Jeb Bush
Governor

M. Rony François, M.D., M.S.P.H., Ph.D.
Secretary

INTEROFFICE MEMORANDUM

DATE: December 26, 2006

TO: County Health Department Directors/Administrators

FROM: Bonita J. Sorensen, M.D., M.B.A.
Deputy State Health Officer

SUBJECT: Survey of Immunization Levels in Two-Year-Old Children (2006)

FOR INFORMATION ONLY

In September, the Bureau of Immunization completed an annual immunization survey of 1,984 randomly selected two-year-old children born in Florida. The survey provides estimated immunization levels for 20 selected counties, as well as statewide figures (see Attachment 1).

The 2006 statewide coverage rate for the basic 4/3/1 (four DTaP, three polio, and one MMR) series of vaccines among two-year-olds is 85.2%. Coverage levels for the 20 largest counties ranged from 71.1% to 97.8%. Attachment 2 depicts statewide progress from 1990 to 2006.

The next challenge for Florida is to achieve a coverage rate of at least 90% among two-year-olds for the 4/3/1/3/3/1 (four DTaP, three polio, one MMR, three Hib, three Hepatitis B and one Varicella) series by June 2007, to be measured by National Immunization Survey results in July 2007. The coverage level of the 4/3/1/3/3/1 series is 79.2% statewide. Congratulations goes to Marion and Osceola counties on exceeding the state and national goal of 90% coverage for the 4/3/1/3/3/1 series.

The 2006 survey also reflected a 90.1% coverage rate for children two years of age who completed the 3/3/1 (three DTaP, three polio, and one MMR) series. Failure to receive the fourth dose of DTaP by age two accounts for the overall decrease observed when comparing the 90.1% rate to the 85.2% rate for two-year-olds who completed the 4/3/1 series. Furthermore, the data indicated that 93.8% of private sector children completed the 4/3/1 series by age two, in contrast to 90.3% of the children in the public sector (see Attachment 3, Table 1).

We must continue our efforts to reach our 2010 national goal, as well as our new state goal of 90% coverage for two-year-old children for the 4/3/1/3/3/1 series by 2007. Through immunization, we prevent dangerous outbreaks and ensure a healthy future for our children.

Survey Purposes:

This survey had three primary purposes: (1) to determine immunization levels among two-year-old children, (2) to evaluate our success in immunizing children on schedule, and (3) to measure immunization levels of children based on high-risk maternal factors.

Survey Method:

The Bureau of Immunization field staff conducted the survey with the assistance of county health department personnel, private physicians, and parents. The survey included a random sample of 2,091 birth records selected from a list of all live births occurring among Florida residents for the month of January 2004. One hundred and seven children were removed from the sample as death or adoption cases, and the sample was further reduced by eliminating 87 children whose parents refused to participate in the survey. Despite intensive follow-up, 249 children, or 12.5%, were not located. Consequently, a total 1,648 children were included in this year's survey.

Survey Results:

Despite the fact that 93.5% of surveyed children began their immunizations on time, only 67.8% continued on schedule by age seven months. At 18 months old, only 47.3% remained on schedule. Attachment 4 provides vaccine-specific coverage by provider type.

The survey confirmed that most of the high-risk maternal factors shown in Attachment 5 continue to be associated with a decreased chance of completing the required immunization series. Mothers below the age of 20 demonstrated slightly lower coverage rates than those ages 20 to 24. In addition, mothers whose prenatal care was initiated in the first trimester showed higher coverage rates than those whose care was initiated in the second trimester or third trimester.

The sample analysis reflected the following coverage rates for the 4/3/1 series, by racial/ethnic breakdowns: White, 85.3% complete with a margin of error of plus or minus (±) 4.9%; Black, 84.4% complete with a margin of error of ±5.2%; Hispanic, 85.1% complete with a margin of error of ±4.2%. The 4/3/1/3/3/1 series breakdown was provided as well: White, 78.4% complete with a margin of error of ±6.1%; Black, 78.0% complete with a margin of error of ±5.9%; and Hispanic, 79.1% complete with a margin of error of ±5.0%. Please refer to Attachment 6 for breakdown of other series.

In cooperation with the Medicaid Office of the Agency for Health Care Administration, 986 children (59.8% of the sample) were eligible for Medicaid in their first two years of life. Among this group of children, 84.3% completed the 4/3/1 immunization series at 24 months old, with a margin of error of ± 2.8%. The coverage rates by race/ethnicity for the Medicaid-eligible children were 81.1% White with a margin of error of ±8.4%; 85.2% non-White with a margin of error of ±3.8%; 88.8% Hispanic with a margin of error of ±4.2%; and 82.4% non-Hispanic with a margin of error of ±3.6%.

