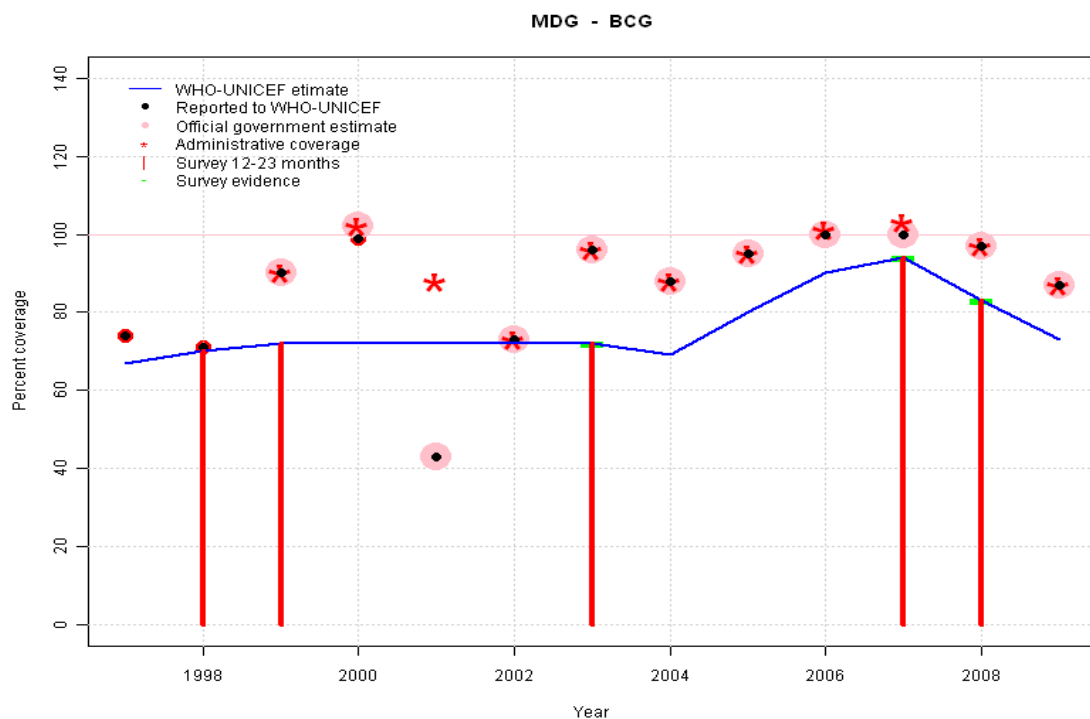


# Madagascar - BCG



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	67	70	72	72	72	72	72	69	80	90	94	83	73
Reported	74	71	90	99	43	73	96	88	95	100	100	97	87
Official	NA	NA	90	102	43	73	96	88	95	100	100	97	87
Administrative	NA	NA	90	102	88	73	96	88	95	101	103	97	87
Survey	NA	NA	NA	NA	NA	NA	72	NA	NA	NA	94	83	NA

## Description:

1997: Legacy estimate.

1998: Estimate based on working group decision to interpolated between 1997 and 1999. Fluctuating and inconsistent data suggest poor reporting. Survey results of 70 percent with sample size 0 ignored; sample size less than 300.

1999: Estimate based on survey results. Survey results of 72 percent with sample size 0 ignored; sample size less than 300.

2000: Estimate interpolated between 1999 and 2003 estimates.

2001: Estimate interpolated between 1999 and 2003 estimates. 2001 reported data (43 percent) inconsistent with data from other years.

2002: Estimate interpolated between 1999 and 2003 estimates.

2003: Estimate based on survey results. Reported data (96 percent) not consistent with survey results (72 percent).

2004: Reported data (88 percent) calibrated to 2003 and 2007 levels.

2005: Reported data (95 percent) calibrated to 2003 and 2007 levels.

