

**WHO/UNICEF  
Review of National Immunization Coverage  
1980-2008**

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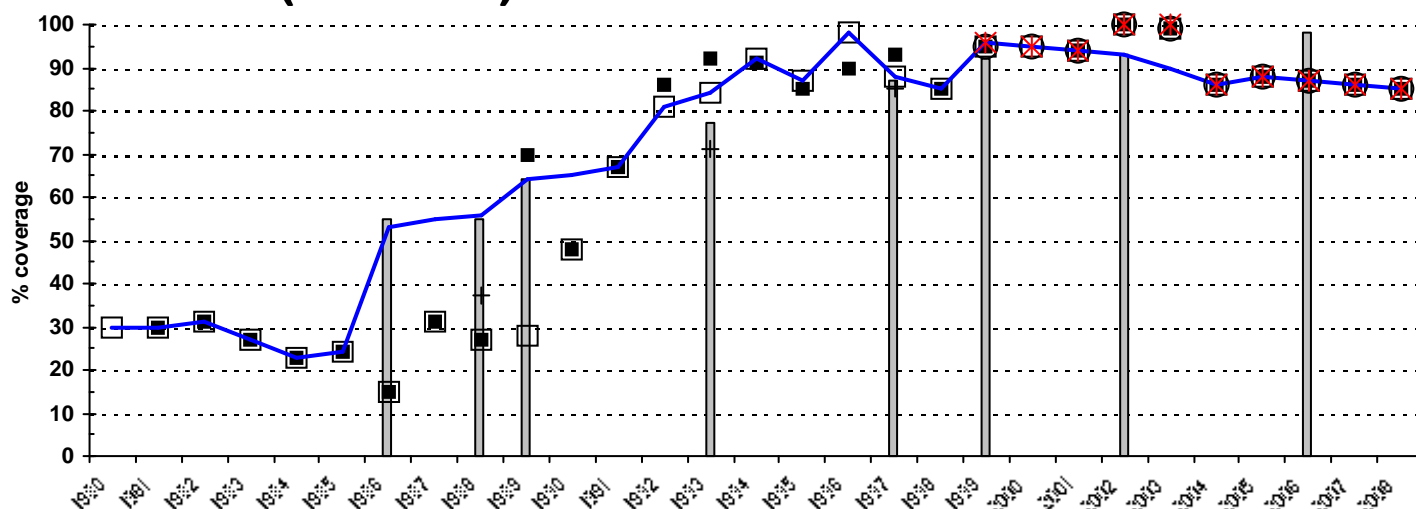
***Bolivia***

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**July, 2009**

# Bolivia

## BCG (1980-2008)



### Description of trend

The trend in the late 1980s is based on survey data. The routine monitoring system improved in the 1991; trends since 1991 are based on officially reported data supported by surveys. The size of the target age group for 2002-2003 does not appear consistent with target age group from preceding and subsequent years.

### Data presented in chart

Year	WHO/ UNICEF estimate (%)  —	Reported to:*		Government official estimate (%)  ○	Reported doses administered (%)**  ✕	Survey data (%)***	
		WHO (%)  □	UNICEF (%)  ■			Survey 12-23 months  	Survey <12 months  +
1980	30	30					
1981	30	30	30				
1982	31	31	31				
1983	27	27	27				
1984	23	23	23				
1985	24	24	24				
1986	53	15	15			55	
1987	55	31	31				
1988	56	27	27			55	37
1989	64	28	70			64	
1990	65	48	48				
1991	67	67	67				
1992	81	81	86				
1993	84	84	92			77	71
1994	92	92	91				
1995	87	87	85				
1996	98	98	90				
1997	88	88	93			87	85
1998	85	85	85				
1999	96	95	95	95	96	92	
2000	95	95		95	95		
2001	94	94	94	94	94		
2002	93	100	100	100	100	93	
2003	90	99	99	99	100		
2004	86	86	86	86	86		
2005	88	88	88	88	88		
2006	87	87	87	87	87	98	
2007	86	86	86	86	86		
2008	85	85	85	85	85		