Comments:

In recent years, the delivery of immunization services has shifted from the county health departments to the private sector, with private providers and managed care organizations

administering 64.8% of childhood immunizations. If we are to reach the state goal of 90% immunization coverage levels for each of the vaccines administered to two-year-old children by 2007, we need to continue focusing our energy and resources on the following key areas.

- Identify and target interventions toward geographic areas with populations at high risk for under-immunization (pockets of need).

- Continue linkage with the Women, Infants, and Children (WIC) program.

- Conduct semi-annual audits in county health department clinics using the Comprehensive Clinic Assessment Software Application (CoCASA) tool to assess immunization coverage levels, as part of ongoing quality assurance reviews, to ensure complete immunization of children in the public sector.

- Implement automated reminders and recalls using the Health Management System (HMS), Immunization Module of the Health Clinic Management System (HCMS), and/or the Florida State Health Online Tracking System (SHOTS).

- Implement the Missed Immunization Opportunities Policy of the County Health Department Guidebook.

In addition, county health departments should increase their partnerships with managed care organizations and private healthcare providers to reach the state goal. Collaborative efforts should include the following:

- Promotion of the *Standards for Pediatric Immunization Practices*

- Promotion of the statewide immunization registry (Florida SHOTS), by the Department of Health, which is currently transitioning for replacement of the HCMS system

If you have any questions or comments about the survey, or if you have found other successful methods to improve your community's immunization levels, please contact Ms. Emily A. Fogarty, in the Bureau of Immunization, at (850) 245-4342, or SUNCOM 205-4342, extension 2395. We are eager to share any best practices that improve immunization rates with other county health departments and private providers.

BJS/cha/eaf
Attachments
cc: Troy Tippett, M.D., President
Florida Medical Association
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Tad P. Fisher, Executive Vice-President
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Bureau of Immunization Field Staff

Department of Health
Immunization Levels in Two-Year-Old Children
By Selected Counties and State
Florida, 2006

County	Sample Size	Survey Participants*	Complete 4/3/1†	Partial 4/3/1†	No Shots	Completion Percentage^ 4/3/1†	4/3/1/3‡	4/3/1/3/3§	4/3/1/3/3/1§§	Partially Complete % 4/3/1†	No Shots %
Brevard	81	70	60	9	1	85.7 ± 8.4	85.7 ± 8.4	85.7 ± 8.4	77.1 ± 10.0	12.9	1.4
Broward	100	67	57	10	0	85.1 ± 8.7	85.1 ± 8.7	83.6 ± 9.1	77.6 ± 10.2	14.9	0.0
Collier	100	92	76	16	0	82.6 ± 7.9	82.6 ± 7.9	81.5 ± 8.1	81.5 ± 8.1	17.4	0.0
Miami-Dade	101	87	76	9	2	87.4 ± 7.1	87.4 ± 7.1	82.8 ± 8.1	79.3 ± 8.7	10.3	2.3
Duval	100	75	66	9	0	88.0 ± 7.5	86.7 ± 7.9	84.0 ± 8.5	81.3 ± 9.0	12.0	0.0
Escambia	105	60	53	6	1	88.3 ± 8.3	88.3 ± 8.3	86.7 ± 8.8	85.0 ± 9.2	10.0	1.7
Hillsborough	144	135	109	26	0	80.7 ± 6.8	80.7 ± 6.8	79.3 ± 7.0	77.8 ± 7.2	19.3	0.0
Lee	92	78	66	12	0	84.6 ± 8.2	84.6 ± 8.2	84.6 ± 8.2	84.6 ± 8.2	15.4	0.0
Leon	121	113	98	14	1	86.7 ± 6.4	86.7 ± 6.4	86.7 ± 6.4	85.0 ± 6.7	12.4	0.9
Manatee	70	66	54	12	0	81.8 ± 9.5	77.3 ± 10.3	77.3 ± 10.3	75.8 ± 10.6	18.2	0.0
Marion	55	46	45	1	0	97.8 ± 4.3	97.8 ± 4.3	97.8 ± 4.3	97.8 ± 4.3	2.2	0.0
Orange	149	104	85	16	3	81.7 ± 7.6	81.7 ± 7.6	81.7 ± 7.6	75.0 ± 8.5	15.4	2.9
Osceola	77	74	69	5	0	93.2 ± 5.8	93.2 ± 5.8	93.2 ± 5.8	93.2 ± 5.8	6.8	0.0
Palm Beach	107	76	68	8	0	89.5 ± 7.0	88.2 ± 7.4	85.5 ± 8.1	76.3 ± 9.8	10.5	0.0
Pasco	28	25	22	3	0	88.0 ± 13.0	88.0 ± 13.0	88.0 ± 13.0	88.0 ± 13.0	12.0	0.0
Pinellas	125	113	102	11	0	90.3 ± 5.6	89.4 ± 5.8	85.8 ± 6.6	83.2 ± 7.0	9.7	0.0
Polk	80	79	71	8	0	89.9 ± 6.8	89.9 ± 6.8	89.9 ± 6.8	89.9 ± 6.8	10.1	0.0
Sarasota	90	77	65	12	0	84.4 ± 8.3	84.4 ± 8.3	81.8 ± 8.8	80.5 ± 9.0	15.6	0.0
Seminole	58	38	27	11	0	71.1 ± 14.7	68.4 ± 15.1	68.4 ± 15.1	63.2 ± 15.7	28.9	0.0
Volusia	65	56	51	4	1	91.1 ± 7.6	91.1 ± 7.6	91.1 ± 7.6	89.3 ± 8.3	7.1	1.8
All other counties	136	117	95	21	1	81.2 ± 7.2	81.2 ± 7.2	77.8 ± 7.7	75.2 ± 8.0	17.9	0.9
Statewide¶	1,984	1,648	1,415	223	10	85.2 ± 2.2	84.9 ± 2.2	82.8 ± 2.4	79.2 ± 2.5	14.0	0.6