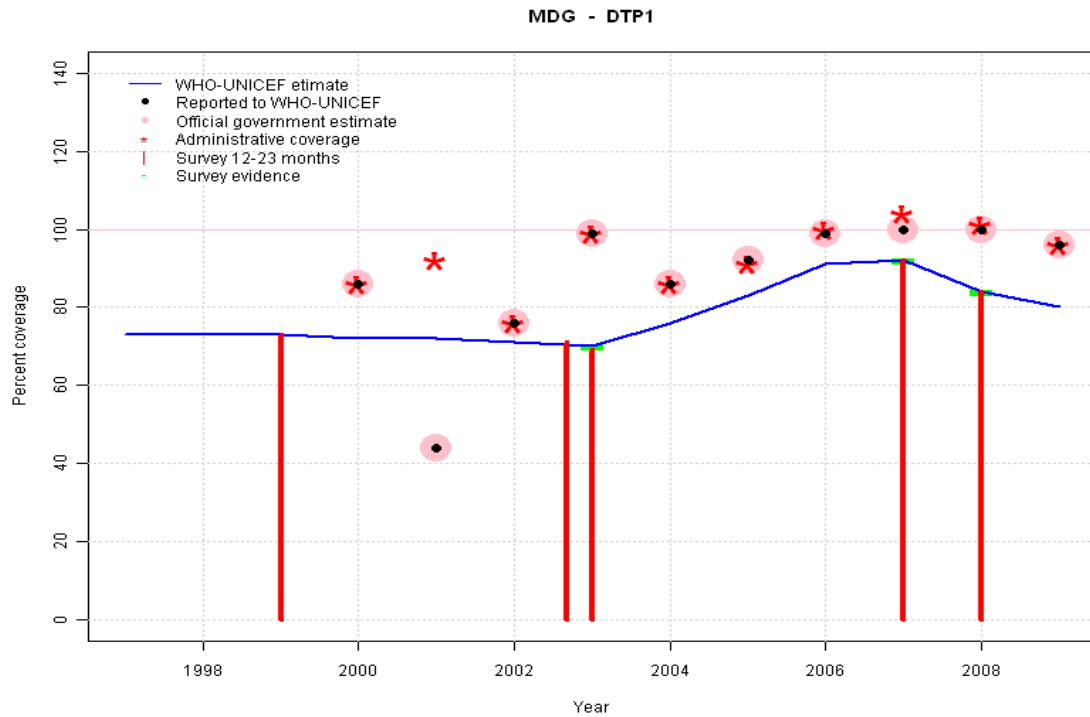
2006: Reported data (99 percent) calibrated to 2003 and 2007 levels.

2007: Estimate based on survey results.

2008: Estimate based on survey results. Reported data (97 percent) not consistent with survey results (83 percent).

2009: Estimate based on 2008 estimate calibrated to match the change in reported data from 2008 to 2009. Ministry of Health reports 15 days of vaccine shortage.

