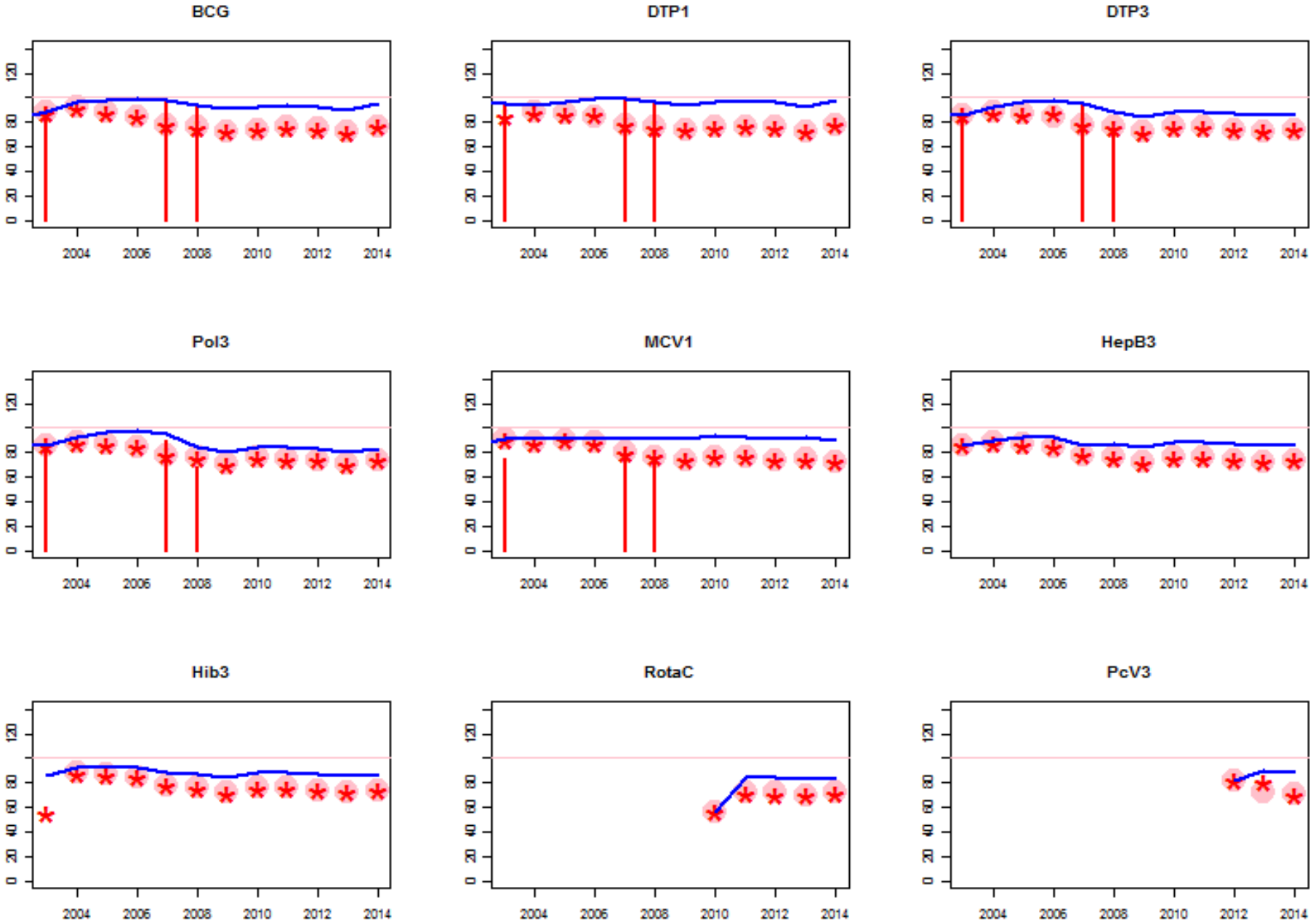
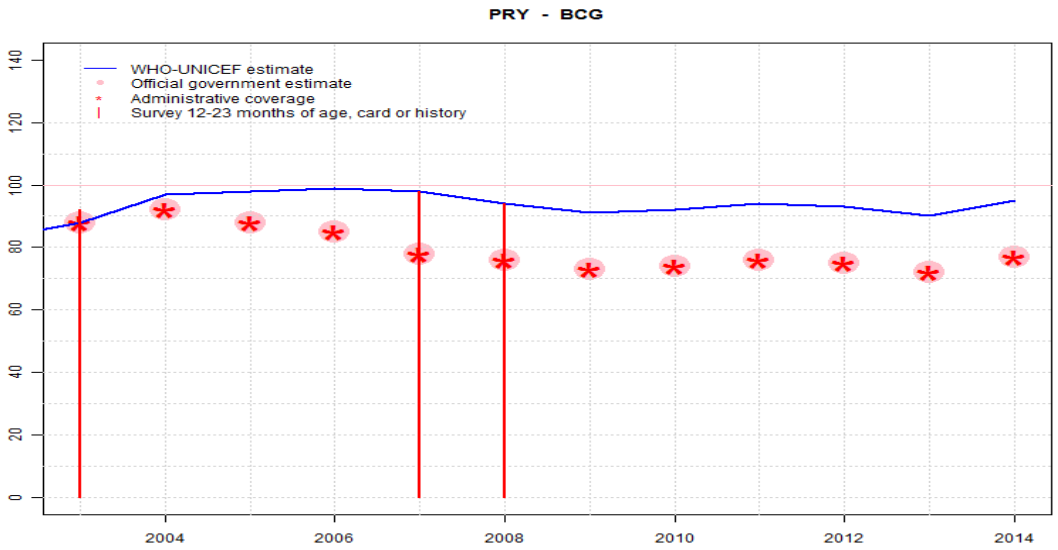