^ % ± 95% Confidence Interval

* Does not include children who could not be located or those who refused to participate.

† Four or more doses of diphtheria, tetanus and acellular pertussis vaccine (DTaP), three doses of poliovirus vaccine, one dose of measles, mumps and rubella vaccine (MMR)

‡ Four or more doses of DTaP, three or more doses of poliovirus vaccine, one or more doses of MMR, and three or more doses of H*emophilus influenzae* type b vaccine (Hib)

§ Four or more doses of DTaP, three or more doses of poliovirus vaccine, one or more doses of MMR, three or more doses of Hib, and three or more doses of Hepatitis B

§§ Four or more doses of DTaP, three or more doses of poliovirus vaccine, one or more doses of MMR, three or more doses of Hib, three or more doses of Hepatitis B, and one Varicella

¶ Complete and partial percentage weighted by the number of births in each strata.

Department of Health

Attachment 5

Table I

IMMUNIZATION STATUS OF TWO-YEAR-OLD CHILDREN BY HIGH-RISK CHARACTERISTICS FLORIDA, 2006

	Mother's Education Level (Years)								
	<12		12		>12		Unknown		
Complete^	272	79.3%	487	86.5%	648	88.5%	8	80.0%	
Incomplete*	71	20.7%	76	13.5%	84	11.5%	2	20.0%	
	Age of Mother								
	<20		20-24		25-29		30+		Unknown
Complete^	150	80.2%	378	84.9%	365	87.5%	528	88.1%	0.0%
Incomplete*	37	19.8%	67	15.1%	52	12.5%	71	11.9%	0.0%
	Number of Siblings in Family								
	3+		2		1		0		Unknown
Complete^	121	79.6%	224	81.5%	449	86.7%	621	88.3%	0.0%
Incomplete*	31	20.4%	51	18.5%	69	13.3%	82	11.7%	0.0%
	Marital Status								
	No		Yes						
Complete^	530	82.7%	885	87.9%					
Incomplete*	111	17.3%	122	12.1%					
	Trimester of Initiation of Prenatal Care								
	3rd		2nd		1st				Unknown
Complete^	32	74.4%	152	78.8%	1231	87.2%			0.0%
Incomplete*	11	25.6%	41	21.2%	181	12.8%			0.0%

^ 4 doses of diphtheria, tetanus and acellular pertussis vaccine (DTaP), 3 doses of poliovirus vaccine, and 1 dose of measles, mumps and rubella vaccine (MMR)

* Includes 10 children with no shots

Table II

IMMUNIZATION STATUS OF TWO-YEAR-OLD CHILDREN HIGH-RISK VERSUS NON-HIGH-RISK FLORIDA, 2006

		Complete^		Partial		No Shots	
	Total	#	%	#	%	#	%
High-risk	859	715	83.2%	141	16.4%	3	0.3%
Non-high-risk	789	682	86.4%	100	12.7%	7	0.9%

