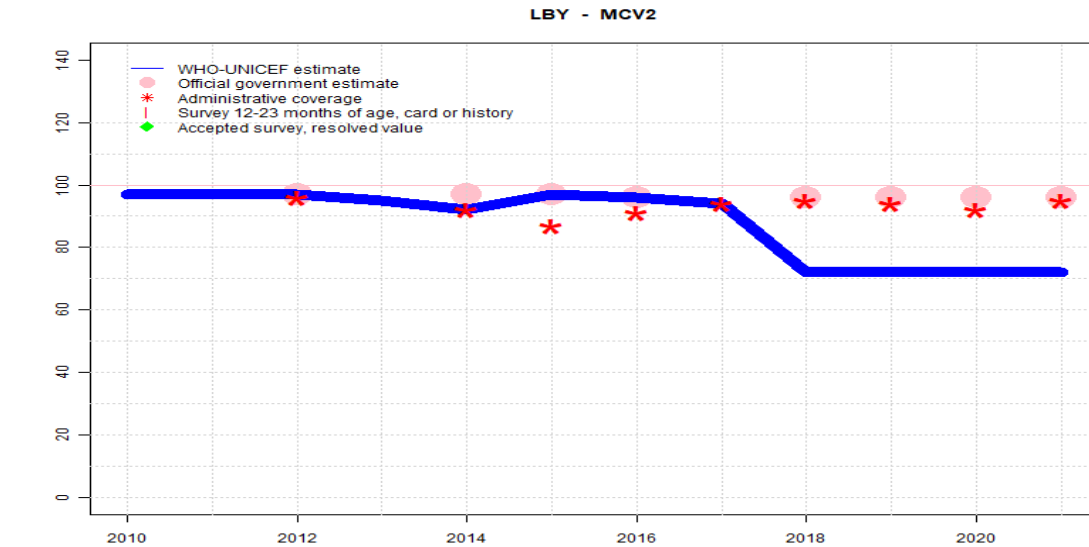
2013: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data

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

Libya - MCV1

- 2011: Estimate based on interpolation between data reported by national government. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data
- 2010: Estimate based on interpolation between data reported by national government. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data

Libya - MCV2



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	97	97	97	95	92	97	96	94	72	72	72	72
Estimate GoC	●	●	●	●	●	●	●	●	●	●	●	●
Official	NA	NA	97	NA	97	97	96	NA	96	96	96	96
Administrative	NA	NA	96	NA	92	87	91	94	95	94	92	95
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

Description:

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

2021: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage, as the situation permits. Programme reports two month vaccine stock out at national and subnational levels. Estimate challenged by: D-R-

2020: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2019: WHO and UNICEF have highlighted the impact of ongoing civil conflict and instability on children, particularly those residing in Tripoli, Derna and urban areas in the west and south (see UN News, <https://news.un.org/en/story/2020/01/1055492>). WHO and UNICEF have noted severe disruptions to the health system, including immunization service delivery and availability of essential medicines (see Lancet. 2014;387:1363 and Lancet. 2018;391:824-5). While reports suggest these disruptions have been ongoing for several years, unfortunately, available data that quantifies the magnitude and onset of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. Using this information and a strong assumption that immunization services were severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2018: Programme reports three month vaccine stock-out at national and sub-national levels. Estimate is based on a reduction in coverage consistent with an extreme assumption of no service delivery during the three month vaccine stock-out. Estimate challenged by: D-R-

2017: Estimate based on reported administrative estimate. Estimate challenged by: D-