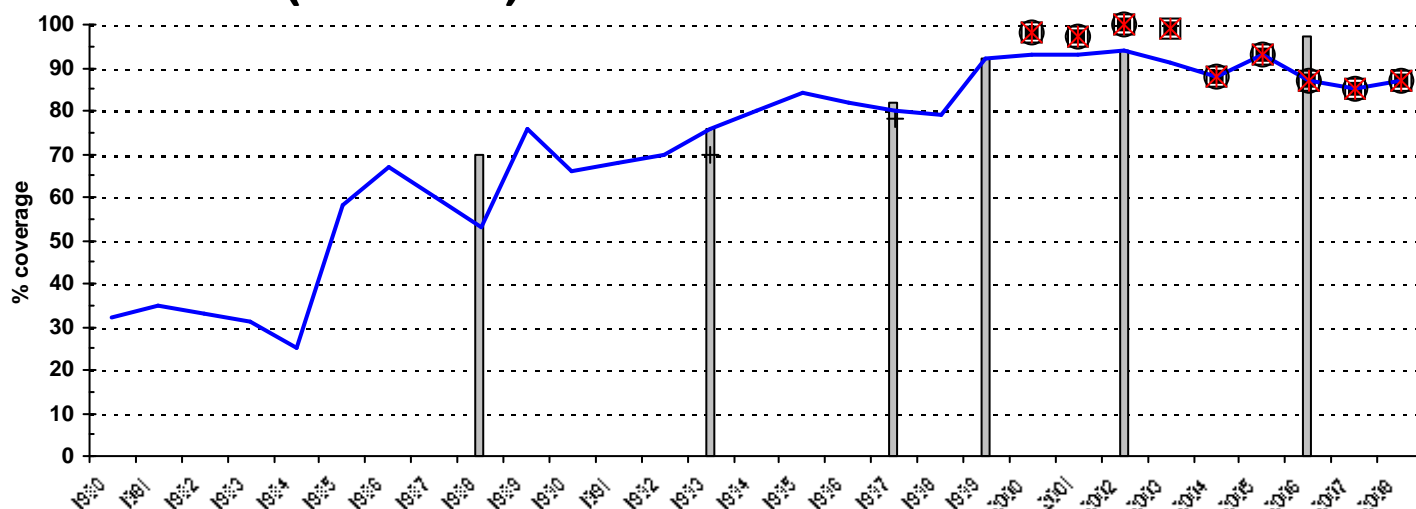
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*Coverage based on registration of doses administered by health care providers.

\*\*\*In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

# Bolivia

## DTP1 (1980-2008)



### Description of trend

WHO and UNICEF began requesting data on DTP1 coverage in 2001 and have received national reports reflecting DTP1 coverage from 2001 onward. The DTP1 estimates from 1993-2003 are based on survey results. For years prior to 1993 the estimates are derived from the WHO/UNICEF estimates of DTP3 and the relationship between the levels of DTP3 coverage and the drop-out between DTP1 and DTP3. This relationship results from an analysis of 282 surveys conducted in 101 countries which were published between 1980 and 2004. The size of the target age group for 2002-2003 does not appear consistent with target age groups from preceding and subsequent years. The 2006 DHS survey results support reported data.

### Data presented in chart

Year	WHO/ UNICEF estimate (%)	Reported to:*		Government official estimate (%)	Reported doses administered (%)**	Survey data (%)***	
		WHO (%)	UNICEF (%)			Survey 12-23 months	Survey <12 months
1980	32						
1981	35						
1982	33						
1983	31						
1984	25						
1985	58						
1986	67						
1987	60						
1988	53					70	
1989	76						
1990	66						
1991	68						
1992	70						
1993	76					76	70
1994	80						
1995	84						
1996	82						
1997	80					82	78
1998	79						
1999	92					92	
2000	93	98	98	98	98		
2001	93	97	97	97	97		
2002	94	100	100	100	100	94	
2003	91	99	99		99		
2004	88	88	88	88	88		
2005	93	93	93	93	93		
2006	87	87	87	87	87	97	
2007	85	85	85	85	85		
2008	87	87	87	87	87		

