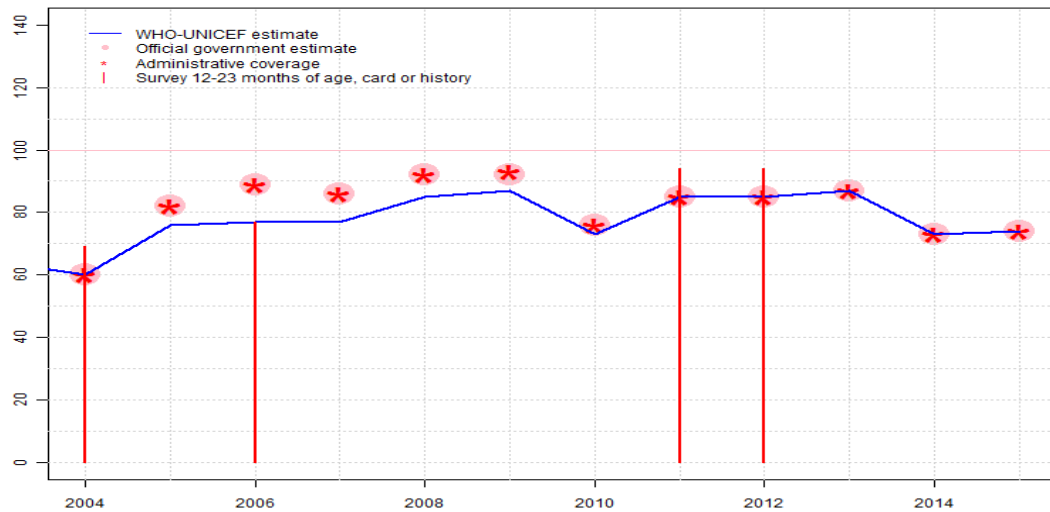


# Liberia - BCG

LBR - BCG



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	60	76	77	77	85	87	73	85	85	87	73	74
Estimate GoC	●●●	●	●	●	●	●	●	●	●	●●	●●	●●
Official	60	82	89	86	92	92	76	85	85	87	73	74
Administrative	60	82	89	86	92	93	76	85	85	87	73	74
Survey	69	NA	77	NA	NA	NA	NA	94	94	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.

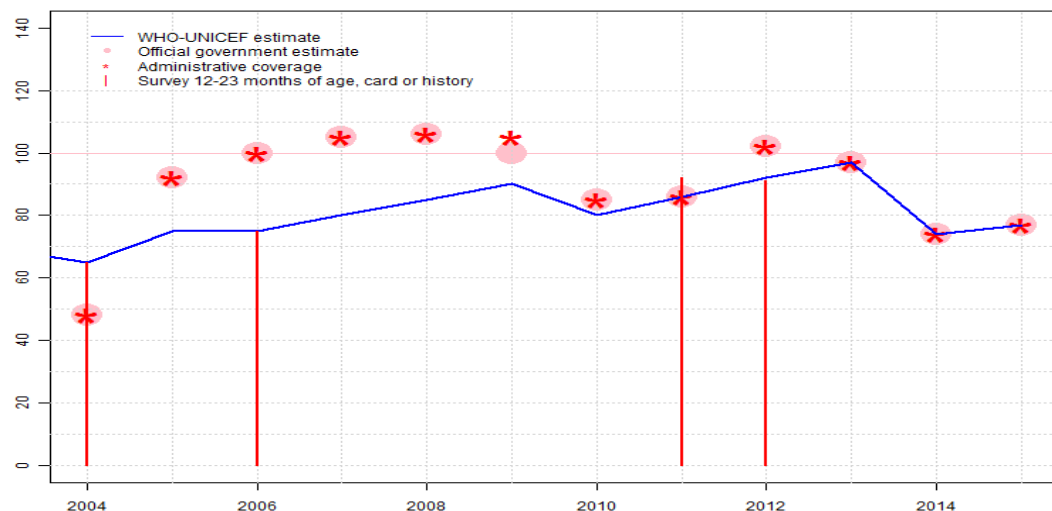
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2004: Estimate based on coverage reported by national government supported by survey. Survey evidence of 69 percent based on 1 survey(s). GoC=R+ S+ D+
- 2005: Reported data calibrated to 2004 and 2006 levels. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimate challenged by: D-
- 2006: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 77 percent based on 1 survey(s). Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2008: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2009: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2010: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 94 percent based on 1 survey(s). Estimate challenged by: D-
- 2012: Estimate based on coverage reported by national government supported by survey. Survey evidence of 94 percent based on 1 survey(s). Estimate challenged by: D-
- 2013: Estimate based on coverage reported by national government. GoC=Assigned by working group. .
- 2014: Estimate based on coverage reported by national government. Estimates based on reported data. Lower coverage the result of service delivery interruption due to Ebola virus disease outbreak. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+

# Liberia - DTP1

LBR - DTP1



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	65	75	75	80	85	90	80	86	92	97	74	77
Estimate GoC	•	•	•	•	•	•	•	•••	•	••	••	••
Official	48	92	100	105	106	100	85	86	102	97	74	77
Administrative	48	92	100	105	106	105	85	86	102	97	74	77
Survey	65	NA	75	NA	NA	NA	NA	92	91	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.

