Madagascar: WHO and UNICEF estimates of immunization coverage: 2014 revision

BCG

DTP1

DTP3

Pol3

MCV1

HepB3

Hib3

RotaC

PcV3

WHO and UNICEF estimates of national immunization coverage - next revision available July 15, 2016

data as of July 7, 2015

Madagascar - BCG

MDG - BCG

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	77	85	92	95	94	83	78	76	82	78	77	75
Estimate GoC	●	●●	●●	●●	●	●	●	●	●●●	●●●	●●●	●●
Official	96	88	95	100	100	97	87	81	82	78	77	75
Administrative	96	88	95	101	103	97	87	81	82	78	77	75
Survey	NA	NA	NA	NA	94	83	NA	76	74	NA	NA	NA

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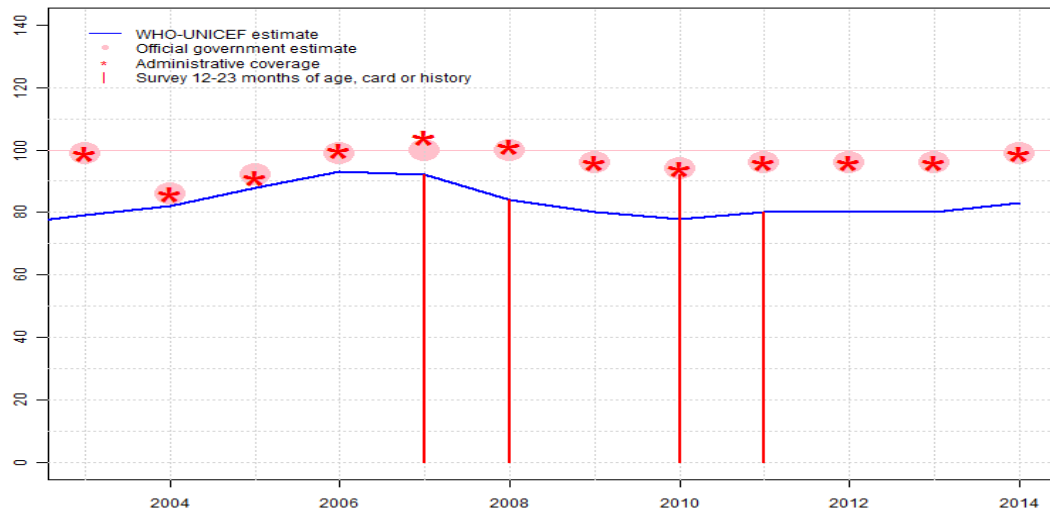
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In all cases these estimates should be used with caution and should be assessed in light
of the objective for which they are being used.
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Description:

2003: Estimate based on interpolation between 2002 and 2007 levels. Fluctuating and inconsistent data suggest poor reporting. Estimate challenged by: D-R-

2004: Reported data calibrated to 2002 and 2007 levels. GoC=D+

2005: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2006: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2007: Estimate based on survey results. Estimate challenged by: R-

2008: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 83 percent based on 1 survey(s). Estimate challenged by: D-R-S-

2009: Reported data calibrated to 2008 and 2011 levels. Ministry of Health reports 15 days of vaccine shortage. Estimate challenged by: D-S-

2010: Reported data calibrated to 2008 and 2011 levels. Madagascar Immunization Coverage Evaluation, 2011 results ignored by working group. Survey results remain preliminary. Estimate challenged by: S-

2011: Estimate based on coverage reported by national government supported by survey. Survey evidence of 74 percent based on 1 survey(s). GoC=Assigned by working group. Estimate is supported by R+ S+ D+.

2012: Estimate based on coverage reported by national government. Since 2006, maternal and child health weeks have been conducted twice per year and serve as an important contribution towards routine immunization service delivery. In 2011 and 2012, the maternal and child health weeks accounted for 20 to 30 percent of children 0 to 11 months of age reached with routine vaccination services. GoC=Assigned by working group. Estimate is supported by R+ S+ D+.

2013: Estimate based on coverage reported by national government. Since 2006, maternal and child health weeks have been conducted twice per year and serve as an important contribution towards routine immunization service delivery. In 2011 and 2012, the maternal and child health weeks accounted for 20 to 30 percent of children 0 to 11 months of age reached with routine vaccination services. GoC=R+ S+ D+

2014: Estimate based on coverage reported by national government. GoC=R+ D+

Madagascar - DTP1

MDG - DTP1

Legend:
- WHO-UNICEF estimate
- Official government estimate
- * Administrative coverage
- | Survey 12-23 months of age, card or history

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	79	82	88	93	92	84	80	78	80	80	80	83
Estimate GoC	●	●●	●●	●●	●	●	●	●	●	●	●	●
Official	99	86	92	99	100	100	96	94	96	96	96	99
Administrative	99	86	91	100	104	101	96	94	96	96	96	99
Survey	NA	NA	NA	NA	92	84	NA	92	80	NA	NA	NA

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   denominator from the World Population Prospects: 2012 revision from the UN Popula-
   tion Division (D+), and at least one supporting survey within 2 years [S+]. While well
   supported, the estimate still carries a risk of being wrong.

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   [R-], [D-], or [S-], challenges the estimate.

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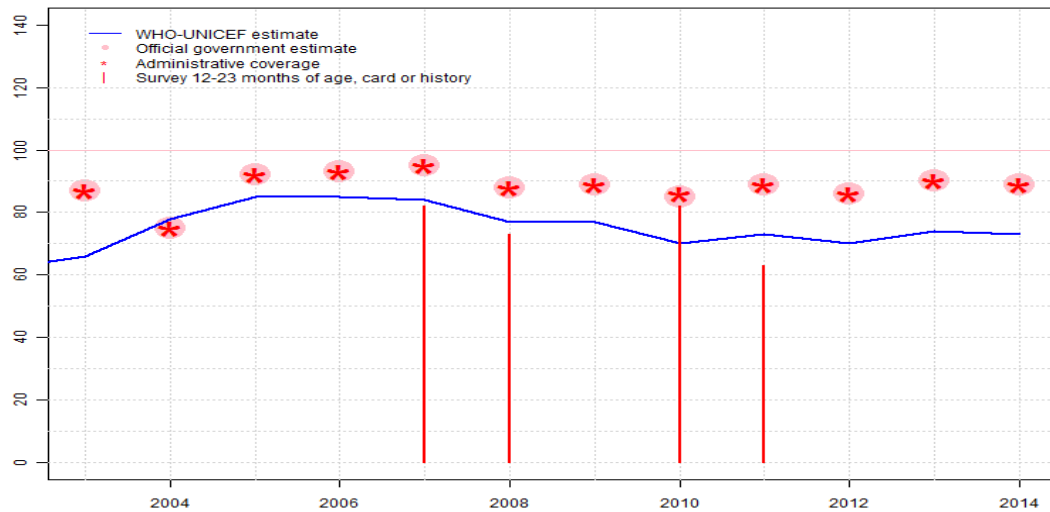   challenge the estimate.

