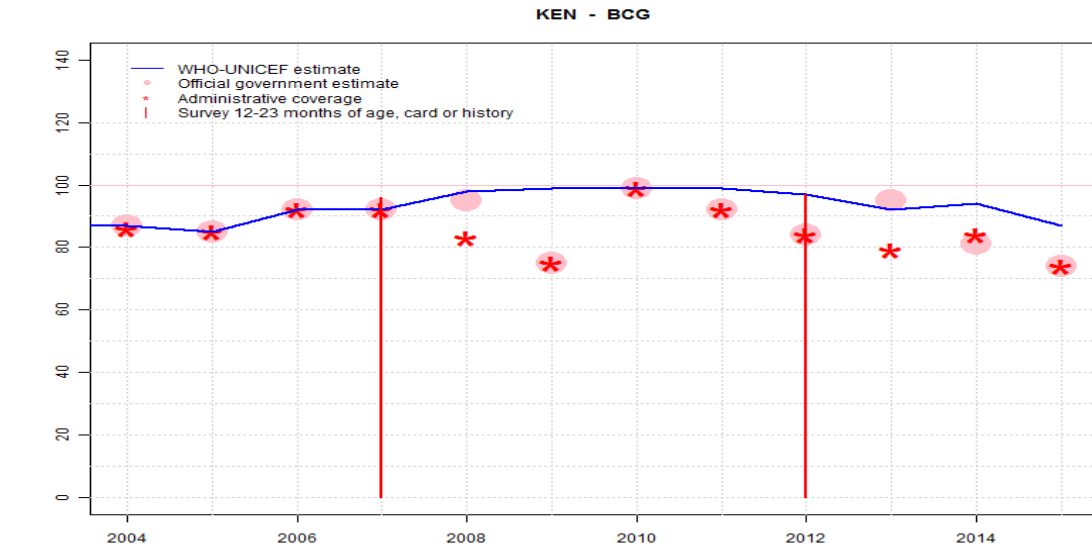


# Kenya - BCG



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	87	85	92	92	98	99	99	99	97	92	94	87
Estimate GoC	●●●	●●	●●●	●●●	●●	●	●	●	●	●●	●●	●●
Official	87	85	92	92	95	75	99	92	84	95	81	74
Administrative	86	85	92	92	83	75	99	92	84	79	84	74
Survey	NA	NA	NA	96	NA	NA	NA	NA	97	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.

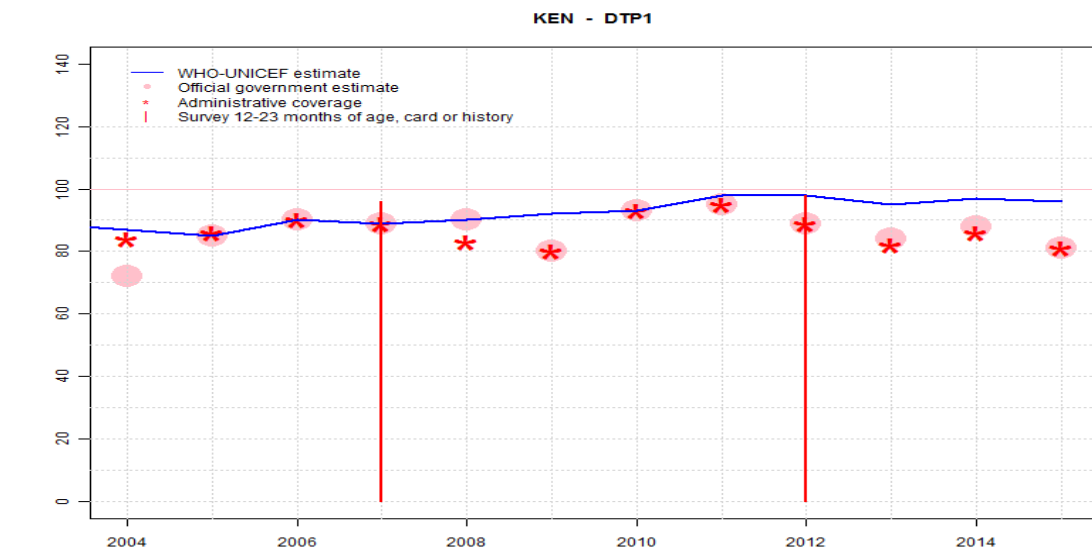
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ D+
- 2006: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 96 percent based on 1 survey(s). GoC=R+ S+ D+
- 2008: Reported data calibrated to 2007 and 2012 levels. Drop in coverage likely due to vaccine shortage (24 days) Estimate of 98 percent changed from previous revision value of 95 percent. GoC=S+ D+
- 2009: Reported data calibrated to 2007 and 2012 levels. Reported data excluded. Sudden unexplained change in target population Reported data excluded. Decline in reported coverage from 95 percent to 75 percent with increase to 99 percent. Estimate of 99 percent changed from previous revision value of 97 percent. Estimate challenged by: D-
- 2010: Reported data calibrated to 2007 and 2012 levels. Revised denominator. Estimate challenged by: D-
- 2011: Reported data calibrated to 2007 and 2012 levels. Estimate of 99 percent changed from previous revision value of 92 percent. Estimate challenged by: D-
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 97 percent based on 1 survey(s). Two-month vaccine shortage reported. Estimate of 97 percent changed from previous revision value of 84 percent. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2012 levels. Reported year to year change in number of births between 2012 and 2013 is significantly higher than in previous years. Insufficient explanation of methods and data sources used to derive government official estimates. Estimate of 92 percent changed from previous revision value of 79 percent. GoC=S+ D+
- 2014: Reported data calibrated to 2012 levels. Estimate of 94 percent changed from previous revision value of 81 percent. GoC=S+ D+
- 2015: Reported data calibrated to 2012 levels. Programme reports two month national level stock-out. GoC=D+

# Kenya - DTP1



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	87	85	90	89	90	92	93	98	98	95	97	96
Estimate GoC	••	••	•••	•••	•••	••	•••	•	•	•	•	•
Official	72	85	90	89	90	80	93	95	89	84	88	81
Administrative	84	86	90	89	83	80	93	95	89	82	86	81
Survey	NA	NA	NA	96	NA	NA	NA	NA	98	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.