# Madagascar - DTP1

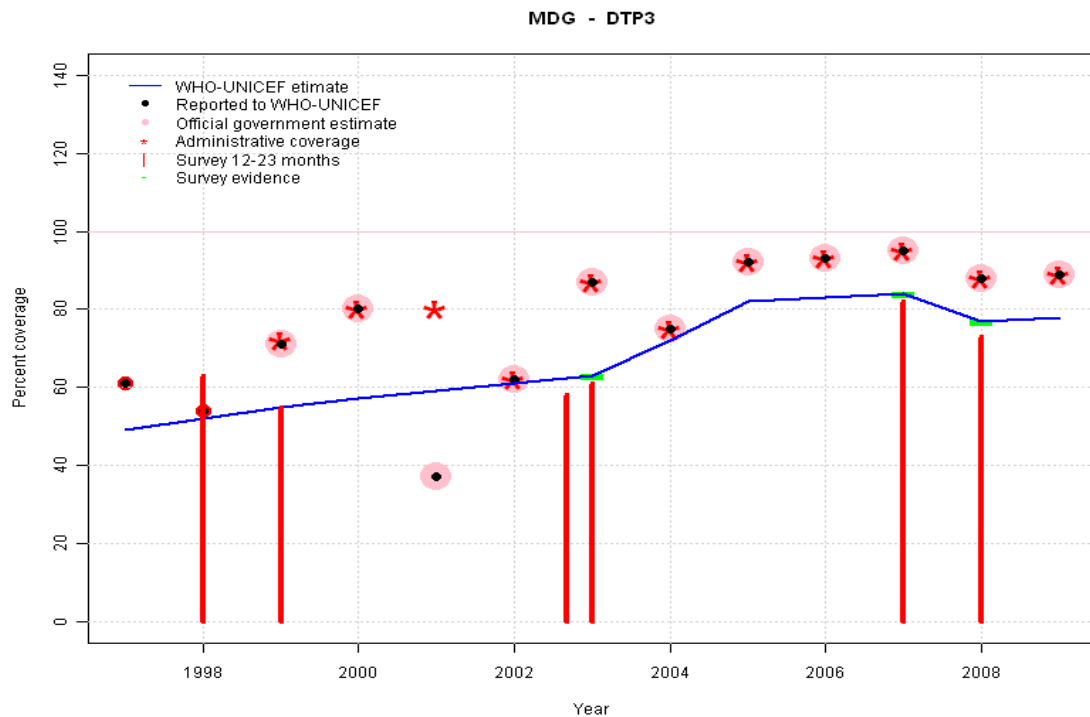


## Description:

- 1997: Legacy estimate.
- 1998: Estimate interpolated between 1997 and 1999 estimates.
- 1999: Estimate based on survey results. Survey results of 73 percent with sample size 0 ignored; sample size less than 300.
- 2000: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting.
- 2001: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting. 2001 reported data (44 percent) inconsistent with data from other years.
- 2002: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting.
- 2003: Estimate based on survey results. 2003 reported data (99 percent) inconsistent with data from other years.
- 2004: Reported data (86 percent) calibrated to 2003 and 2007 levels.
- 2005: Reported data (92 percent) calibrated to 2003 and 2007 levels.
- 2006: Reported data (99 percent) calibrated to 2003 and 2007 levels.
- 2007: Estimate based on survey results.
- 2008: Estimate based on survey results. Reported data (99 percent) not consistent with survey results (84 percent).
- 2009: Estimate based on 2008 estimate calibrated to match the change in reported data from 2008 to 2009.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	73	73	73	72	72	71	70	76	83	91	92	84	80
Reported	NA	NA	NA	86	44	76	99	86	92	99	100	100	96
Official	NA	NA	NA	86	44	76	99	86	92	99	100	100	96
Administrative	NA	NA	NA	86	92	76	99	86	91	100	104	101	96
Survey	NA	NA	NA	NA	NA	NA	70	NA	NA	NA	92	84	NA

# Madagascar - DTP3



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	49	52	55	57	59	61	63	72	82	83	84	77	78
Reported	61	54	71	80	37	62	87	75	92	93	95	88	89
Official	NA	NA	71	80	37	62	87	75	92	93	95	88	89
Administrative	NA	NA	72	80	80	62	87	75	92	93	95	88	89
Survey	NA	NA	NA	NA	NA	NA	63	NA	NA	NA	84	77	NA

## Description:

1997: Legacy estimate.

1998: Estimate based on working group decision to interpolated between 1997 and 1999. Fluctuating and inconsistent data suggest poor reporting. Survey results of 63 percent with sample size 0 ignored; sample size less than 300.

1999: Estimate based on survey results. Survey results of 55 percent with sample size 0 ignored; sample size less than 300.

2000: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting.

2001: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting. 2001 reported data (37 percent) inconsistent with data from other years.

2002: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting.

2003: Estimate based on survey results. Survey results (58 percent) adjusted for recall bias to 64 percent based on first dose card or history coverage (71 percent) and documented drop-out between first (48 percent) and third (43 percent) doses. Survey results (58 percent) adjusted for recall bias to 62 percent based on first dose card or history coverage (69 percent) and documented drop-out between first (48 percent) and third (43 percent) doses. Survey results (61 percent) adjusted for recall bias to 64 percent based on first dose card or history coverage (71 percent) and documented drop-out between first (48 percent) and third (43 percent) doses. Survey results (61 percent) adjusted for recall bias to 62 percent based on first dose card or history coverage (69 percent) and documented drop-out between first (48 percent) and third (43 percent) doses. 2003 reported data (87 percent) inconsistent with data from other years.

2004: Reported data (82 percent) calibrated to 2003 and 2007 levels. Missing or ignored reported value estimated by interpolation between reported values of 62 percent in 2002 and 92 percent in 2005. 2004 reported data (75 percent) inconsistent with data from other years.

2005: Reported data (92 percent) calibrated to 2003 and 2007 levels.

2006: Reported data (93 percent) calibrated to 2003 and 2007 levels.

2007: Estimate based on survey results. Reported data (95 percent) not consistent with survey results (84 percent). Survey results (82 percent) adjusted for recall bias to 84 percent based on first dose card or history coverage (92 percent) and documented drop-out between first (67 percent) and third (61 percent) doses.

2008: Estimate based on survey results. Reported data (88 percent) not consistent with survey results (77 percent). Survey results (73 percent) adjusted for recall bias to 77 percent based on first dose card or history coverage (84 percent) and documented drop-out between first (60 percent) and third