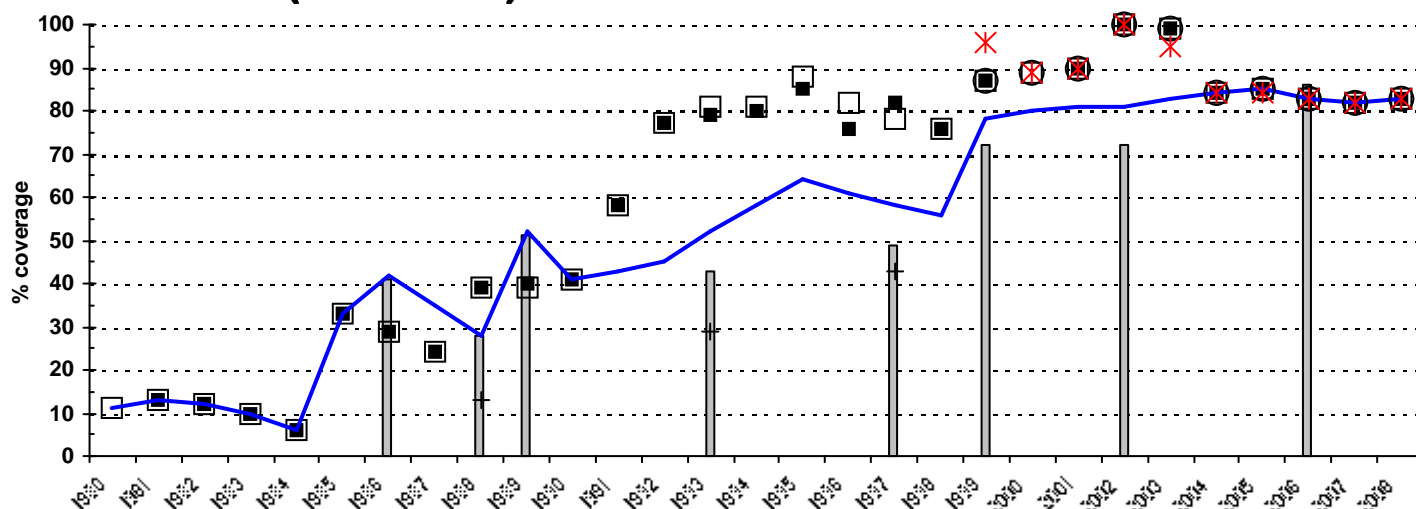
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\*\*Coverage based on registration of doses administered by health care providers.

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# Bolivia

## DTP3 (1980-2008)



### Description of trend

Trend follows officially reported data in the early 1980s. From 1986-1999 officially reported data seem to underestimate coverage. From 1999 onward the level is established by survey data adjusted upward for recall bias introduced by multi-dose schedules, following the trend of officially reported data. The size of the target age group for 2002-2003 does not appear consistent with target age groups from preceding and subsequent years. The 2006 DHS results support reported data.

### Data presented in chart

Year	WHO/ UNICEF estimate (%)  —	Reported to:*		Government official estimate (%)  ○	Reported doses administered (%)**  ✕	Survey data (%)***	
		WHO (%)  □	UNICEF (%)  ■			Survey 12-23 months  	Survey <12 months  +
1980	11	11					
1981	13	13	13				
1982	12	12	12				
1983	10	10	10				
1984	6	6	6				
1985	33	33	33				
1986	42	29	29			41	
1987	35	24	24				
1988	28	39	39			28	13
1989	52	39	40			51	
1990	41	41	41				
1991	43	58	58				
1992	45	77	77				
1993	52	81	79			43	29
1994	58	81	80				
1995	64	88	85				
1996	61	82	76				
1997	58	78	82			49	43
1998	56	76	76				
1999	78	87	87	87	96	72	
2000	80	89		89	89		
2001	81	90	90	90	90		
2002	81	100	100	100	100	72	
2003	83	99	99	99	95		
2004	84	84	84	84	84		
2005	85	85	85	85	84		
2006	83	83	83	83	83	86	
2007	82	82	82	82	82		
2008	83	83	83	83	83		

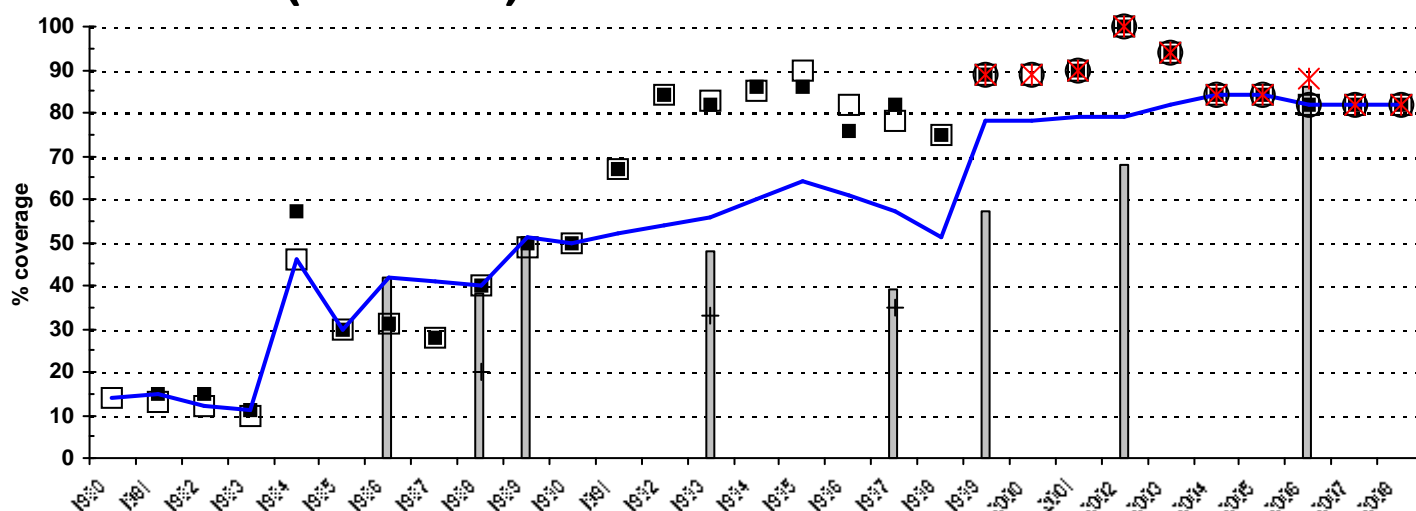
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*Coverage based on registration of doses administered by health care providers.