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 interpolation between 2002 and 2007 levels. Fluctuating
   and inconsistent data suggest poor reporting. Reported data excluded.
   Unexplained increase from 76 percent to 99 percent with decrease 86 per-
   cent. Estimate challenged by: D-R-

2004: Reported data calibrated to 2002 and 2007 levels. GoC=D+

2005: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2006: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2007: Estimate based on survey results. Estimate challenged by: R-

2008: Survey evidence does not support reported data. Estimate based on survey
   results. Survey evidence of 84 percent based on 1 survey(s). Estimate
   challenged by: D-R-S-

2009: Reported data calibrated to 2008 and 2011 levels. Estimate challenged by:
   D-S-

2010: Reported data calibrated to 2008 and 2011 levels. Madagascar Immuniza-
   tion Coverage Evaluation, 2011 results ignored by working group. Survey
   results remain preliminary. Estimate challenged by: D-S-

2011: Survey evidence does not support reported data. Estimate based on survey
   results. Survey evidence of 80 percent based on 1 survey(s). Estimate
   challenged by: D-R-S-

2012: Reported data calibrated to 2011 levels. Since 2006, maternal and child
   health weeks have been conducted twice per year and serve as an impor-
   tant contribution towards routine immunization service delivery. In 2011
   and 2012, the maternal and child health weeks accounted for 20 to 30 per-
   cent of children 0 to 11 months of age reached with routine vaccination
   services. Estimate challenged by: D-S-

2013: Reported data calibrated to 2011 levels. Since 2006, maternal and child
   health weeks have been conducted twice per year and serve as an impor-
   tant contribution towards routine immunization service delivery. In 2011
   and 2012, the maternal and child health weeks accounted for 20 to 30 per-
   cent of children 0 to 11 months of age reached with routine vaccination
   services. Estimate challenged by: D-

2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-

Madagascar - DTP3

MDG - DTP3

Legend:
- WHO-UNICEF estimate
- Official government estimate
- * Administrative coverage
- I Survey 12-23 months of age, card or history

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	66	78	85	85	84	77	77	70	73	70	74	73
Estimate GoC	●	●●	●●	●●	●	●	●	●	●	●	●	●
Official	87	75	92	93	95	88	89	85	89	86	90	89
Administrative	87	75	92	93	95	88	89	86	89	86	90	89
Survey	NA	NA	NA	NA	82	73	NA	82	63	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
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which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence
intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around
the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is
not a judgment of the quality of data reported by national authorities.

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    denominator from the World Population Prospects: 2012 revision from the UN Popula-
    tion Division (D+), and at least one supporting survey within 2 years [S+]. While well
    supported, the estimate still carries a risk of being wrong.

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    [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 interpolation between 2002 and 2007 levels. Fluctuating
and inconsistent data suggest poor reporting. Reported data excluded.
Unexplained increase from 62 percent to 87 percent with decrease 75 per-
cent. Estimate challenged by: D-R-

2004: Reported data calibrated to 2002 and 2007 levels. Reported data excluded.
Decline in reported coverage from 87 percent to 75 percent with increase
to 92 percent. GoC=D+

2005: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2006: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2007: Survey evidence does not support reported data. Estimate based on survey
results. Survey evidence of 84 percent based on 1 survey(s). Madagascar
Immunization Coverage Survey 2008 card or history results of 82 percent
modifed for recall bias to 84 percent based on 1st dose card or history
coverage of 92 percent, 1st dose card only coverage of 67 percent and 3d
dose card only coverage of 61 percent. Estimate challenged by: R-

2008: Survey evidence does not support reported data. Estimate based on survey
results. Survey evidence of 77 percent based on 1 survey(s). Madagascar
Demographic and Health Survey 2008-2009 card or history results of 73
percent modifed for recall bias to 77 percent based on 1st dose card or his-
tory coverage of 84 percent, 1st dose card only coverage of 60 percent and
3d dose card only coverage of 55 percent. Estimate challenged by: R-S-

2009: Reported data calibrated to 2008 and 2011 levels. Estimate challenged by:
D-S-

2010: Reported data calibrated to 2008 and 2011 levels. Madagascar Immunization
Coverage Evaluation, 2011 results ignored by working group. Survey re-
sults remain preliminary.Madagascar Immunization Coverage Evaluation,
2011 card or history results of 82 percent modifed for recall bias to 83 per-
cent based on 1st dose card or history coverage of 92 percent, 1st dose card
only coverage of 53 percent and 3d dose card only coverage of 48 percent.
Estimate challenged by: D-S-

2011: Survey evidence does not support reported data. Estimate based on sur-
vey results. Survey evidence of 73 percent based on 1 survey(s). National
Monitoring of the Millenium Development Goals Survey in Madagascar;
ENSOMD 2012-2013 card or history results of 63 percent modifed for re-
call bias to 73 percent based on 1st dose card or history coverage of 80
percent, 1st dose card only coverage of 45 percent and 3d dose card only
coverage of 41 percent. Estimate challenged by: D-R-S-

2012: Reported data calibrated to 2011 levels. Since 2006, maternal and child
health weeks have been conducted twice per year and serve as an impor-
tant contribution towards routine immunization service delivery. In 2011
and 2012, the maternal and child health weeks accounted for 20 to 30 per-

cent of children 0 to 11 months of age reached with routine vaccination services. Estimate challenged by: D-S-