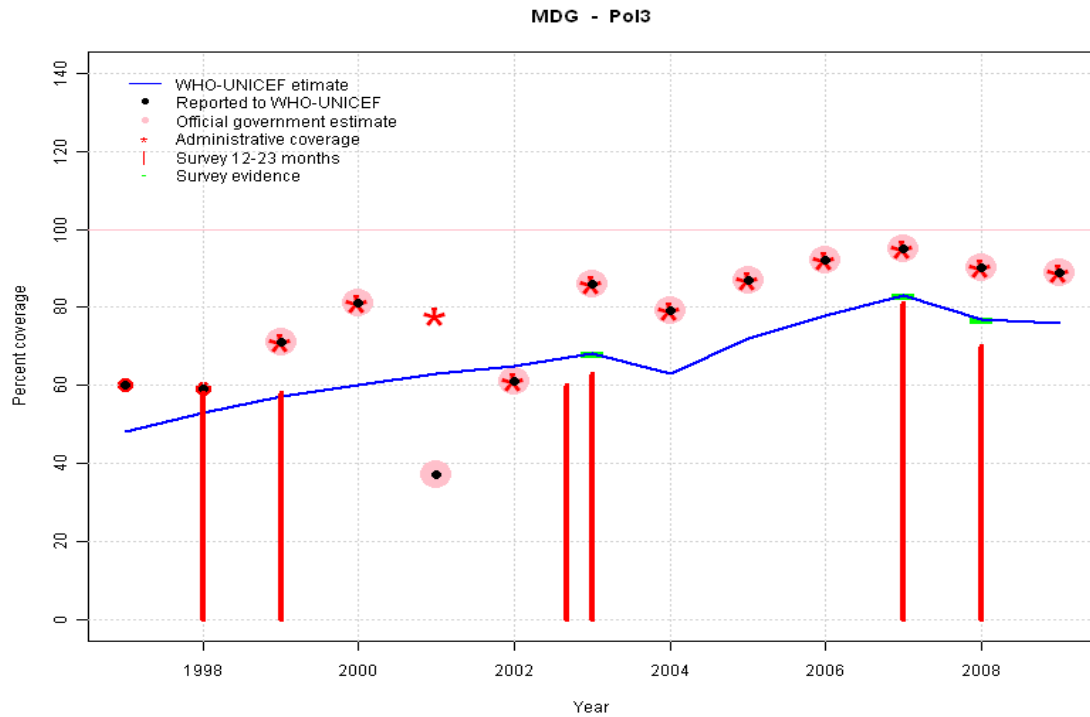
# Madagascar - DTP3

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(55 percent) doses.

2009: Estimate based on 2008 estimate calibrated to match the change in reported data from 2008 to 2009.

# Madagascar - Pol3



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	48	53	57	60	63	65	68	63	72	78	83	77	76
Reported	60	59	71	81	37	61	86	79	87	92	95	90	89
Official	NA	NA	71	81	37	61	86	79	87	92	95	90	89
Administrative	NA	NA	71	81	78	61	86	79	87	92	95	90	89
Survey	NA	NA	NA	NA	NA	NA	68	NA	NA	NA	83	77	NA

## Description:

1997: Legacy estimate.

1998: Estimate based on working group decision to interpolated between 1997 and 1999. Fluctuating and inconsistent data suggest poor reporting. Survey results of 58 percent with sample size 0 ignored; sample size less than 300.

1999: Estimate based on survey results. Survey results of 58 percent with sample size 0 ignored; sample size less than 300.

2000: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting.

2001: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting. 2001 reported data (37 percent) inconsistent with data from other years.

2002: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting.

2003: Estimate based on survey results. Reported data (86 percent) not consistent with survey results (68 percent). 4 surveys, results = 69, 67, 69, 67, mean = 68 percent. Survey results (60 percent) adjusted for recall bias to 69 percent based on first dose card or history coverage (77 percent) and documented drop-out between first (49 percent) and third (44 percent) doses. Survey results (60 percent) adjusted for recall bias to 67 percent based on first dose card or history coverage (75 percent) and documented drop-out between first (49 percent) and third (44 percent) doses. Survey results (63 percent) adjusted for recall bias to 69 percent based on first dose card or history coverage (77 percent) and documented drop-out between first (49 percent) and third (44 percent) doses. Survey results (63 percent) adjusted for recall bias to 67 percent based on first dose card or history coverage (75 percent) and documented drop-out between first (49 percent) and third (44 percent) doses. Survey results (63 percent) adjusted for recall bias to 69 percent based on first dose card or history coverage (77 percent) and documented drop-out between first (49 percent) and third (44 percent) doses. Survey results (63 percent) adjusted for recall bias to 67 percent based on first dose card or history coverage (75 percent) and documented drop-out between first (49 percent) and third (44 percent) doses.

2004: Reported data (79 percent) calibrated to 2003 and 2007 levels.

2005: Reported data (87 percent) calibrated to 2003 and 2007 levels.

2006: Reported data (92 percent) calibrated to 2003 and 2007 levels.

2007: Estimate based on survey results. Reported data (95 percent) not consistent with survey results (83 percent). Survey results (81 percent) adjusted for recall bias to 83 percent based on first dose card or history coverage (90 percent) and documented drop-out between first (65 percent) and third (60 percent) doses.

2008: Estimate based on survey results. Reported data (90 percent) not consistent with survey results (77 percent). Survey results (70 percent) adjusted for recall bias to 77 percent based on first dose card or history coverage (84 percent) and documented drop-out between first (60 percent) and third (55 percent) doses.