\*\*\*In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

# Bolivia

## Pol3 (1980-2008)



### Description of trend

Trend follows officially reported data in the early 1980s. From 1986-1999 officially reported data seems to underestimate coverage. From 1999 onward the level is established by survey data adjusted upward for recall bias introduced by multi-dose schedules, following the trend of officially reported data. The size of the target age group for 2002-2003 does not appear consistent with target age groups from preceding and subsequent years. The 2006 DHS results support reported data.

### Data presented in chart

Year	WHO/ UNICEF estimate (%)  —	Reported to:*		Government official estimate (%)  ○	Reported doses administered (%)**  ✕	Survey data (%)***	
		WHO (%)  □	UNICEF (%)  ■			Survey 12-23 months  	Survey <12 months  +
1980	14	14					
1981	15	13	15				
1982	12	12	15				
1983	11	10	11				
1984	46	46	57				
1985	30	30	30				
1986	42	31	31			42	
1987	41	28	28				
1988	40	40	40			38	20
1989	51	49	50			51	
1990	50	50	50				
1991	52	67	67				
1992	54	84	84				
1993	56	83	82			48	33
1994	60	85	86				
1995	64	90	86				
1996	61	82	76				
1997	57	78	82			39	35
1998	51	75	75				
1999	78	89	89	89	89	57	
2000	78	89	89	89	89		
2001	79	90	90	90	90		
2002	79	100	100	100	100	68	
2003	82	94	94	94	94		
2004	84	84	84	84	84		
2005	84	84	84	84	84		
2006	82	82	82	82	88	86	
2007	82	82	82	82	82		
2008	82	82	82	82	82		

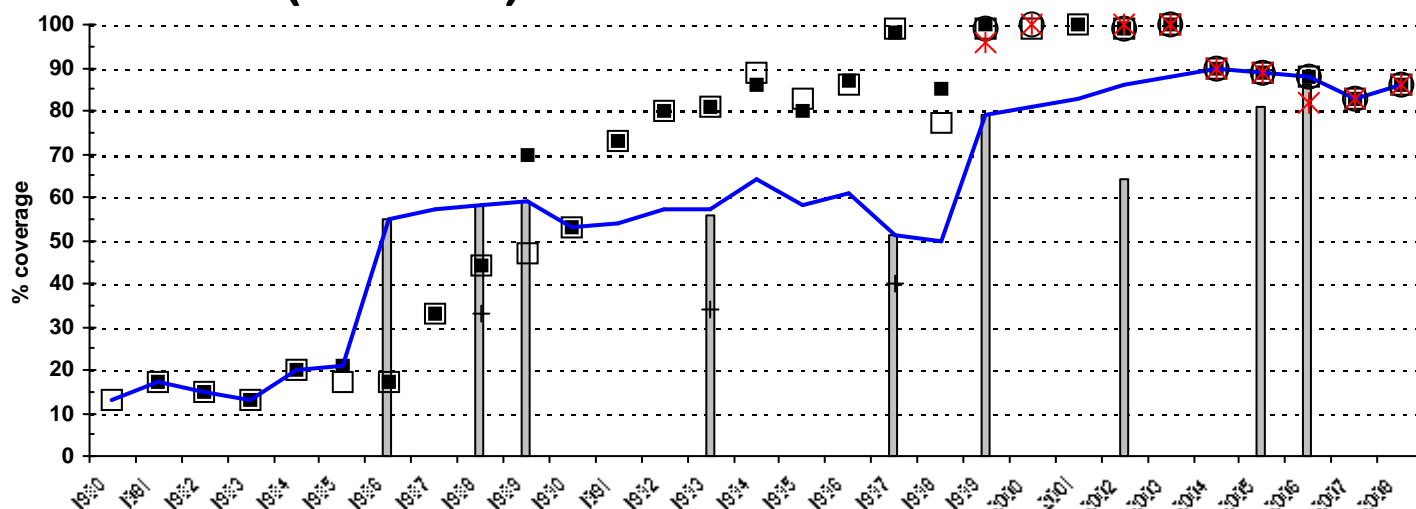
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*Coverage based on registration of doses administered by health care providers.

