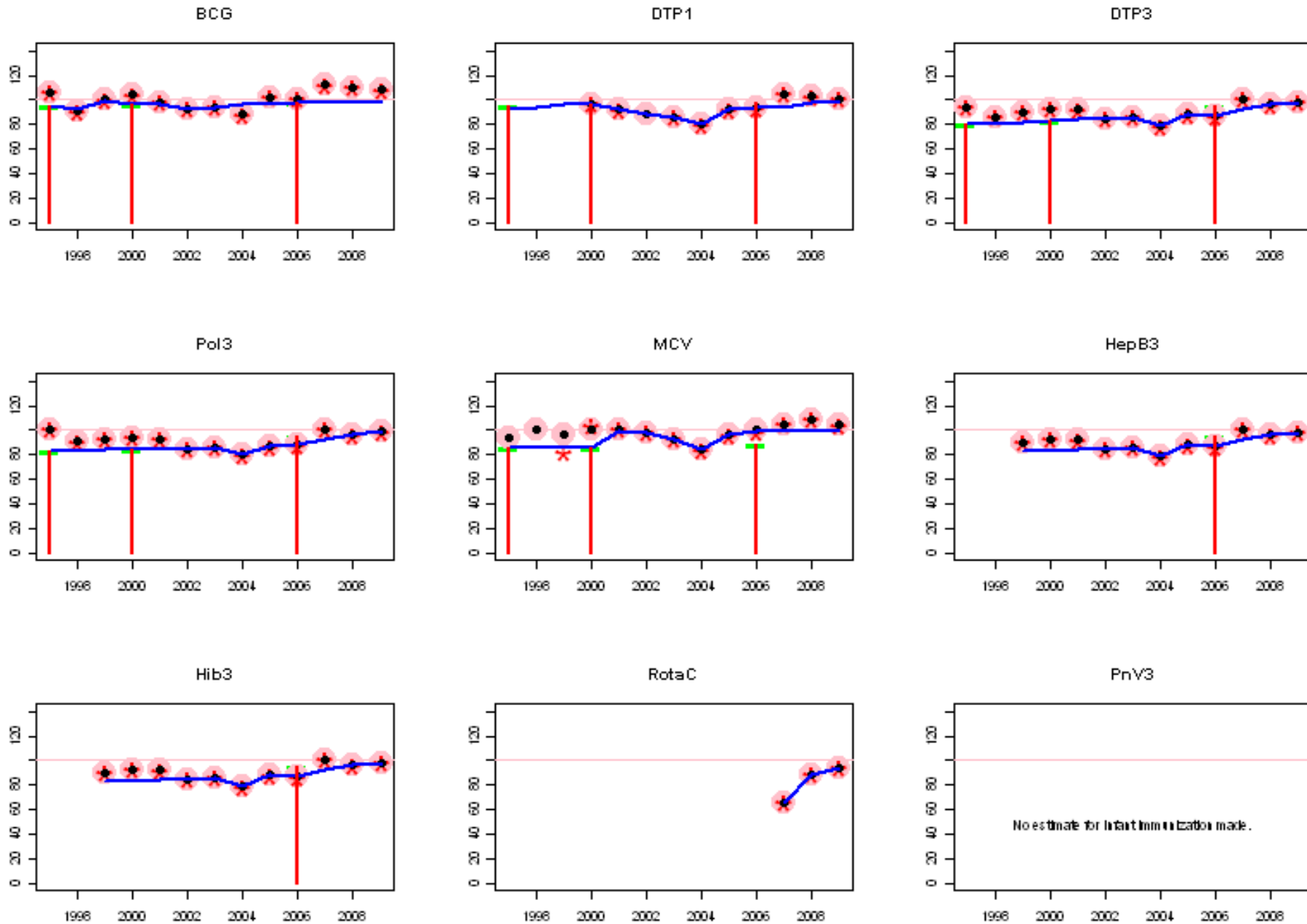
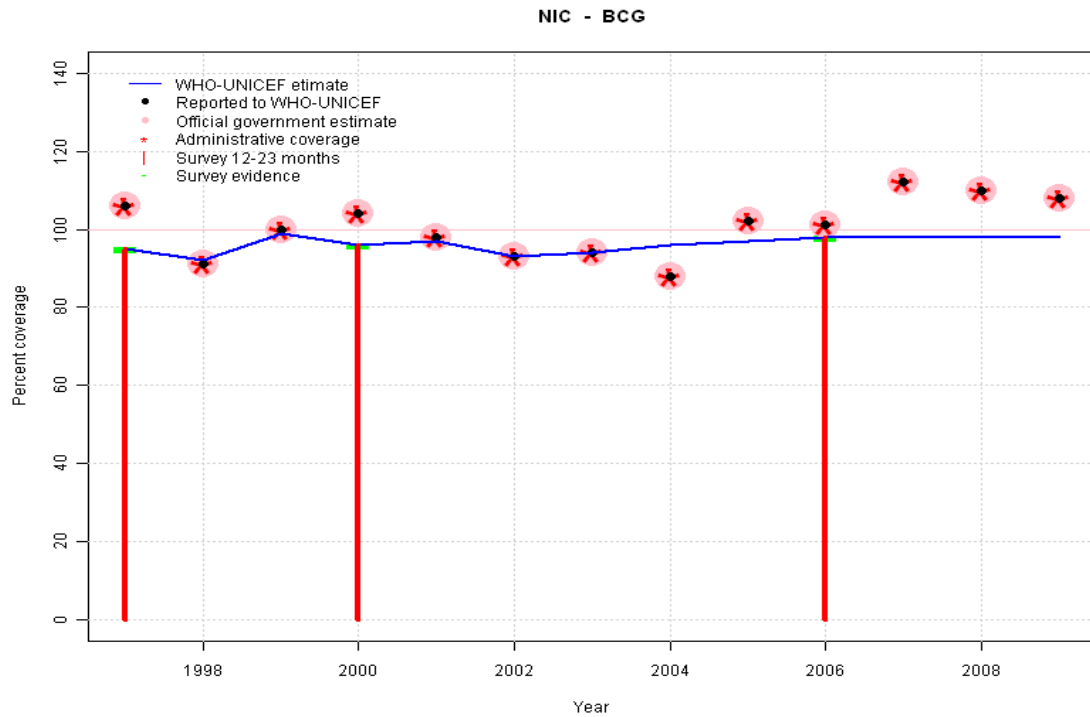