2013: Reported data calibrated to 2011 levels. Since 2006, maternal and child health weeks have been conducted twice per year and serve as an important contribution towards routine immunization service delivery. In 2011 and 2012, 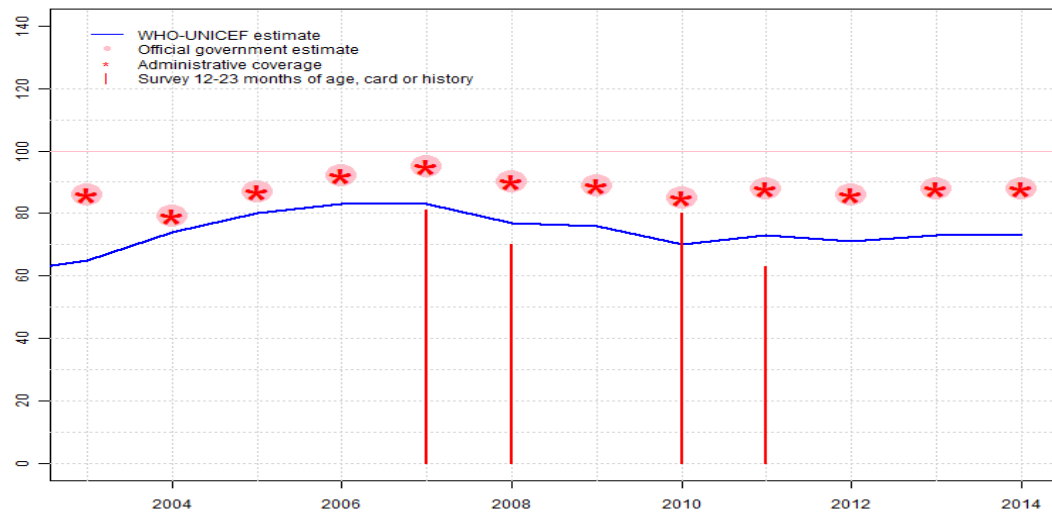the maternal and child health weeks accounted for 20 to 30 percent of children 0 to 11 months of age reached with routine vaccination services. Estimate challenged by: D-

2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-

MDG - Pol3

Legend:
- WHO-UNICEF estimate
- Official government estimate
- * Administrative coverage
- | Survey 12-23 months of age, card or history

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	65	74	80	83	83	77	76	70	73	71	73	73
Estimate GoC	●	●●	●●	●●	●	●	●	●	●	●	●	●
Official	86	79	87	92	95	90	89	85	88	86	88	88
Administrative	86	79	87	92	95	90	89	85	88	86	88	88
Survey	NA	NA	NA	NA	81	70	NA	80	63	NA	NA	NA

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The WHO and UNICEF estimates of national immunization coverage (wuenic) are based on data and information
that are of varying, and, in some instances, unknown quality.  Beginning with the 2011 revision we describe
the grade of confidence (GoC) we have in these estimates. As there is no underlying probability model upon
which the estimates are based, we are unable to present classical measures of uncertainty, e.g., confidence
intervals. Moreover, we have chosen not to make subjective estimates of plausibility/certainty ranges around
the coverage. The GoC reflects the degree of empirical support upon which the estimates are based. It is
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   denominator from the World Population Prospects: 2012 revision from the UN Popula-
   tion Division (D+), and at least one supporting survey within 2 years [S+]. While well
   supported, the estimate still carries a risk of being wrong.

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   [R-], [D-], or [S-], challenges the estimate.

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   challenge the estimate.

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

Description:

2003: Estimate based on interpolation between 2002 and 2007 levels. Fluctuat-
   ing and inconsistent data suggest poor reporting. Estimate challenged by:
   D-R-

2004: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2005: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2006: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2006: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2007: Survey evidence does not support reported data. Estimate based on survey
   results. Survey evidence of 83 percent based on 1 survey(s). Madagascar
   Immunization Coverage Survey 2008 card or history results of 81 percent
   modifed for recall bias to 83 percent based on 1st dose card or history
   coverage of 90 percent, 1st dose card only coverage of 65 percent and 3d
   dose card only coverage of 60 percent. Estimate challenged by: R-

2008: Survey evidence does not support reported data. Estimate based on survey
   results. Survey evidence of 77 percent based on 1 survey(s). Madagascar
   Demographic and Health Survey 2008-2009 card or history results of 70
   percent modifed for recall bias to 77 percent based on 1st dose card or his-
   tory coverage of 84 percent, 1st dose card only coverage of 60 percent and
   3d dose card only coverage of 55 percent. Estimate challenged by: D-R-S-

2009: Reported data calibrated to 2008 and 2011 levels. Estimate challenged by:
   D-S-

2010: Reported data calibrated to 2008 and 2011 levels. Madagascar Immuniza-
   tion Coverage Evaluation, 2011 results ignored by working group. Survey
   results remain preliminary. Estimate challenged by: D-S-

2011: Survey evidence does not support reported data. Estimate based on sur-
   vey results. Survey evidence of 73 percent based on 1 survey(s). National
   Monitoring of the Millenium Development Goals Survey in Madagascar;
   ENSOMD 2012-2013 card or history results of 63 percent modifed for re-
   call bias to 73 percent based on 1st dose card or history coverage of 80
   percent, 1st dose card only coverage of 45 percent and 3d dose card only
   coverage of 41 percent. Estimate challenged by: D-R-S-

2012: Reported data calibrated to 2011 levels. Since 2006, maternal and child
   health weeks have been conducted twice per year and serve as an impor-
   tant contribution towards routine immunization service delivery. In 2011
   and 2012, the maternal and child health weeks accounted for 20 to 30 per-
   cent of children 0 to 11 months of age reached with routine vaccination
   services. Estimate challenged by: D-S-