\*\*\*In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

# Bolivia

## MCV (1980-2008)



### Description of trend

Trend follows officially reported data in the early 1980s. From 1986-2000 onward the level is established by survey data following the trend of officially reported data. The 2002 survey sample of children 12-23 months of age censors the sample for MMR recommended at 12 months of age. The 2006 DHS results support reported data from 2003.

### Data presented in chart

Year	WHO/ UNICEF estimate (%)  —	Reported to:*		Government official estimate (%)  ○	Reported doses administered (%)**  ✱	Survey data (%)***	
		WHO (%)  □	UNICEF (%)  ■			Survey 12-23 months  ▮	Survey <12 months  +
1980	13	13					
1981	17	17	17				
1982	15	15	15				
1983	13	13	13				
1984	20	20	20				
1985	21	17	21				
1986	55	17	17			55	
1987	57	33	33				
1988	58	44	44			58	33
1989	59	47	70			59	
1990	53	53	53				
1991	54	73	73				
1992	57	80	80				
1993	57	81	81			56	34
1994	64	89	86				
1995	58	83	80				
1996	61	86	87				
1997	51	99	98			51	40
1998	50	77	85				
1999	79	99	100	99	96	79	
2000	81	99		100	100		
2001	83	100	100	107	107		
2002	86	99	99	99	100	64	
2003	88	100	100	100	100		
2004	90	90	90	90	90		
2005	89	89	89	89	89	81	
2006	88	88	88	88	82	86	
2007	83	83	83	83	83		
2008	86	86	86	86	86		

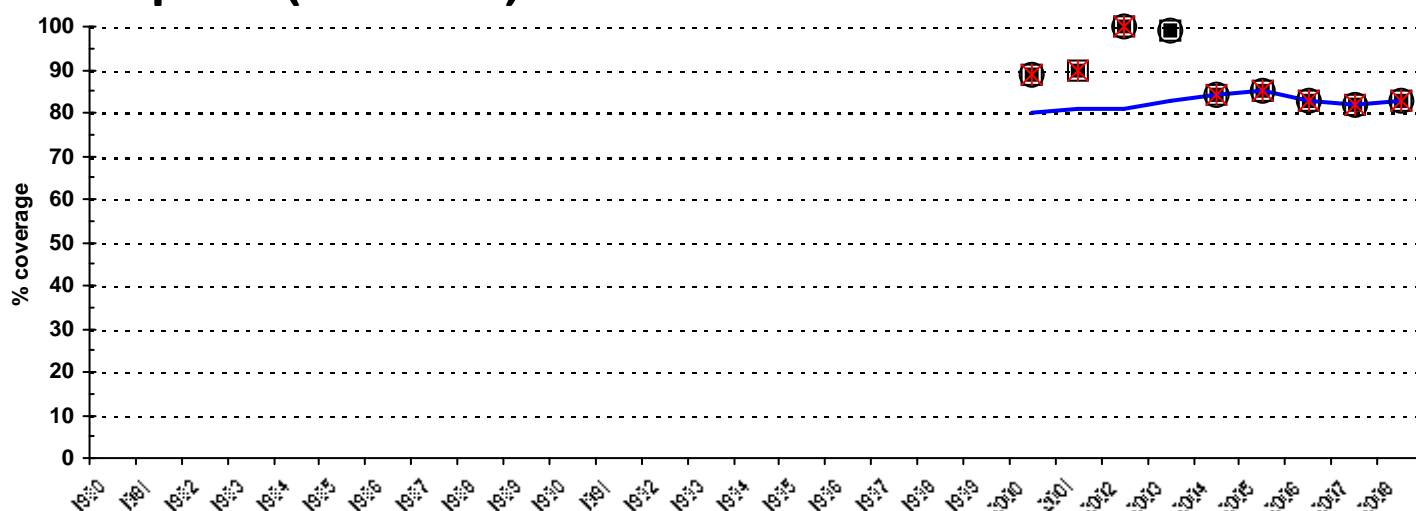
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*Coverage based on registration of doses administered by health care providers.