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

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

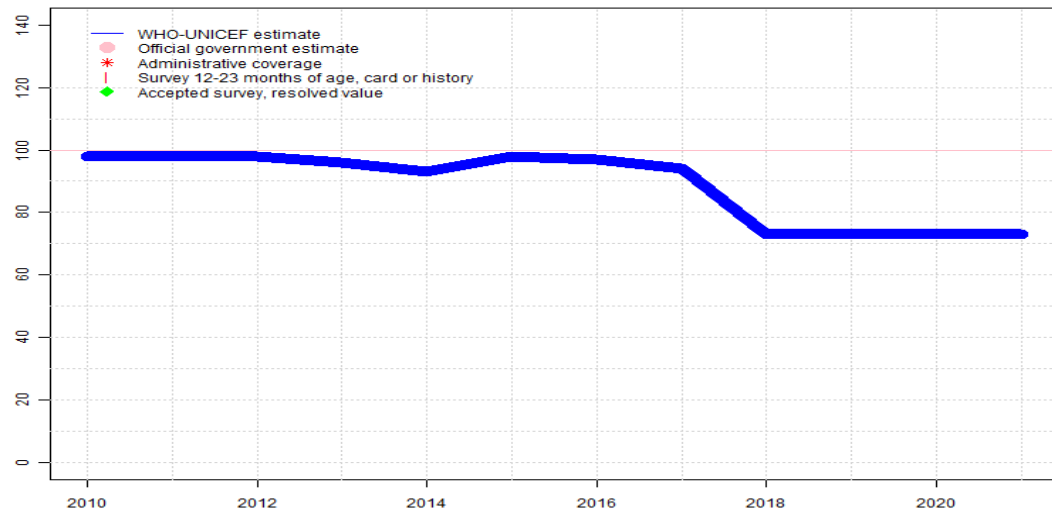
2014: Estimate based on reported administrative estimate. Programme does not provide an explanation for adjustment of government official coverage from administrative reported data. Estimate challenged by: D-

Libya - MCV2

- 2013: Estimate based on interpolation between reported values. GoC=No accepted empirical data
- 2012: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2011: Estimate based on interpolation between reported values. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data
- 2010: Estimate based on interpolation between reported values. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data

Libya - RCV1

LBY - RCV1



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	98	98	96	93	98	97	94	73	73	73	73
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: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

Description:

For this revision, coverage estimates for the first dose of rubella containing vaccine are based on WHO and UNICEF estimates of coverage of measles containing vaccine. Nationally reported coverage of rubella containing vaccine is not taken into consideration nor are they represented in the the accompanying graph and data table.

2021: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage, as the situation permits. Estimate challenged by: D-R-

2020: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2019: WHO and UNICEF have highlighted the impact of ongoing civil conflict and instability on children, particularly those residing in Tripoli, Derna and urban areas in the west and south (see UN News, <https://news.un.org/en/story/2020/01/1055492>). WHO and UNICEF have noted severe disruptions to the health system, including immunization service delivery and availability of essential medicines (see Lancet. 2014;387:1363 and Lancet. 2018;391:824-5). While reports suggest these disruptions have been ongoing for several years, unfortunately, available data that quantifies the magnitude and onset of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. Using this information and a strong assumption that immunization services were severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2018: Programme reports three month vaccine stock-out at national and sub-national levels. Estimate is based on a reduction in coverage consistent with an extreme assumption of no service delivery during the three month vaccine stock-out. Estimate challenged by: D-R-

2017: Estimate based on estimated MCV1. Estimate challenged by: D-

2016: Estimate based on estimated MCV1. Estimate challenged by: D-

2015: Estimate based on estimated MCV1. Estimate challenged by: D-

2014: Estimate based on estimated MCV1. Programme does not provide an explanation for adjustment of government official coverage from administrative reported data. Estimate

Libya - RCV1

challenged by: D-

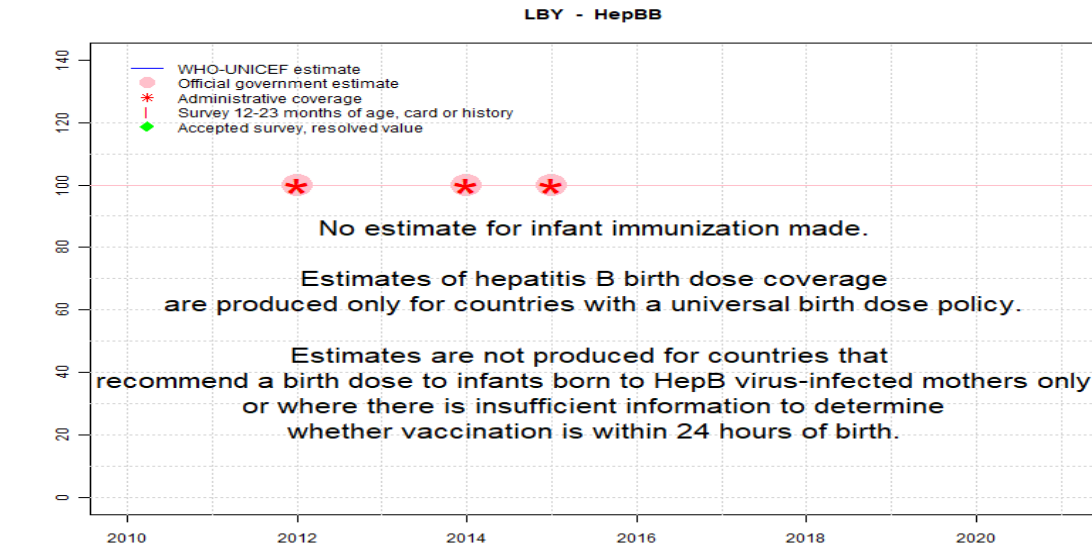
2013: Estimate based on estimated MCV1. GoC=No accepted empirical data