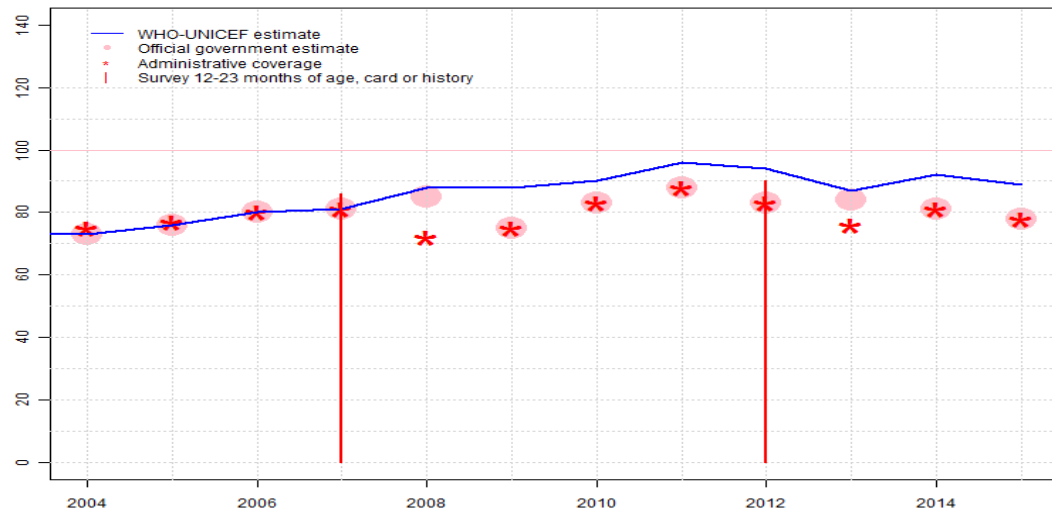
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2004: Estimate based on interpolation between coverage reported by national government. Reported data excluded. Decline in reported coverage from 89 percent to 72 percent with increase to 85 percent. GoC=S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ D+
- 2006: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 96 percent based on 1 survey(s). GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. Drop in coverage likely due to vaccine shortage (25 days) GoC=R+ S+ D+
- 2009: Estimate based on interpolation between coverage reported by national government. Reported data excluded. Sudden unexplained change in target population GoC=S+ D+
- 2010: Estimate based on coverage reported by national government. Revised denominator. GoC=R+ S+ D+
- 2011: DTP1 coverage estimated based on DTP3 coverage of 96. Estimate of 98 percent changed from previous revision value of 95 percent. Estimate challenged by: D-R-
- 2012: DTP1 coverage estimated based on DTP3 coverage of 94. One-month vaccine shortage reported. Estimate of 98 percent changed from previous revision value of 89 percent. Estimate challenged by: D-R-
- 2013: DTP1 coverage estimated based on DTP3 coverage of 87. Insufficient explanation of methods and data sources used to derive government official estimates. Estimate of 95 percent changed from previous revision value of 82 percent. Estimate challenged by: D-R-
- 2014: DTP1 coverage estimated based on DTP3 coverage of 92. Estimate of 97 percent changed from previous revision value of 88 percent. Estimate challenged by: D-R-
- 2015: DTP1 coverage estimated based on DTP3 coverage of 89. Estimate challenged by: D-R-

# Kenya - DTP3

KEN - DTP3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	73	76	80	81	88	88	90	96	94	87	92	89
Estimate GoC	●●●	●●	●●	●●●	●	●●	●	●	●	●	●	●●
Official	73	76	80	81	85	75	83	88	83	84	81	78
Administrative	75	77	80	81	72	75	83	88	83	76	81	78
Survey	NA	NA	NA	86	NA	NA	NA	NA	90	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.

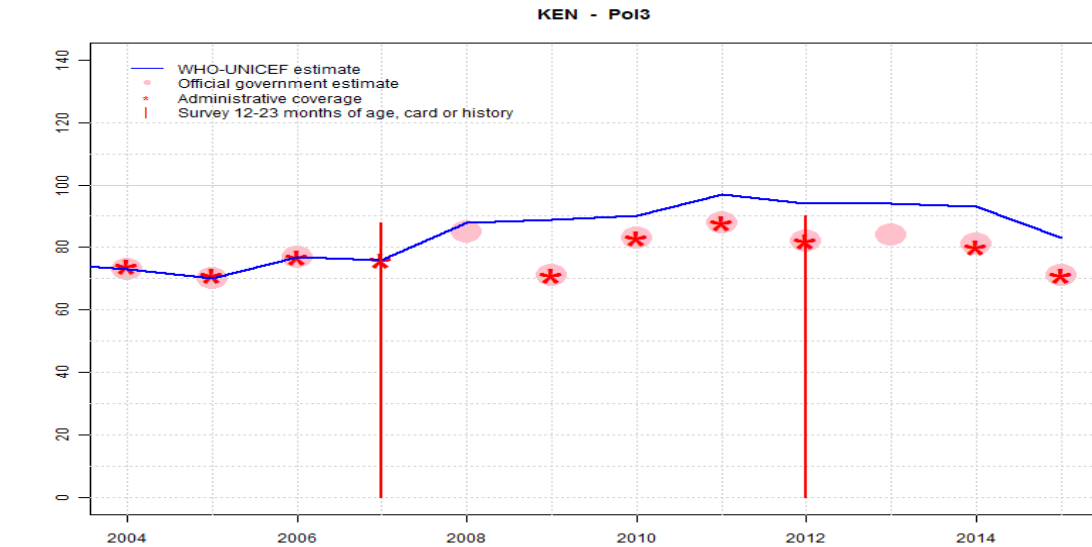
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ D+
- 2006: Estimate based on coverage reported by national government. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 91 percent based on 1 survey(s). Kenya Demographic and Health Survey 2008-09 card or history results of 86 percent modified for recall bias to 91 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 70 percent and 3d dose card only coverage of 66 percent. GoC=R+ S+ D+
- 2008: Reported data calibrated to 2007 and 2012 levels. Drop in coverage likely due to vaccine shortage (25 days) Estimate of 88 percent changed from previous revision value of 85 percent. Estimate challenged by: D-
- 2009: Reported data calibrated to 2007 and 2012 levels. Reported data excluded. Sudden unexplained change in target population Estimate of 88 percent changed from previous revision value of 84 percent. GoC=S+ D+
- 2010: Reported data calibrated to 2007 and 2012 levels. Revised denominator. Estimate of 90 percent changed from previous revision value of 83 percent. Estimate challenged by: D-
- 2011: Reported data calibrated to 2007 and 2012 levels. Estimate of 96 percent changed from previous revision value of 88 percent. Estimate challenged by: D-
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 94 percent based on 1 survey(s). Kenya Demographic and Health Survey card or history results of 90 percent modified for recall bias to 94 percent based on 1st dose card or history coverage of 98 percent, 1st dose card only coverage of 74 percent and 3d dose card only coverage of 71 percent. One-month vaccine shortage reported. Estimate of 94 percent changed from previous revision value of 83 percent. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2012 levels. Insufficient explanation of methods and data sources used to derive government official estimates. Estimate of 87 percent changed from previous revision value of 76 percent. Estimate challenged by: D-
- 2014: Reported data calibrated to 2012 levels. Estimate of 92 percent changed from previous revision value of 81 percent. Estimate challenged by: D-
- 2015: Reported data calibrated to 2012 levels. GoC=D+