\*\*\*In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

# Bolivia

## HepB3 (1980-2008)



### Description of trend

DTP-HepB-Hib combination vaccine introduced in 2000. HepB3 estimates are based on DTP3 estimates. The size of the target age group for 2002-2003 does not appear consistent with target age groups from preceding and subsequent years. Estimates from 2001-2003 are based on DTP3 estimates. The 2006 DHS results support reported data from 2003.

### Data presented in chart

Year	WHO/ UNICEF estimate (%)	Reported to:*		Government official estimate (%)	Reported doses administered (%)**	Survey data (%)***	
		WHO (%)	UNICEF (%)			Survey 12-23 months	Survey <12 months
1980							
1981							
1982							
1983							
1984							
1985							
1986							
1987							
1988							
1989							
1990							
1991							
1992							
1993							
1994							
1995							
1996							
1997							
1998							
1999							
2000	80	89	89	89	89		
2001	81	90	90		90		
2002	81	100	100	100	100		
2003	83	99	99	99			
2004	84	84	84	84	84		
2005	85	85	85	85	85		
2006	83	83	83	83	83		
2007	82	82	82	82	82		
2008	83	83	83	83	83		

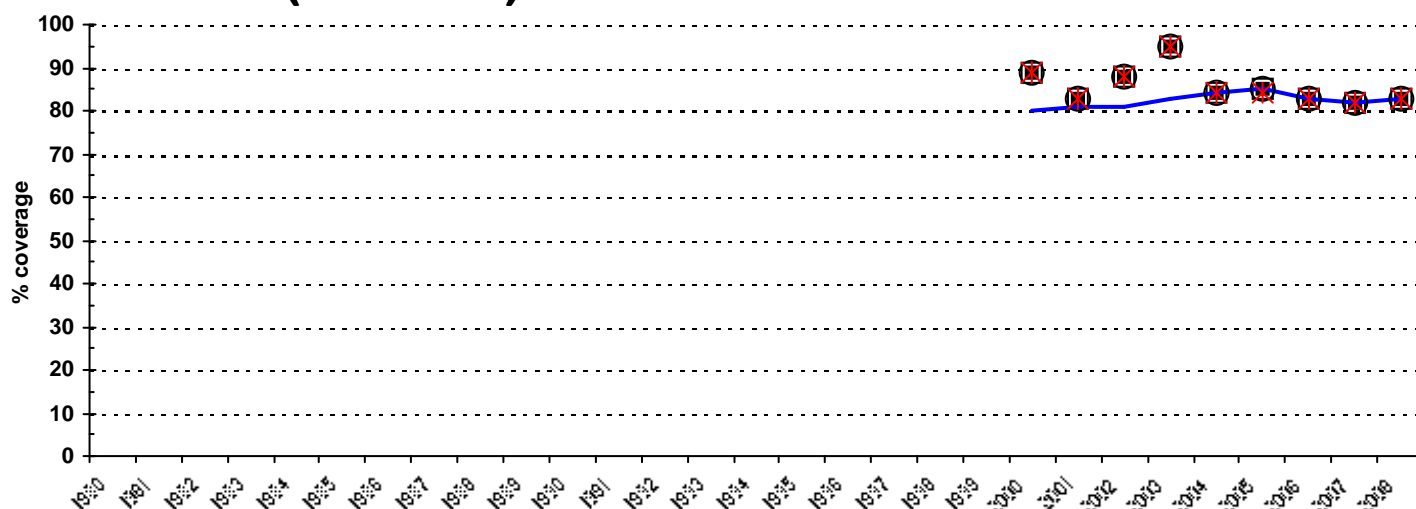
\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*Coverage based on registration of doses administered by health care providers.

\*\*\*In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

# Bolivia

## Hib3 (1980-2008)



### Description of trend

DTP-HepB-Hib combination vaccine introduced in 2000. Hib3 estimates are based on DTP3 estimates. The size of the target age group for 2003 does not appear consistent with target age groups from preceding and subsequent years. Estimates from 20001- 2003 are based on D estimates. The 2006 DHS results support reported data from 2003.