2012: Estimate based on estimated MCV1. Estimate challenged by: D-

2011: Estimate based on estimated MCV1. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data

2010: Estimate based on estimated MCV1. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data

Libya - HepBB



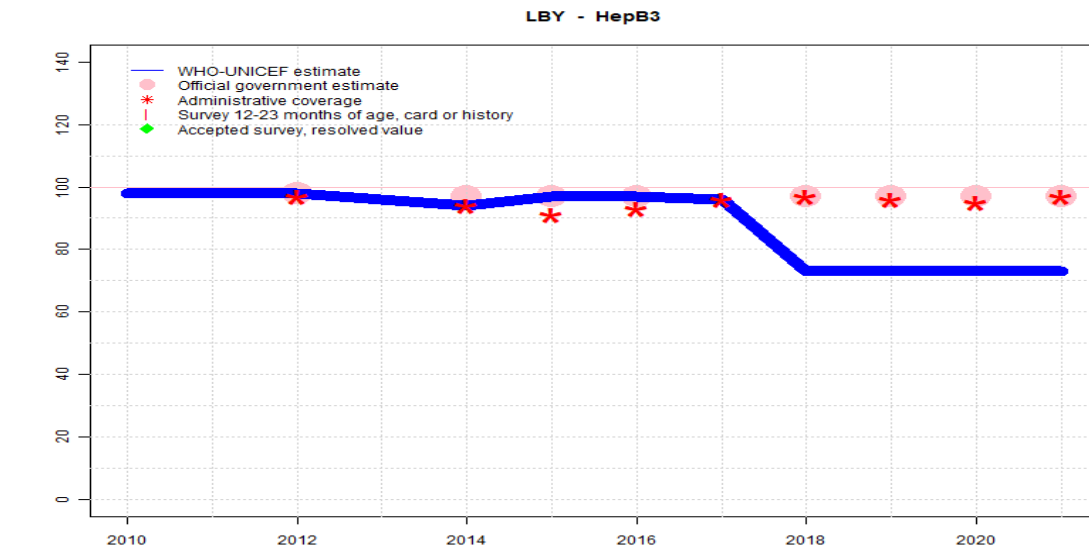
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	100	NA	100	100	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	100	NA	100	100	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

Libya - HepB3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	98	98	96	94	97	97	96	73	73	73	73
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	98	NA	97	97	97	NA	97	97	97	97
Administrative	NA	NA	97	NA	94	91	93	96	97	96	95	97
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

Description:

2021: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage, as the situation permits. Programme reports two month vaccine stock out at national and subnational levels. Estimate challenged by: D-R-

2020: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2019: WHO and UNICEF have highlighted the impact of ongoing civil conflict and instability on children, particularly those residing in Tripoli, Derna and urban areas in the west and south (see UN News, <https://news.un.org/en/story/2020/01/1055492>). WHO and UNICEF have noted severe disruptions to the health system, including immunization service delivery and availability of essential medicines (see Lancet. 2014;387:1363 and Lancet. 2018;391:824-5). While reports suggest these disruptions have been ongoing for several years, unfortunately, available data that quantifies the magnitude and onset of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. Using this information and a strong assumption that immunization services were severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2018: Programme reports three month vaccine stock-out at national and sub-national levels. Estimate is based on a reduction in coverage consistent with an extreme assumption of no service delivery during the three month vaccine stock-out. Estimate challenged by: D-R-