BCG
DTP1
DTP3
Pol3
MCV1
HepB3
Hib3
RotaC
PcV3
0
20
40
60
80
120
2004
2006
2008
2010
2012
2014

Paraguay - BCG



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	88	97	98	99	98	94	91	92	94	93	90	95
Estimate GoC	●●●	●●	●	●	●	●	●	●	●	●	●	●
Official	88	92	88	85	78	76	73	74	76	75	72	77
Administrative	88	92	88	85	78	76	73	74	76	75	72	77
Survey	92	NA	NA	NA	98	94	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: 2012 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:

2003: 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+

2004: Reported data calibrated to 2003 and 2007 levels. GoC=S+ D+

2005: Reported data calibrated to 2003 and 2007 levels. Estimate challenged by: D-

2006: Reported data calibrated to 2003 and 2007 levels. Estimate challenged by: D-

2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 98 percent based on 1 survey(s). Estimate challenged by: D-R-

2008: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 94 percent based on 1 survey(s). Estimate challenged by: D-R-

2009: Reported data calibrated to 2008 levels. An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office. Estimate challenged by: D-

2010: Reported data calibrated to 2008 levels. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Estimate challenged by: D-

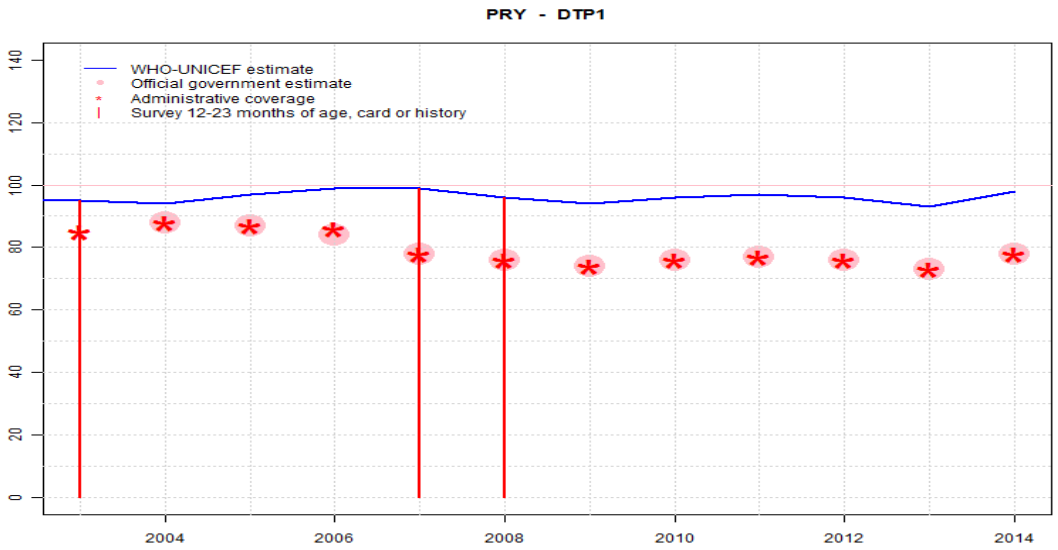
2011: Reported data calibrated to 2008 levels. Estimate challenged by: D-

2012: Reported data calibrated to 2008 levels. Estimate challenged by: D-

2013: Reported data calibrated to 2008 levels. Estimate challenged by: D-

2014: Reported data calibrated to 2008 levels. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

Paraguay - DTP1



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	95	94	97	99	99	96	94	96	97	96	93	98
Estimate GoC	•	••	••	•	•	•	•	•	•	•	•	•
Official	NA	88	87	84	78	76	74	76	77	76	73	78
Administrative	85	88	87	86	78	76	74	76	77	76	73	78
Survey	95	NA	NA	NA	99	96	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: 2012 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.

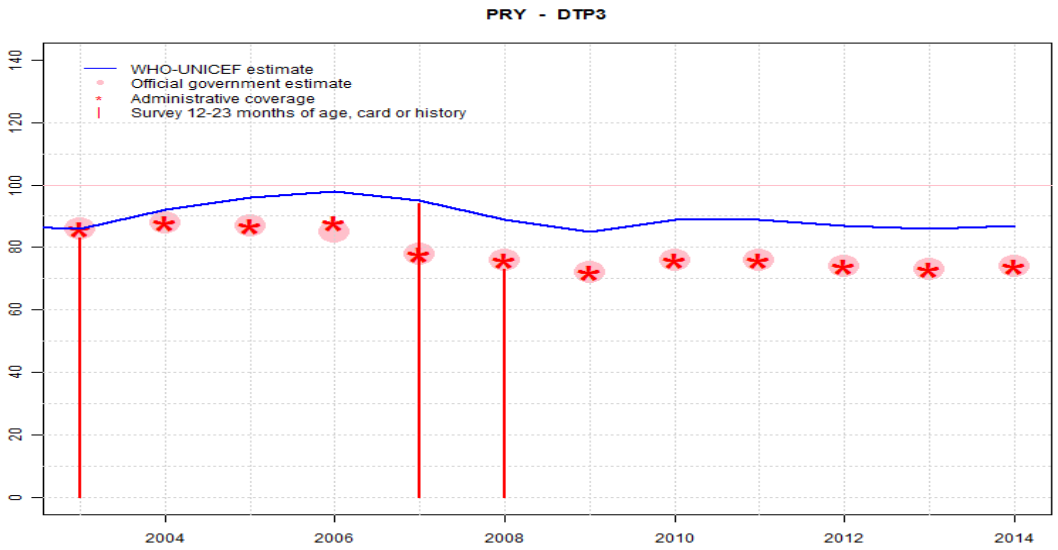
● There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

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:

2003: DTP1 coverage estimated based on DTP3 coverage of 86. Estimate challenged by: R-
2004: Reported data calibrated to 2003 and 2007 levels. GoC=S+ D+
2005: Reported data calibrated to 2003 and 2007 levels. GoC=S+ D+
2006: Reported data calibrated to 2003 and 2007 levels. Estimate challenged by: D-
2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 99 percent based on 1 survey(s). Estimate challenged by: D-R-
2008: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 96 percent based on 1 survey(s). Estimate challenged by: D-R-
2009: Reported data calibrated to 2008 levels. An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office. Estimate challenged by: D-
2010: Reported data calibrated to 2008 levels. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Estimate challenged by: D-
2011: Reported data calibrated to 2008 levels. Estimate challenged by: D-
2012: Reported data calibrated to 2008 levels. Estimate challenged by: D-
2013: Reported data calibrated to 2008 levels. Estimate challenged by: D-
2014: Reported data calibrated to 2008 levels. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

Paraguay - DTP3



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	86	92	96	98	95	89	85	89	89	87	86	87
Estimate GoC	●●●	●●	●●	●●	●	●	●	●	●	●	●	●
Official	86	88	87	85	78	76	72	76	76	74	73	74
Administrative	86	88	87	88	78	76	72	76	76	74	73	74
Survey	83	NA	NA	NA	94	73	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: 2012 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:

2003: Estimate based on coverage reported by national government supported by survey. Survey evidence of 83 percent based on 1 survey(s). GoC=R+ S+ D+

2004: Reported data calibrated to 2003 and 2007 levels. GoC=S+ D+

2005: Reported data calibrated to 2003 and 2007 levels. GoC=S+ D+

2006: Reported data calibrated to 2003 and 2007 levels. GoC=S+ D+

2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 95 percent based on 1 survey(s). Survey of Demography and Reproductive and Sexual Health, ENDSSR-2008 card or history results of 94 percent modifed for recall bias to 95 percent based on 1st dose card or history coverage of 99 percent, 1st dose card only coverage of 71 percent and 3d dose card only coverage of 68 percent. Estimate challenged by: D-R-

2008: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 89 percent based on 1 survey(s). Continuous Demographic and Health Survey 2009 card or history results of 73 percent modifed for recall bias to 89 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 65 percent and 3d dose card only coverage of 60 percent. Estimate challenged by: D-R-

2009: Reported data calibrated to 2008 levels. An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office. Estimate challenged by: D-

2010: Reported data calibrated to 2008 levels. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Estimate challenged by: D-

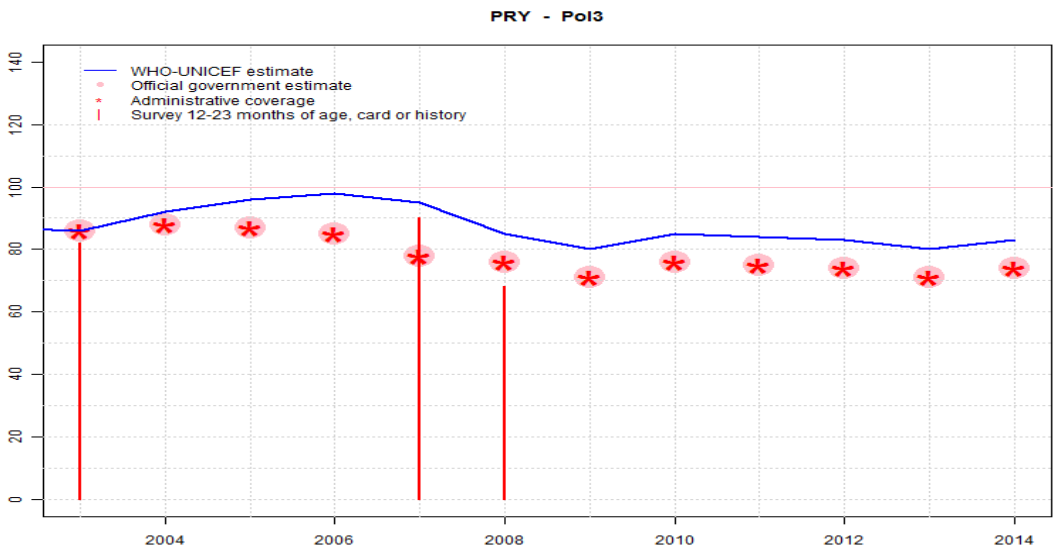
2011: Reported data calibrated to 2008 levels. Estimate challenged by: D-

2012: Reported data calibrated to 2008 levels. Estimate challenged by: D-

2013: Reported data calibrated to 2008 levels. Estimate challenged by: D-

2014: Reported data calibrated to 2008 levels. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

Paraguay - Pol3



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	86	92	96	98	95	85	80	85	84	83	80	83
Estimate GoC	●●●	●●	●●	●	●	●	●●	●	●	●	●	●
Official	86	88	87	85	78	76	71	76	75	74	71	74
Administrative	86	88	87	85	78	76	71	76	75	74	71	74
Survey	82	NA	NA	NA	90	68	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: 2012 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:

2003: Estimate based on coverage reported by national government supported by survey. Survey evidence of 82 percent based on 1 survey(s). GoC=R+ S+ D+

2004: Reported data calibrated to 2003 and 2007 levels. GoC=S+ D+

2005: Reported data calibrated to 2003 and 2007 levels. GoC=S+ D+

2006: Reported data calibrated to 2003 and 2007 levels. Estimate challenged by: D-

2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 95 percent based on 1 survey(s). Survey of Demography and Reproductive and Sexual Health, ENDSSR-2008 card or history results of 90 percent modifed for recall bias to 95 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 68 percent and 3d dose card only coverage of 67 percent. Estimate challenged by: D-R-

2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 95 percent based on 1 survey(s). Survey of Demography and Reproductive and Sexual Health, ENDSSR-2008 card or history results of 90 percent modifed for recall bias to 95 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 68 percent and 3d dose card only coverage of 67 percent. Estimate challenged by: D-R-