Nicaragua: WHO and UNICEF estimates of immunization coverage, 1997 - 2009



Nicaragua - BCG



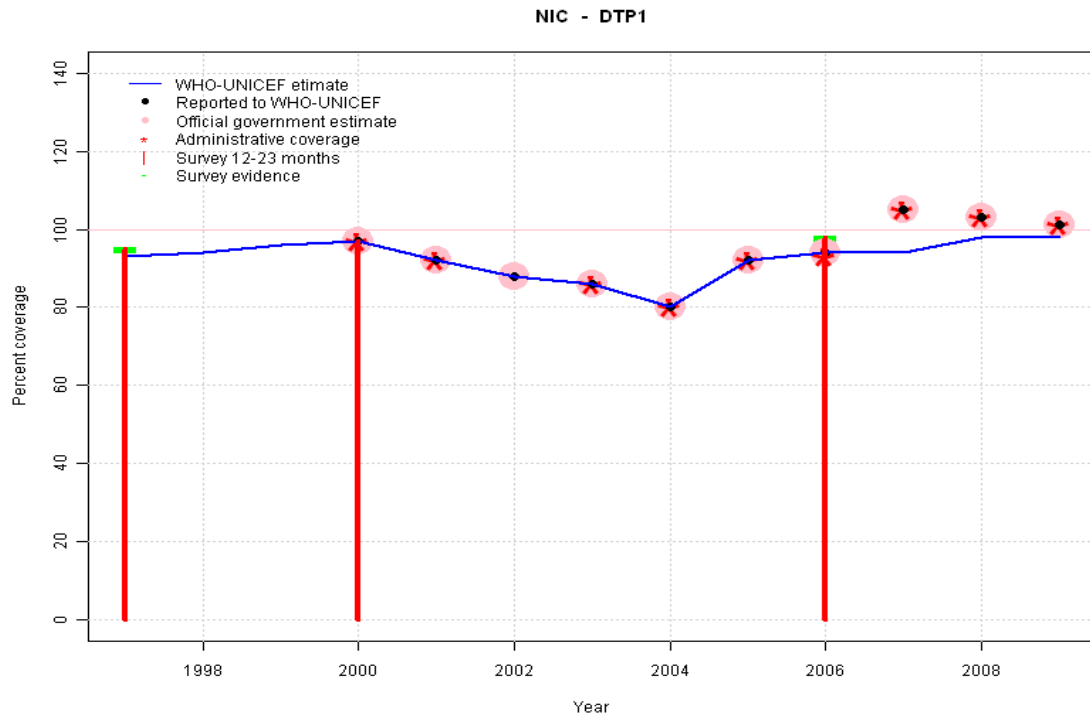
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	95	92	99	96	97	93	94	96	97	98	98	98	98
Reported	106	91	100	104	98	93	94	88	102	101	112	110	108
Official	106	91	100	104	98	93	94	88	102	101	112	110	108
Administrative	106	91	100	104	98	93	94	88	102	101	112	110	108
Survey	95	NA	NA	96	NA	NA	NA	NA	NA	98	NA	NA	NA

Description:

- 1997: Legacy estimate. 1997 reported data (106 percent) ignored; greater than 100 percent.
- 1998: Reported data (91 percent) calibrated to 1997 and 2000 levels.
- 1999: Reported data (99 percent) calibrated to 1997 and 2000 levels.
- 2000: Nationally reported estimates are based on 1985 census and likely overestimate true coverage. 2000 reported data (104 percent) ignored; greater than 100 percent.
- 2001: Reported data (98 percent) calibrated to 2000 and 2002 levels.
- 2002: Estimates since 2002 are based on national estimates using revised population projections
- 2003: Estimate interpolated between 2002 and 2006 estimates.
- 2004: Estimate interpolated between 2002 and 2006 estimates.
- 2005: Estimate interpolated between 2002 and 2006 estimates. 2005 reported data (102 percent) ignored; greater than 100 percent.
- 2006: Survey confirms high levels of coverage. 2006 reported data (101 percent) ignored; greater than 100 percent.
- 2007: Estimate extrapolated from 2006 level (98 percent). 2007 reported data (112 percent) ignored; greater than 100 percent.
- 2008: Estimate extrapolated from 2006 level (98 percent). 2008 reported data (110 percent) ignored; greater than 100 percent.
- 2009: Estimate extrapolated from 2006 level (98 percent). 2009 reported data (108 percent) ignored; greater than 100 percent.