2017: Estimate based on reported administrative data. Estimate challenged by: D-

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

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

2014: Estimate based on reported administrative data. Programme does not provide an explanation for adjustment of government official coverage from administrative reported data. Estimate challenged by: D-

2013: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data

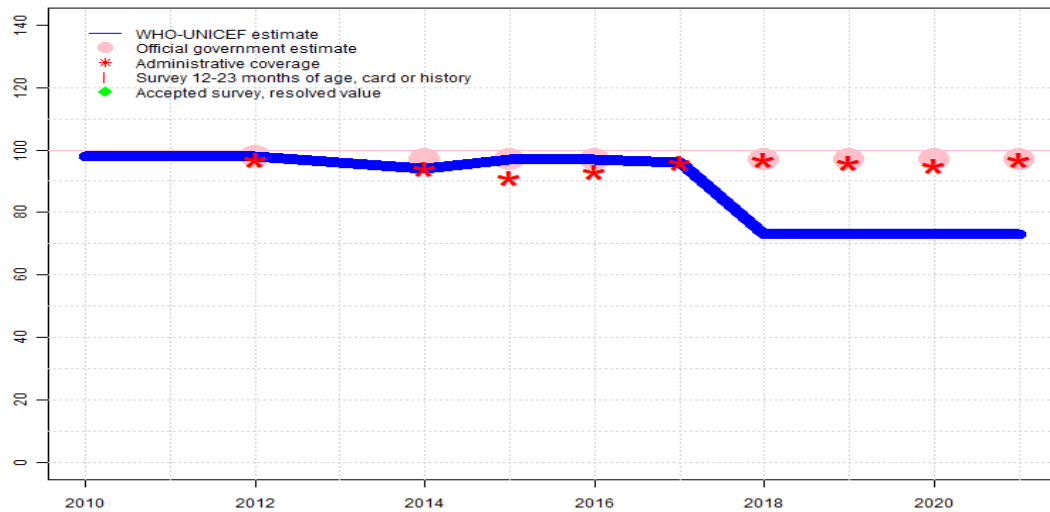
2012: Estimate based on coverage reported by national government. Estimate challenged by: D-

Libya - HepB3

- 2011: Estimate based on interpolation between data reported by national government. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data
- 2010: Estimate based on interpolation between data reported by national government. No empirical data available. Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data

Libya - Hib3

LBY - Hib3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	98	98	98	96	94	97	97	96	73	73	73	73
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	NA	NA	98	NA	97	97	97	NA	97	97	97	97
Administrative	NA	NA	97	NA	94	91	93	96	97	96	95	97
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

Description:

2021: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage, as the situation permits. Programme reports two month vaccine stock out at national and subnational levels. Estimate challenged by: D-R-

2020: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2019: WHO and UNICEF have highlighted the impact of ongoing civil conflict and instability on children, particularly those residing in Tripoli, Derna and urban areas in the west and south (see UN News, <https://news.un.org/en/story/2020/01/1055492>). WHO and UNICEF have noted severe disruptions to the health system, including immunization service delivery and availability of essential medicines (see Lancet. 2014;387:1363 and Lancet. 2018;391:824-5). While reports suggest these disruptions have been ongoing for several years, unfortunately, available data that quantifies the magnitude and onset of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. Using this information and a strong assumption that immunization services were severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2018: Programme reports three month vaccine stock-out at national and sub-national levels. Estimate is based on a reduction in coverage consistent with an extreme assumption of no service delivery during the three month vaccine stock-out. Estimate challenged by: D-R-

2017: Estimate based on reported administrative estimate. Estimate challenged by: D-

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

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

2014: Estimate based on reported administrative estimate. Programme does not provide an explanation for adjustment of government official coverage from administrative reported data. Estimate challenged by: D-