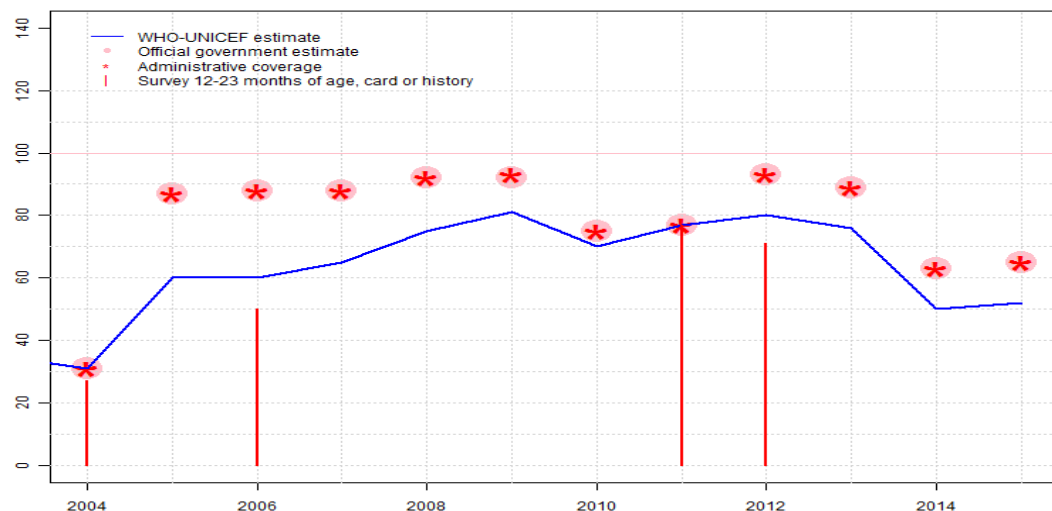
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2004: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 65 percent based on 1 survey(s). Estimate challenged by: D-R-
- 2005: The results of the 2006 survey are presumed to reflect accurately the coverage levels following the 2005 outreach activities. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimate challenged by: D-R-
- 2006: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 75 percent based on 1 survey(s). Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2006 and 2011 levels. Reported data excluded. 105 percent greater than 100 percent. Estimate challenged by: D-
- 2008: Reported data calibrated to 2006 and 2011 levels. Reported data excluded. 106 percent greater than 100 percent. Estimate challenged by: D-
- 2009: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2010: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 92 percent based on 1 survey(s). GoC=R+ S+ D+
- 2012: Estimate based on interpolation between data reported by national government supported by survey. Survey evidence of 91 percent based on 1 survey(s). Reported data excluded. 102 percent greater than 100 percent. Estimate challenged by: D-
- 2013: Estimate based on coverage reported by national government. GoC=Assigned by working group. .
- 2014: Estimate based on coverage reported by national government. Estimates based on reported data. Lower coverage the result of service delivery interruption due to Ebola virus disease outbreak. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+

# Liberia - DTP3

LBR - DTP3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	31	60	60	65	75	81	70	77	80	76	50	52
Estimate GoC	●●●	●	●	●	●	●	●	●●●	●	●	●	●
Official	31	87	88	88	92	92	75	77	93	89	63	65
Administrative	31	87	88	88	92	93	75	77	93	89	63	65
Survey	27	NA	50	NA	NA	NA	NA	77	71	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.

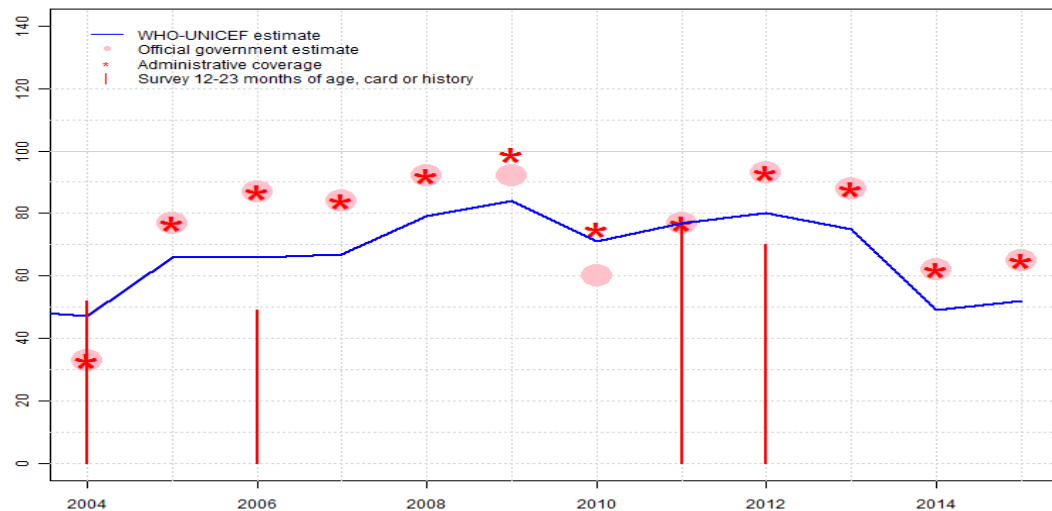
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2004: Estimate based on coverage reported by national government supported by survey. Survey evidence of 33 percent based on 1 survey(s). Liberia 2005 EPI Cluster Survey card or history results of 27 percent modified for recall bias to 33 percent based on 1st dose card or history coverage of 65 percent, 1st dose card only coverage of 35 percent and 3d dose card only coverage of 18 percent. GoC=R+ S+ D+
- 2005: The results of the 2006 survey are presumed to reflect accurately the coverage levels following the 2005 outreach activities. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimate challenged by: D-R-
- 2006: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 60 percent based on 1 survey(s). Liberia Demographic and Health Survey 2007 card or history results of 50 percent modified for recall bias to 60 percent based on 1st dose card or history coverage of 75 percent, 1st dose card only coverage of 46 percent and 3d dose card only coverage of 37 percent. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2008: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2009: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2010: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 76 percent based on 1 survey(s). Routine Immunization Survey, Liberia 2012 card or history results of 77 percent modified for recall bias to 76 percent based on 1st dose card or history coverage of 92 percent, 1st dose card only coverage of 70 percent and 3d dose card only coverage of 58 percent. GoC=R+ S+ D+
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 80 percent based on 1 survey(s). Liberia Demographic and Health Survey 2013 card or history results of 71 percent modified for recall bias to 80 percent based on 1st dose card or history coverage of 91 percent, 1st dose card only coverage of 57 percent and 3d dose card only coverage of 50 percent. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2012 levels. Estimate challenged by: D-
- 2014: Reported data calibrated to 2012 levels. Estimates based on reported data. Lower coverage the result of service delivery interruption due to Ebola virus disease outbreak. Estimate challenged by: D-
- 2015: Reported data calibrated to 2012 levels. Estimate challenged by: D-

# Liberia - Pol3

LBR - Pol3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	47	66	66	67	79	84	71	77	80	75	49	52
Estimate GoC	•	•	•	•	•	•	•	•••	•	•	•	•
Official	33	77	87	84	92	92	60	77	93	88	62	65
Administrative	33	77	87	84	92	99	75	77	93	88	62	65
Survey	52	NA	49	NA	NA	NA	NA	76	70	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.