2013: Reported data calibrated to 2011 levels. Since 2006, maternal and child
   health weeks have been conducted twice per year and serve as an impor-
   tant contribution towards routine immunization service delivery. In 2011
   and 2012, the maternal and child health weeks accounted for 20 to 30 per-
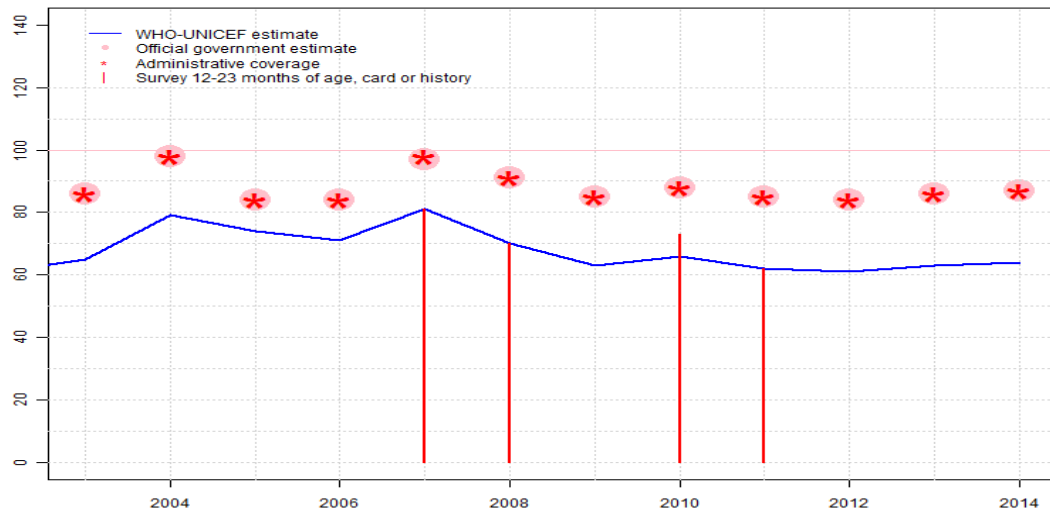
cent of children 0 to 11 months of age reached with routine vaccination services. Estimate challenged by: D-

2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-

Madagascar - MCV1

MDG - MCV1

Legend:
- WHO-UNICEF estimate
- Official government estimate
- * Administrative coverage
- | Survey 12-23 months of age, card or history

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	65	79	74	71	81	70	63	66	62	61	63	64
Estimate GoC	●	●	●●	●●	●	●	●	●	●	●	●	●
Official	86	98	84	84	97	91	85	88	85	84	86	87
Administrative	86	98	84	84	98	91	85	88	85	84	86	87
Survey	NA	NA	NA	NA	81	70	NA	73	62	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
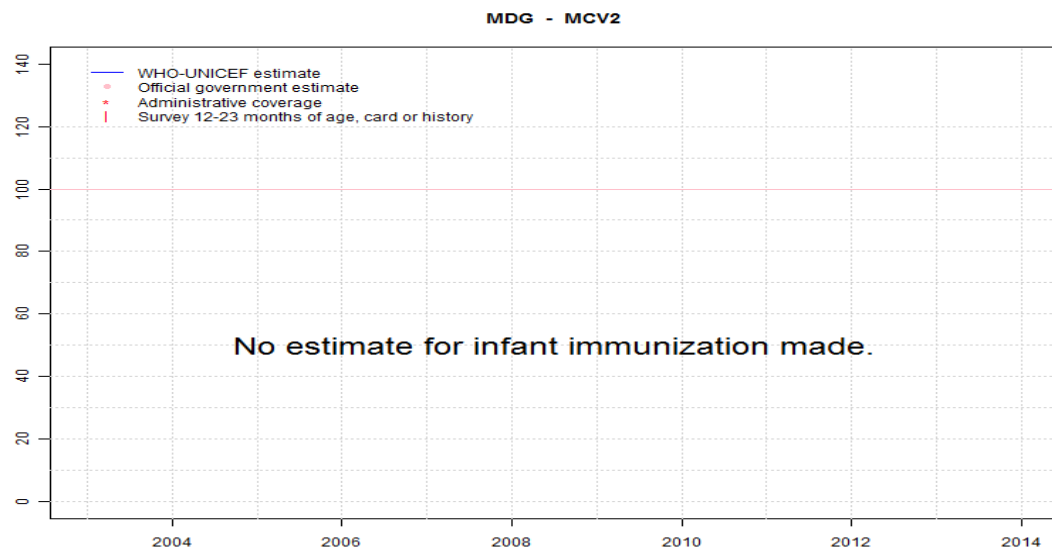not a judgment of the quality of data reported by national authorities.

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

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of the objective for which they are being used.

Description:

2003: Estimate based on interpolation between 2002 and 2007 levels. Fluctuat-
      ing and inconsistent data suggest poor reporting. Estimate challenged by:
      D-R-

2004: Reported data calibrated to 2002 and 2007 levels. Reported data excluded.
      Unexplained increase from 86 percent to 98 percent with decrease 84 per-
      cent. Estimate challenged by: D-

2005: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2006: Reported data calibrated to 2002 and 2007 levels. GoC=S+ D+

2007: Survey evidence does not support reported data. Estimate based on survey
      results. Survey evidence of 81 percent based on 1 survey(s). Estimate
      challenged by: R-

2008: Survey evidence does not support reported data. Estimate based on survey
      results. Survey evidence of 70 percent based on 1 survey(s). Estimate
      challenged by: D-R-S-

2009: Reported data calibrated to 2008 and 2011 levels. Estimate challenged by:
      D-S-

2010: Reported data calibrated to 2008 and 2011 levels. Madagascar Immuniza-
      tion Coverage Evaluation, 2011 results ignored by working group. Survey
      results remain preliminary. Estimate challenged by: D-S-

2011: Survey evidence does not support reported data. Estimate based on survey
      results. Survey evidence of 62 percent based on 1 survey(s). Estimate
      challenged by: D-R-S-

2012: Reported data calibrated to 2011 levels. Since 2006, maternal and child
      health weeks have been conducted twice per year and serve as an impor-
      tant contribution towards routine immunization service delivery. In 2011
      and 2012, the maternal and child health weeks accounted for 20 to 30 per-
      cent of children 0 to 11 months of age reached with routine vaccination
      services. Estimate challenged by: D-S-

2013: Reported data calibrated to 2011 levels. Since 2006, maternal and child
      health weeks have been conducted twice per year and serve as an impor-
      tant contribution towards routine immunization service delivery. In 2011
      and 2012, the maternal and child health weeks accounted for 20 to 30 per-
      cent of children 0 to 11 months of age reached with routine vaccination
      services. Estimate challenged by: D-