# Kenya - Pol3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	73	70	77	76	88	89	90	97	94	94	93	83
Estimate GoC	●●●	●	●	●	●	●	●	●	●	●●	●	●●
Official	73	70	77	NA	85	71	83	88	82	84	81	71
Administrative	74	71	77	76	NA	71	83	88	82	NA	80	71
Survey	NA	NA	NA	88	NA	NA	NA	NA	90	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:

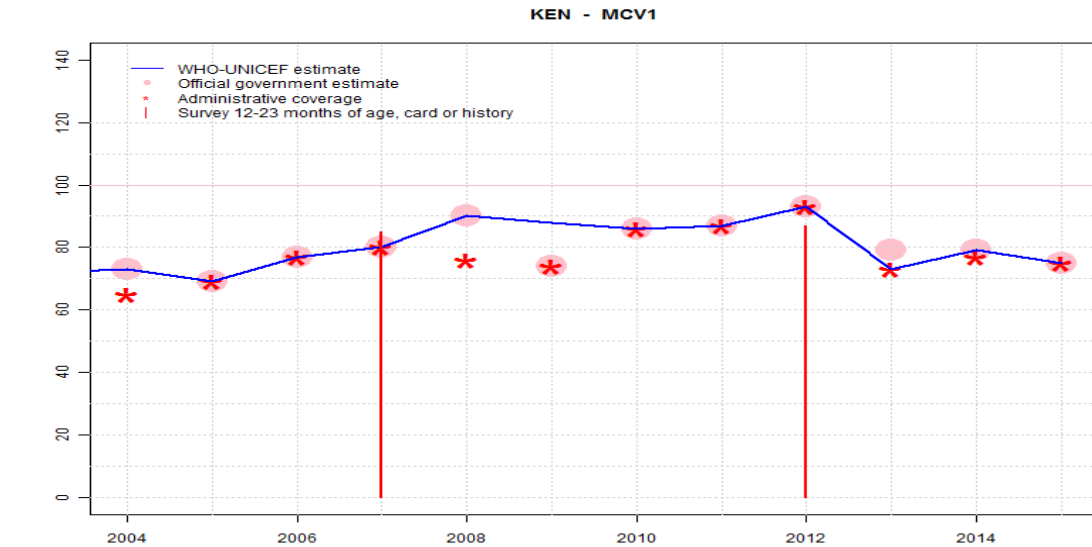
- 2004: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. Estimate challenged by: S-
- 2006: Estimate based on coverage reported by national government. Estimate challenged by: S-
- 2007: Estimate based on reported data. Kenya Demographic and Health Survey 2008-09 results ignored by working group. Survey results likely include campaign doses. Kenya Demographic and Health Survey 2008-09 card or history results of 88 percent modified for recall bias to 92 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 70 percent and 3d dose card only coverage of 67 percent. Estimate challenged by: S-
- 2008: Reported data calibrated to 2007 and 2012 levels. Estimate of 88 percent changed from previous revision value of 85 percent. Estimate challenged by: S-
- 2009: Reported data calibrated to 2007 and 2012 levels. Reported data excluded. Sudden unexplained change in target population. Reported data excluded. Decline in reported coverage from 85 percent to 71 percent with increase to 83 percent. Estimate of 89 percent changed from previous revision value of 84 percent. Estimate challenged by: D-S-
- 2010: Reported data calibrated to 2007 and 2012 levels. Revised denominator. Estimate of 90 percent changed from previous revision value of 83 percent. Estimate challenged by: D-
- 2011: Reported data calibrated to 2007 and 2012 levels. Estimate of 97 percent changed from previous revision value of 88 percent. Estimate challenged by: D-
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 94 percent based on 1 survey(s). Kenya Demographic and Health Survey card or history results of 90 percent modified for recall bias to 94 percent based on 1st dose card or history coverage of 98 percent, 1st dose card only coverage of 74 percent and 3d dose card only coverage of 71 percent. Estimate of 94 percent changed from previous revision value of 82 percent. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2012 levels. Insufficient explanation of methods and data sources used to derive government official estimates. Estimate of 94 percent changed from previous revision value of 82 percent. GoC=S+
- 2014: Reported data calibrated to 2012 levels. Preliminary results from the 2014 Demographic and Health Survey supports reported coverage levels. Estimate of 93 percent changed from previous revision value of 81 percent. Estimate challenged by: D-

# Kenya - Pol3

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2015: Reported data calibrated to 2012 levels. Programme reports two month national level stock-out. GoC=D+

# Kenya - MCV1



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	73	69	77	80	90	88	86	87	93	73	79	75
Estimate GoC	●●●	●●	●●●	●●●	●	●●	●●●	●●●	●●●	●●	●●●	●●
Official	73	69	77	80	90	74	86	87	93	79	79	75
Administrative	65	69	77	80	76	74	86	87	93	73	77	75
Survey	NA	NA	NA	85	NA	NA	NA	NA	87	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.

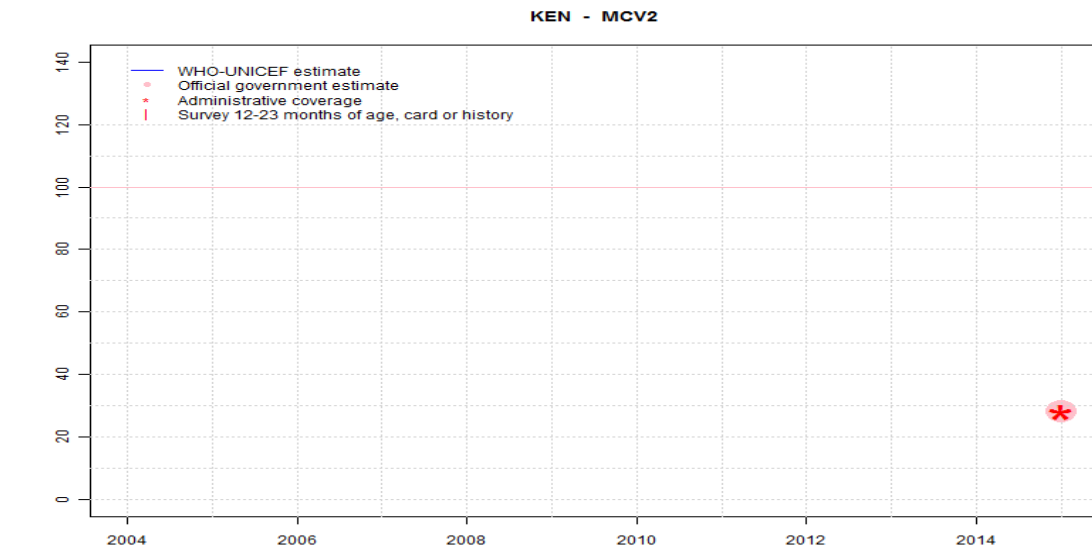
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