2008: Estimate based on Survey results. Continuous Demographic and Health Survey 2009 card or history results of 68 percent modifed for recall bias to 85 percent based on 1st dose card or history coverage of 92 percent, 1st dose card only coverage of 63 percent and 3d dose card only coverage of 58 percent. Estimate challenged by: R-

2009: Reported data calibrated to 2008 levels. An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office. GoC=S+ D+

2010: Reported data calibrated to 2008 levels. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Estimate challenged by: D-

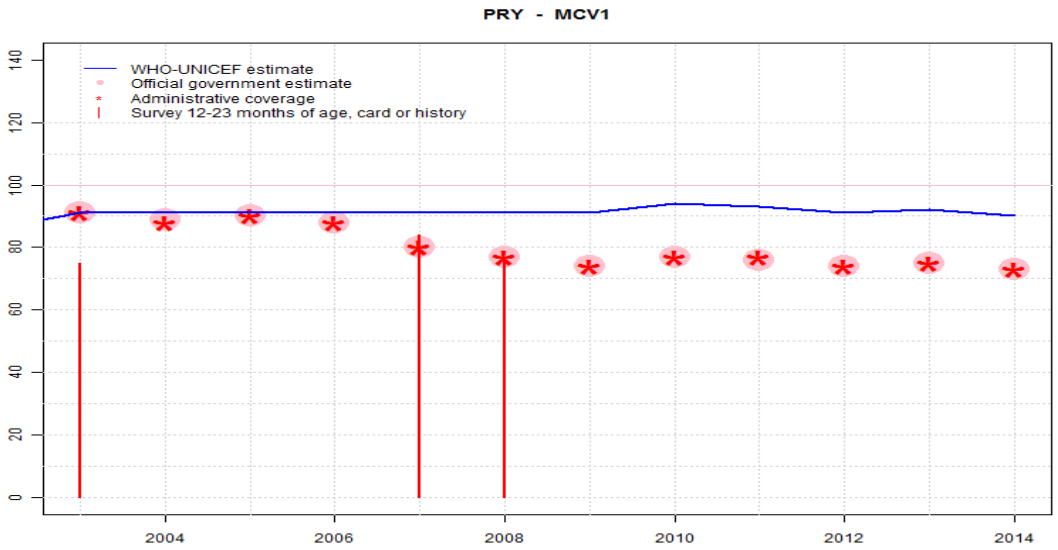
2011: Reported data calibrated to 2008 levels. Estimate challenged by: D-

2012: Reported data calibrated to 2008 levels. Estimate challenged by: D-

2013: Reported data calibrated to 2008 levels. Estimate challenged by: D-

2014: Reported data calibrated to 2008 levels. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

Paraguay - MCV1



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	91	91	91	91	91	91	91	94	93	91	92	90
Estimate GoC	•	•	•	•	•	•	•	•	•	•	•	•
Official	91	89	90	88	80	77	74	77	76	74	75	73
Administrative	91	88	90	88	80	77	74	77	77	74	75	73
Survey	75	NA	NA	NA	84	76	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: 2012 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:

2003: Estimate based on reported data. Survey of Demography and Reproductive and Sexual Health, ENDSSR-2004 results ignored by working group. Measles vaccination is recommended between 12 and 23 months of age. Survey cohort under-estimates coverage. Estimate challenged by: S-

2004: Estimate based on interpolation between 2003 and 2009 levels. Estimate based on 2003 reported data. 2003 reported data supported by survey for other vaccines. Estimate challenged by: R-S-

2005: Estimate based on interpolation between 2003 and 2009 levels. Estimate based on 2003 reported data. 2003 reported data supported by survey for other vaccines. Estimate challenged by: R-S-

2006: Estimate based on interpolation between 2003 and 2009 levels. Estimate based on 2003 reported data. 2003 reported data supported by survey for other vaccines. Estimate challenged by: R-S-

2007: Estimate based on interpolation between 2003 and 2009 levels. Estimate based on 2003 reported data. 2003 reported data supported by survey for other vaccines. Survey of Demography and Reproductive and Sexual Health, ENDSSR-2008 results ignored by working group. Measles vaccine is recommended at 12-23 months of age. Survey results underestimate coverage. Estimate challenged by: D-R-S-

2008: Estimate based on interpolation between 2003 and 2009 levels. Estimate based on 2003 reported data. 2003 reported data supported by survey for other vaccines. Continuous Demographic and Health Survey 2009 results ignored by working group. Measles vaccine is recommended at 12-23 months of age. Survey results underestimate coverage. Estimate challenged by: D-R-S-

2009: Administrative coverage based on population estimate under review. An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office. Estimate challenged by: D-R-S-

2010: Reported data calibrated to 2009 levels. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Estimate challenged by: D-S-

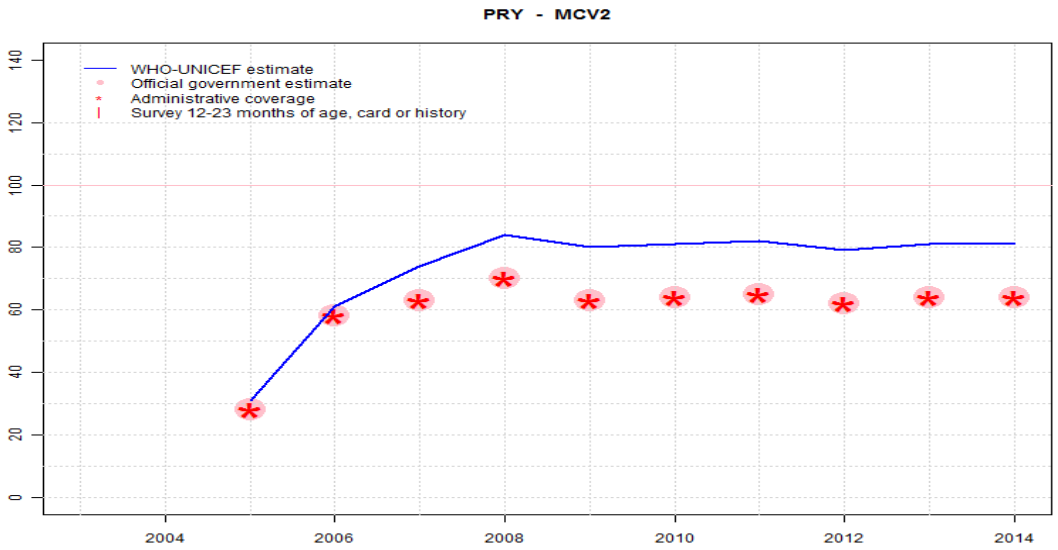
2011: Reported data calibrated to 2009 levels. Estimate challenged by: D-