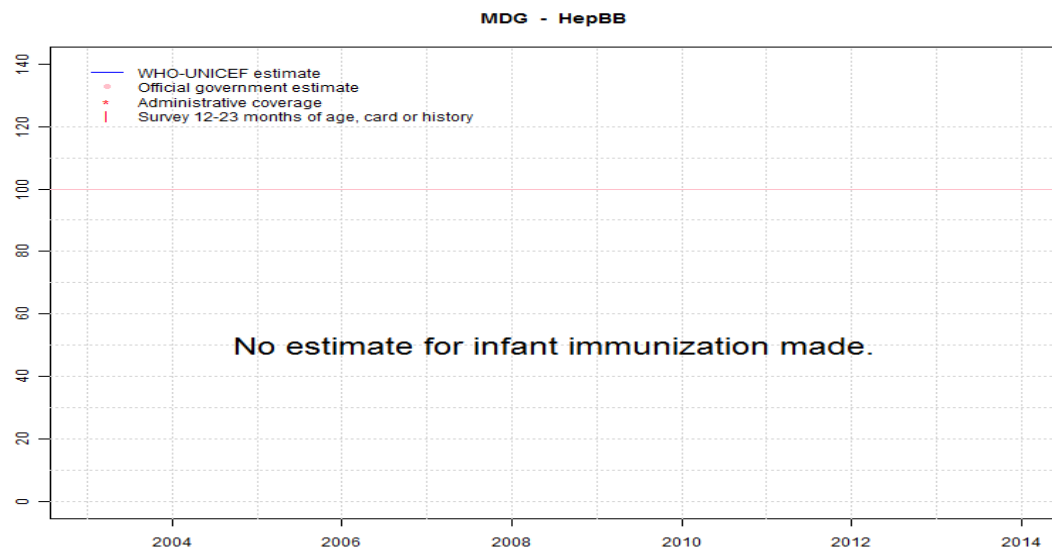2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-

Madagascar - MCV2

WHO-UNICEF estimate
Official government estimate
Administrative coverage
Survey 12-23 months of age, card or history

No estimate for infant immunization made.

	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
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challenge the estimate.

In all cases these estimates should be used with caution and should be assessed in light
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Madagascar - HepBB

MDG - HepBB

No estimate for infant immunization made.

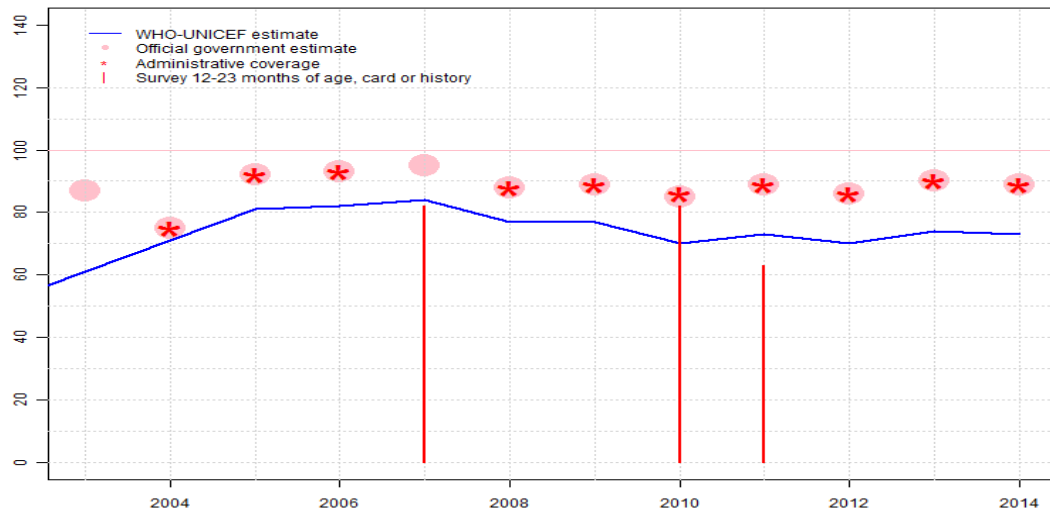|	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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
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● 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.

MDG - HepB3

Legend:
- WHO-UNICEF estimate
- Official government estimate
- * Administrative coverage
- | Survey 12-23 months of age, card or history

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	61	71	81	82	84	77	77	70	73	70	74	73
Estimate GoC	●	●●	●●	●●	●	●	●	●	●	●	●	●
Official	87	75	92	93	95	88	89	85	89	86	90	89
Administrative	NA	75	92	93	NA	88	89	86	89	86	90	89
Survey	NA	NA	NA	NA	82	NA	NA	82	63	NA	NA	NA

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

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

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

2003: Reported data calibrated to 2007 levels. Reported data excluded. Unexplained increase from 62 percent to 87 percent with decrease 75 percent. HepB vaccine introduced in 2002. Reporting started in 2003. GoC=No accepted empirical data

2004: Reported data calibrated to 2007 levels. Reported data excluded. Decline in reported coverage from 87 percent to 75 percent with increase to 92 percent. GoC=D+

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

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

2007: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 84 percent based on 1 survey(s). Madagascar Immunization Coverage Survey 2008 card or history results of 82 percent modifed for recall bias to 84 percent based on 1st dose card or history coverage of 92 percent, 1st dose card only coverage of 67 percent and 3d dose card only coverage of 61 percent. Estimate challenged by: R-

2008: Estimate follows DTP3 levels. Estimate challenged by: R-S-

2009: Reported data calibrated to 2008 and 2011 levels. Estimate challenged by: D-S-

2010: Reported data calibrated to 2008 and 2011 levels. Madagascar Immunization Coverage Evaluation, 2011 results ignored by working group. Survey results remain preliminary.Madagascar Immunization Coverage Evaluation, 2011 card or history results of 82 percent modifed for recall bias to 83 percent based on 1st dose card or history coverage of 92 percent, 1st dose card only coverage of 53 percent and 3d dose card only coverage of 48 percent. Estimate challenged by: D-S-

2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 73 percent based on 1 survey(s). National Monitoring of the Millenium Development Goals Survey in Madagascar; ENSOMD 2012-2013 card or history results of 63 percent modifed for recall bias to 73 percent based on 1st dose card or history coverage of 80 percent, 1st dose card only coverage of 45 percent and 3d dose card only coverage of 41 percent. Estimate challenged by: D-R-S-