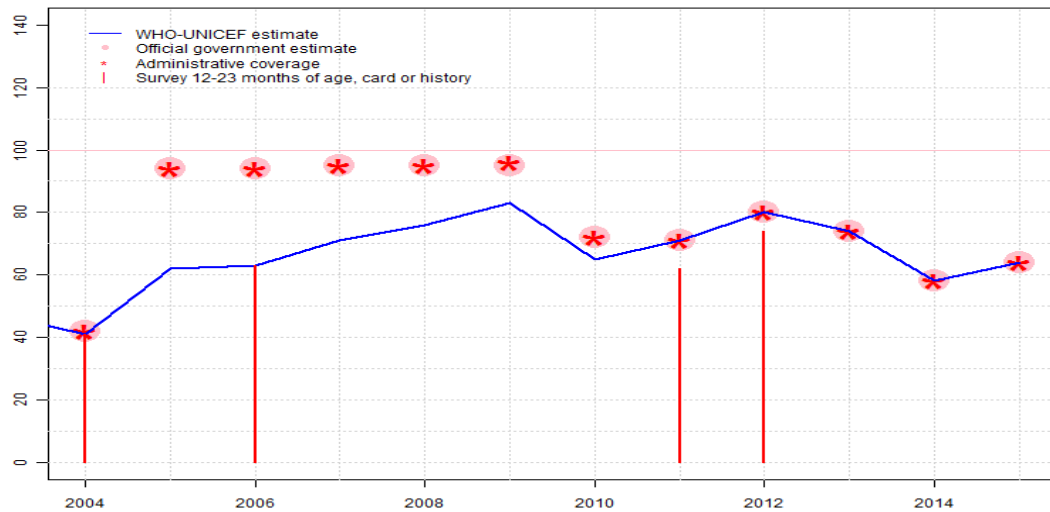
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2004: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 47 percent based on 1 survey(s). Liberia 2005 EPI Cluster Survey card or history results of 52 percent modified for recall bias to 47 percent based on 1st dose card or history coverage of 89 percent, 1st dose card only coverage of 34 percent and 3d dose card only coverage of 18 percent. Estimate challenged by: D-R-
- 2005: The results of the 2006 survey are presumed to reflect accurately the coverage levels following the 2005 outreach activities. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimate challenged by: D-R-
- 2006: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 66 percent based on 1 survey(s). Liberia Demographic and Health Survey 2007 card or history results of 49 percent modified for recall bias to 66 percent based on 1st dose card or history coverage of 83 percent, 1st dose card only coverage of 45 percent and 3d dose card only coverage of 36 percent. Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2008: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2009: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2010: Reported data calibrated to 2006 and 2011 levels. National coverage estimate ignored to maintain consistency with other vaccines. Estimate challenged by: S-
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 76 percent based on 1 survey(s). GoC=Assigned by working group. Consistency with other vaccines. Estimate supported by R+ S+ D+
- 2012: Estimate is based on estimated coverage for third dose of DTP containing vaccine. Liberia Demographic and Health Survey 2013 results ignored by working group. Survey coverage likely includes campaign doses. Liberia Demographic and Health Survey 2013 card or history results of 70 percent modified for recall bias to 84 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 58 percent and 3d dose card only coverage of 51 percent. Estimate challenged by: D-R-S-
- 2013: Reported data calibrated to 2012 levels. Estimate challenged by: D-S-
- 2014: Reported data calibrated to 2012 levels. Estimates based on reported data. Lower coverage the result of service delivery interruption due to Ebola virus disease outbreak. Estimate challenged by: D-S-
- 2015: Reported data calibrated to 2012 levels. Estimate challenged by: D-

# Liberia - MCV1

LBR - MCV1



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	41	62	63	71	76	83	65	71	80	74	58	64
Estimate GoC	•	•	•	•	•	•	•	•••	•••	•••	••	••
Official	42	94	94	95	95	95	72	71	80	74	58	64
Administrative	42	94	94	95	95	96	72	71	80	74	58	64
Survey	41	NA	63	NA	NA	NA	NA	62	74	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.

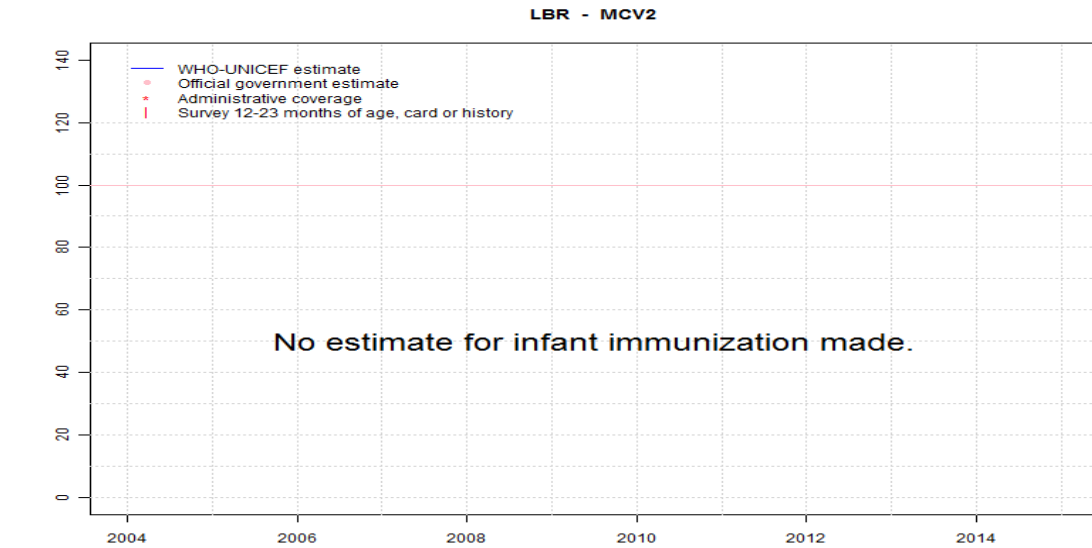
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2004: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 41 percent based on 1 survey(s). Reported data excluded. Decline in reported coverage from 53 percent to 42 percent with increase to 94 percent. Estimate challenged by: R-
- 2005: Reported data calibrated to 2004 and 2006 levels. During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimate challenged by: D-
- 2006: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 63 percent based on 1 survey(s). Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2008: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2009: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2010: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 62 percent based on 1 survey(s). GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government supported by survey. Survey evidence of 74 percent based on 1 survey(s). GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2014: Estimate based on coverage reported by national government. Estimates based on reported data. Lower coverage the result of service delivery interruption due to Ebola virus disease outbreak. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+