- 2004: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ D+
- 2006: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 85 percent based on 1 survey(s). GoC=R+ S+ D+
- 2008: Estimate based on coverage reported by national government. Estimate challenged by: D-
- 2009: Estimate based on interpolation between coverage reported by national government. Reported data excluded. Sudden unexplained change in target population. Reported data excluded. Decline in reported coverage from 90 percent to 74 percent with increase to 86 percent. GoC=S+ D+
- 2010: Estimate based on coverage reported by national government. Revised denominator. GoC=R+ S+ D+
- 2011: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2012: Estimate based on coverage reported by national government supported by survey. Survey evidence of 87 percent based on 1 survey(s). GoC=R+ S+ D+
- 2013: Estimate based on reported administrative data. Decline in of number of children vaccinated with measles is unexplained. Insufficient explanation of methods and data sources used to derive government official estimates. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+



# Kenya - 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	28
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk of being wrong.
- Estimate is supported by at least one data source; [R+], [S+], or [D+]; and no data source, [R-], [D-], or [S-], challenges the estimate.
- There are no directly supporting data; or data from at least one source; [R-], [D-], [S-]; challenge the estimate.

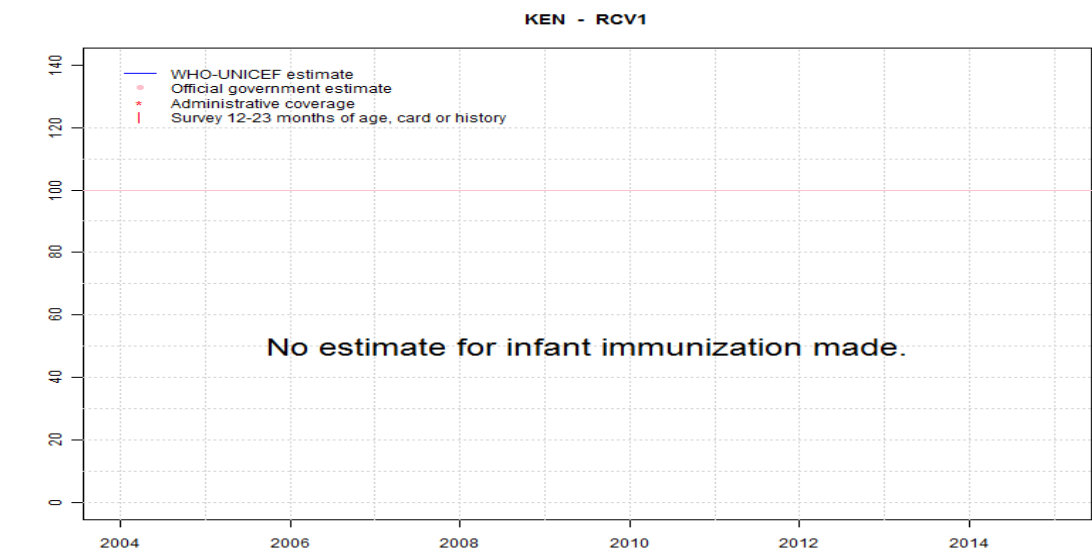
In all cases these estimates should be used with caution and should be assessed in light of the objective for which they are being used.

## Description:

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

2015: Estimate based on coverage reported by national government. Second dose of MCV introduced in July 2013 and recommended for administration at 18 months. Reporting began in 2015. GoC=R+ D+





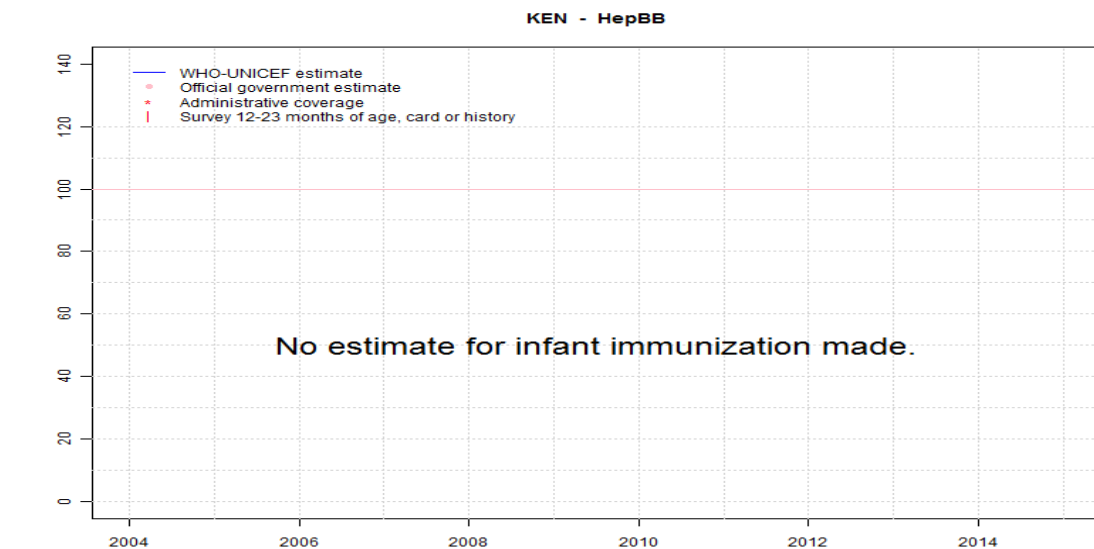
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.

# Kenya - HepBB



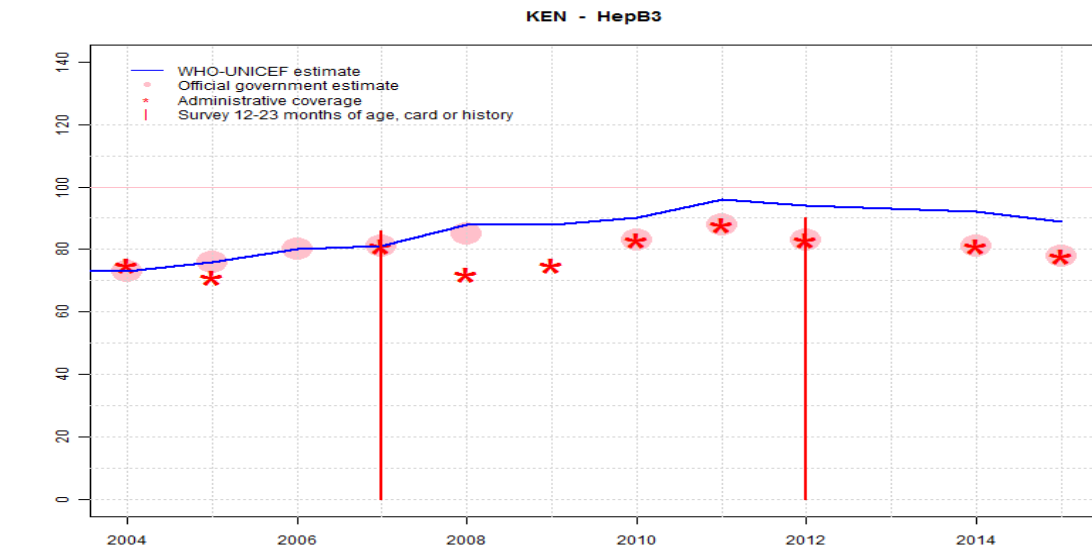
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.