2012: Reported data calibrated to 2009 levels. Estimate challenged by: D-

2013: Reported data calibrated to 2009 levels. Estimate challenged by: D-

2014: Reported data calibrated to 2009 levels. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

Paraguay - MCV2



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	NA	NA	31	61	74	84	80	81	82	79	81	81
Estimate GoC	NA	NA	••	•	•	•	•	•	•	•	•	•
Official	NA	NA	28	58	63	70	63	64	65	62	64	64
Administrative	NA	NA	28	58	63	70	63	64	65	62	64	64
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: 2012 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.

2005: Reported data calibrated to 2006 levels. MCV second dose introduced during 2004, reporting started in 2005 GoC=D+

2006: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Estimate challenged by: D-R-

2007: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Estimate challenged by: D-R-

2008: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Estimate challenged by: D-R-

2009: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office. Estimate challenged by: D-R-

2010: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Estimate challenged by: D-R-

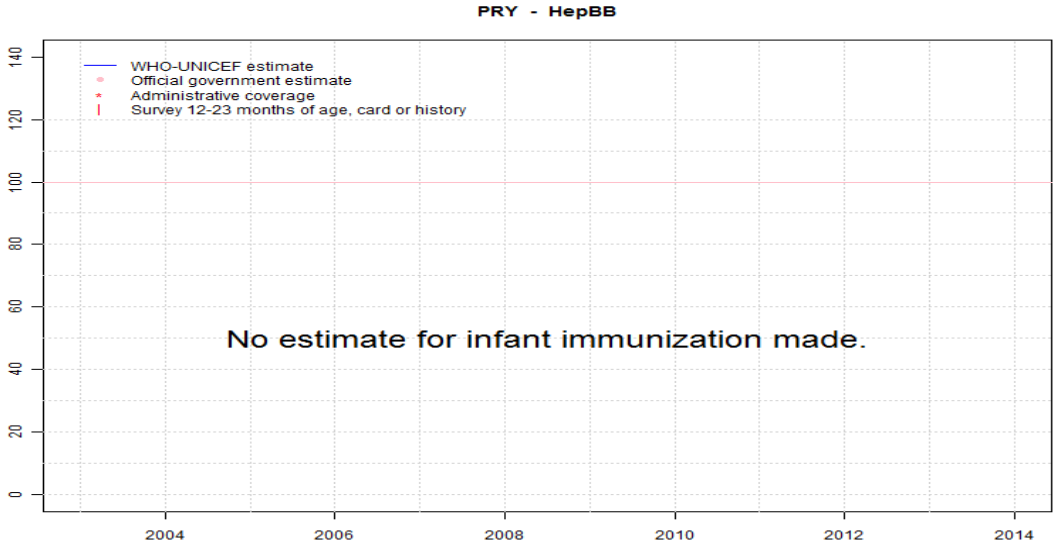
2011: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Estimate challenged by: D-R-

2012: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Estimate challenged by: D-R-

2013: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Estimate challenged by: D-R-

2014: Reported data calibrated to 2013 levels. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

Paraguay - HepBB



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
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.

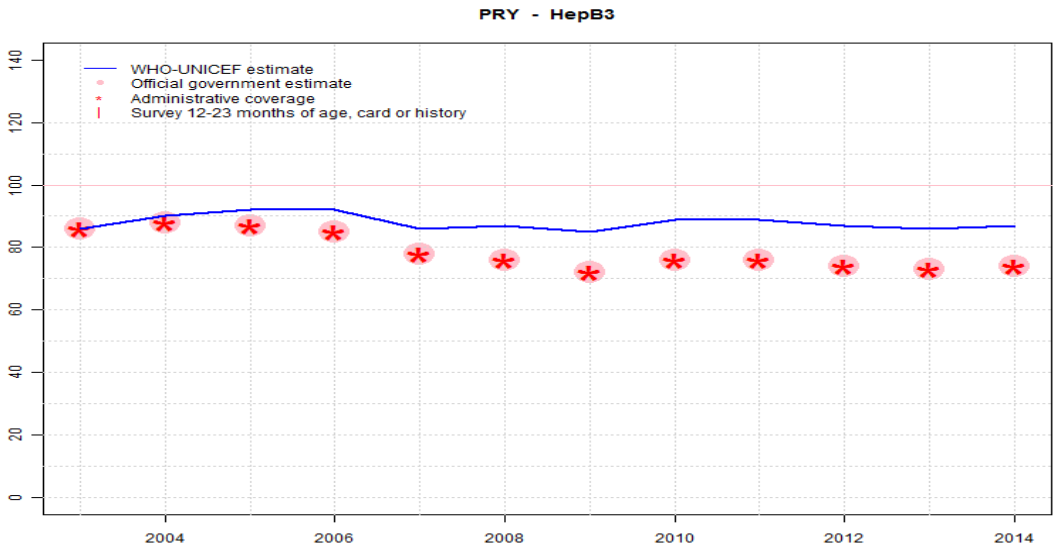
●●● Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2012 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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.