2012: Reported data calibrated to 2011 levels. Since 2006, maternal and child health weeks have been conducted twice per year and serve as an important contribution towards routine immunization service delivery. In 2011 and 2012, the maternal and child health weeks accounted for 20 to 30 percent of children 0 to 11 months of age reached with routine vaccination services. Estimate challenged by: D-S-

2013: Reported data calibrated to 2011 levels. Since 2006, maternal and child health weeks have been conducted twice per year and serve as an important contribution towards routine immunization service delivery. In 2011

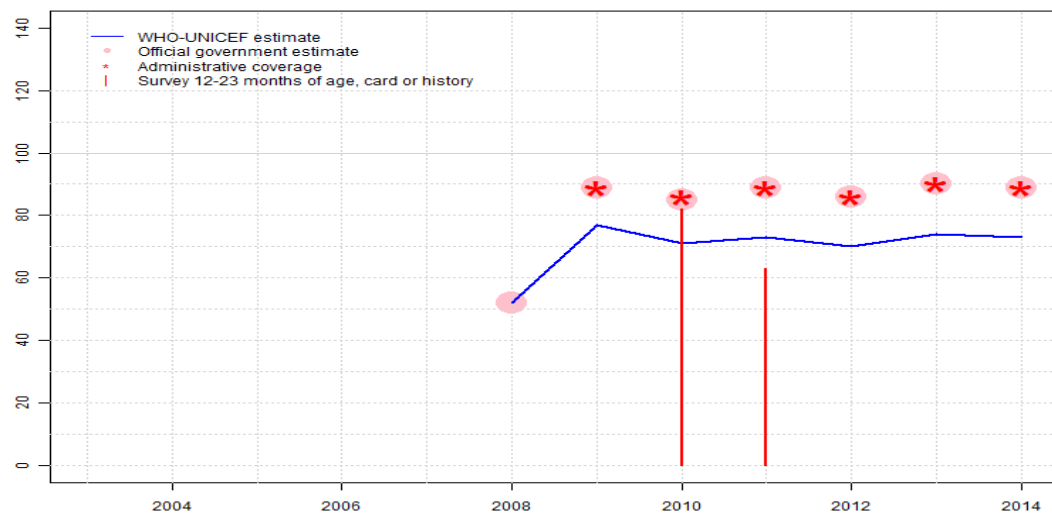and 2012, the maternal and child health weeks accounted for 20 to 30 per-
cent of children 0 to 11 months of age reached with routine vaccination
services. Estimate challenged by: D-

2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-

MDG - Hib3

Legend:
- WHO-UNICEF estimate
- Official government estimate
- * Administrative coverage
- | Survey 12-23 months of age, card or history

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	NA	NA	NA	NA	NA	52	77	71	73	70	74	73
Estimate GoC	NA	NA	NA	NA	NA	●	●	●	●	●	●	●
Official	NA	NA	NA	NA	NA	52	89	85	89	86	90	89
Administrative	NA	NA	NA	NA	NA	NA	89	86	89	86	90	89
Survey	NA	NA	NA	NA	NA	NA	NA	82	63	NA	NA	NA

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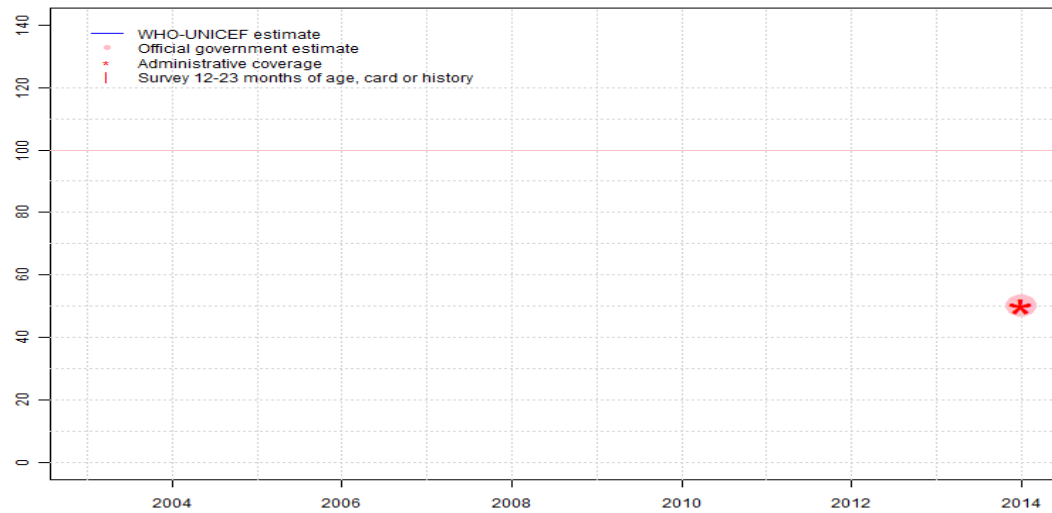
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Description:

2008: . Hib vaccine introduced in 2008 Vaccine presentation is DTP-HepB-Hib. Estimate challenged by: D-S-

2009: Estimate follows DTP3 levels. Estimate challenged by: D-R-S-

2010: Reported data calibrated to 2009 and 2011 levels. Madagascar Immunization Coverage Evaluation, 2011 results ignored by working group. Survey results remain preliminary.Madagascar Immunization Coverage Evaluation, 2011 card or history results of 82 percent modifed for recall bias to 83 percent based on 1st dose card or history coverage of 92 percent, 1st dose card only coverage of 53 percent and 3d dose card only coverage of 48 percent. Estimate challenged by: D-S-

2011: Survey evidence does not support reported data. Estimate based on survey results. Survey evidence of 73 percent based on 1 survey(s). National Monitoring of the Millenium Development Goals Survey in Madagascar; ENSOMD 2012-2013 card or history results of 63 percent modifed for recall bias to 73 percent based on 1st dose card or history coverage of 80 percent, 1st dose card only coverage of 45 percent and 3d dose card only coverage of 41 percent. Estimate challenged by: D-R-S-

2012: Reported data calibrated to 2011 levels. Since 2006, maternal and child health weeks have been conducted twice per year and serve as an important contribution towards routine immunization service delivery. In 2011 and 2012, the maternal and child health weeks accounted for 20 to 30 percent of children 0 to 11 months of age reached with routine vaccination services. Estimate challenged by: D-S-

2013: Reported data calibrated to 2011 levels. Since 2006, maternal and child health weeks have been conducted twice per year and serve as an important contribution towards routine immunization service delivery. In 2011 and 2012, the maternal and child health weeks accounted for 20 to 30 percent of children 0 to 11 months of age reached with routine vaccination services. Estimate challenged by: D-

2014: Reported data calibrated to 2011 levels. Estimate challenged by: D-

MDG - RotaC

Legend:
- WHO-UNICEF estimate
- Official government estimate
- Administrative coverage
- Survey 12-23 months of age, card or history

Description:

2014: Estimate based on coverage reported by national government. Rotavirus vaccine introduced during May 2014. GoC=Assigned by working group. Consistency with other vaccines.