### Data presented in chart

Year	WHO/ UNICEF estimate (%)	Reported to:*		Government official estimate (%)	Reported doses administered (%)**	Survey data (%)***	
		WHO (%)	UNICEF (%)			Survey 12-23 months	Survey <12 months
1980							
1981							
1982							
1983							
1984							
1985							
1986							
1987							
1988							
1989							
1990							
1991							
1992							
1993							
1994							
1995							
1996							
1997							
1998							
1999							
2000	80	89	89	89	89		
2001	81	83	83	83	83		
2002	81	88	88	88	88		
2003	83	95	95	95	95		
2004	84	84	84	84	84		
2005	85	85	85	85	84		
2006	83	83	83	83	83		
2007	82	82	82	82	82		
2008	83	83	83	83	83		

\*Prior to 1998 national reports to WHO/UNICEF did not specify whether information was derived from administrative records, surveys or other sources.

\*\*Coverage based on registration of doses administered by health care providers.

\*\*\*In case more than one survey was implemented in a certain year the highest value is presented. Details of all data are presented in the second section of this report.

# Bolivia

## Details Survey Data

### Year Source

Antigen	Confirmation method	% coverage	Compliance with schedule	Age group	Sample size	% cards seen	Survey year	Comments
<b>2006 Bolivia Encuesta Nacional de Demografía y Salud 2008, Informe Preliminar</b>								
BCG	Card or History	98.4		18-29 m	1689	77	2008	
DTP1	Card or History	97		18-29 m	1689	77	2008	
DTP3	Card or History	85.7		18-29 m	1689	77	2008	
Pol3	Card or History	85.8		18-29 m	1689	77	2008	
MCV	Card or History	85.8		18-29 m	1689	77	2008	
<b>2005 Encuesta de cobertura vacunal de SR 15-39 años y SRP en niños de 12-23 meses</b>								
MCV	C or H <24 month	81		< 24 m	597	64.7	2006	
<b>2002 Encuesta Nacional de Demografía y Salud, ENDSA 2003</b>								
BCG	Card or History	93.4		12-23 m	1861	78.6	2003	
DTP1	Card or History	94.4		12-23 m	1861	78.6	2003	
DTP3	Card or History	71.5		12-23 m	1861	78.6	2003	
Pol3	Card or History	68.1		12-23 m	1861	78.6	2003	
MCV	Card or History	63.9		12-23 m	1861	78.6	2003	
<b>1999 Bolivia, Encuesta de múltiples indicadores por conglomerados 2000 (MICS 2000), 2001</b>								
BCG	Card or History	92.5		12-23 m	642	54.4	2000	Not sure if any time before survey or < 12 m
DTP1	Card or History	92.1		12-23 m	642	54.4	2000	Not sure if any time before survey or < 12 m
DTP3	Card or History	71.7		12-23 m	642	54.4	2000	Not sure if any time before survey or < 12 m
Pol3	Card or History	57.3		12-23 m	642	54.4	2000	Not sure if any time before survey or < 12 m
MCV	Card or History	78.9		12-23 m	642	54.4	2000	Not sure if any time before survey or < 12 m
PAB	Card or History	55.7		Women 15-49			2000	
<b>1997 República de Bolivia, Encuesta Nacional de Demografía y Salud 1998</b>								
BCG	Card or History	87.4		12-23 m	1275	40.2	1998	
BCG	C or H <12 month	84.8		12-23 m	1275	40.2	1998	
BCG	C or H <12 month	82		24-35 m	1234	36.6	1998	with question mark in the survey
BCG	C or H <12 month	77.1		36-47 m	1302	27.4	1998	
BCG	C or H <12 month	77.6		48-59 m	1249	26.7	1998	
DTP1	Card or History	81.6		12-23 m	1275	40.2	1998	
DTP1	C or H <12 month	77.9		12-23 m	1275	40.2	1998	
DTP1	C or H <12 month	75.4		24-35 m	1234	36.6	1998	
DTP1	C or H <12 month	72.1		36-47 m	1302	27.4	1998	
DTP1	C or H <12 month	70		48-59 m	1249	26.7	1998	
DTP3	Card or History	48.6		12-23 m	1275	40.2	1998	
DTP3	C or H <12 month	41.1		12-23 m	1275	40.2	1998	
DTP3	C or H <12 month	42.9		24-35 m	1234	36.6	1998	
DTP3	C or H <12 month	38.1		36-47 m	1302	27.4	1998	
DTP3	C or H <12 month	38.5		48-59 m	1249	26.7	1998	
Pol3	Card or History	39.1		12-23 m	1275	40.2	1998	
Pol3	C or H <12 month	32.4		12-23 m	1275	40.2	1998	
Pol3	C or H <12 month	35.1		24-35 m	1234	36.6	1998	
Pol3	C or H <12 month	31.2		36-47 m	1302	27.4	1998	
Pol3	C or H <12 month	30		48-59 m	1249	26.7	1998	
MCV	Card or History	50.8		12-23 m	1275	40.2	1998	
MCV	C or H <12 month	11.7		12-23 m	1275	40.2	1998	
MCV	C or H <12 month	24.5		24-35 m	1234	36.6	1998	
MCV	C or H <12 month	39.6		36-47 m	1302	27.4	1998	
MCV	C or H <12 month	40.2		48-59 m	1249	26.7	1998	