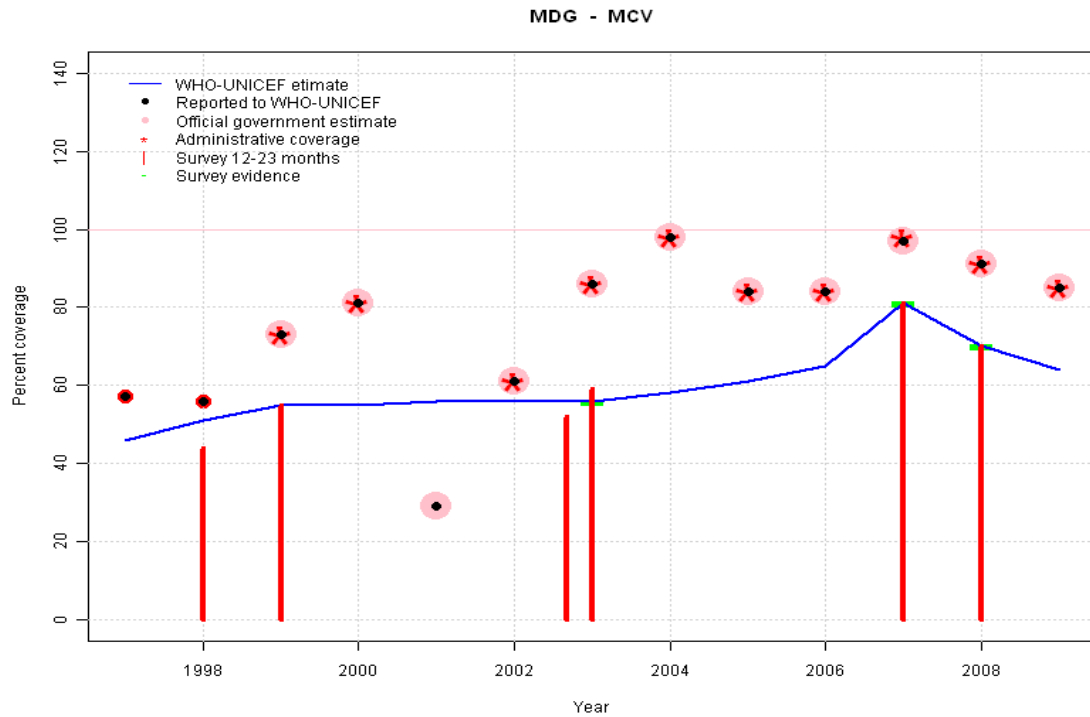
2009: Estimate based on 2008 estimate calibrated to match the change in reported

# Madagascar - Pol3

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data from 2008 to 2009.

# Madagascar - MCV



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	46	51	55	55	56	56	56	58	61	65	81	70	64
Reported	57	56	73	81	29	61	86	98	84	84	97	91	85
Official	NA	NA	73	81	29	61	86	98	84	84	97	91	85
Administrative	NA	NA	73	81	NA	61	86	98	84	84	98	91	85
Survey	NA	NA	NA	NA	NA	NA	56	NA	NA	NA	81	70	NA

## Description:

1997: Legacy estimate.

1998: Estimate based on working group decision to interpolated between 1997 and 1999. Fluctuating and inconsistent data suggest poor reporting. Survey results of 44 percent with sample size 0 ignored; sample size less than 300.

1999: Estimate based on survey results. Survey results of 55 percent with sample size 0 ignored; sample size less than 300.

2000: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting.

2001: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting. 2001 reported data (29 percent) inconsistent with data from other years.

2002: Estimate based on working group decision to interpolated between 1999 and 2003. Fluctuating and inconsistent data suggest poor reporting.

2003: Estimate based on survey results. Reported data (86 percent) not consistent with survey results (56 percent). 2 surveys, results = 52, 59, mean = 56 percent.

2004: Reported data (85 percent) calibrated to 2003 and 2007 levels. Missing or ignored reported value estimated by interpolation between reported values of 86 percent in 2003 and 84 percent in 2005. 2004 reported data (98 percent) inconsistent with data from other years.

2005: Reported data (84 percent) calibrated to 2003 and 2007 levels.

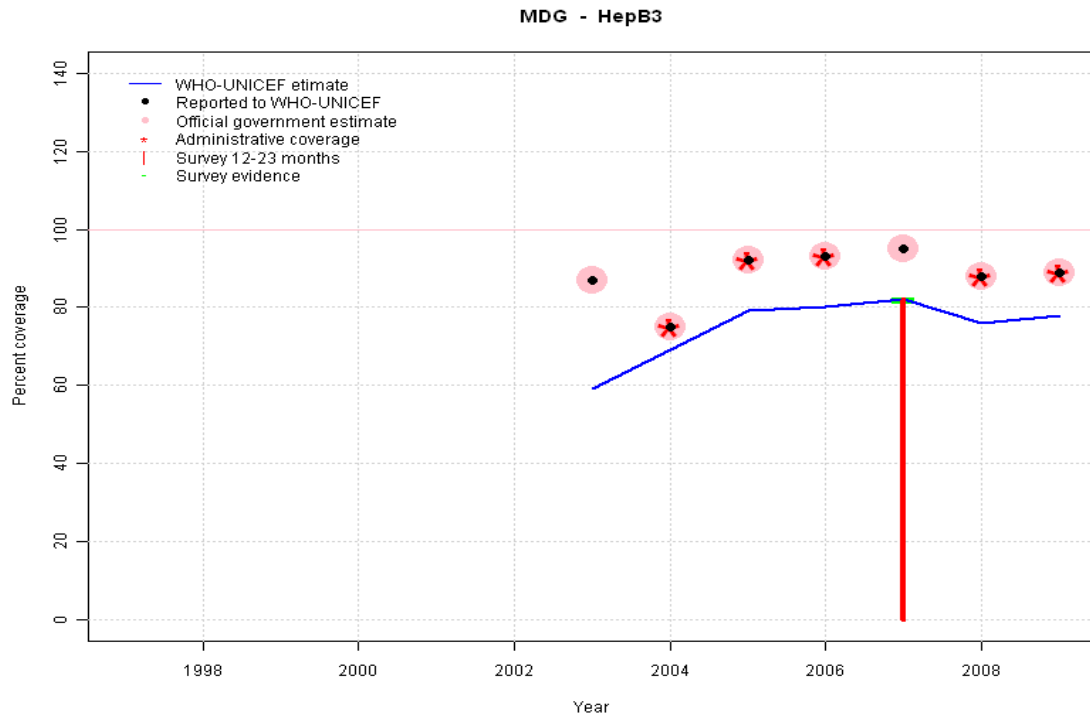
2006: Reported data (84 percent) calibrated to 2003 and 2007 levels.

