



Charlie Crist
Governor

Ana M. Viamonte Ros, M.D., M.P.H.
State Surgeon General

INTEROFFICE MEMORANDUM

DATE: March 26, 2008

TO: County Health Department Directors/Administrators

FROM: Jean L. Kline, R.N., B.S.N., M.P.H.
Deputy Secretary for Health, Public Health Programs

SUBJECT: Survey of Immunization Levels in Two-Year-Old Children (2007)

FOR INFORMATION ONLY

In September 2007, the Bureau of Immunization completed an annual immunization survey of 1,876 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 2007 statewide coverage rate for the basic 4/3/1 (four DTaP, three polio, and one MMR) series of vaccines among two-year-olds is 85.7%. Coverage levels for the 20 largest counties ranged from 68.5% to 93.8%. Attachment 2 depicts statewide progress from 1990 to 2007.

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. The coverage level of the 4/3/1/3/3/1 series is 83.2% statewide.

The 2007 survey also reflected a 89.9% 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 89.9% rate to the 85.7% rate for two-year-olds who completed the 4/3/1 series. Furthermore, the data indicated that 92.8% of private sector children completed the 4/3/1 series by age two, in contrast to 90.2% of the children in the public sector (see Attachment 3, Table 1). Please Note: Since our goal for immunization coverage among 2 year-olds is 90% for the 4/3/1/3/3/1 series, this will be the last year that we will publish data for the 4/3/1 series.

We must continue our efforts to reach our 2010 national and state goal of 90% coverage for two-year-old children for the 4/3/1/3/3/1 series. 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 an original random sample of 2,367 birth records selected from a list of all live births occurring among Florida residents for the month of January 2005.

One hundred seventy-eight (178) children were removed from the sample as death or adoption cases, and the sample was further reduced by eliminating 81 children whose parents refused to participate in the survey. Despite intensive follow-up, 232 children, or 10.6%, were not located. Consequently, a total of 1,876 children were included in this year's survey.

Survey Results:

Despite the fact that 88.0% of surveyed children began their immunizations on time, only 65.9% continued on schedule by age 7 months. At 18 months old, only 49.5% 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. Number of siblings continues to be a factor in demonstrating lower coverage rates. 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 or third trimesters.

The sample analysis reflected the following coverage rates for the 4/3/1 series, by racial/ethnic breakdowns: White, 86.1% complete, with a margin of error of $\pm 4.9\%$; Black, 82.8% complete, $\pm 5.2\%$; and Hispanic, 84.9% complete, $\pm 4.2\%$. The 4/3/1/3/3/1 series breakdown was also provided: White, 83.6% complete, with a margin of error of $\pm 6.1\%$; Black, 80.5% complete, $\pm 5.9\%$; and Hispanic, 83.1% complete, $\pm 5.0\%$. Please refer to Attachment 6 for breakdown of other series.

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 66.2% of childhood immunizations. If we are to reach the state goal of 90% immunization coverage levels by 2008 for each of the vaccines administered to two-year-old children, 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 Florida State Health Online Tracking System (SHOTS), to assess immunization coverage levels, as part of ongoing quality assurance reviews, and to ensure complete immunization of children in the public sector.
- Implement automated reminders and recalls using the Florida SHOTS.
- Implement the Missed Immunization Opportunities Policy of the County Health Department Guidebook.
- Use reminder and recall systems to improve overall compliance with the recommended immunization schedule, particularly for the fourth dose of DTaP.

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

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. Mayra Lacen, in the Bureau of Immunization, at (850) 245-4444, extension 2389. We are eager to share any best practices that improve immunization rates with other county health departments and private providers.