^ 4 DTaP, 3 Polio, 1 MMR

Department of Health
Immunization Levels of Two-Year-Olds
Percent Immunized by Specific Vaccine and By Type of Provider
Florida, 2006

Provider	Total Clients	% Population	% DTaP 1^	% DTaP 2^	% DTaP 3^	% DTaP 4^	% Polio 1	% Polio 2	% Polio 3	% MMR*	% HIB 3†	% Hep 3‡	% Varicella
CHD§	290	17.6	103.3	102.6	96.4	95.7	102.2	100.2	99.8	102.2	99.1	99.5	99.1
PRIVATE PHYSICIAN	1069	64.9	99.2	100.9	101.0	100.0	99.2	100.1	99.5	101.2	99.8	99.4	99.7
CHC¶	43	2.6	101.3	101.3	103.6	112.8	108.2	110.5	92.1	96.7	89.7	94.4	89.7
MILITARY	8	0.5	71.7	83.7	95.7	95.7	83.7	119.6	95.7	83.7	155.4	83.7	131.5
NO SOURCE	238	14.4	100.5	93.3	99.7	103.0	100.1	96.7	103.9	92.9	101.8	105.1	103.0
TOTAL‖ OR AVERAGE	1,648	100	100	100	100	100	100	100	100	100	100	100	100

^ Diphtheria, tetanus and acellular pertussis vaccine

* Measles, mumps and rubella vaccine

† *Haemophilus influenzae* type b vaccine

‡ Hepatitis B vaccine

§ County Health Department

¶ Community Health Center

‖ Total sample population of 1,648 includes 10 children with no shots.

Department of Health

TABLE I
IMMUNIZATION LEVELS^ OF 1,648 TWO-YEAR-OLD CHILDREN BY VACCINE PROVIDER
FLORIDA, 2006

STATUS	TOTAL SAMPLE POP	% OF SAMPLE	CHD* #	CHD* %	CHC† #	CHC† %	PRIVATE PHYSICIAN #	PRIVATE PHYSICIAN %	MILITARY #	MILITARY %	NO SOURCE #	NO SOURCE %
COMPLETE ^	1,415	85.9%	250	90.3%	39	79.6%	1003	93.8%	8	100.0%	115	46.9%
PARTIAL	223	13.5%	27	9.7%	10	20.4%	66	6.2%	0	0.0%	120	49.0%
NO SHOTS‡	10	0.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	10	4.1%
TOTAL	1,648	100%	277	100.0%	49	100.0%	1069	100.0%	8	100.0%	245	100.0%

^ Unweighted completion of 4/3/1 series, consisting of four or more doses of diphtheria tetanus and acellular pertussis vaccine (DTaP), three or more doses of poliovirus vaccine and one or more doses of measles mumps and rubella vaccine (MMR) at 24 months of age.

* County Health Department

† Community Health Center

‡ Includes four children with a religious exemption and five children with no shots.