2007: Estimate based on survey results. Reported data (97 percent) not consistent with survey results (81 percent).

2008: Estimate based on survey results. Reported data (91 percent) not consistent with survey results (70 percent).

2009: Estimate based on 2008 estimate calibrated to match the change in reported data from 2008 to 2009.

# Madagascar - HepB3



## Description:

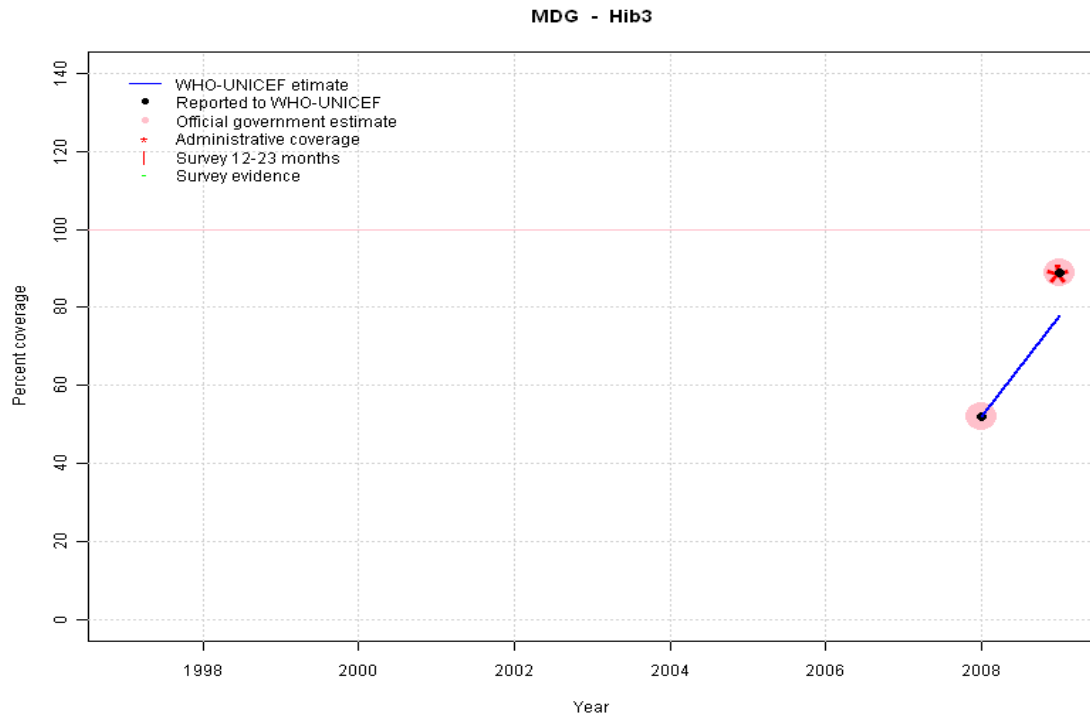
- 2003: Reported data (72 percent) calibrated to 2007 level (82 percent). 2003 reported data (87 percent) inconsistent with data from other years. HepB introduced in 2002. Reporting started in 2003.
- 2004: Reported data (82 percent) calibrated to 2007 level (82 percent). 2004 reported data (75 percent) inconsistent with data from other years.
- 2005: Reported data (92 percent) calibrated to 2007 level (82 percent).
- 2006: Reported data (93 percent) calibrated to 2007 level (82 percent).
- 2007: Estimate based on survey results. Reported data (95 percent) not consistent with survey results (82 percent).
- 2008: Reported data (88 percent) calibrated to 2007 and 2009 levels.
- 2009: Estimate follows DTP3 levels.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	NA	NA	NA	NA	NA	NA	59	69	79	80	82	76	78
Reported	NA	NA	NA	NA	NA	NA	87	75	92	93	95	88	89
Official	NA	NA	NA	NA	NA	NA	87	75	92	93	95	88	89
Administrative	NA	NA	NA	NA	NA	NA	NA	75	92	93	NA	88	89
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	82	NA	NA