Nicaragua - DTP1

Description:

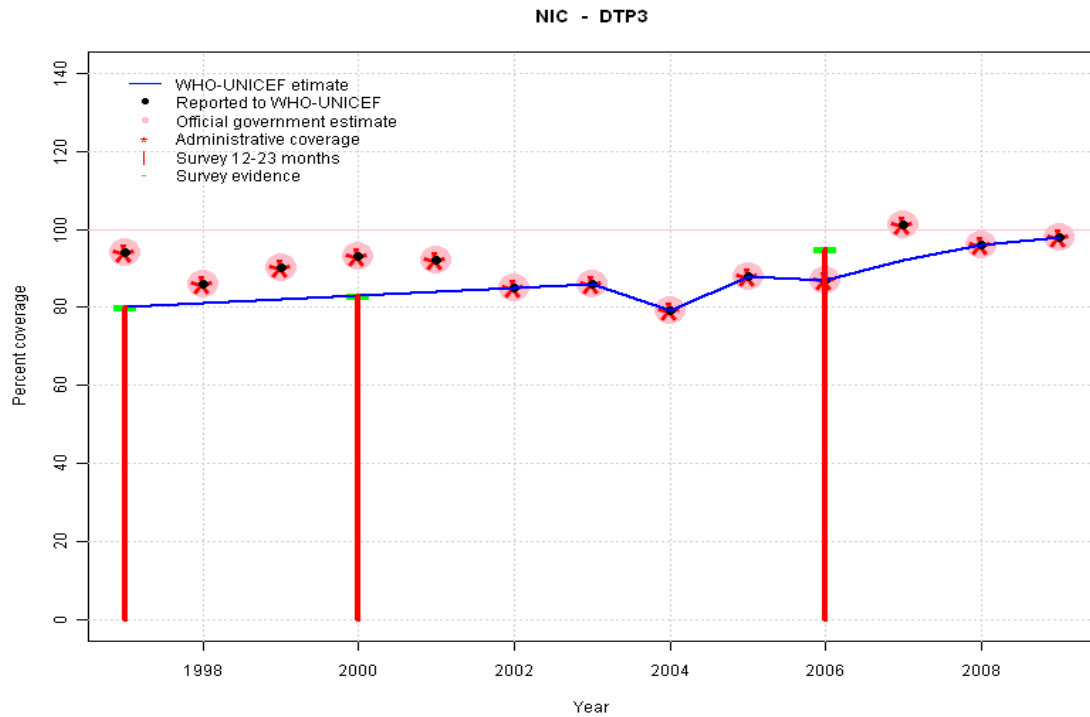


- 1997: Legacy estimate.
- 1998: Estimate interpolated between 1997 and 2000 estimates.
- 1999: Estimate interpolated between 1997 and 2000 estimates.
- 2000: Estimate based on reported data (97 percent) confirmed by survey (97 percent).
- 2001: Estimate based on reported data.
- 2002: Estimate based on reported data.
- 2003: Estimate based on reported data.
- 2004: Estimate based on reported data.
- 2005: Estimate based on reported data.
- 2006: Estimate based on reported data (94 percent) confirmed by survey (98 percent).
- 2007: Estimate based on trend in reported data. Missing or ignored reported value estimated by extrapolation from 2006 reported value of 94 percent. 2007 reported data (105 percent) ignored; greater than 100 percent.
- 2008: Estimated DTP3 greater than estimated DTP1; DTP1 estimate based on the relationship between DTP1 and DTP3 from 282 surveys.
- 2009: Estimated DTP3 greater than estimated DTP1; DTP1 estimate based on the relationship between DTP1 and DTP3 from 282 surveys.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	93	94	96	97	92	88	86	80	92	94	94	98	98
Reported	NA	NA	NA	97	92	88	86	80	92	94	105	103	101
Official	NA	NA	NA	97	92	88	86	80	92	94	105	103	101
Administrative	NA	NA	NA	97	92	NA	86	80	92	93	105	103	101
Survey	95	NA	NA	97	NA	NA	NA	NA	NA	98	NA	NA	NA

Nicaragua - DTP3

Description:



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	80	81	82	83	84	85	86	79	88	87	92	96	98
Reported	94	86	90	93	92	85	86	79	88	87	101	96	98
Official	94	86	90	93	92	85	86	79	88	87	101	96	98
Administrative	94	86	90	93	92	85	86	79	88	87	101	96	98
Survey	80	NA	NA	83	NA	NA	NA	NA	NA	95	NA	NA	NA

1997: Legacy estimate.

1998: Estimate interpolated between 1997 and 2000 estimates.

1999: Estimate interpolated between 1997 and 2000 estimates.