Paraguay - HepB3



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	86	90	92	92	86	87	85	89	89	87	86	87
Estimate GoC	•	••	••	••	••	•	•	•	•	•	•	•
Official	86	88	87	85	78	76	72	76	76	74	73	74
Administrative	86	88	87	85	78	76	72	76	76	74	73	74
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

••• Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2012 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:

2003: HepB vaccine delivered in combination DTP-HepB-Hib vaccine. Estimate based on DTP3 levels HepB vaccine introduced in 2002. Reporting started in 2003. Vaccine presentation is DTP-HepB-Hib. Estimate challenged by: D-

2004: Reported data calibrated to 2003 and 2009 levels. GoC=D+

2005: Reported data calibrated to 2003 and 2009 levels. GoC=D+

2006: Reported data calibrated to 2003 and 2009 levels. GoC=D+

2007: Reported data calibrated to 2003 and 2009 levels. GoC=D+

2008: Reported data calibrated to 2003 and 2009 levels. Estimate challenged by: D-

2009: HepB vaccine delivered in combination DTP-HepB-Hib vaccine. Estimate based on DTP3 levels An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office. Estimate challenged by: D-R-

2010: Reported data calibrated to 2009 levels. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Estimate challenged by: D-

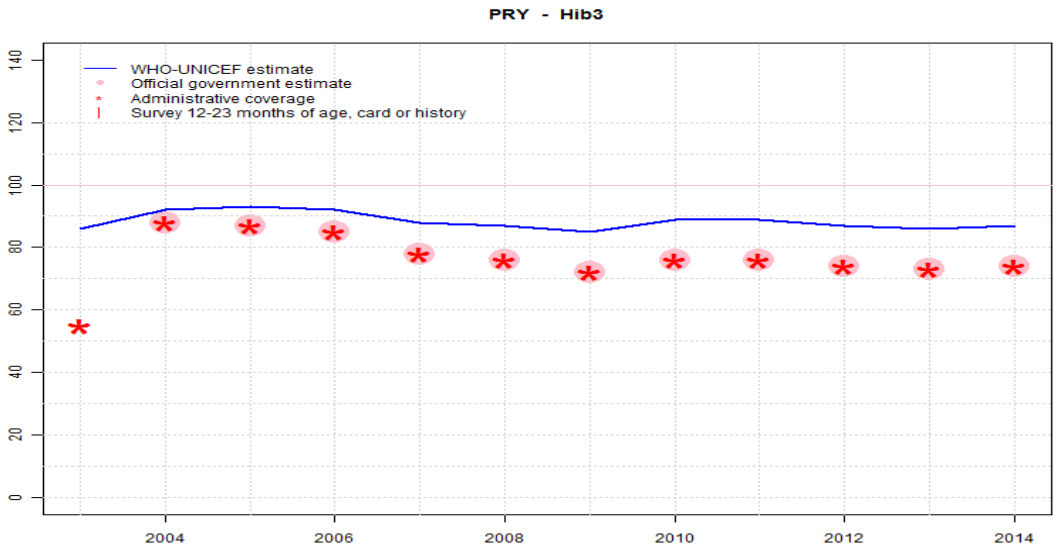
2011: Reported data calibrated to 2009 levels. Estimate challenged by: D-

2012: Reported data calibrated to 2009 levels. Estimate challenged by: D-

2013: Reported data calibrated to 2009 levels. Estimate challenged by: D-

2014: Reported data calibrated to 2009 levels. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

Paraguay - Hib3



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	86	92	93	92	88	87	85	89	89	87	86	87
Estimate GoC	•	•	•	••	•	•	•	•	•	•	•	•
Official	NA	88	87	85	78	76	72	76	76	74	73	74
Administrative	55	88	87	85	78	76	72	76	76	74	73	74
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

●●● Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2012 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:

2003: Hib vaccine delivered in combination DTP-HepB-Hib vaccine. Estimate based on DTP3 levels Hib vaccine introduced in 2002. Reporting started in 2003. Vaccine presentation is DTP-HepB-Hib. Estimate challenged by: D-R-

2004: Estimate based on DTP3 estimate. Estimate challenged by: R-

2005: Reported data calibrated to 2004 and 2009 levels. Estimate challenged by: D-

2006: Reported data calibrated to 2004 and 2009 levels. GoC=D+

2007: Reported data calibrated to 2004 and 2009 levels. Estimate challenged by: D-

2008: Reported data calibrated to 2004 and 2009 levels. Estimate challenged by: D-

2009: Hib vaccine delivered in combination DTP-HepB-Hib vaccine. Estimate based on DTP3 levels An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office. Estimate challenged by: D-R-

2010: Reported data calibrated to 2009 levels. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Estimate challenged by: D-

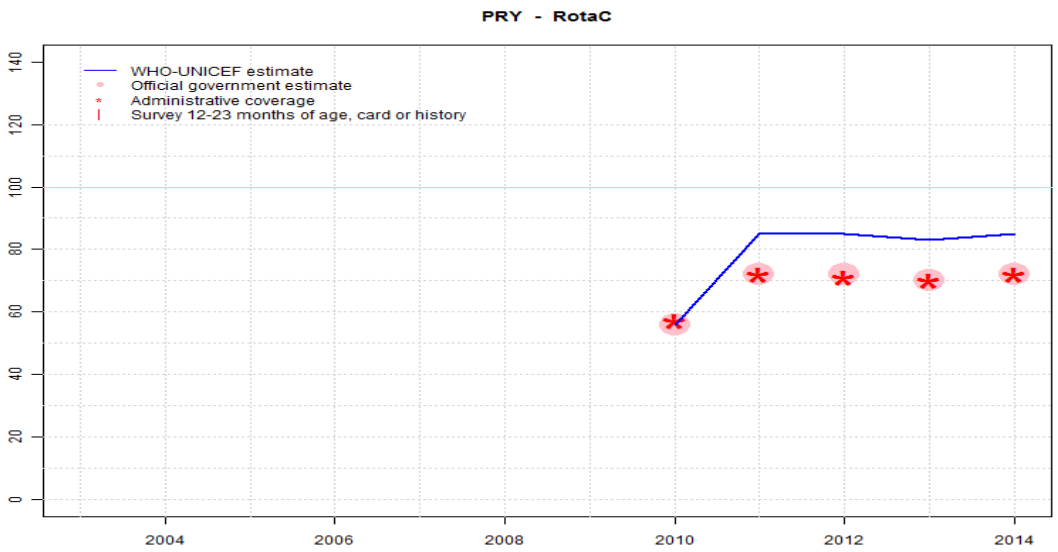
2011: Reported data calibrated to 2009 levels. Estimate challenged by: D-