# Liberia - MCV2



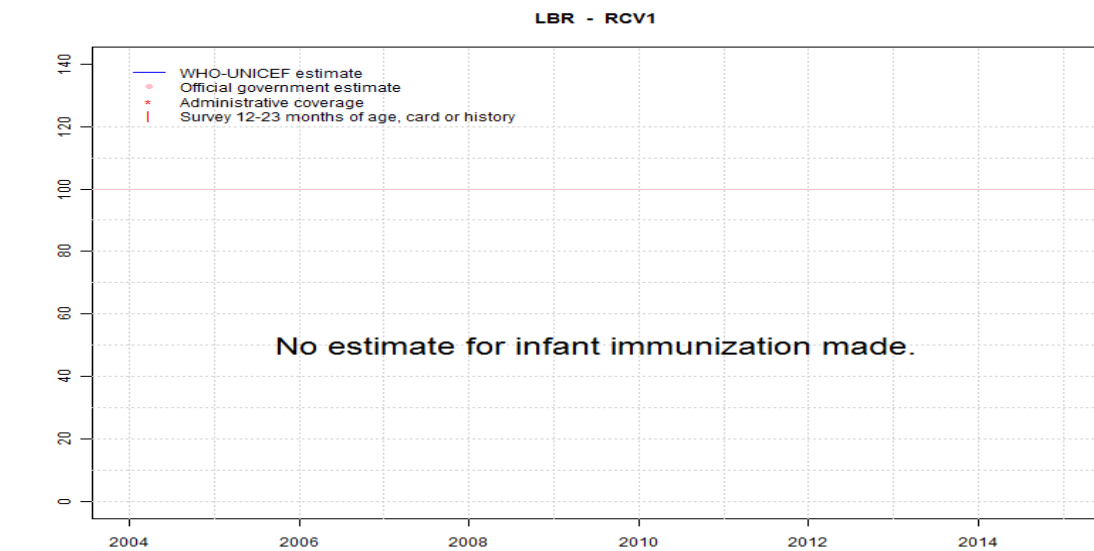
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.

# Liberia - RCV1



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
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

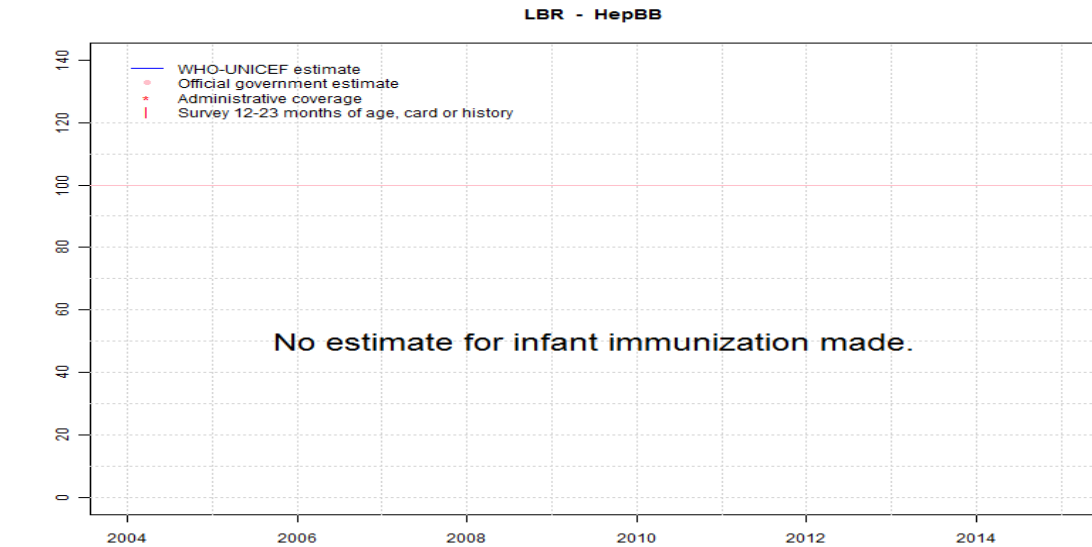
The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information that are of varying, and, in some instances, unknown quality. Beginning with the 2011 revision we describe the grade of confidence (GoC) we have in these estimates. As there is no underlying probability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



# Liberia - HepBB



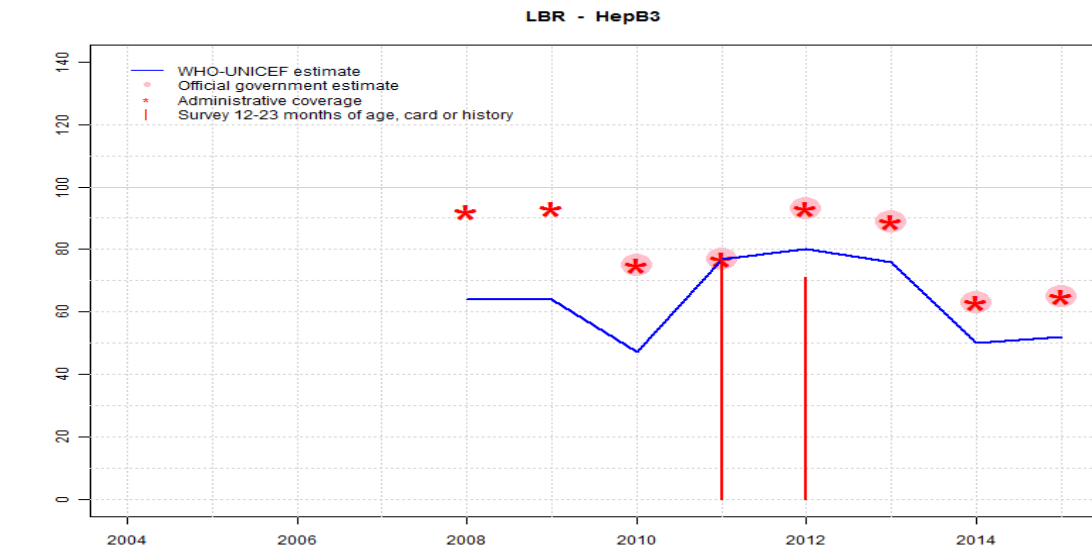
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.