TABLE II
IMMUNIZATION STATUS OF SURVEYED TWO-YEAR-OLD CHILDREN
FLORIDA, 1990 - 2006

YEAR	TOTAL SAMPLE	COMPLETE^ (%)	PARTIAL (%)	NO SHOTS (%)	PRIVATE PROVIDER (%)	CHD (%)	CHC (%)	MILITARY (%)	NO SOURCE (%)	4+ DTaP (%)	3+ POLIO (%)	MMR (%)	3 HIB* (%)	3 Hep B † (%)	Varicella (%)
‡2006	1,648	85.2	13.5	0.6	64.8	16.8	2.9	0.005	0.1	87.4	93.2	93.3	94.1	93.3	92.3
‡2005	1,901	86.6	13.1	0.5	74.5	17.2	4.5	0.7	3.0	86.4	93.2	93.7	95.1	94.0	90.6
‡2004	1,540	85.3	14.0	0.6	74.0	18.4	4.5	1.6	1.4	86.0	92.5	93.1	93.8	92.8	90.0
‡2003	1,190	79.4	20.4	0.3	74.5	16.9	3.4	1.6	3.6	80.2	93.5	93.9	78.7	92.3	85.3
‡2002	1,159	85.3	14.0	0.7	74.8	17.5	3.6	1.2	2.8	86.6	93.7	95.8	96.7	92.0	89.2
‡2001	1,092	85.5	14.3	0.2	75.4	16.9	3.0	0.8	3.7	87.9	93.6	95.2	96.7	95.2	75.5
‡2000	1,113	86.6	12.5	0.9	69.0	22.3	2.9	1.8	3.1	88.8	93.5	95.2	96.9	96.1	57.7
‡1999	1,064	86.2	13.4	0.4	68.4	24.5	2.8	1.2	2.6	87.1	94.5	94.0	97.9	94.1	31.3
‡1998	1,498	82.9	16.6	0.5	66.2	27.9	2.8	0.9	1.7	86.6	95.0	92.4	94.8	93.0	N/A
‡1997	942	83.0	16.5	0.5	65.9	31.2	N/A	1.5	1.4	84.3	94.3	92.5	94.6	87.3	N/A
1996	1493	81.6	18.0	0.5	55.4	41.7	N/A	1.8	1.0	83.6	93.1	91.1	94.5	79.4	N/A
1995	1463	80.0	19.1	0.9	52.8	42.7	N/A	1.7	2.8	82.3	87.9	90.2	72.1	61.2	N/A
1994	553	76.5	22.4	1.1	55.8	41.7	N/A	2.2	0.3	78.1	86.3	88.5	77.5	N/A	N/A
1993	591	73.3	26.2	0.5	50.9	46.9	N/A	2.0	0.2	75.5	80.0	88.5	91.0	N/A	N/A
1992	549	67.4	31.0	1.6	50.2	45.9	N/A	2.6	1.3	69.0	77.0	89.3	83.9	N/A	N/A
1991	497	63.2	35.6	1.2	55.3	40.6	N/A	2.2	0.6	65.4	75.4	86.2	55.1	N/A	N/A
1990	532	66.0	32.7	1.3	51.3	44.2	N/A	3.2	1.3	75.9	82.0	89.7	59.2	N/A	N/A

^ Completion of 4/3/1 series at 24 months of age.

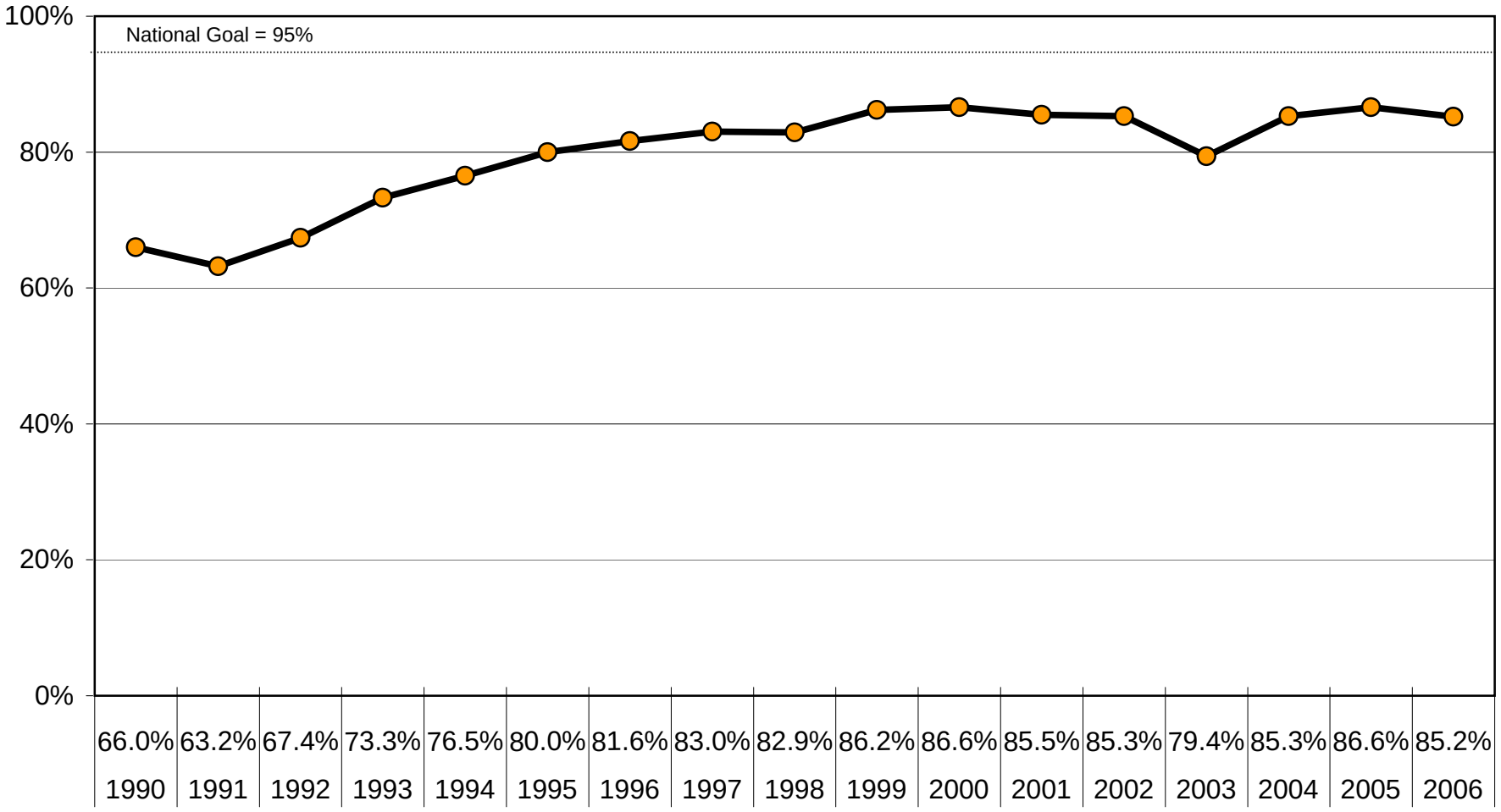
* Only one dose of *Haemophilus influenzae* type b vaccine (Hib) vaccine for years prior to 1994.