# Kenya - HepB3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	73	76	80	81	88	88	90	96	94	93	92	89
Estimate GoC	••	••	••	•••	•	••	•	•	•	••	•	••
Official	73	76	80	81	85	NA	83	88	83	NA	81	78
Administrative	75	71	NA	81	72	75	83	88	83	NA	81	78
Survey	NA	NA	NA	86	NA	NA	NA	NA	90	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.

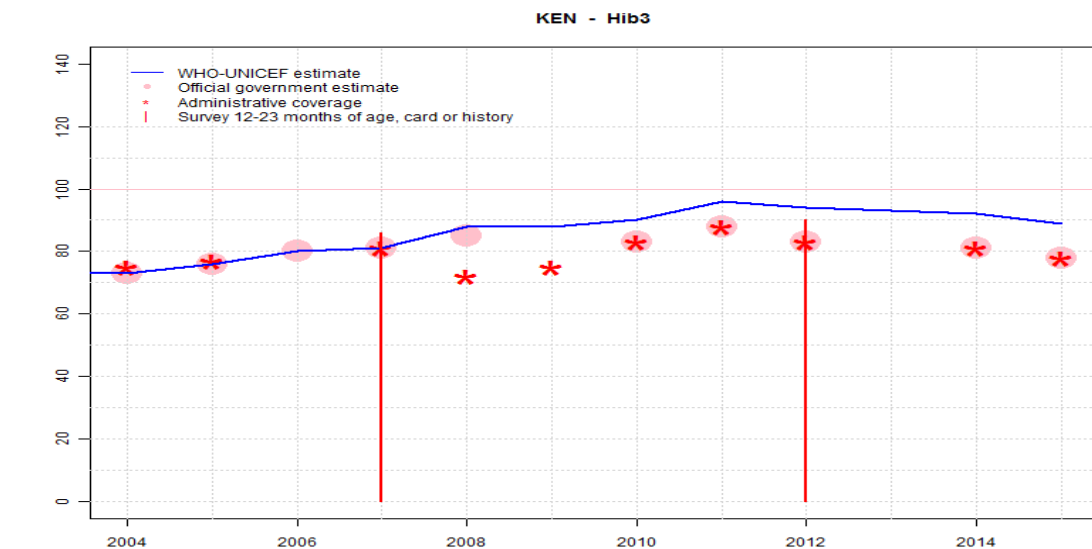
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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 reported data. GoC=R+ D+
- 2005: Estimate based on reported data. GoC=R+ D+
- 2006: Estimate based on reported data. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 91 percent based on 1 survey(s). Kenya Demographic and Health Survey 2008-09 card or history results of 86 percent modified for recall bias to 91 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 70 percent and 3d dose card only coverage of 66 percent. GoC=R+ S+ D+
- 2008: Reported data calibrated to 2007 and 2012 levels. Drop in coverage likely due to vaccine shortage (25 days) Estimate of 88 percent changed from previous revision value of 85 percent. Estimate challenged by: D-
- 2009: Reported data calibrated to 2007 and 2012 levels. Reported data excluded. Sudden unexplained change in target population Estimate of 88 percent changed from previous revision value of 84 percent. GoC=S+ D+
- 2010: Reported data calibrated to 2007 and 2012 levels. Revised denominator. Estimate of 90 percent changed from previous revision value of 83 percent. Estimate challenged by: D-
- 2011: Reported data calibrated to 2007 and 2012 levels. Estimate of 96 percent changed from previous revision value of 88 percent. Estimate challenged by: D-
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 94 percent based on 1 survey(s). Kenya Demographic and Health Survey card or history results of 90 percent modified for recall bias to 94 percent based on 1st dose card or history coverage of 98 percent, 1st dose card only coverage of 74 percent and 3d dose card only coverage of 71 percent. One-month vaccine shortage reported. Estimate of 94 percent changed from previous revision value of 83 percent. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2012 levels. Insufficient explanation of methods and data sources used to derive government official estimates. Estimate of 93 percent changed from previous revision value of 82 percent. GoC=S+
- 2014: Reported data calibrated to 2012 levels. Estimate of 92 percent changed from previous revision value of 81 percent. Estimate challenged by: D-
- 2015: Reported data calibrated to 2012 levels. GoC=D+

# Kenya - Hib3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	73	76	80	81	88	88	90	96	94	93	92	89
Estimate GoC	●●●	●●	●●	●●●	●	●●	●	●	●	●●	●	●●
Official	73	76	80	81	85	NA	83	88	83	NA	81	78
Administrative	75	77	NA	81	72	75	83	88	83	NA	81	78
Survey	NA	NA	NA	86	NA	NA	NA	NA	90	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.