# Madagascar - Hib3

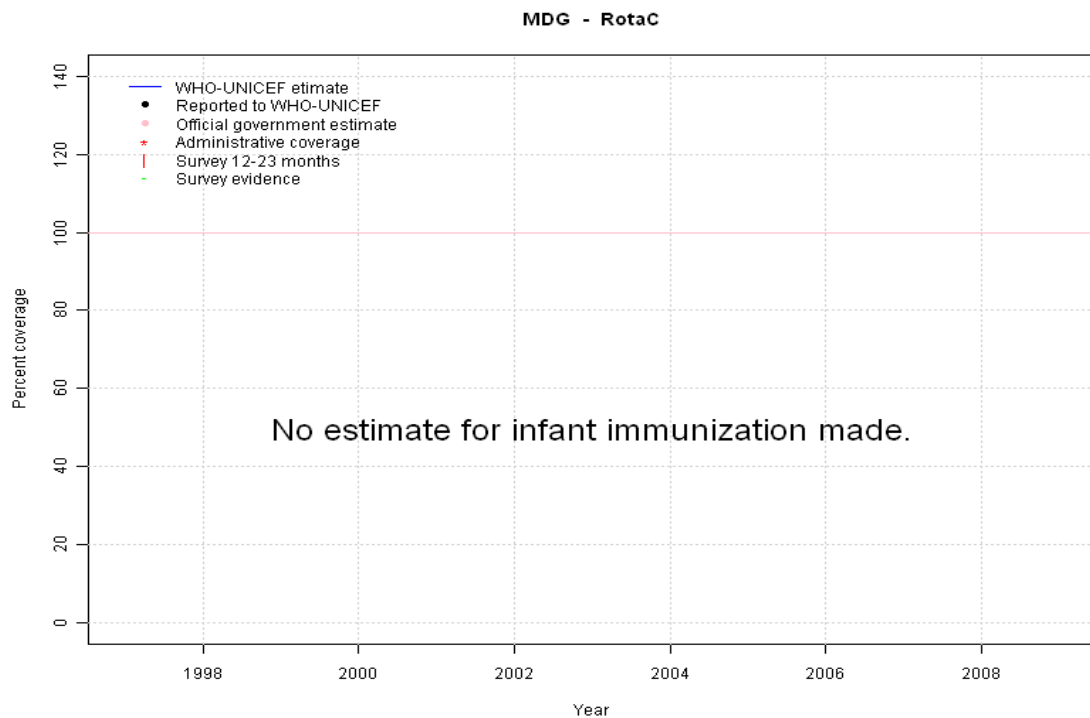
## Description:

2008: Hib introduced in 2008 Vaccine presentation is DTP-HepB-Hib.  
 2009: Estimate follows DTP3 levels. 2009 reported data (89 percent) inconsistent with data from other years.



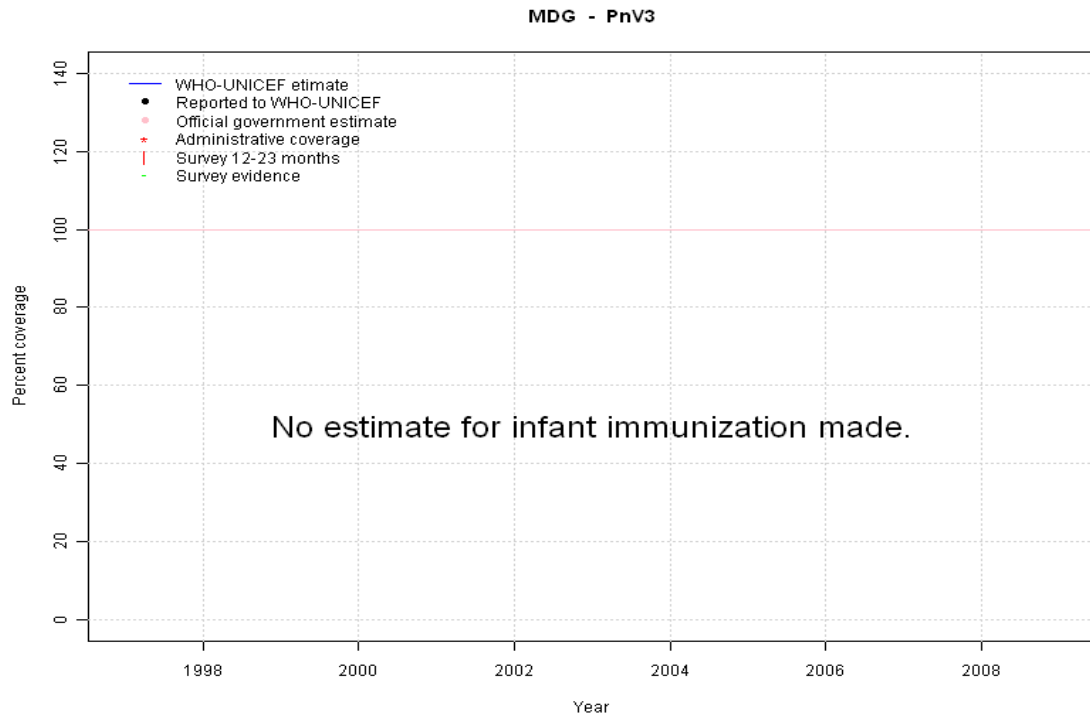
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	52	78
Reported	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	52	89
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	52	89
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	89
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

