Cuba: WHO and UNICEF estimates of immunization coverage: 2020 revision

- BCG
- DTP1
- DTP3
- Pol3
- MCV1
- HepB3
- Hib3
- RotaC
- PcV3

No estimate for infant immunization made.
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:

*Brown et al. 2013. An introduction to the grade of confidence used to characterize uncertainty around immunization coverage: a computational logic approach.

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.
PcV3: percentage of surviving infants who received the 3rd dose of Haemophilus influenzae type b containing vaccine.
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.

WHO and UNICEF estimates of national immunization coverage: 2020 revision
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: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+].** While well supported, the estimate still carries a risk of being wrong.
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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.

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July 8, 2021; page 3  WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022  data received as of July 6, 2021
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2020: Estimate based on reported administrative data. GoC=R+ D+
2019: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2018: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2017: Estimate based on coverage reported by national government supported by survey. Survey evidence of 96 percent based on 1 survey(s). GoC=R+ S+ D+
2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 94 percent based on 1 survey(s). GoC=R+ S+ D+
2015: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2014: DTP1 coverage estimated based on DTP3 coverage of 100. Estimate challenged by: R-
2013: DTP1 coverage estimated based on DTP3 coverage of 100. Estimate challenged by: R-
2012: DTP1 coverage estimated based on DTP3 coverage of 99. Reported data excluded because 102 percent greater than 100 percent. Estimate challenged by: R-
2011: DTP1 coverage estimated based on DTP3 coverage of 97. Reported data excluded because 105 percent greater than 100 percent. Estimate challenged by: D-R-
2010: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2009: DTP1 coverage estimated based on DTP3 coverage of 96. Reported data excluded because 119 percent greater than 100 percent. Reported data excluded due to an increase from 104 percent to 119 percent with decrease 96 percent. Estimate challenged by: R-
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Description:

2020: Estimate based on reported administrative data. GoC=R+ D+
2019: Estimate based on coverage reported by national government. GoC=R+ D+
2018: Estimate based on coverage reported by national government. GoC=R+ D+
2017: Estimate based on coverage reported by national government. Cuba Multiple Indicator Cluster Survey 2019 results ignored by working group. Survey results not considered due to inconsistent results compared to other vaccine doses.Cuba Multiple Indicator Cluster Survey 2019 card or history results of 47 percent modified for recall bias to 43 percent based on 1st dose card or history coverage of 64 percent, 1st dose card only coverage of 62 percent and 3rd dose card only coverage of 42 percent. GoC=R+ D+
2016: Estimate based on coverage reported by national government. Cuba Multiple Indicator Cluster Survey 2019 results ignored by working group. Survey results not considered due to inconsistent results compared to other vaccine doses.Cuba Multiple Indicator Cluster Survey 2019 card or history results of 67 percent modified for recall bias to 62 percent based on 1st dose card or history coverage of 61 percent, 1st dose card only coverage of 55 percent and 3rd dose card only coverage of 56 percent. GoC=R+ D+
2015: Estimate based on interpolation between data reported by national government. GoC=No accepted empirical data
2014: Estimate based on coverage reported by national government. GoC=R+
2013: Estimate based on coverage reported by national government. GoC=R+
2012: Estimate based on coverage reported by national government. GoC=R+ D+
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### Cuba - IPV1

**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).**

**2020:** Estimate based on reported administrative estimate. GoC=R+ D+

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

**2018:** Estimate based on coverage reported by national government. Programme reports two month vaccine stock-out at national level. Programme reports use of fractional IPV dose. Reported data reflect second fractional dose. GoC=R+ D+

**2017:** Estimate based on coverage reported by national government. Cuba Multiple Indicator Cluster Survey 2019 results ignored by working group. Survey results not considered due to inconsistent results compared to other vaccine doses. Country reports a 3-month stock-out of IPV. GoC=R+ D+

**2016:** Estimate based on coverage reported by national government. Cuba Multiple Indicator Cluster Survey 2019 results ignored by working group. Survey results not considered due to inconsistent results compared to other vaccine doses. Inactivated polio vaccine introduced during January 2016. GoC=R+ D+

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### Coverage of Inactivated Polio Vaccine (IPV) in Cuba

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Description:

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

2020: Estimate based on reported administrative estimate. Programme reports a three month vaccine stock-out at national and subnational levels. GoC=R+ D+
2019: Estimate based on coverage reported by national government. Estimate challenged by: D-
2018: Estimate based on coverage reported by national government. Estimate challenged by: D-
2017: Estimate based on coverage reported by national government. GoC=R+ D+
2016: Estimate based on coverage reported by national government. GoC=R+ D+
2015: Estimate based on interpolation between reported values. Reported data excluded because 103 percent greater than 100 percent. GoC=R+ D+
2014: Estimate based on interpolation between reported values. Reported data excluded because 102 percent greater than 100 percent. GoC=R+ D+
2013: Estimate based on interpolation between reported values. Reported data excluded because 103 percent greater than 100 percent. GoC=R+ D+
2012: Estimate based on interpolation between reported values. Reported data excluded because 102 percent greater than 100 percent. GoC=R+ D+
2011: Estimate based on coverage reported by national government. GoC=R+ D+
2010: Estimate based on coverage reported by national government. GoC=R+ D+
2009: Estimate based on coverage reported by national government. Estimate challenged by: D-
Cuba - RCV1

**Description:**

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

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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:

2020: Estimate based on reported administrative data. GoC=R+ D+
2019: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2018: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2017: Estimate based on coverage reported by national government supported by survey. Survey evidence of 98 percent based on 1 survey(s). GoC=R+ S+ D+
2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 95 percent based on 1 survey(s). GoC=R+ S+ D+
2015: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2014: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2013: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2012: Estimate based on coverage reported by national government supported by survey. Survey evidence of 99 percent based on 1 survey(s). GoC=R+ S+ D+
2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 96 percent based on 1 survey(s). GoC=R+ S+ D+
2010: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2009: Estimate based on coverage reported by national government supported by survey. Survey evidence of 100 percent based on 1 survey(s). GoC=R+ S+ D+

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The WHO and UNICEF estimates of national immunization coverage (wunic) 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.