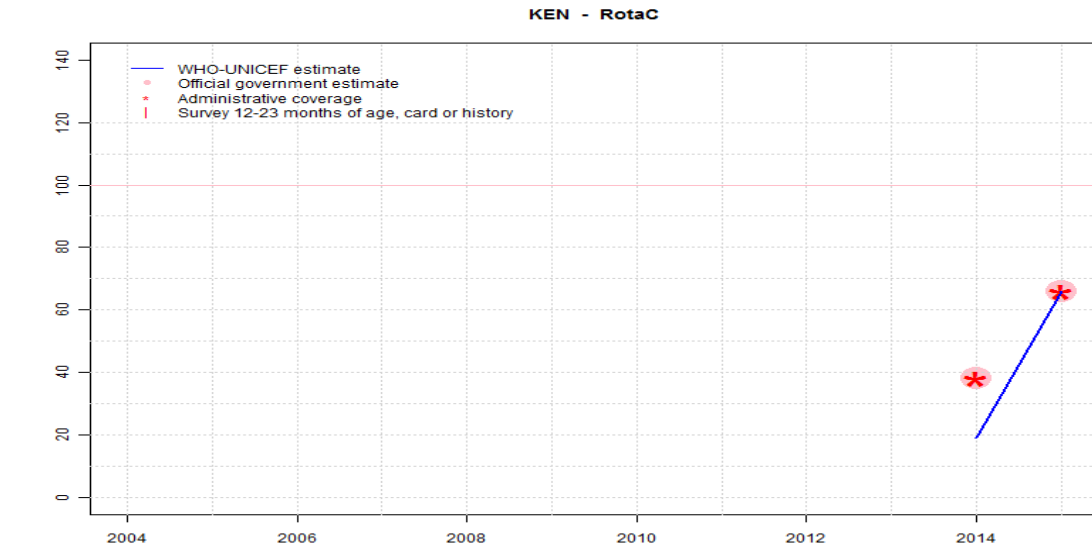
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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. GoC=R+ S+ D+
- 2005: Estimate based on coverage reported by national government. GoC=R+ D+
- 2006: Estimate based on coverage reported by national government. GoC=R+ D+
- 2007: Estimate based on coverage reported by national government supported by survey. Survey evidence of 91 percent based on 1 survey(s). Kenya Demographic and Health Survey 2008-09 card or history results of 86 percent modified for recall bias to 91 percent based on 1st dose card or history coverage of 96 percent, 1st dose card only coverage of 70 percent and 3d dose card only coverage of 66 percent. GoC=R+ S+ D+
- 2008: Reported data calibrated to 2007 and 2012 levels. Drop in coverage likely due to vaccine shortage (25 days) Estimate of 88 percent changed from previous revision value of 85 percent. Estimate challenged by: D-
- 2009: Reported data calibrated to 2007 and 2012 levels. Reported data excluded. Sudden unexplained change in target population Estimate of 88 percent changed from previous revision value of 84 percent. GoC=S+ D+
- 2010: Reported data calibrated to 2007 and 2012 levels. Revised denominator. Estimate of 90 percent changed from previous revision value of 83 percent. Estimate challenged by: D-
- 2011: Reported data calibrated to 2007 and 2012 levels. Estimate of 96 percent changed from previous revision value of 88 percent. Estimate challenged by: D-
- 2012: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 94 percent based on 1 survey(s). Kenya Demographic and Health Survey card or history results of 90 percent modified for recall bias to 94 percent based on 1st dose card or history coverage of 98 percent, 1st dose card only coverage of 74 percent and 3d dose card only coverage of 71 percent. One-month vaccine shortage reported. Estimate of 94 percent changed from previous revision value of 83 percent. Estimate challenged by: D-R-
- 2013: Reported data calibrated to 2012 levels. Insufficient explanation of methods and data sources used to derive government official estimates. Estimate of 93 percent changed from previous revision value of 82 percent. GoC=S+
- 2014: Reported data calibrated to 2012 levels. Estimate of 92 percent changed from previous revision value of 81 percent. Estimate challenged by: D-
- 2015: Reported data calibrated to 2012 levels. GoC=D+

# Kenya - RotaC



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	19	66
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●	●●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38	66
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38	66
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.

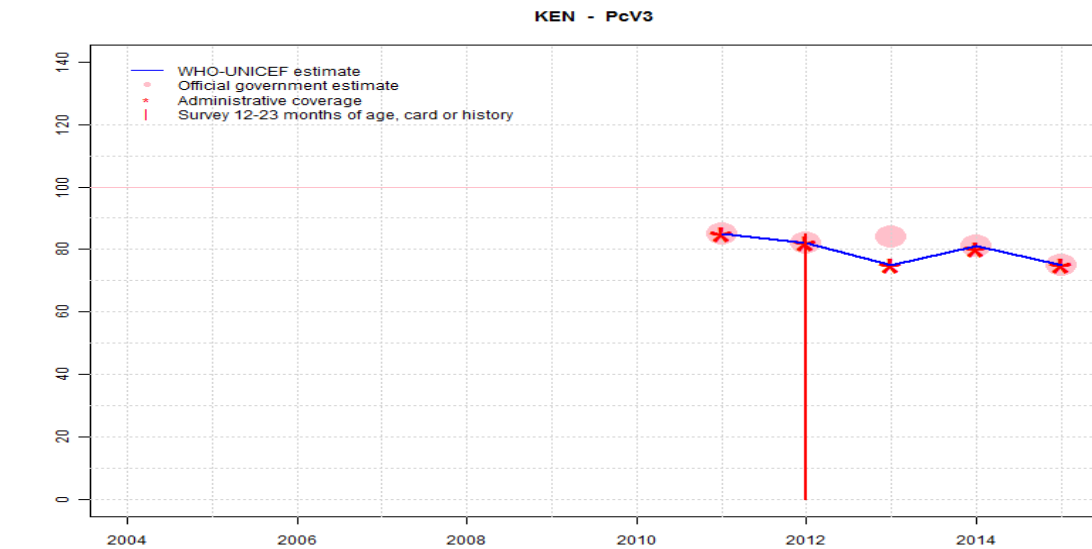
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk 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: Rotavirus vaccine introduced during 2014. Programme achieved 38 percent coverage in 50 percent of the national target population. Estimate is based on annualized coverage for the national birth cohort. Programme reports local level stock-outs due to vaccination of children out of target age range. Estimate challenged by: R-
- 2015: Estimate based on coverage reported by national government. GoC=R+D+

# Kenya - PcV3



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	NA	NA	NA	NA	NA	NA	NA	85	82	75	81	75
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	●●	●●●	●●	●●●	●●
Official	NA	NA	NA	NA	NA	NA	NA	85	82	84	81	75
Administrative	NA	NA	NA	NA	NA	NA	NA	85	82	75	80	75
Survey	NA	NA	NA	NA	NA	NA	NA	NA	85	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.

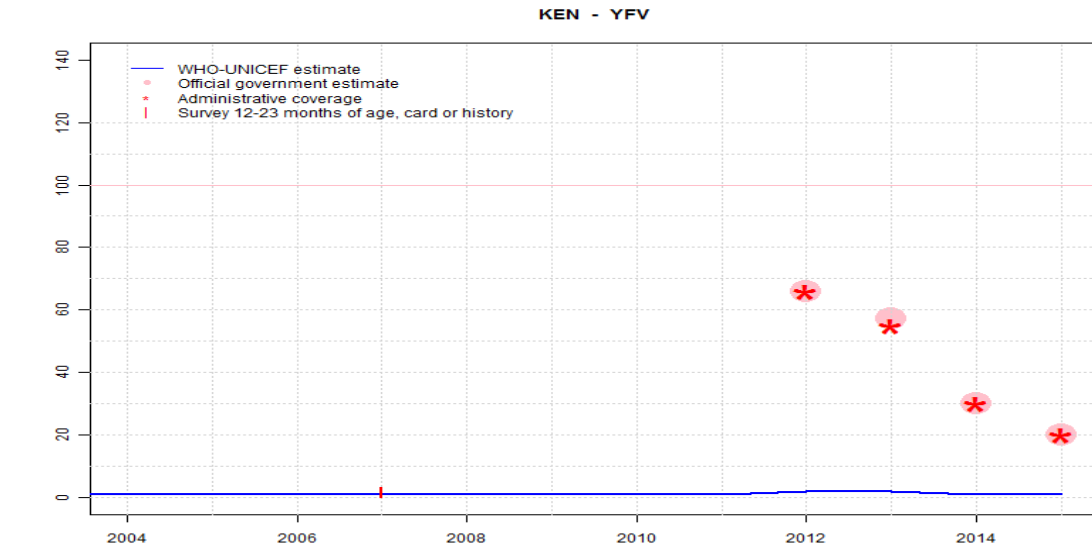
- Estimate is supported by reported data [R+], coverage recalculated with an independent denominator from the World Population Prospects: 2015 revision from the UN Population Division (D+), and at least one supporting survey within 2 years [S+]. While well supported, the estimate still carries a risk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