# Madagascar - RotaC



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Reported	NA	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	NA
Administrative	NA	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	NA

# Madagascar - PnV3



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Reported	NA	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	NA
Administrative	NA	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	NA

# Madagascar - survey details

## 2008 Enquête Démographique et de Santé Madagascar 2008-2009

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	58	12-23 m	2309	60
BCG	History	25	12-23 m	2309	60
BCG	Card or History	83	12-23 m	2309	60
BCG	C or H <12 months	82	12-23 m	2309	60
DTP1	Card or History	84	12-23 m	2309	60
DTP1	History	24	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
DTP3	Card	55	12-23 m	2309	60
DTP3	C or H <12 months	71	12-23 m	2309	60
DTP3	Card or History	73	12-23 m	2309	60
DTP3	History	18	12-23 m	2309	60
MCV	Card	51	12-23 m	2309	60
MCV	C or H <12 months	62	12-23 m	2309	60
MCV	History	19	12-23 m	2309	60
MCV	Card or History	70	12-23 m	2309	60
Pol1	History	24	12-23 m	2309	60
Pol1	Card or History	84	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
Pol3	History	15	12-23 m	2309	60
Pol3	Card or History	70	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

## 2007 Enquête 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	History	25	12-23 m	6632	72
HepB1	Card	67	12-23 m	6632	72
HepB1	Card or History	92	12-23 m	6632	72
HepB3	History	21	12-23 m	6632	72
HepB3	Card or History	82	12-23 m	6632	72
HepB3	Card	61	12-23 m	6632	72
MCV	Card	61	12-23 m	6632	72
MCV	Card or History	81	12-23 m	6632	72
MCV	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

## 2003 République de Madagascar Enquête Démographique et de Santé 2003-2004

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

# Madagascar - survey details

Pol1	Card	49	12-23 m	1287	50
Pol1	Card or history	75	12-23 m	1287	50
Pol1	Card or history	77	12-23 m	1287	50
Pol3	Card or history	60	12-23 m	1287	50
Pol3	Card or history	63	12-23 m	1287	50
Pol3	History	19	12-23 m	1287	50
Pol3	Card	44	12-23 m	1287	50

## 1999 Madagascar MICS 2000

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card	45	12-23 m	0	48
BCG	Card <12 months	42	12-23 m	0	48
BCG	Card or History	72	12-23 m	0	48
BCG	History	26	12-23 m	0	48
DTP1	Card	47	12-23 m	0	48
DTP1	Card <12 months	44	12-23 m	0	48
DTP1	Card or History	73	12-23 m	0	48
DTP1	History	26	12-23 m	0	48
DTP3	History	15	12-23 m	0	48
DTP3	Card	40	12-23 m	0	48
DTP3	Card <12 months	37	12-23 m	0	48

DTP3	Card or History	55	12-23 m	0	48
MCV	Card <12 months	29	12-23 m	0	48
MCV	Card or History	55	12-23 m	0	48
MCV	History	18	12-23 m	0	48
MCV	Card	37	12-23 m	0	48
Pol1	History	37	12-23 m	0	48
Pol1	Card	48	12-23 m	0	48
Pol1	Card <12 months	44	12-23 m	0	48
Pol1	Card or History	84	12-23 m	0	48
Pol3	History	17	12-23 m	0	48
Pol3	Card or History	58	12-23 m	0	48
Pol3	Card	40	12-23 m	0	48
Pol3	Card <12 months	37	12-23 m	0	48

## 1998 Madagascar EPM 1999

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	70	12-23 m	0	0
DTP3	Card or History	63	12-23 m	0	0
MCV	Card or History	44	12-23 m	0	0
Pol3	Card or History	58	12-23 m	0	0

Further information and estimates for 1980-1996 are available at:

[http://www.childinfo.org/immunization\\_countryreports.html](http://www.childinfo.org/immunization_countryreports.html)

[http://www.who.int/immunization\\_monitoring/routine/immunization\\_coverage/en/index4.html](http://www.who.int/immunization_monitoring/routine/immunization_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 receive 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.

Year	PAB coverage estimate (%)
1997	47
1998	48
1999	54
2000	58
2001	60
2002	61
2003	62
2004	63
2005	66
2006	71
2007	72
2008	76
2009	76

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<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.