# Liberia - HepB3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	64	64	47	77	80	76	50	52
Estimate GoC	NA	NA	NA	NA	•	•	•	•••	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	75	77	93	89	63	65
Administrative	NA	NA	NA	NA	92	93	75	77	93	89	63	65
Survey	NA	NA	NA	NA	NA	NA	NA	77	71	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.

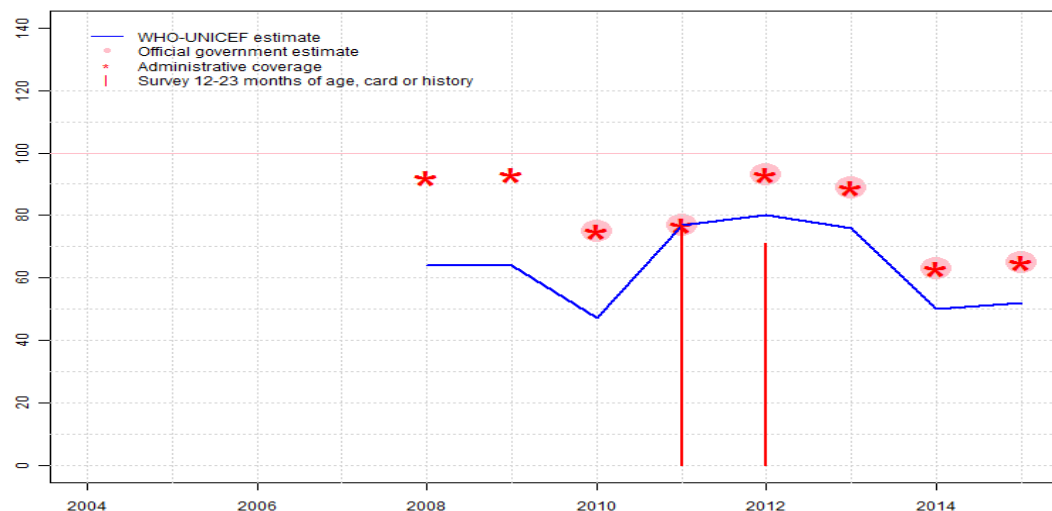
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2008: Estimate follows the DTP3 levels of coverage. HepB vaccine introduced in 2008 Vaccine presentation is DTP-HepB-Hib. Estimate challenged by: D-R-
- 2009: Estimate follows the DTP3 levels of coverage. Estimate challenged by: D-R-
- 2010: Estimate follows the DTP3 levels of coverage. Estimate challenged by: D-R-
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 76 percent based on 1 survey(s). Routine Immunization Survey, Liberia 2012 card or history results of 77 percent modified for recall bias to 76 percent based on 1st dose card or history coverage of 92 percent, 1st dose card only coverage of 70 percent and 3d dose card only coverage of 58 percent. GoC=R+ S+ D+
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 80 percent based on 1 survey(s). Liberia Demographic and Health Survey 2013 card or history results of 71 percent modified for recall bias to 80 percent based on 1st dose card or history coverage of 91 percent, 1st dose card only coverage of 57 percent and 3d dose card only coverage of 50 percent. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2012 levels. Estimate challenged by: D-
- 2014: Reported data calibrated to 2012 levels. Estimates based on reported data. Lower coverage the result of service delivery interruption due to Ebola virus disease outbreak. Estimate challenged by: D-
- 2015: Reported data calibrated to 2012 levels. Estimate challenged by: D-

# Liberia - Hib3

LBR - Hib3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	64	64	47	77	80	76	50	52
Estimate GoC	NA	NA	NA	NA	•	•	•	•••	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	75	77	93	89	63	65
Administrative	NA	NA	NA	NA	92	93	75	77	93	89	63	65
Survey	NA	NA	NA	NA	NA	NA	NA	77	71	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.

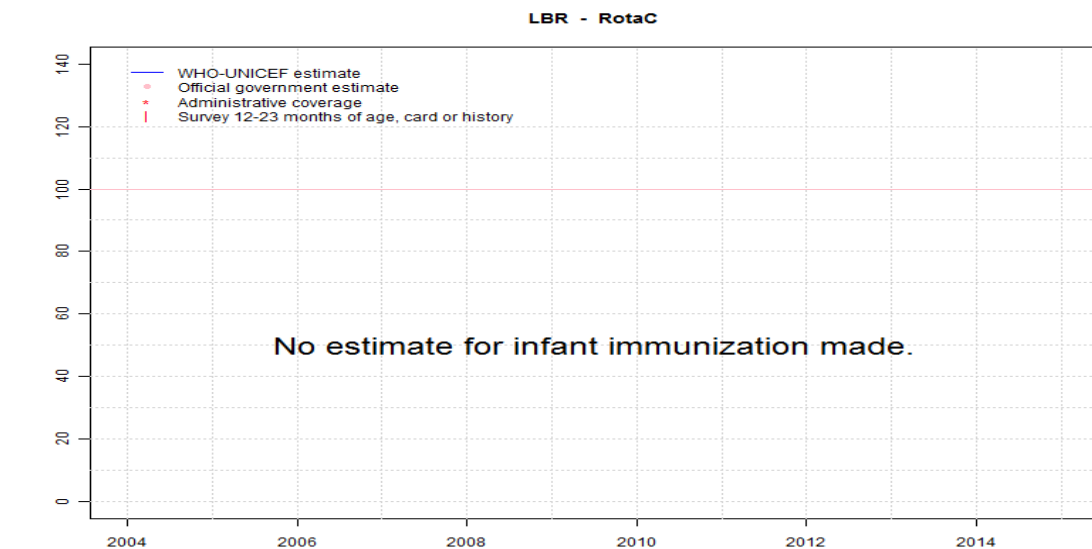
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