- 2011: Estimate based on reported data. Pneumococcal conjugate vaccine introduced in 2011. GoC=R+ S+
- 2012: Estimate based on coverage reported by national government supported by survey. Survey evidence of 89 percent based on 1 survey(s). Kenya Demographic and Health Survey card or history results of 85 percent modified for recall bias to 89 percent based on 1st dose card or history coverage of 94 percent, 1st dose card only coverage of 71 percent and 3d dose card only coverage of 67 percent. One-month vaccine shortage reported. GoC=R+ S+ D+
- 2013: Estimate based on reported administrative data. Insufficient explanation of methods and data sources used to derive government official estimates. GoC=R+ D+
- 2014: Estimate based on coverage reported by national government. GoC=R+ S+ D+
- 2015: Estimate based on coverage reported by national government. GoC=R+ D+

# Kenya - YFV



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Estimate	1	1	1	1	1	1	1	1	2	2	1	1
Estimate GoC	••	••	••	••	••	••	••	••	•	•	•	•
Official	NA	NA	NA	NA	NA	NA	NA	NA	66	57	30	20
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	66	55	30	20
Survey	NA	NA	NA	3	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:

- 2004: Routine infant immunization recommended in four high risk areas which comprises approximately three percent of the national birth cohort. GoC=D+
- 2005: Routine infant immunization recommended in four high risk areas which comprises approximately three percent of the national birth cohort. GoC=S+ D+
- 2006: Routine infant immunization recommended in four high risk areas which comprises approximately three percent of the national birth cohort. GoC=S+ D+
- 2007: Routine infant immunization recommended in four high risk areas which comprises approximately three percent of the national birth cohort. GoC=S+ D+
- 2008: Routine infant immunization recommended in four high risk areas which comprises approximately three percent of the national birth cohort. GoC=S+ D+
- 2009: Routine infant immunization recommended in four high risk areas which comprises approximately three percent of the national birth cohort. GoC=S+ D+
- 2010: Routine infant immunization recommended in four high risk areas which comprises approximately three percent of the national birth cohort. Revised denominator. GoC=D+
- 2011: Routine infant immunization recommended in four high risk areas which comprises approximately three percent of the national birth cohort. GoC=D+
- 2012: Sixty six percent coverage achieved in three percent of the target population. Estimate challenged by: R-
- 2013: Fifty-four percent coverage achieved in three percent of the target population. Insufficient explanation of methods and data sources used to derive government official estimates. Estimate challenged by: R-
- 2014: Programme achieved 30 percent coverage in three percent of the national target population. Estimate is based on total national target population. Estimate challenged by: R-
- 2015: Programme achieved 20 percent coverage in three percent of the national target population. Estimate is based on total national target population. Programme reports three month national level stock-out. Estimate challenged by: R-



# Kenya - survey details

## 2012 Kenya Demographic and Health Survey

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	96	12-23 m	3777	75
BCG	Card	73	12-23 m	2820	75
BCG	Card or History	97	12-23 m	3777	75
BCG	History	24	12-23 m	957	75
DTP1	C or H <12 months	97	12-23 m	3777	75
DTP1	Card	74	12-23 m	2820	75
DTP1	Card or History	98	12-23 m	3777	75
DTP1	History	23	12-23 m	957	75
DTP3	C or H <12 months	88	12-23 m	3777	75
DTP3	Card	71	12-23 m	2820	75
DTP3	Card or History	90	12-23 m	3777	75
DTP3	History	19	12-23 m	957	75
HepB1	C or H <12 months	97	12-23 m	3777	75
HepB1	Card	74	12-23 m	2820	75
HepB1	Card or History	98	12-23 m	3777	75
HepB1	History	23	12-23 m	957	75
HepB3	C or H <12 months	88	12-23 m	3777	75
HepB3	Card	71	12-23 m	2820	75
HepB3	Card or History	90	12-23 m	3777	75
HepB3	History	19	12-23 m	957	75
Hib1	C or H <12 months	97	12-23 m	3777	75
Hib1	Card	74	12-23 m	2820	75
Hib1	Card or History	98	12-23 m	3777	75
Hib1	History	23	12-23 m	957	75
Hib3	C or H <12 months	88	12-23 m	3777	75
Hib3	Card	71	12-23 m	2820	75
Hib3	Card or History	90	12-23 m	3777	75
Hib3	History	19	12-23 m	957	75
MCV1	C or H <12 months	79	12-23 m	3777	75
MCV1	Card	65	12-23 m	2820	75
MCV1	Card or History	87	12-23 m	3777	75
MCV1	History	22	12-23 m	957	75
PcV1	C or H <12 months	93	12-23 m	3777	75
PcV1	Card	71	12-23 m	2820	75
PcV1	Card or History	94	12-23 m	3777	75
PcV1	History	22	12-23 m	957	75
PcV3	C or H <12 months	83	12-23 m	3777	75

PcV3	Card	67	12-23 m	2820	75
PcV3	Card or History	85	12-23 m	3777	75
PcV3	History	18	12-23 m	957	75
Pol1	C or H <12 months	98	12-23 m	3777	75
Pol1	Card	74	12-23 m	2820	75
Pol1	Card or History	98	12-23 m	3777	75
Pol1	History	24	12-23 m	957	75
Pol3	C or H <12 months	88	12-23 m	3777	75
Pol3	Card	71	12-23 m	2820	75
Pol3	Card or History	90	12-23 m	3777	75
Pol3	History	19	12-23 m	957	75