LR/cha/ccp
Attachments

cc: Karl M. Altenburger, M.D., President
Florida Medical Association
Louis B. St. Petery, Jr., M.D., Executive Vice-President
Florida Pediatric Society
Tad P. Fisher, Executive Vice-President
Florida Academy of Family Physicians
Stephen R. Winn, Executive Director
Florida Osteopathic Medical Association
Ana M. Viamonte Ros, M.D., M.P.H.
State Surgeon General, Department of Health
Thomas W. Arnold
Deputy State Health Officer
Russell W. Eggert, M.D., M.P.H., Director
Division of Disease Control

Survey of Immunization Levels
in Two-Year-Old Children (2007)
Page Four
March 26, 2008

C. Meade Grigg, Director
Office of Planning, Evaluation and Data Analysis
Annette Phelps, A.R.N.P., M.S.N., Director
Division of Family Health Services
Phyllis J. Sloyer, R.N., Ph.D., Division Director
CMS Network and Related Programs
Shannon B. Lease, M.S., Director
Office of Performance Improvement
Charles H. Alexander, Chief
Bureau of Immunization
County Health Department Nursing Directors
Bureau of Immunization Field Staff

Department of Health
Immunization Levels in Two-Year-Old Children
By Selected Counties and State
Florida, 2007

County	Sample Size	Survey Participants*	Complete 4/3/1 [†]	Partial 4/3/1 [†]	No Shots	Completion Percentage [^]										Partially Complete % 4/3/1 [†]	No Shots %		
						4/3/1 [†]		4/3/1/3 [‡]		4/3/1/3/3 [§]		4/3/1/3/3/1 ^{§§}							
Brevard	99	89	74	14	1	83.1	±	8.4	82.0	±	8.4	82.0	±	8.4	79.8	±	10.0	15.7	1.1
Broward	103	82	68	13	1	82.9	±	8.7	82.9	±	8.7	81.7	±	9.1	78.0	±	10.2	15.9	1.2
Collier	97	81	68	11	2	84.0	±	7.9	84.0	±	7.9	82.7	±	8.1	80.2	±	8.1	13.6	2.5
Miami-Dade	95	73	67	6	0	91.8	±	7.1	91.8	±	7.1	91.8	±	8.1	89.0	±	8.7	8.2	0.0
Duval	98	81	70	9	1	86.4	±	7.5	87.7	±	7.9	85.2	±	8.5	84.0	±	9.0	11.1	1.2
Escambia	106	81	67	13	1	82.7	±	8.3	82.7	±	8.3	81.5	±	8.8	80.2	±	9.2	16.0	1.2
Hillsborough	103	95	79	15	1	83.2	±	6.8	83.2	±	6.8	83.2	±	7.0	82.1	±	7.2	15.8	1.1
Lee	102	76	67	8	1	88.2	±	8.2	86.8	±	8.2	86.8	±	8.2	85.5	±	8.2	10.5	1.3
Leon	116	103	94	6	3	91.3	±	6.4	90.3	±	6.4	89.3	±	6.4	89.3	±	6.7	5.8	2.9
Manatee	78	75	66	7	2	88.0	±	9.5	88.0	±	10.3	88.0	±	10.3	86.7	±	10.6	9.3	2.7
Marion	85	70	60	9	1	85.7	±	4.3	85.7	±	4.3	84.3	±	4.3	82.9	±	4.3	12.9	1.4
Orange	102	76	61	14	1	80.3	±	7.6	80.3	±	7.6	80.3	±	7.6	77.6	±	8.5	18.4	1.3
Osceola	87	86	76	10	0	88.4	±	5.8	88.4	±	5.8	88.4	±	5.8	87.2	±	5.8	11.6	0.0
Palm Beach	110	89	61	28	0	68.5	±	7.0	68.5	±	7.4	67.4	±	8.1	65.2	±	9.8	31.5	0.0
Pasco	91	86	69	16	1	80.2	±	13.0	80.2	±	13.0	79.1	±	13.0	79.1	±	13.0	18.6	1.2
Pinellas	102	92	77	13	2	83.7	±	5.6	83.7	±	5.8	82.6	±	6.6	82.6	±	7.0	14.1	2.2
Polk	95	93	84	9	0	90.3	±	6.8	90.3	±	6.8	90.3	±	6.8	89.2	±	6.8	9.7	0.0
Sarasota	65	48	45	3	0	93.8	±	8.3	91.7	±	8.3	89.6	±	8.8	89.6	±	9.0	6.3	0.0
Seminole	90	84	77	7	0	91.7	±	5.0	91.7	±	15.1	91.7	±	5.2	86.9	±	5.3	8.3	0.0
Volusia	103	79	69	10	0	87.3	±	7.6	87.3	±	7.6	87.3	±	7.6	86.1	±	8.3	12.7	0.0
All other counties	262	237	208	28	2	87.8	±	7.2	88.2	±	7.2	86.9	±	7.7	85.2	±	8.0	11.8	0.8
Statewide [¶]	2,189	1,876	1,607	249	20	85.7	±	2.2	85.5	±	2.2	84.8	±	2.4	83.2	±	2.5	13.3	1.1