# Bolivia

## Details Survey Data

### Year Source

Antigen	Confirmation method	% coverage	Compliance with schedule	Age group	Sample size	% cards seen	Survey year	Comments
<b>1993 República de Bolivia, Encuesta Nacional de Demografía y Salud 1994</b>								
BCG	Card or History	76.9		12-23 m	1111	35.1	1994	
BCG	C or H <12 month	71.2		12-23 m	1111	35.1	1994	
BCG	C or H <12 month	71.2		24-35 m	1073	29	1994	
BCG	C or H <12 month	63.7		36-47 m	1099	27.9	1994	
DTP1	Card or History	76.5		12-23 m	1111	35.1	1994	
DTP1	C or H <12 month	70.5		12-23 m	1111	35.1	1994	
DTP1	C or H <12 month	64.8		24-35 m	1073	29	1994	
DTP1	C or H <12 month	61.3		36-47 m	1099	27.9	1994	
DTP3	Card or History	42.8		12-23 m	1111	35.1	1994	
DTP3	C or H <12 month	28.8		12-23 m	1111	35.1	1994	
DTP3	C or H <12 month	27.6		24-35 m	1073	29	1994	
DTP3	C or H <12 month	26.5		36-47 m	1099	27.9	1994	
Pol3	Card or History	47.5		12-23 m	1111	35.1	1994	
Pol3	C or H <12 month	33.4		12-23 m	1111	35.1	1994	
Pol3	C or H <12 month	30.3		24-35 m	1073	29	1994	
Pol3	C or H <12 month	30.8		36-47 m	1099	27.9	1994	
MCV	Card or History	55.7		12-23 m	1111	35.1	1994	
MCV	C or H <12 month	34.2		12-23 m	1111	35.1	1994	
MCV	C or H <12 month	31.4		24-35 m	1073	29	1994	
MCV	C or H <12 month	27.8		36-47 m	1099	27.9	1994	

### 1989 Encuesta Nacional de Cobertura de Vacunacion (ENCOVA) 1990

BCG	Card or History	64		12-23 m			1990	
DTP1	Card or History			12-23 m			1990	
DTP3	Card or History	51		12-23 m			1990	
Pol3	Card or History	51		12-23 m			1990	
MCV	Card or History	59		12-23 m			1990	

### 1988 Demographic and Health Surveys Comparative Studies No. 1, Immunization, Boerma et al., Institute for Resource Development/Macro Systems, 1990

BCG	Card or History	55		12-23 m	1108		1989	
BCG	C or H <12 month	37		12-23 m	1108		1989	
DTP1	Card or History	70		12-23 m	1108		1989	
DTP1	C or H <12 month			12-23 m	1108		1989	
DTP3	Card or History	28		12-23 m	1108		1989	
DTP3	C or H <12 month	13		12-23 m	1108		1989	
Pol3	Card or History	38		12-23 m	1108		1989	
Pol3	C or H <12 month	20		12-23 m	1108		1989	
MCV	Card or History	58		12-23 m	1108		1989	
MCV	C or H <12 month	33		12-23 m	1108		1989	

### 1986 Encuesta Nacional de Cobertura Vacunal (ENCOVA) 1987

BCG	Card or History	54.8		12-23 m			1987	
DTP1	Card or History			12-23 m			1987	
DTP3	Card or History	41		12-23 m			1987	
Pol3	Card or History	42.4		12-23 m			1987	
MCV	Card or History	55.4		12-23 m			1987	

## **Bolivia**

### **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.

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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.

## Bolivia

Year	PAB coverage estimate (%)
1980	
1981	
1982	
1983	
1984	
1985	
1986	
1987	3
1988	11
1989	21
1990	23
1991	25
1992	49
1993	53
1994	56
1995	57
1996	58
1997	60
1998	61
1999	66
2000	67
2001	68
2002	69
2003	69
2004	70
2005	70
2006	71
2007	71
2008	74