## 2011 National Immunization Coverage Survey, 2012-Summary of Findings

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Scar	94	12-23 m	3986	74

## 2007 Kenya Demographic and Health Survey 2008-09

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	95	12-23 m	1096	70
BCG	Card	70	12-23 m	1096	70
BCG	Card or History	96	12-23 m	1096	70
BCG	History	26	12-23 m	1096	70
DTP1	C or H <12 months	94	12-23 m	1096	70
DTP1	Card	70	12-23 m	1096	70
DTP1	Card or History	96	12-23 m	1096	70
DTP1	History	26	12-23 m	1096	70
DTP3	C or H <12 months	84	12-23 m	1096	70
DTP3	Card	66	12-23 m	1096	70
DTP3	Card or History	86	12-23 m	1096	70
DTP3	History	20	12-23 m	1096	70
HepB1	C or H <12 months	94	12-23 m	1096	70
HepB1	Card	70	12-23 m	1096	70
HepB1	Card or History	96	12-23 m	1096	70
HepB1	History	26	12-23 m	1096	70
HepB3	C or H <12 months	84	12-23 m	1096	70

# Kenya - survey details

HepB3	Card	66	12-23 m	1096	70
HepB3	Card or History	86	12-23 m	1096	70
HepB3	History	20	12-23 m	1096	70
Hib1	C or H <12 months	94	12-23 m	1096	70
Hib1	Card	70	12-23 m	1096	70
Hib1	Card or History	96	12-23 m	1096	70
Hib1	History	26	12-23 m	1096	70
Hib3	C or H <12 months	84	12-23 m	1096	70
Hib3	Card	66	12-23 m	1096	70
Hib3	Card or History	86	12-23 m	1096	70
Hib3	History	20	12-23 m	1096	70
MCV1	C or H <12 months	74	12-23 m	1096	70
MCV1	Card	61	12-23 m	1096	70
MCV1	Card or History	85	12-23 m	1096	70
MCV1	History	24	12-23 m	1096	70
Pol1	C or H <12 months	94	12-23 m	1096	70
Pol1	Card	70	12-23 m	1096	70
Pol1	Card or History	96	12-23 m	1096	70
Pol1	History	26	12-23 m	1096	70
Pol3	C or H <12 months	84	12-23 m	1096	70
Pol3	Card	67	12-23 m	1096	70
Pol3	Card or History	88	12-23 m	1096	70
Pol3	History	21	12-23 m	1096	70
YFV	C or H <12 months	2	12-23 m	1096	70
YFV	Card	3	12-23 m	1096	70
YFV	Card or History	3	12-23 m	1096	70
YFV	History	0	12-23 m	1096	70

## 2002 National Demographic and Health Survey 2003

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	87	12-23 m	1131	60
BCG	Card	57	12-23 m	1131	60
BCG	Card or history	87	12-23 m	1131	60
BCG	History	30	12-23 m	1131	60
DTP1	C or H <12 months	88	12-23 m	1131	60
DTP1	Card	59	12-23 m	1131	60
DTP1	Card or history	89	12-23 m	1131	60
DTP1	History	30	12-23 m	1131	60

DTP3	C or H <12 months	70	12-23 m	1131	60
DTP3	Card	53	12-23 m	1131	60
DTP3	Card or history	72	12-23 m	1131	60
DTP3	History	20	12-23 m	1131	60
Hib3	C or H <12 months	70	12-23 m	1131	60
Hib3	Card	53	12-23 m	1131	60
Hib3	Card or history	72	12-23 m	1131	60
Hib3	History	20	12-23 m	1131	60
MCV1	C or H <12 months	63	12-23 m	1131	60
MCV1	Card	46	12-23 m	1131	60
MCV1	Card or history	72	12-23 m	1131	60
MCV1	History	26	12-23 m	1131	60
Pol1	C or H <12 months	90	12-23 m	1131	60
Pol1	Card	59	12-23 m	1131	60
Pol1	Card or history	91	12-23 m	1131	60
Pol1	History	32	12-23 m	1131	60
Pol3	C or H <12 months	70	12-23 m	1131	60
Pol3	Card	52	12-23 m	1131	60
Pol3	Card or history	72	12-23 m	1131	60
Pol3	History	20	12-23 m	1131	60

## 1999 Kenya Multiple Indicator Cluster Survey 2000, 2001

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	90	12-23 m	1544	-
BCG	Card	63	12-23 m	1544	-
BCG	Card or History	91	12-23 m	1544	-
BCG	History	28	12-23 m	1544	-
DTP1	C or H <12 months	89	12-23 m	1544	-
DTP1	Card	63	12-23 m	1544	-
DTP1	Card or History	89	12-23 m	1544	-
DTP1	History	26	12-23 m	1544	-
DTP3	C or H <12 months	75	12-23 m	1544	-
DTP3	Card	58	12-23 m	1544	-
DTP3	Card or History	76	12-23 m	1544	-
DTP3	History	18	12-23 m	1544	-
MCV1	C or H <12 months	72	12-23 m	1544	-
MCV1	Card	51	12-23 m	1544	-
MCV1	Card or History	76	12-23 m	1544	-

# Kenya - survey details

MCV1	History	25	12-23 m	1544	-
Pol1	C or H <12 months	86	12-23 m	1544	-
Pol1	Card	62	12-23 m	1544	-
Pol1	Card or History	87	12-23 m	1544	-
Pol1	History	24	12-23 m	1544	-
Pol3	C or H <12 months	72	12-23 m	1544	-
Pol3	Card	58	12-23 m	1544	-
Pol3	Card or History	73	12-23 m	1544	-
Pol3	History	15	12-23 m	1544	-

## 1997 Kenya Demographic and Health Survey 1998,1999

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	55	12-23 m	1097	55
BCG	Card <12 months	94	12-23 m	1097	55
BCG	Card or History	96	12-23 m	1097	55
BCG	History	41	12-23 m	1097	55
DTP1	Card	55	12-23 m	1097	55

DTP1	Card <12 months	94	12-23 m	1097	55
DTP1	Card or History	96	12-23 m	1097	55
DTP1	History	41	12-23 m	1097	55
DTP3	Card	51	12-23 m	1097	55
DTP3	Card <12 months	76	12-23 m	1097	55
DTP3	Card or History	79	12-23 m	1097	55
DTP3	History	28	12-23 m	1097	55
MCV1	Card	46	12-23 m	1097	55
MCV1	Card <12 months	71	12-23 m	1097	55
MCV1	Card or History	79	12-23 m	1097	55
MCV1	History	33	12-23 m	1097	55
Pol1	Card	55	12-23 m	1097	55
Pol1	Card <12 months	94	12-23 m	1097	55
Pol1	Card or History	95	12-23 m	1097	55
Pol1	History	40	12-23 m	1097	55
Pol3	Card	51	12-23 m	1097	55
Pol3	Card <12 months	78	12-23 m	1097	55
Pol3	Card or History	81	12-23 m	1097	55
Pol3	History	30	12-23 m	1097	55

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)

## Kenya

### 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 (%)
2004	73
2005	73
2006	74
2007	74
2008	78
2009	78
2010	78
2011	73
2012	73
2013	73
2014	76
2015	80

<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.