2000: Nationally reported estimates are based on 1985 census and likely overestimate true coverage.

2001: Estimate interpolated between 2000 and 2002 estimates.

2002: Estimates since 2002 are based on national estimates using revised population projections

2003: Estimate based on reported data.

2004: Estimate based on reported data.

2005: Estimate based on reported data.

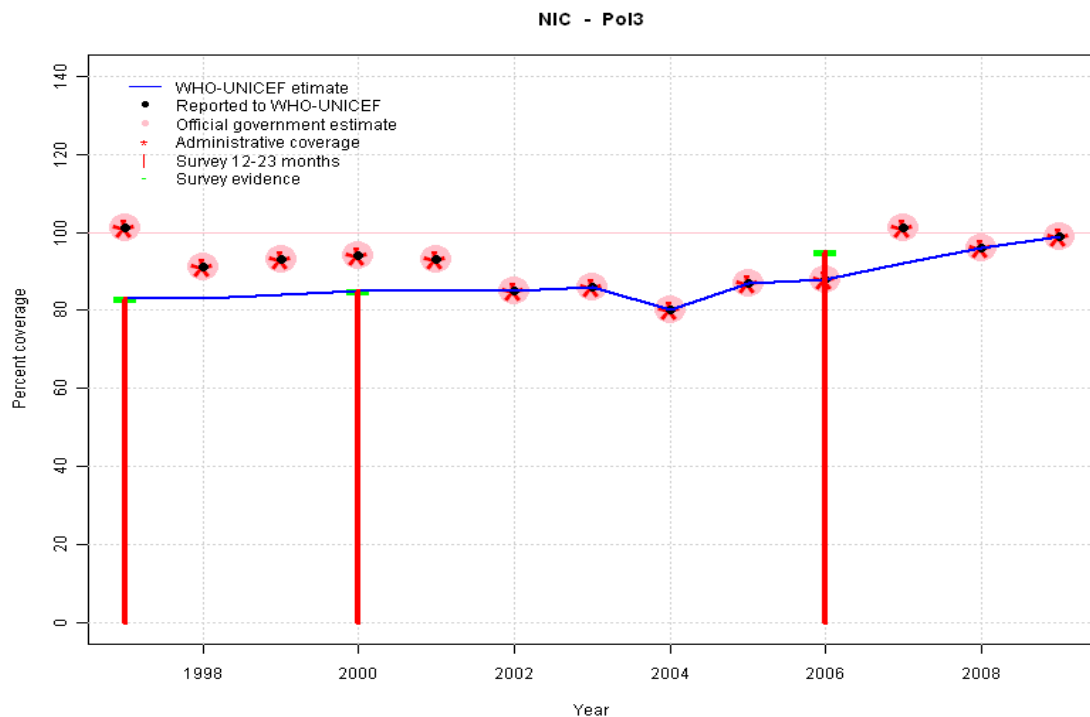
2006: Estimate based on reported data (87 percent) confirmed by survey (95 percent).

2007: Estimate based on trend in reported data. Missing or ignored reported value estimated by interpolation between reported values of 87 percent in 2006 and 96 percent in 2008. 2007 reported data (101 percent) ignored; greater than 100 percent.

2008: Estimate based on reported data.

2009: Estimate based on reported data.

Nicaragua - Pol3

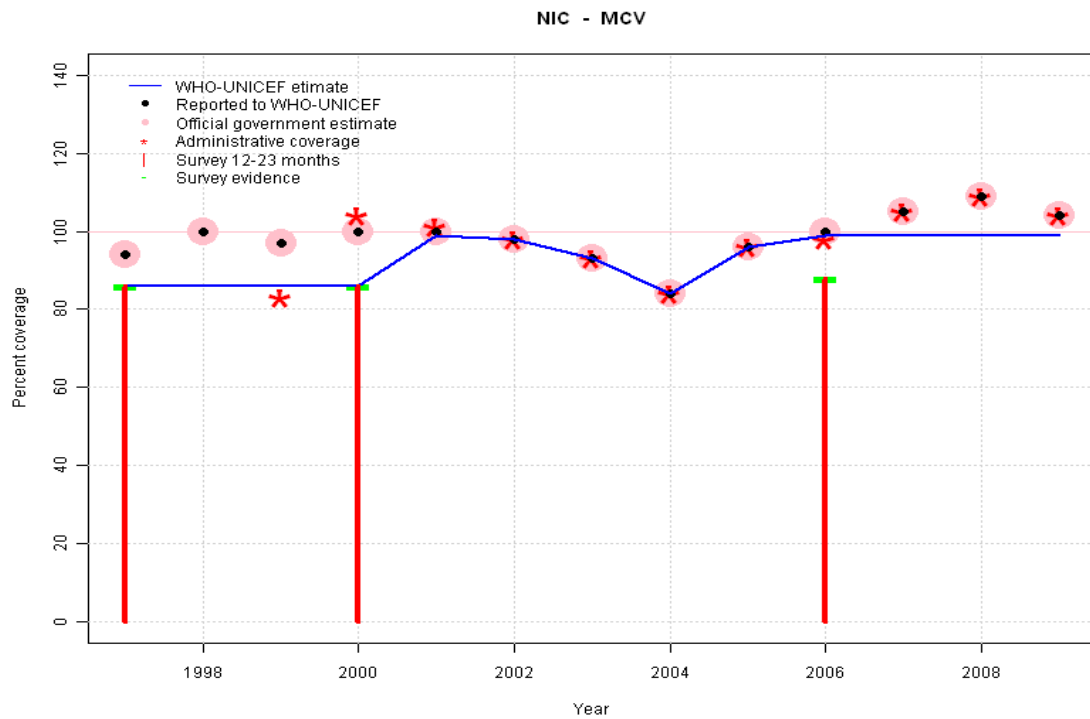


Description:

- 1997: Legacy estimate. 1997 reported data (101 percent) ignored; greater than 100 percent.
- 1998: Reported data (91 percent) calibrated to 1997 and 2000 levels.
- 1999: Reported data (93 percent) calibrated to 1997 and 2000 levels.
- 2000: Nationally reported estimates are based on 1985 census and likely overestimate true coverage.
- 2001: Estimate interpolated between 2000 and 2002 estimates.
- 2002: Estimates since 2002 are based on national estimates using revised population projections
- 2003: Estimate based on reported data.
- 2004: Estimate based on reported data.
- 2005: Estimate based on reported data.
- 2006: Estimate based on reported data (88 percent) confirmed by survey (95 percent).
- 2007: Estimate based on trend in reported data. Missing or ignored reported value estimated by interpolation between reported values of 88 percent in 2006 and 96 percent in 2008. 2007 reported data (101 percent) ignored; greater than 100 percent.
- 2008: Estimate based on reported data.
- 2009: Estimate based on reported data.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	83	83	84	85	85	85	86	80	87	88	92	96	99
Reported	101	91	93	94	93	85	86	80	87	88	101	96	99
Official	101	91	93	94	93	85	86	80	87	88	101	96	99
Administrative	101	91	93	94	93	85	86	80	87	88	101	96	99
Survey	83	NA	NA	85	NA	NA	NA	NA	NA	95	NA	NA	NA

Nicaragua - MCV

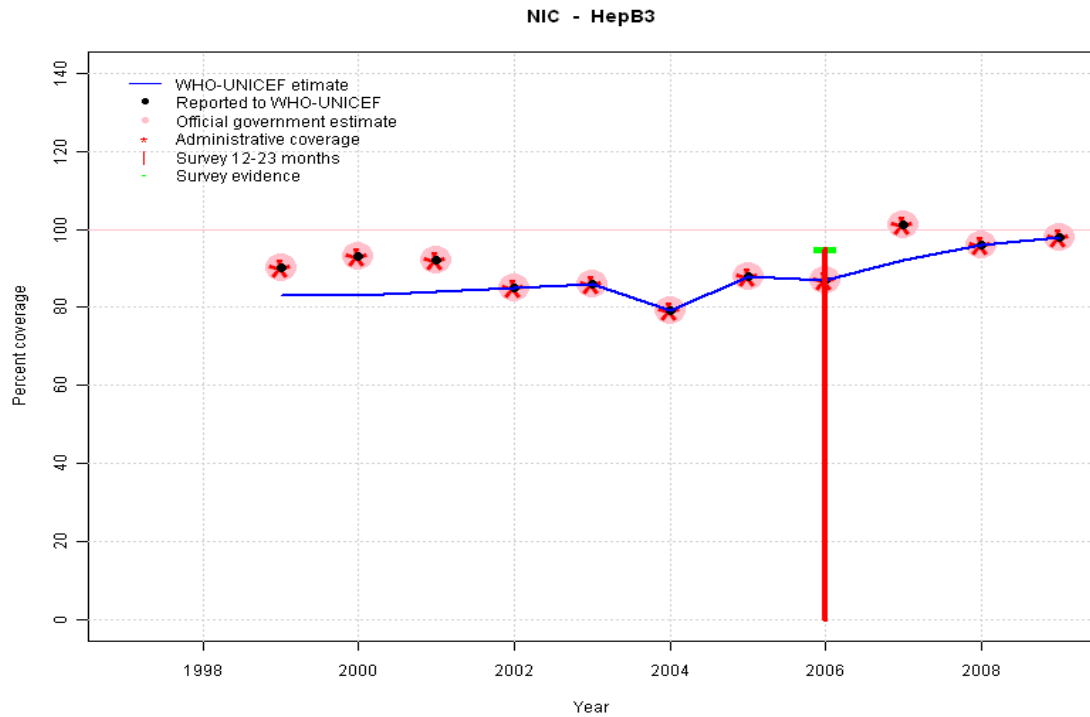


	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	86	86	86	86	99	98	93	84	96	99	99	99	99
Reported	94	100	97	100	100	98	93	84	96	100	105	109	104
Official	94	100	97	100	100	98	93	84	96	100	105	109	104
Administrative	NA	NA	83	104	101	98	93	84	96	98	105	109	104
Survey	86	NA	NA	86	NA	NA	NA	NA	NA	88	NA	NA	NA

Description:

- 1997: Legacy estimate.
- 1998: Estimate interpolated between 1997 and 2000 estimates.
- 1999: Estimate interpolated between 1997 and 2000 estimates.
- 2000: Nationally reported estimates are based on 1985 census and likely overestimate true coverage.
- 2001: Survey results based on cohort 18-29 months of age and not representative of target population. Other estimates based on reported data.
- 2002: Survey results based on cohort 18-29 months of age and not representative of target population. Other estimates based on reported data.
- 2003: Estimate based on reported data.
- 2004: Estimate based on reported data.
- 2005: Estimate based on reported data.
- 2006: Survey results based on cohort 18-29 months of age and not representative of target population. Other estimates based on reported data.
- 2007: Estimate based on trend in reported data. Missing or ignored reported value estimated by extrapolation from 2006 reported value of 99 percent. 2007 reported data (105 percent) ignored; greater than 100 percent.
- 2008: Estimate based on trend in reported data. Missing or ignored reported value estimated by extrapolation from 2006 reported value of 99 percent. 2008 reported data (109 percent) ignored; greater than 100 percent.
- 2009: Estimate based on trend in reported data. Missing or ignored reported value estimated by extrapolation from 2006 reported value of 99 percent. 2009 reported data (104 percent) ignored; greater than 100 percent.

Nicaragua - HepB3

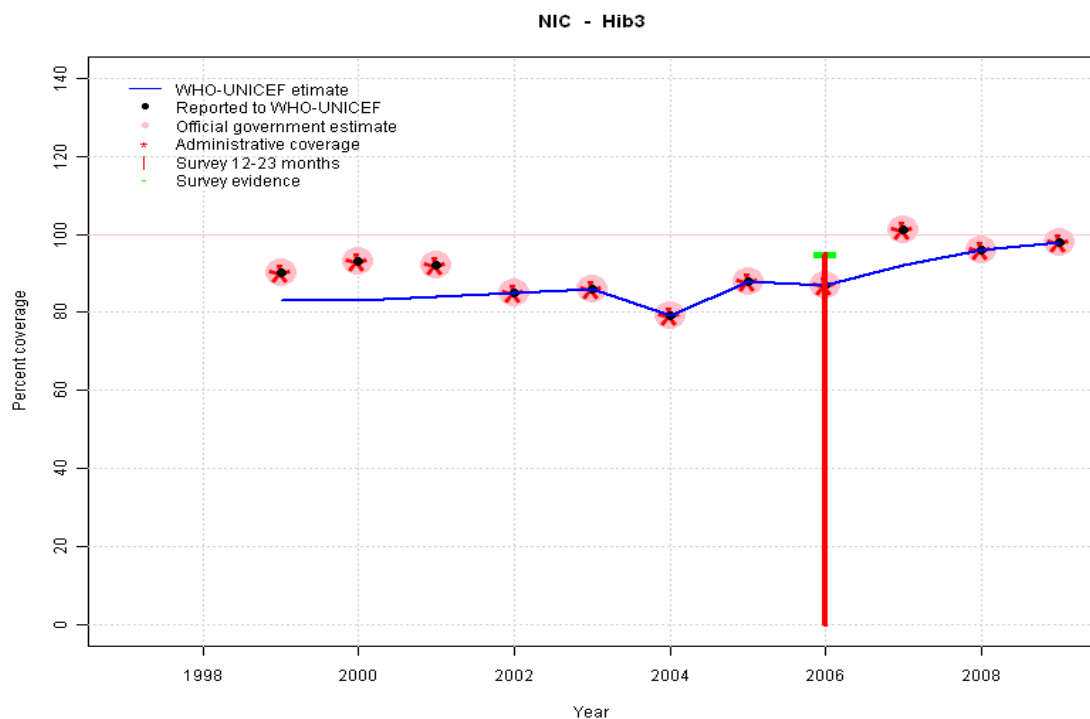


Description:

- 1999: Estimate extrapolated from 2000 value of 83 percent. HepB introduced in 1999 Vaccine presentation is DTP-HepB-Hib.
- 2000: Nationally reported estimates are based on 1985 census and likely overestimate true coverage. Estimates are based on DTP3 estimates
- 2001: Estimate interpolated between 2000 and 2002 estimates.
- 2002: Estimates since 2002 are based on national estimates using revised population projections
- 2003: Estimate based on reported data.
- 2004: Estimate based on reported data.
- 2005: Estimate based on reported data.
- 2006: Estimate based on reported data (87 percent) confirmed by survey (95 percent).
- 2007: Estimate based on trend in reported data. Missing or ignored reported value estimated by interpolation between reported values of 87 percent in 2006 and 96 percent in 2008. 2007 reported data (101 percent) ignored; greater than 100 percent.
- 2008: Estimate based on reported data.
- 2009: Estimate based on reported data.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	NA	NA	83	83	84	85	86	79	88	87	92	96	98
Reported	NA	NA	90	93	92	85	86	79	88	87	101	96	98
Official	NA	NA	90	93	92	85	86	79	88	87	101	96	98
Administrative	NA	NA	90	93	92	85	86	79	88	87	101	96	98
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	95	NA	NA	NA

Nicaragua - Hib3



Description:

- 1999: Estimate extrapolated from 2000 value of 83 percent. Hib introduced in 1999 Vaccine presentation is DTP-HepB-Hib.
- 2000: Nationally reported estimates are based on 1985 census and likely overestimate true coverage. Estimates are based on DTP3 estimates
- 2001: Estimate interpolated between 2000 and 2002 estimates.
- 2002: Estimates since 2002 are based on national estimates using revised population projections
- 2003: Estimate based on reported data.
- 2004: Estimate based on reported data.
- 2005: Estimate based on reported data.
- 2006: Estimate based on reported data (87 percent) confirmed by survey (95 percent).
- 2007: Estimate based on trend in reported data. Missing or ignored reported value estimated by interpolation between reported values of 87 percent in 2006 and 96 percent in 2008. 2007 reported data (101 percent) ignored; greater than 100 percent.
- 2008: Estimate based on reported data.
- 2009: Estimate based on reported data.