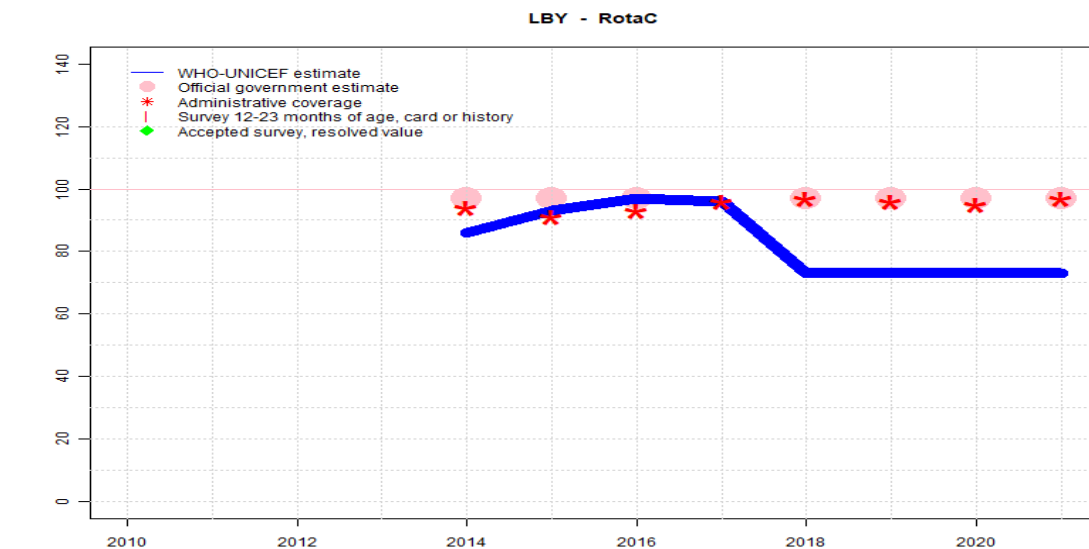
2013: Estimate based on interpolation between reported values. GoC=No accepted empirical data

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

Libya - Hib3

- 2011: Estimate based on interpolation between reported values. No empirical data available.
Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data
- 2010: Estimate based on interpolation between reported values. No empirical data available.
Estimate is based on interpolation and actual coverage levels were likely lower during the time of civil strife. GoC=No accepted empirical data

Libya - RotaC



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	NA	NA	86	93	97	96	73	73	73	73
Estimate GoC	NA	NA	NA	NA	•	•	•	•	•	•	•	•
Official	NA	NA	NA	NA	97	97	97	NA	97	97	97	97
Administrative	NA	NA	NA	NA	94	91	93	96	97	96	95	97
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

Description:

2021: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage, as the situation permits. Programme reports two month vaccine stock out at national and subnational levels. Estimate challenged by: D-R-

2020: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2019: WHO and UNICEF have highlighted the impact of ongoing civil conflict and instability on children, particularly those residing in Tripoli, Derna and urban areas in the west and south (see UN News, <https://news.un.org/en/story/2020/01/1055492>). WHO and UNICEF have noted severe disruptions to the health system, including immunization service delivery and availability of essential medicines (see Lancet. 2014;387:1363 and Lancet. 2018;391:824-5). While reports suggest these disruptions have been ongoing for several years, unfortunately, available data that quantifies the magnitude and onset of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. Using this information and a strong assumption that immunization services were severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2018: Programme reports three month vaccine stock-out at national and sub-national levels. Estimate is based on a reduction in coverage consistent with an extreme assumption of no service delivery during the three month vaccine stock-out. Estimate challenged by: D-R-

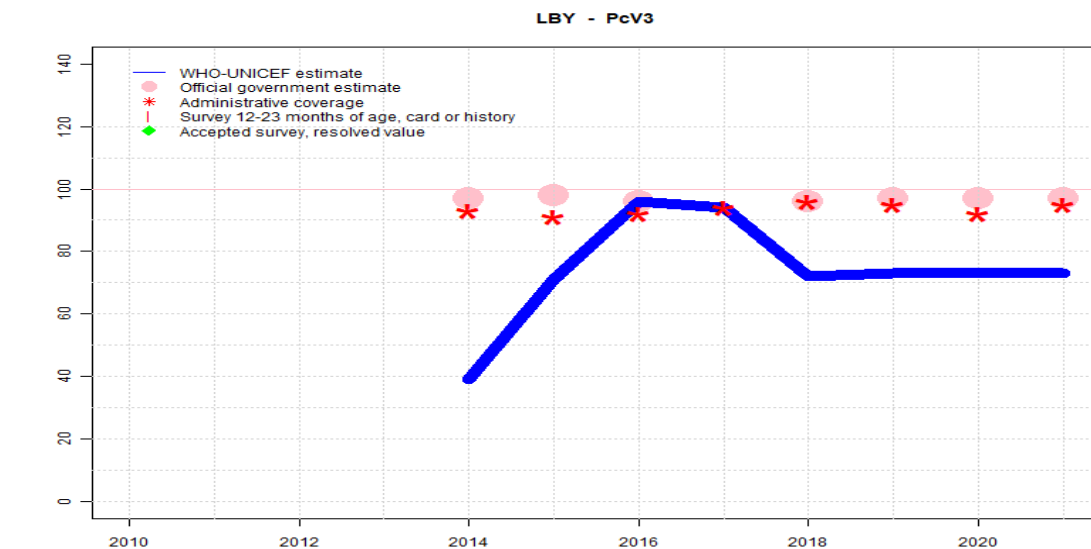
2017: Estimate based on reported administrative data. Estimate challenged by: D-