- 2008: Estimate follows the DTP3 levels of coverage. Hib vaccine introduced in 2008. Vaccine presentation is DTP-HepB-Hib. Estimate challenged by: D-R-
- 2009: Estimate follows the DTP3 levels of coverage. Estimate challenged by: D-R-
- 2010: Estimate follows the DTP3 levels of coverage. Estimate challenged by: D-R-
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 76 percent based on 1 survey(s). Routine Immunization Survey, Liberia 2012 card or history results of 77 percent modified for recall bias to 76 percent based on 1st dose card or history coverage of 92 percent, 1st dose card only coverage of 70 percent and 3d dose card only coverage of 58 percent. GoC=R+ S+ D+
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 80 percent based on 1 survey(s). Liberia Demographic and Health Survey 2013 card or history results of 71 percent modified for recall bias to 80 percent based on 1st dose card or history coverage of 91 percent, 1st dose card only coverage of 57 percent and 3d dose card only coverage of 50 percent. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2012 levels. Estimate challenged by: D-
- 2014: Reported data calibrated to 2012 levels. Estimates based on reported data. Lower coverage the result of service delivery interruption due to Ebola virus disease outbreak. Estimate challenged by: D-
- 2015: Reported data calibrated to 2012 levels. Estimate challenged by: D-

# Liberia - RotaC

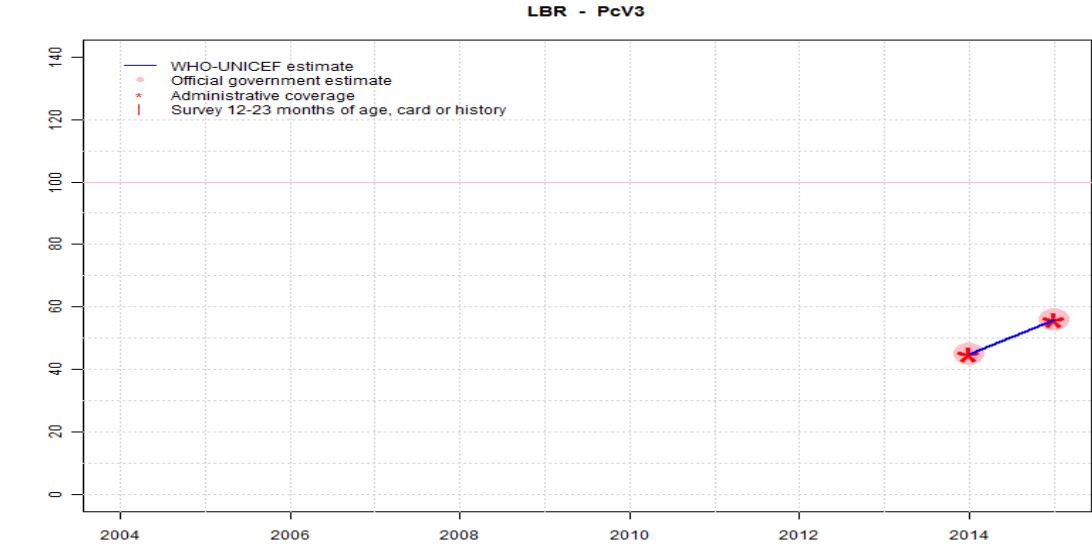


	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	56
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●●	●●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	56
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	45	56
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.

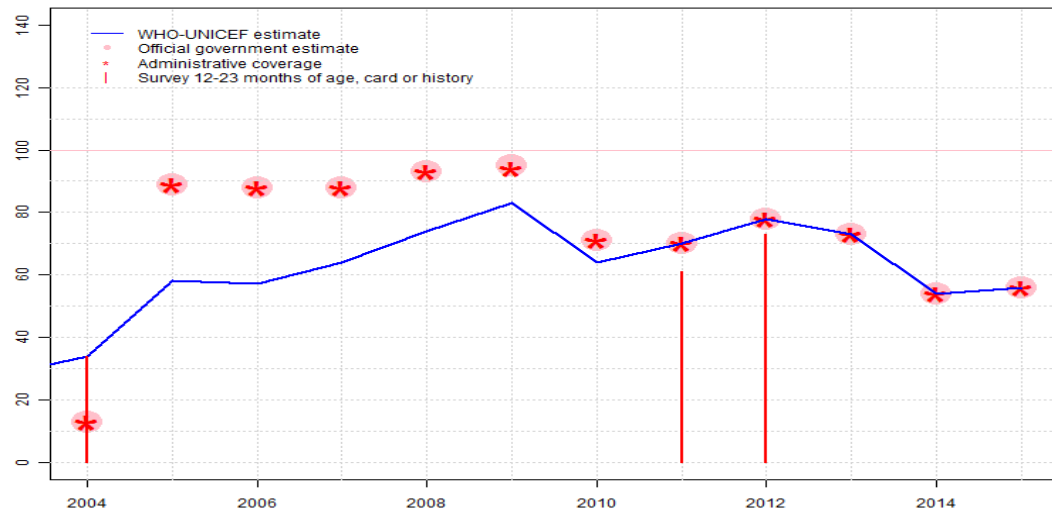
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

Description:

- 2014: Estimate based on coverage reported by national government. Pneumococcal conjugate vaccine introduced during 2014. Estimates based on reported data. Lower coverage the result of service delivery interruption due to Ebola virus disease outbreak. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+

# Liberia - YFV

LBR - YFV



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	34	58	57	64	74	83	64	70	78	73	54	56
Estimate GoC	•	•	•	•	•	•	•	•••	•••	•••	••	••
Official	13	89	88	88	93	95	71	70	78	73	54	56
Administrative	13	89	88	88	93	94	71	70	78	73	54	56
Survey	34	NA	NA	NA	NA	NA	NA	61	73	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:

- 2004: Estimate is calibrated from reported data using adjustment factor of 0.21, based on the 2005 survey. Estimate challenged by: D-R-
- 2005: Estimates from 2005 onward are based on the calibration factor applied to MCV coverage levels (-0.31). During 2005 Liberia carried out six multi-antigen immunization outreach activities. Estimate challenged by: D-R-
- 2006: Estimates from 2005 onward are based on the calibration factor applied to MCV coverage levels (-0.31). Estimate challenged by: D-R-
- 2007: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2008: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2009: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2010: Reported data calibrated to 2006 and 2011 levels. Estimate challenged by: D-
- 2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 61 percent based on 1 survey(s). GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government supported by survey. Survey evidence of 73 percent based on 1 survey(s). GoC=R+ S+ D+
- 2013: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2014: Estimate based on coverage reported by national government. Estimates based on reported data. Lower coverage the result of service delivery interruption due to Ebola virus disease outbreak. GoC=R+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+