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	NA	NA	83	83	84	85	86	79	88	87	92	96	98
Reported	NA	NA	90	93	92	85	86	79	88	87	101	96	98
Official	NA	NA	90	93	92	85	86	79	88	87	101	96	98
Administrative	NA	NA	90	93	92	85	86	79	88	87	101	96	98
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	95	NA	NA	NA

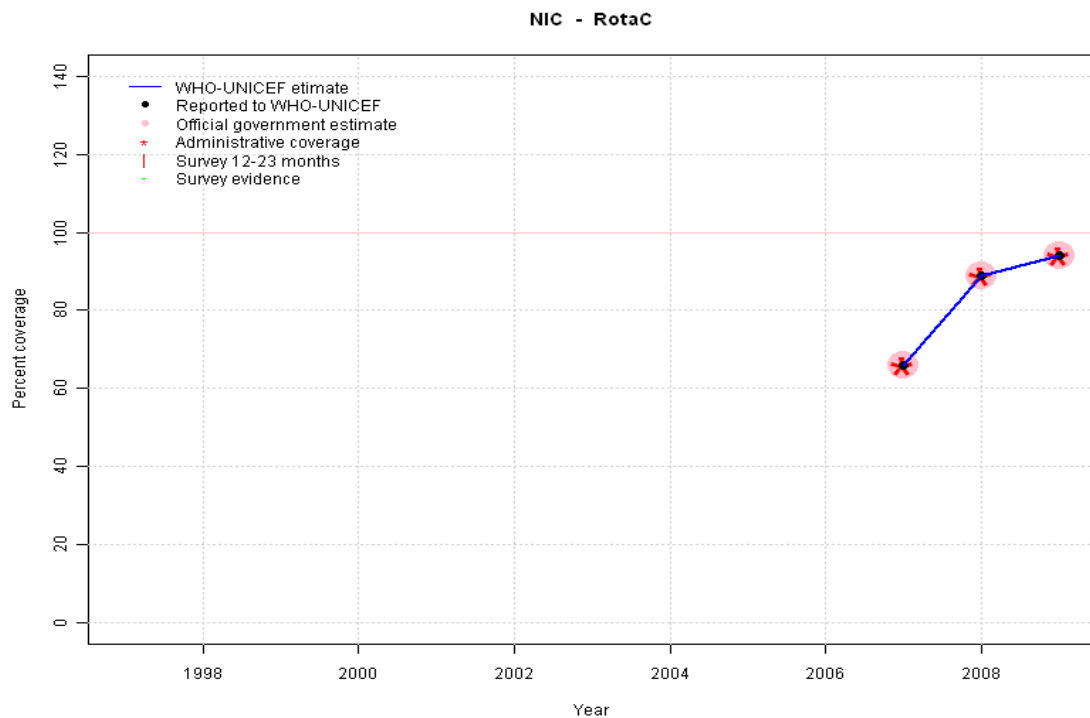
Nicaragua - RotaC

Description:

2007: Estimate based on reported data.

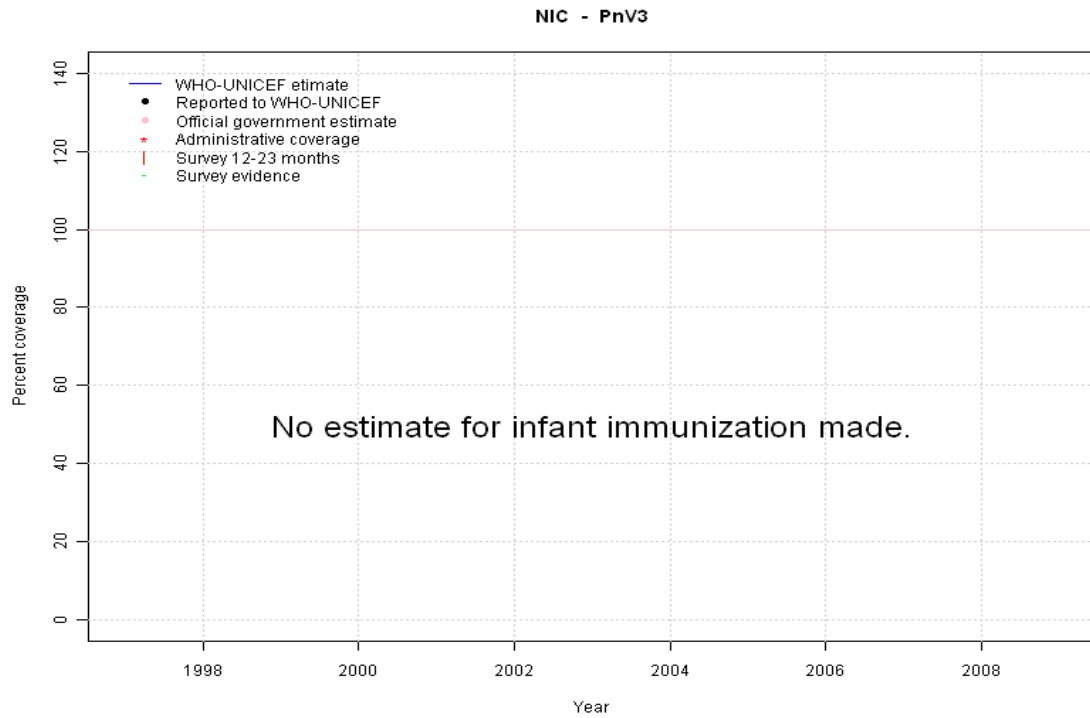
2008: Estimate based on reported data. Rota introduced in 2006 reporting started in 2008