2016: Estimate based on reported data following introduction. Estimate challenged by: D-

2015: Reported data calibrated to 2014 and 2016 levels. Estimate challenged by: D-R-

2014: Estimate of 86 percent assigned by working group. Rotavirus vaccine introduced during 2013 and reporting started in 2014. Programme reports 97 percent coverage in 92 percent of the target population. Estimate is based on annualized coverage achieved in the national birth cohort. Programme does not provide an explanation for adjustment of government official coverage from administrative reported data. Estimate challenged by: D-R-

Libya - PcV3



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Estimate	NA	NA	NA	NA	39	71	96	94	72	73	73	73
Estimate GoC	NA	NA	NA	NA	•	•	•	•	•	•	•	•
Official	NA	NA	NA	NA	97	98	96	NA	96	97	97	97
Administrative	NA	NA	NA	NA	93	91	92	94	96	95	92	95
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2022 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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

Description:

2021: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports four month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. No nationally representative household survey within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage, as the situation permits. Programme reports two month vaccine stock out at national and subnational levels. Estimate challenged by: D-R-

2020: Prolonged instability continues. Available data to quantify the magnitude of the disruption of health service delivery are scarce. Programme reports four month vaccine stock-out at national and sub-national levels. As done for previous years, using this information and a strong assumption that immunization services have been severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2019: WHO and UNICEF have highlighted the impact of ongoing civil conflict and instability on children, particularly those residing in Tripoli, Derna and urban areas in the west and south (see UN News, <https://news.un.org/en/story/2020/01/1055492>). WHO and UNICEF have noted severe disruptions to the health system, including immunization service delivery and availability of essential medicines (see Lancet. 2014;387:1363 and Lancet. 2018;391:824-5). While reports suggest these disruptions have been ongoing for several years, unfortunately, available data that quantifies the magnitude and onset of the disruption of health service delivery are scarce. Programme reports three month vaccine stock-out at national and sub-national levels. Using this information and a strong assumption that immunization services were severely disrupted during the vaccine stock-out, the estimate is based on a 25 percentage point reduction in coverage consistent with the duration of the stock-out. Estimate challenged by: D-R-

2018: Programme reports three month vaccine stock-out at national and sub-national levels. Estimate is based on a reduction in coverage consistent with an extreme assumption of no service delivery during the three month vaccine stock-out. Estimate challenged by: D-R-

2017: Estimate based on reported administrative data. Estimate challenged by: D-

2016: Estimate based on reported data following introduction. Estimate challenged by: D-

2015: Reported data calibrated to 2014 and 2016 levels. Estimate challenged by: D-R-

2014: Estimate of 39 percent assigned by working group. Pneumococcal conjugate vaccine introduced during 2013 and reporting started in 2014. Programme reports 97 percent coverage in 42 percent of the target population. Estimate is based on coverage achieved in the national target population. Programme does not provide an explanation for adjustment of government official coverage from administrative reported data. Estimate challenged

Libya - PcV3

by: D-R-

Libya - survey details

2006 Libyan Arab Republic 2007 Family Health Survey

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	99.9	12-23 m	11920	81
DTP1	Card or History	99.7	12-23 m	11920	81

DTP3	Card or History	98.2	12-23 m	11920	81
MCV1	Card or History	93.7	12-23 m	11920	81
Pol1	Card or History	99.7	12-23 m	11920	81
Pol3	Card or History	98.2	12-23 m	11920	81

Further information and estimates for previous years are available at:

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

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