### Diagram:

[Diagram showing coverage trends from 2009 to 2020 with estimates and grades of confidence]

July 8, 2021; page 11

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022

Data received as of July 6, 2021
Cuba - HepB3

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+] or survey evidence [S+].
- Coverage recalculated with an independent denominator from the World Population Prospects: 2020 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.

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July 8, 2021; page 12 WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022 data received as of July 6, 2021
The WHO and UNICEF estimates of national immunization coverage (wunec) 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: 2020 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
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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.

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2020: Estimate based on reported administrative data. GoC=R+ D+
2019: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2018: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2017: Estimate based on coverage reported by national government supported by survey. Survey evidence of 95 percent based on 1 survey(s). Cuba Multiple Indicator Cluster Survey 2019 card or history results of 94 percent modified for recall bias to 95 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 88 percent and 3rd dose card only coverage of 87 percent. GoC=R+ S+ D+
2016: Estimate based on coverage reported by national government supported by survey. Survey evidence of 93 percent based on 1 survey(s). Cuba Multiple Indicator Cluster Survey 2019 card or history results of 92 percent modified for recall bias to 93 percent based on 1st dose card or history coverage of 94 percent, 1st dose card only coverage of 81 percent and 3rd dose card only coverage of 80 percent. GoC=R+ S+ D+
2015: Estimate based on interpolation between coverage reported by national government. Reported data excluded because 101 percent greater than 100 percent. GoC=R+ S+ D+
2014: Estimate based on interpolation between coverage reported by national government. Reported data excluded because 103 percent greater than 100 percent. GoC=R+ S+ D+
2013: Estimate based on coverage reported by national government. GoC=R+ S+ D+
2012: Estimate based on interpolation between data reported by national government supported by survey. Survey evidence of 97 percent based on 1 survey(s). Reported data excluded because 101 percent greater than 100 percent. Estimate challenged by: D-
2011: Estimate based on interpolation between data reported by national government supported by survey. Survey evidence of 91 percent based on 1 survey(s). Cuba Multiple Indicator Cluster Survey, 2014 card or history results of 89 percent modified for recall bias to 91 percent based on 1st dose card or history coverage of 94 percent, 1st dose card only coverage of 80 percent and 3rd dose card only coverage of 80 percent. Reported data excluded because 103 percent greater than 100 percent. Estimate challenged by: D-
2010: Estimate based on coverage reported by national government. GoC=R+ S+ D+
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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.

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-•••
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## Cuba - survey details

### 2017 Cuba Encuesta de Indicadores Mu´ltiples por Conglomerados 2019

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<th>Vaccine</th>
<th>Confirmation method</th>
<th>Coverage</th>
<th>Age cohort</th>
<th>Sample</th>
<th>Cards seen</th>
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### 2016 Cuba Encuesta de Indicadores Mu´ltiples por Conglomerados 2019

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July 8, 2021; page 17  
WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022  
data received as of July 6, 2021
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#### 2005 La Encuesta de Indicadores Múltiples por Conglomerados 2006 de Cuba

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<th>Coverage</th>
<th>Age cohort</th>
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</tbody>
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July 8, 2021; page 18  
WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2022  
data received as of July 6, 2021
Cuba - survey details

| Vaccine | Group | Coverage | Age | Dose |
|---------|-------|----------|-----|------|----------|
| HepB3   | C or H <12 months | 92.4 | 12-23 m | 1840 | 98 |
| HepB3   | Card | 92.5 | 12-23 m | 1840 | 98 |
| HepB3   | Card or History | 94.8 | 12-23 m | 1840 | 98 |
| HepB3   | History | 2.3 | 12-23 m | 1840 | 98 |
| Hib3    | C or H <12 months | 89 | 12-23 m | 1840 | 98 |
| Hib3    | Card | 93.1 | 12-23 m | 1840 | 98 |
| Hib3    | Card or History | 95 | 12-23 m | 1840 | 98 |
| Hib3    | History | 1.9 | 12-23 m | 1840 | 98 |
| MCV1    | C or H <12 months | 82.7 | 12-23 m | 1840 | 98 |
| MCV1    | Card | 83.2 | 12-23 m | 1840 | 98 |
| MCV1    | Card or History | 86.3 | 12-23 m | 1840 | 98 |
| MCV1    | History | 3.2 | 12-23 m | 1840 | 98 |
| Pol1    | C or H <12 months | 92.3 | 12-23 m | 1840 | 98 |
| Pol1    | Card | 65.2 | 12-23 m | 1840 | 98 |
| Pol1    | Card or History | 94.7 | 12-23 m | 1840 | 98 |
| Pol1    | History | 29.5 | 12-23 m | 1840 | 98 |

Further information and estimates for previous years are available at:
http://www.data.unicef.org/child-health/immunization