# Liberia - survey details

## 2012 Liberia Demographic and Health Survey 2013

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	93	12-23 m	1272	58
BCG	Card	58	12-23 m	743	58
BCG	Card or History	94	12-23 m	1272	58
BCG	History	36	12-23 m	529	58
DTP1	C or H <12 months	91	12-23 m	1272	58
DTP1	Card	57	12-23 m	743	58
DTP1	Card or History	91	12-23 m	1272	58
DTP1	History	34	12-23 m	529	58
DTP3	C or H <12 months	68	12-23 m	1272	58
DTP3	Card	50	12-23 m	743	58
DTP3	Card or History	71	12-23 m	1272	58
DTP3	History	22	12-23 m	529	58
HepB1	C or H <12 months	91	12-23 m	1272	58
HepB1	Card	57	12-23 m	743	58
HepB1	Card or History	91	12-23 m	1272	58
HepB1	History	34	12-23 m	529	58
HepB3	C or H <12 months	68	12-23 m	1272	58
HepB3	Card	50	12-23 m	743	58
HepB3	Card or History	71	12-23 m	1272	58
HepB3	History	22	12-23 m	529	58
Hib1	C or H <12 months	91	12-23 m	1272	58
Hib1	Card	57	12-23 m	743	58
Hib1	Card or History	91	12-23 m	1272	58
Hib1	History	34	12-23 m	529	58
Hib3	C or H <12 months	68	12-23 m	1272	58
Hib3	Card	50	12-23 m	743	58
Hib3	Card or History	71	12-23 m	1272	58
Hib3	History	22	12-23 m	529	58
MCV1	C or H <12 months	65	12-23 m	1272	58
MCV1	Card	44	12-23 m	743	58
MCV1	Card or History	74	12-23 m	1272	58
MCV1	History	30	12-23 m	529	58
Pol1	C or H <12 months	95	12-23 m	1272	58
Pol1	Card	58	12-23 m	743	58
Pol1	Card or History	96	12-23 m	1272	58
Pol1	History	38	12-23 m	529	58
Pol3	C or H <12 months	67	12-23 m	1272	58

Pol3	Card	51	12-23 m	743	58
Pol3	Card or History	70	12-23 m	1272	58
Pol3	History	19	12-23 m	529	58
YFV	C or H <12 months	63	12-23 m	1272	58
YFV	Card	43	12-23 m	743	58
YFV	Card or History	73	12-23 m	1272	58
YFV	History	29	12-23 m	529	58

## 2011 Liberia Demographic and Health Survey 2013

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	88	24-35 m	1085	58
DTP1	C or H <12 months	87	24-35 m	1085	58
DTP3	C or H <12 months	64	24-35 m	1085	58
HepB1	C or H <12 months	87	24-35 m	1085	58
HepB3	C or H <12 months	64	24-35 m	1085	58
Hib1	C or H <12 months	87	24-35 m	1085	58
Hib3	C or H <12 months	64	24-35 m	1085	58
MCV1	C or H <12 months	61	24-35 m	1085	58
Pol1	C or H <12 months	92	24-35 m	1085	58
Pol3	C or H <12 months	64	24-35 m	1085	58
YFV	C or H <12 months	60	24-35 m	1085	58

## 2011 Routine Immunization Survey, Liberia 2012

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	94	12-23 m	1140	77
BCG	Card or Scar	90	12-23 m	1140	77
DTP1	Card	70	12-23 m	1140	77
DTP1	Card or History	92	12-23 m	1140	77
DTP3	Card	58	12-23 m	1140	77
DTP3	Card or History	77	12-23 m	1140	77
HepB1	Card	70	12-23 m	1140	77
HepB1	Card or History	92	12-23 m	1140	77
HepB3	Card	58	12-23 m	1140	77
HepB3	Card or History	77	12-23 m	1140	77
Hib1	Card	70	12-23 m	1140	77
Hib1	Card or History	92	12-23 m	1140	77



# Liberia - survey details

Hib3	Card	58	12-23 m	1140	77
Hib3	Card or History	77	12-23 m	1140	77
MCV1	Card	46	12-23 m	1140	77
MCV1	Card or History	62	12-23 m	1140	77
Pol1	Card	70	12-23 m	1140	77
Pol1	Card or History	92	12-23 m	1140	77
Pol3	Card	58	12-23 m	1140	77
Pol3	Card or History	76	12-23 m	1140	77
YFV	Card	45	12-23 m	1140	77
YFV	Card or History	61	12-23 m	1140	77

## 2010 Liberia Demographic and Health Survey 2013

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	87	36-47 m	1198	58
DTP1	C or H <12 months	83	36-47 m	1198	58
DTP3	C or H <12 months	58	36-47 m	1198	58
HepB1	C or H <12 months	83	36-47 m	1198	58
HepB3	C or H <12 months	58	36-47 m	1198	58
Hib1	C or H <12 months	83	36-47 m	1198	58
Hib3	C or H <12 months	58	36-47 m	1198	58
MCV1	C or H <12 months	61	36-47 m	1198	58
Pol1	C or H <12 months	85	36-47 m	1198	58
Pol3	C or H <12 months	55	36-47 m	1198	58
YFV	C or H <12 months	61	36-47 m	1198	58

## 2009 Liberia Demographic and Health Survey 2013

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	88	48-59 m	1159	58
DTP1	C or H <12 months	81	48-59 m	1159	58
DTP3	C or H <12 months	56	48-59 m	1159	58
HepB1	C or H <12 months	81	48-59 m	1159	58
HepB3	C or H <12 months	56	48-59 m	1159	58
Hib1	C or H <12 months	81	48-59 m	1159	58
Hib3	C or H <12 months	56	48-59 m	1159	58
MCV1	C or H <12 months	54	48-59 m	1159	58

Pol1	C or H <12 months	86	48-59 m	1159	58
Pol3	C or H <12 months	55	48-59 m	1159	58
YFV	C or H <12 months	51	48-59 m	1159	58