2009: Estimate based on reported data.



	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Estimate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	66	89	94
Reported	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	66	89	94
Official	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	66	89	94
Administrative	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	66	89	94
Survey	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Nicaragua - 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

Nicaragua - survey details

2006 Encuesta Nicaragüense de Demografía y Salud ENDESA 2006/07, Informe Preliminar

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	98	18-29 m	1815	0
DTP1	Card or History	98	18-29 m	1815	0
DTP3	Card or History	95	18-29 m	1815	0
HepB1	Card or History	98	18-29 m	1815	0
HepB3	Card or History	95	18-29 m	1815	0
Hib1	Card or History	98	18-29 m	1815	0
Hib3	Card or History	95	18-29 m	1815	0
MCV	Card or History	88	18-29 m	1815	0
Pol1	Card or History	99	18-29 m	1815	0
Pol3	Card or History	95	18-29 m	1815	0

2000 Encuesta Nicaragüense de Demografía y Salud 2001, 2002

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	Card or History	96	12-23 m	1370	78
DTP1	Card or History	97	12-23 m	1370	78
DTP3	Card or History	83	12-23 m	1370	78
MCV	Card or History	86	12-23 m	1370	78
Pol1	Card or History	97	12-23 m	1370	78
Pol3	Card or History	85	12-23 m	1370	78

1997 Encuesta Nicaragüense de Demografía y Salud 1998, 1999

Vaccine	Confirmation method	Coverage	Age cohort	Sample	Cards seen
BCG	History	23	12-23 m	1486	74
BCG	Card or History	95	12-23 m	1486	74

BCG	C or H <12 months	94	12-23 m	1486	74
BCG	C or H <12 months	94	24-35 m	1485	73
BCG	C or H <12 months	91	36-47 m	1602	68
BCG	C or H <12 months	88	48-59 m	1596	66
DTP1	Card or History	95	12-23 m	1486	74
DTP1	History	22	12-23 m	1486	74
DTP1	C or H <12 months	93	12-23 m	1486	74
DTP1	C or H <12 months	90	24-35 m	1485	73
DTP1	C or H <12 months	87	36-47 m	1602	68
DTP1	C or H <12 months	81	48-59 m	1596	66
DTP3	History	14	12-23 m	1486	74
DTP3	C or H <12 months	69	12-23 m	1486	74
DTP3	Card or History	80	12-23 m	1486	74
DTP3	C or H <12 months	69	24-35 m	1485	73
DTP3	C or H <12 months	61	36-47 m	1602	68
DTP3	C or H <12 months	54	48-59 m	1596	66
MCV	C or H <12 months	71	12-23 m	1486	74
MCV	Card or History	86	12-23 m	1486	74
MCV	History	19	12-23 m	1486	74
MCV	C or H <12 months	63	24-35 m	1485	73
MCV	C or H <12 months	58	36-47 m	1602	68
MCV	C or H <12 months	50	48-59 m	1596	66
Pol1	History	23	12-23 m	1486	74
Pol1	Card or History	97	12-23 m	1486	74
Pol1	C or H <12 months	95	12-23 m	1486	74
Pol1	C or H <12 months	91	24-35 m	1485	73
Pol1	C or H <12 months	87	36-47 m	1602	68
Pol1	C or H <12 months	81	48-59 m	1596	66
Pol3	C or H <12 months	73	12-23 m	1486	74
Pol3	Card or History	83	12-23 m	1486	74
Pol3	History	16	12-23 m	1486	74
Pol3	C or H <12 months	71	24-35 m	1485	73
Pol3	C or H <12 months	63	36-47 m	1602	68
Pol3	C or H <12 months	56	48-59 m	1596	66

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

http://www.childinfo.org/immunization_countryreports.html

http://www.who.int/immunization_monitoring/routine/immunization_coverage/en/index4.html

Nicaragua

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	75
1998	78
1999	80
2000	83
2001	85
2002	87
2003	88
2004	91
2005	87
2006	85
2007	80
2008	80
2009	80

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.