2012: Reported data calibrated to 2009 levels. Estimate challenged by: D-

2013: Reported data calibrated to 2009 levels. Estimate challenged by: D-

2014: Reported data calibrated to 2009 levels. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

Paraguay - RotaC



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	NA	NA	NA	NA	NA	NA	NA	56	85	85	83	85
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	●●	●	●	●	●
Official	NA	NA	NA	NA	NA	NA	NA	56	72	72	70	72
Administrative	NA	NA	NA	NA	NA	NA	NA	57	72	71	70	72
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: 2012 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:

2010: Estimate is based on reported data. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Rotavirus vaccine introduced in 2010. GoC=R+ D+

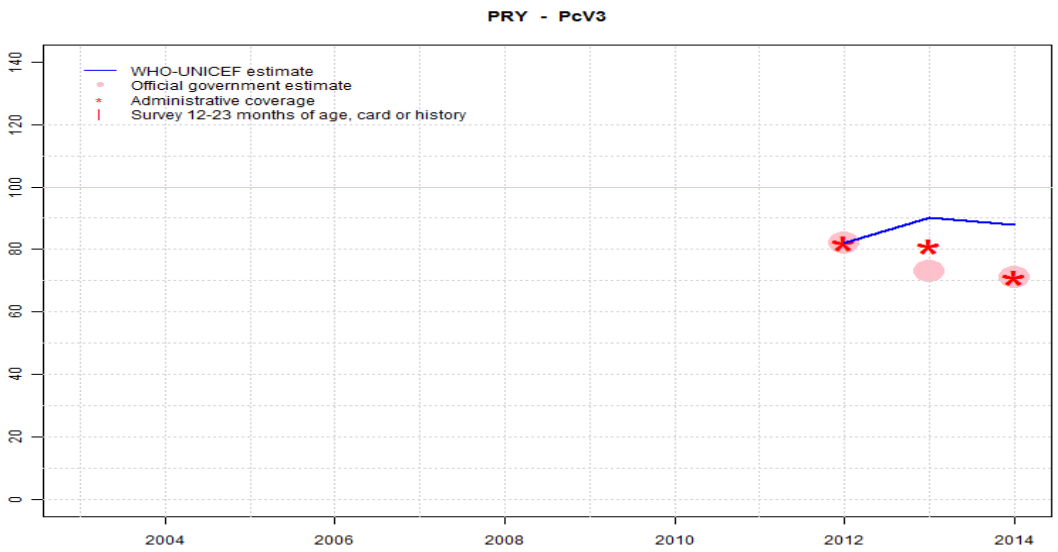
2011: An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office. Estimate is based on an adjustment derived from the difference between estimated third dose of DTP containing vaccine and official government coverage. Estimate challenged by: D-R-

2012: Reported data calibrated to 2011 levels. Estimate challenged by: D-

2013: Reported data calibrated to 2011 levels. Estimate challenged by: D-

2014: Reported data calibrated to 2011 levels. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-

Paraguay - PcV3



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	82	90	88
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	●●	●	●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	82	73	71
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	82	81	71
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: 2012 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.

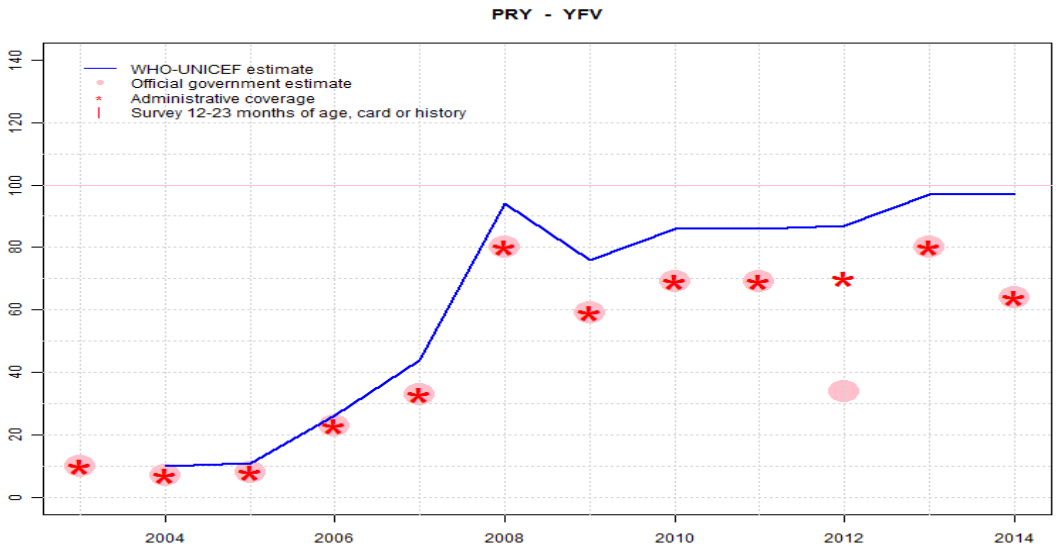
Description:

2012: Estimate is based on reported data during introduction year. Pneumococcal vaccine introduced in 2012. GoC=R+ D+

2013: Estimate is based on an adjustment applied to the official government estimate based on the difference between the estimated MCV1 and official government estimate for MCV1. Estimate of 90 percent changed from previous revision value of 73 percent. Estimate challenged by: D-R-

2014: Estimate is based on an adjustment applied to the official government estimate based on the difference between the estimated MCV1 and official government estimate for MCV1. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Estimate challenged by: D-R-

Paraguay - YFV



	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	NA	10	11	26	44	94	76	86	86	87	97	97
Estimate GoC	NA	●●	●	●	●	●	●	●	●	●	●	●
Official	10	7	8	23	33	80	59	69	69	34	80	64
Administrative	10	7	8	23	33	80	59	69	69	70	80	64
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: 2012 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: Reported data calibrated to 2006 levels. GoC=D+

2005: Reported data calibrated to 2006 levels. Estimate challenged by: D-

2006: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Estimate challenged by: D-R-

2007: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Estimate challenged by: D-R-

2008: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Increase in coverage coincides with an outbreak of yellow fever. . Estimate challenged by: D-R-

2009: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. An in-depth assessment of data quality suggested higher coverage than reported. Estimate of births are under review by the National Statistical Office.. Estimate challenged by: D-R-

2010: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. National coverage survey of children 12-35 years of age supports reported data. See the survey page for details. Estimate challenged by: D-R-

2011: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Estimate challenged by: D-R-

2012: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Reported data excluded. Decline in reported coverage from 69 percent to 34 percent with increase to 80 percent. Estimate challenged by: D-R-

2013: Coverage level follows official government estimated with adjustment based on difference between estimated coverage and official government estimate for MCV1. Reported data excluded. Unexplained increase from 34 percent to 80 percent with decrease 64 percent. Estimate challenged by: D-R-

2014: Reported data calibrated to 2013 levels. Reported data excluded. Change in reported coverage from 80 level to 64 percent. No nationally representative household survey assessing immunization within the last 5 years. WHO and UNICEF recommend a high-quality survey to confirm reported levels of coverage. Unexplained decline in coverage. Estimate challenged by: D-

Paraguay - survey details

2010 Encuesta Nacional sobre Coberturas de Vacunación en niños de 12 a 35 meses de edad, Paraguay, 2011

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	95	12-35 m	3189	-
DTP1	Card or History	94	12-35 m	3189	-
DTP3	Card or History	93	12-35 m	3189	-
HepB1	Card or History	94	12-35 m	3189	-
HepB3	Card or History	93	12-35 m	3189	-
Hib1	Card or History	94	12-35 m	3189	-
Hib3	Card or History	93	12-35 m	3189	-
MCV1	Card or History	91	12-35 m	3189	-
Pol3	Card or History	93	12-35 m	3189	-
YFV	Card or History	88	12-35 m	3189	-

2008 Encuesta Demográfica y de Salud Familiar-ENDES Continua, 2009

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	94	18-29 m	1639	66
BCG	Card	61	18-29 m	1639	66
BCG	Card or History	94	18-29 m	1639	66
BCG	History	32	18-29 m	1639	66
DTP1	C or H <12 months	95	18-29 m	1639	66
DTP1	Card	65	18-29 m	1639	66
DTP1	Card or History	96	18-29 m	1639	66
DTP1	History	31	18-29 m	1639	66
DTP3	C or H <12 months	71	18-29 m	1639	66
DTP3	Card	60	18-29 m	1639	66
DTP3	Card or History	73	18-29 m	1639	66
DTP3	History	13	18-29 m	1639	66
MCV1	C or H <12 months	70	18-29 m	1639	66
MCV1	Card	53	18-29 m	1639	66
MCV1	Card or History	76	18-29 m	1639	66
MCV1	History	23	18-29 m	1639	66
Pol1	C or H <12 months	92	18-29 m	1639	66
Pol1	Card	63	18-29 m	1639	66
Pol1	Card or History	92	18-29 m	1639	66
Pol1	History	29	18-29 m	1639	66
Pol3	C or H <12 months	67	18-29 m	1639	66
Pol3	Card	58	18-29 m	1639	66
Pol3	Card or History	68	18-29 m	1639	66
Pol3	History	10	18-29 m	1639	66

2007 Encuesta Nacional de Demografía y Salud Sexual y Reproductiva (ENDSSR-2004)

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	71	12-23 m	427	71
BCG	Card or History	98	12-23 m	427	71
DTP1	Card	71	12-23 m	427	71
DTP1	Card or History	99	12-23 m	427	71
DTP3	Card	68	12-23 m	427	71
DTP3	Card or History	94	12-23 m	427	71
MCV1	Card	59	12-23 m	427	71
MCV1	Card or History	84	12-23 m	427	71
Pol1	Card	68	12-23 m	427	71
Pol1	Card or History	96	12-23 m	427	71
Pol3	Card	67	12-23 m	427	71
Pol3	Card or History	90	12-23 m	427	71

2003 Encuesta Nacional de Demografia y Salud Sexual y Reproductiva 2004 (ENDSSR-2004)

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	92	12-23 m	898	69
DTP1	Card or History	95	12-23 m	898	69
DTP3	Card or History	83	12-23 m	898	69
MCV1	Card or History	75	12-23 m	898	69
Pol1	Card or History	94	12-23 m	898	69
Pol3	Card or History	82	12-23 m	898	69

Paraguay - survey details

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

Paraguay
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.

Year	PAB coverage estimate (%)
2003	61
2004	68
2005	78
2006	81
2007	74
2008	74
2009	74
2010	85
2011	85
2012	85
2013	85
2014	85

[1] 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.