† Hepatitis B vaccine

‡ Complete and partial percentage weighted by number of births in each strata.

Department of Health
Immunization Coverage Levels (4:3:1)
of Children at 24 Months of Age, Florida

Attachment 2



^4 diphtheria, tetanus and acellular pertussis vaccine (DTaP), 3 poliovirus, and 1 measles, mumps and rubella (MMR) at 24 months of age.

Department of Health
Immunization Levels in Two-Year-Old Children
Florida, by Racial and Ethinic Groups, 2006

	Sample Size	Survey Participants*	Complete 4/3/1†	Partial 4/3/1†	No Shots	Completion Percentage^ 4/3/1†			4/3/1/3‡			4/3/1/3/3§			4/3/1/3/3/1§§			Partially Complete % 4/3/1†	No Shots %
Non-White	847	722	613	100	9	84.2	±	3.4	84.2	±	3.4	82.0	±	3.6	78.2	±	3.8	13.9	1.2
White	1137	926	802	123	1	85.3	±	4.9	84.9	±	5.0	81.2	±	6.0	78.4	±	6.1	13.3	0.1
Statewide¶	**1984**	**1648**	**1415**	**223**	**10**	**85.2**	**±**	**2.2**	**84.9**	**±**	**2.2**	**82.8**	**±**	**2.4**	**79.2**	**±**	**2.5**	**13.5**	**0.6**
Black	383	328	278	50	1	84.4	±	5.2	83.6	±	5.3	81.0	±	5.6	78.0	±	5.9	15.2	0.3
Hispanic	464	394	335	59	8	85.1	±	4.2	85.0	±	4.2	83.4	±	4.5	79.1	±	5.0	15.0	2.0
White	1137	926	802	124	1	85.3	±	4.9	84.9	±	5.0	81.2	±	6.0	78.4	±	6.1	13.4	0.1
Statewide¶	**1984**	**1648**	**1415**	**233**	**10**	**85.2**	**±**	**2.2**	**84.9**	**±**	**2.2**	**82.8**	**±**	**2.4**	**79.2**	**±**	**2.5**	**14**	**0.6**

^ % ± 95% Confidence Interval

* Does not include children who could not be located or those who refused to participate.

† Four or more doses of diphtheria, tetanus and acellular pertussis vaccine (DTaP), three doses of poliovirus vaccine, one dose of measles, mumps and rubella vaccine (MMR)

‡ Four or more doses of DTaP, three or more doses of poliovirus vaccine, one or more doses of MMR, and three or more doses of *haemophilus influenzae* type b vaccine (Hib)

§ Four or more doses of DTaP, three or more doses of poliovirus vaccine, one or more doses of MMR, three or more doses of Hib, and three or more doses of Hepatitis B

§§ Four or more doses of DTaP, three or more doses of poliovirus vaccine, one or more doses of MMR, three or more doses of Hib, three or more doses of Hepatitis B, and one Varicella

¶ Complete and partial percentage weighted by the number of births in each strata.