## 2006 Liberia Demographic and Health Survey 2007

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	76	12-23 m	977	48
BCG	Card	47	12-23 m	977	48
BCG	Card or History	77	12-23 m	977	48
BCG	History	30	12-23 m	977	48
DTP1	C or H <12 months	75	12-23 m	977	48
DTP1	Card	46	12-23 m	977	48
DTP1	Card or History	75	12-23 m	977	48
DTP1	History	29	12-23 m	977	48
DTP3	C or H <12 months	47	12-23 m	977	48
DTP3	Card	37	12-23 m	977	48
DTP3	Card or History	50	12-23 m	977	48
DTP3	History	13	12-23 m	977	48
MCV1	C or H <12 months	53	12-23 m	977	48
MCV1	Card	38	12-23 m	977	48
MCV1	Card or History	63	12-23 m	977	48
MCV1	History	25	12-23 m	977	48
Pol1	C or H <12 months	82	12-23 m	977	48
Pol1	Card	45	12-23 m	977	48
Pol1	Card or History	83	12-23 m	977	48
Pol1	History	38	12-23 m	977	48
Pol3	C or H <12 months	47	12-23 m	977	48
Pol3	Card	36	12-23 m	977	48
Pol3	Card or History	49	12-23 m	977	48
Pol3	History	13	12-23 m	977	48

## 2004 Liberia 2005 EPI Cluster Survey

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	58	12-23 m	2907	44
BCG	Card or history	69	12-23 m	2907	44

# Liberia - survey details

DTP1	Card	35	12-23 m	2907	44
DTP1	Card or history	65	12-23 m	2907	44
DTP3	Card	18	12-23 m	2907	44
DTP3	Card or history	27	12-23 m	2907	44
MCV1	Card	25	12-23 m	2907	44
MCV1	Card or history	41	12-23 m	2907	44
Pol1	Card	34	12-23 m	2907	44
Pol1	Card or history	89	12-23 m	2907	44
Pol3	Card	18	12-23 m	2907	44
Pol3	Card or history	52	12-23 m	2907	44
YFV	Card	18	12-23 m	2907	44
YFV	Card or history	34	12-23 m	2907	44

## 1999 IMCI Household Baseline, Preliminary Report, 2000

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	86	12-23 m	89	-
DTP1	Card or History	91	12-23 m	89	-
DTP3	Card or History	64	12-23 m	89	-
MCV1	Card or History	79	12-23 m	89	-
Pol1	Card or History	94	12-23 m	89	-
Pol3	Card or History	74	12-23 m	89	-

## 1999 Liberia National Nutrition Survey 1999-2000, 2001

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)

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	73	12-23 m	1000	27
BCG	Card	50	12-23 m	1000	27
BCG	Card or History	82	12-23 m	1000	27
BCG	History	33	12-23 m	1000	27
DTP1	C or H <12 months	74	12-23 m	1000	27
DTP1	Card	50	12-23 m	1000	27
DTP1	Card or History	84	12-23 m	1000	27
DTP1	History	34	12-23 m	1000	27
DTP3	C or H <12 months	38	12-23 m	1000	27
DTP3	Card	30	12-23 m	1000	27
DTP3	Card or History	44	12-23 m	1000	27
DTP3	History	14	12-23 m	1000	27
MCV1	C or H <12 months	50	12-23 m	1000	27
MCV1	Card	39	12-23 m	1000	27
MCV1	Card or History	69	12-23 m	1000	27
MCV1	History	30	12-23 m	1000	27
Pol1	C or H <12 months	84	12-23 m	1000	27
Pol1	Card	50	12-23 m	1000	27
Pol1	Card or History	94	12-23 m	1000	27
Pol1	History	44	12-23 m	1000	27
Pol3	C or H <12 months	48	12-23 m	1000	27
Pol3	Card	31	12-23 m	1000	27
Pol3	Card or History	55	12-23 m	1000	27
Pol3	History	24	12-23 m	1000	27

## **Liberia**

### **WHO/UNICEF Estimates of Protection at Birth (PAB) against tetanus**

In countries where tetanus is recommended for girls and women coverage is usually reported as "TT2+", i.e. the proportion of (pregnant) women who have received their second or superior TT dose in a given year. TT2 + coverage, however, can under-represent the actual proportion of births that are protected against tetanus as it does not include women who have previously received protective doses, women who received one dose without documentation of previous doses, and women who received doses in TT (or Td) supplemental immunization activities (SIA). In addition, girls who have received DTP in their childhood and are entering childbearing age, may be protected with TT booster doses.

WHO and UNICEF have developed a model that takes into account the above scenarios, and calculates the proportion of births in a given year that can be considered as having been protected against tetanus - "Protection at Birth".

In this model, annual cohorts of women are followed from infancy through their life. A proportion receives DTP in infancy (estimated based on the WHO-UNICEF estimates of DTP3 coverage). In addition some of these women also receive TT through routine services when they are pregnant and may also receive TT during SIAs. The model also adjusts reported data, taking into account coverage patterns in other years, and/or results available through surveys. The duration of protection is then calculated, based on WHO estimates of the duration of protection by doses ever received. The proportion of births that are protected against tetanus as a result of maternal immunization reflects the tetanus immunization received by the mother throughout her life rather than simply the TT immunizations received during the current pregnancy.

The model was used in the mid to late 2000. Currently, the coverage series developed by the model is used as the baseline, and efforts are made to obtain data from all sources that include the JRF and reported trend over the years, routine PAB reporting and its trend over the years, data from surveys (DHS, MICS, EPI), whether countries have been validated for the attainment of maternal and neonatal tetanus elimination and what the TT coverage figures are from the survey etc and all the information is used to arrive at an estimate of the protection-at-birth from TT vaccination.

<b>Year</b>	<b>PAB coverage estimate (%)</b>
2004	59
2005	60
2006	73
2007	90
2008	91
2009	91
2010	91
2011	91
2012	91
2013	91
2014	89
2015	89

---

<sup>1</sup> This model is described in: Griffiths U., Wolfson L., Quddus A., Younus M., Hafiz R.. Incremental cost-effectiveness of supplementary immunization activities to prevent neo-natal tetanus in Pakistan. Bulletin of the World Health Organization 2004; 82:643-651.