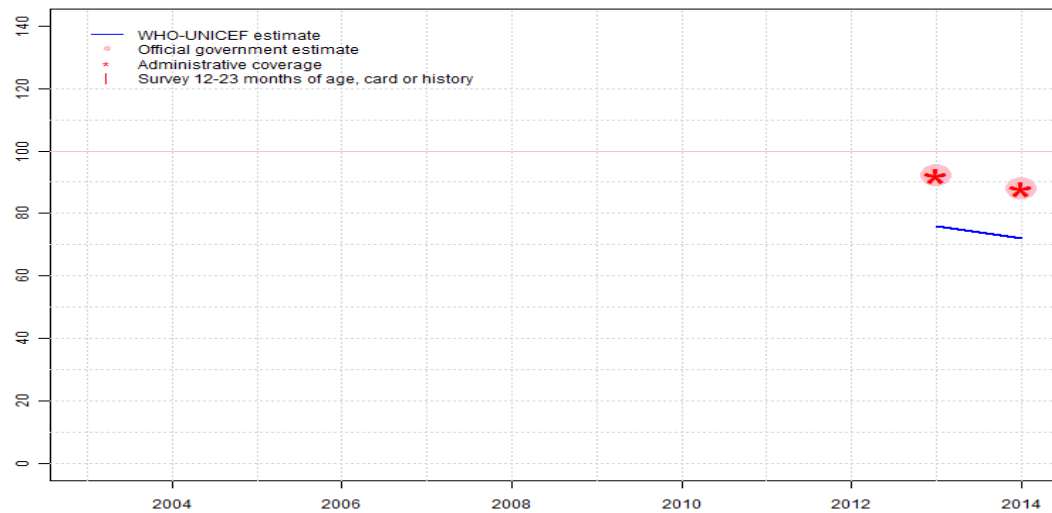|	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	50
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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.

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

Madagascar - PcV3

Description:

2013: Estimate is based on calibrated DTP3 level. Since 2006, maternal and child health weeks have been conducted twice per year and serve as an important contribution towards routine immunization service delivery. In 2011 and 2012, the maternal and child health weeks accounted for 20 to 30 percent of children 0 to 11 months of age reached with routine vaccination services. PcV vaccine introduced in 2012, reporting began in 2013. Estimate of 76 percent changed from previous revision value of 92 percent. Estimate challenged by: D-R-

2014: Reported data calibrated to 2013 levels. Estimate challenged by: D-

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	76	72
Estimate GoC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	●	●
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	92	88
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	92	88
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.

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Madagascar - survey details

2011 Enquete Nationale sur le Suivi des Objectifs du Millenaire pour le Development a Madagascar, ENSOMD 2012-2013

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	42	12-23 m	977	46
BCG	Card <12 months	80	12-23 m	977	46
BCG	Card or History	74	12-23 m	2125	46
BCG	History	32	12-23 m	1148	46
DTP1	Card	45	12-23 m	977	46
DTP1	Card <12 months	98	12-23 m	977	46
DTP1	Card or History	80	12-23 m	2125	46
DTP1	History	35	12-23 m	1148	46
DTP3	Card	41	12-23 m	977	46
DTP3	Card <12 months	98	12-23 m	977	46
DTP3	Card or History	63	12-23 m	2125	46
DTP3	History	22	12-23 m	1148	46
HepB1	Card	45	12-23 m	977	46
HepB1	Card <12 months	98	12-23 m	977	46
HepB1	Card or History	80	12-23 m	2125	46
HepB1	History	35	12-23 m	1148	46
HepB3	Card	41	12-23 m	977	46
HepB3	Card <12 months	98	12-23 m	977	46
HepB3	Card or History	63	12-23 m	2125	46
HepB3	History	22	12-23 m	1148	46
Hib1	Card	45	12-23 m	977	46
Hib1	Card <12 months	98	12-23 m	977	46
Hib1	Card or History	80	12-23 m	2125	46
Hib1	History	35	12-23 m	1148	46
Hib3	Card	41	12-23 m	977	46
Hib3	Card <12 months	98	12-23 m	977	46
Hib3	Card or History	63	12-23 m	2125	46
Hib3	History	22	12-23 m	1148	46
MCV1	Card	38	12-23 m	977	46
MCV1	Card <12 months	89	12-23 m	977	46
MCV1	Card or History	62	12-23 m	2125	46
MCV1	History	24	12-23 m	1148	46
Pol1	Card	45	12-23 m	977	46
Pol1	Card <12 months	98	12-23 m	977	46
Pol1	Card or History	80	12-23 m	2125	46
Pol1	History	35	12-23 m	1148	46
Pol3	Card	41	12-23 m	977	46
Pol3	Card <12 months	97	12-23 m	977	46
Pol3	Card or History	63	12-23 m	2125	46
Pol3	History	22	12-23 m	1148	46

2010 Evaluation de la couverture vaccinale, Madagascar, 2011

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	74	12-23 m	12848	56
BCG	Card or History	76	12-23 m	12848	56
BCG	Scar	70	12-23 m	12848	56
DTP1	Card	53	12-23 m	12848	56
DTP1	Card or History	92	12-23 m	12848	56
DTP3	Card	48	12-23 m	12848	56
DTP3	Card or History	82	12-23 m	12848	56
HepB1	Card	53	12-23 m	12848	56
HepB1	Card or History	92	12-23 m	12848	56
HepB3	Card	48	12-23 m	12848	56
HepB3	Card or History	82	12-23 m	12848	56
Hib1	Card	53	12-23 m	12848	56
Hib1	Card or History	92	12-23 m	12848	56
Hib3	Card	48	12-23 m	12848	56
Hib3	Card or History	82	12-23 m	12848	56
MCV1	Card	42	12-23 m	12848	56
MCV1	Card or History	73	12-23 m	12848	56
Pol1	Card	52	12-23 m	12848	56
Pol1	Card or History	89	12-23 m	12848	56
Pol3	Card	47	12-23 m	12848	56
Pol3	Card or History	80	12-23 m	12848	56

2008 Enquête Démographique et de Santé Madagascar 2008-2009

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	82	12-23 m	2309	60
BCG	Card	58	12-23 m	2309	60
BCG	Card or History	83	12-23 m	2309	60

Madagascar - survey details

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	History	25	12-23 m	2309	60
DTP1	C or H <12 months	84	12-23 m	2309	60
DTP1	Card	60	12-23 m	2309	60
DTP1	Card or History	84	12-23 m	2309	60
DTP1	History	24	12-23 m	2309	60
DTP3	C or H <12 months	71	12-23 m	2309	60
DTP3	Card	55	12-23 m	2309	60
DTP3	Card or History	73	12-23 m	2309	60
DTP3	History	18	12-23 m	2309	60
MCV1	C or H <12 months	62	12-23 m	2309	60
MCV1	Card	51	12-23 m	2309	60
MCV1	Card or History	70	12-23 m	2309	60
MCV1	History	19	12-23 m	2309	60
Pol1	C or H <12 months	84	12-23 m	2309	60
Pol1	Card	60	12-23 m	2309	60
Pol1	Card or History	84	12-23 m	2309	60
Pol1	History	24	12-23 m	2309	60
Pol3	C or H <12 months	68	12-23 m	2309	60
Pol3	Card	55	12-23 m	2309	60
Pol3	Card or History	70	12-23 m	2309	60
Pol3	History	15	12-23 m	2309	60

2007 Enqête sur la couverture vaccinale à Madagascar 2008

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	86	12-23 m	6632	72
BCG	Card or History	94	12-23 m	6632	72
BCG	History	9	12-23 m	6632	72
DTP1	Card	67	12-23 m	6632	72
DTP1	Card or History	92	12-23 m	6632	72
DTP1	History	25	12-23 m	6632	72
DTP3	Card	61	12-23 m	6632	72
DTP3	Card or History	82	12-23 m	6632	72
DTP3	History	21	12-23 m	6632	72
HepB1	Card	67	12-23 m	6632	72
HepB1	Card or History	92	12-23 m	6632	72
HepB1	History	25	12-23 m	6632	72
HepB3	Card	61	12-23 m	6632	72
HepB3	Card or History	82	12-23 m	6632	72
HepB3	History	21	12-23 m	6632	72
MCV1	Card	61	12-23 m	6632	72
MCV1	Card or History	81	12-23 m	6632	72
MCV1	History	20	12-23 m	6632	72
Pol1	Card	65	12-23 m	6632	72
Pol1	Card or History	90	12-23 m	6632	72
Pol1	History	25	12-23 m	6632	72
Pol3	Card	60	12-23 m	6632	72
Pol3	Card or History	81	12-23 m	6632	72
Pol3	History	21	12-23 m	6632	72

2002 République de Madagascar Enquêt Démographique et de Santé 2003-2004

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	C or H <12 months	69	12-23 m	1287	50
BCG	Card	48	12-23 m	1287	50
BCG	Card or history	72	12-23 m	1287	50
BCG	History	24	12-23 m	1287	50
DTP1	C or H <12 months	69	12-23 m	1287	50
DTP1	Card	48	12-23 m	1287	50
DTP1	Card or history	71	12-23 m	1287	50
DTP1	History	24	12-23 m	1287	50
DTP3	C or H <12 months	58	12-23 m	1287	50
DTP3	Card	43	12-23 m	1287	50
DTP3	Card or history	61	12-23 m	1287	50
DTP3	History	19	12-23 m	1287	50
MCV1	C or H <12 months	52	12-23 m	1287	50
MCV1	Card	42	12-23 m	1287	50
MCV1	Card or history	59	12-23 m	1287	50
MCV1	History	17	12-23 m	1287	50
Pol1	C or H <12 months	75	12-23 m	1287	50
Pol1	Card	49	12-23 m	1287	50
Pol1	Card or history	77	12-23 m	1287	50
Pol1	History	28	12-23 m	1287	50
Pol3	C or H <12 months	60	12-23 m	1287	50
Pol3	Card	44	12-23 m	1287	50
Pol3	Card or history	63	12-23 m	1287	50
Pol3	History	19	12-23 m	1287	50

1999 Madagascar MICS 2000

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	45	12-23 m	-	48
BCG	Card <12 months	42	12-23 m	-	48
BCG	Card or History	72	12-23 m	-	48
BCG	History	26	12-23 m	-	48
DTP1	Card	47	12-23 m	-	48
DTP1	Card <12 months	44	12-23 m	-	48
DTP1	Card or History	73	12-23 m	-	48
DTP1	History	26	12-23 m	-	48
DTP3	Card	40	12-23 m	-	48
DTP3	Card <12 months	37	12-23 m	-	48
DTP3	Card or History	55	12-23 m	-	48
DTP3	History	15	12-23 m	-	48
MCV1	Card	37	12-23 m	-	48
MCV1	Card <12 months	29	12-23 m	-	48
MCV1	Card or History	55	12-23 m	-	48
MCV1	History	18	12-23 m	-	48
Pol1	Card	48	12-23 m	-	48
Pol1	Card <12 months	44	12-23 m	-	48
Pol1	Card or History	84	12-23 m	-	48
Pol1	History	37	12-23 m	-	48
Pol3	Card	40	12-23 m	-	48
Pol3	Card <12 months	37	12-23 m	-	48
Pol3	Card or History	58	12-23 m	-	48
Pol3	History	17	12-23 m	-	48

1998 Madagascar EPM 1999

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	70	12-23 m	-	-
DTP3	Card or History	63	12-23 m	-	-
MCV1	Card or History	44	12-23 m	-	-
Pol3	Card or History	58	12-23 m	-	-

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

Madagascar
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	62
2004	63
2005	66
2006	71
2007	72
2008	76
2009	76
2010	76
2011	78
2012	78
2013	78
2014	78

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[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.