[^] % ± 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)

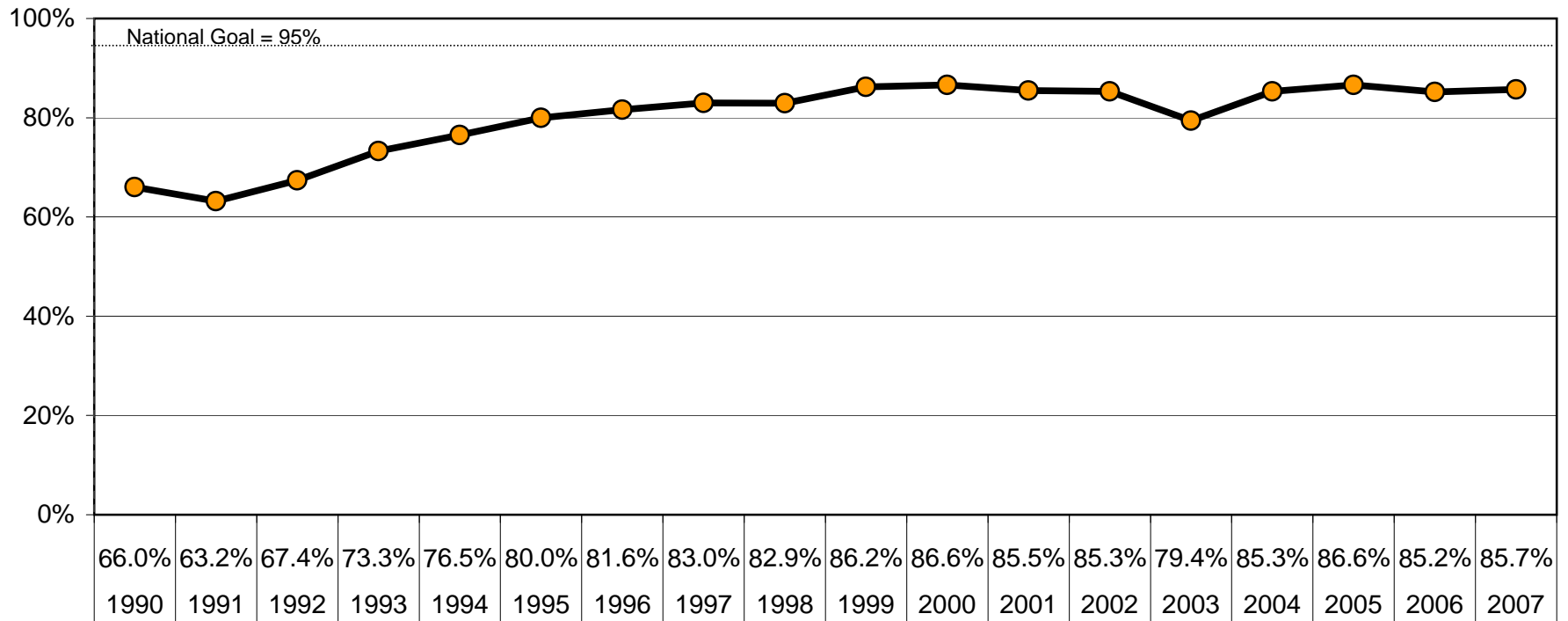
[§] Four or more doses of DTaP, three or more doses of poliovirus vaccine, one or more doses of MMR, three or more doses of Hib, and three or more doses of Hepatitis B

^{§§} 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 Immunization Coverage Levels (4:3:1) of Children at 24 Months of Age, Florida

Attachment 2



% Immunized ^

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

**TABLE I
IMMUNIZATION LEVELS^ OF 1,876 TWO-YEAR-OLD CHILDREN BY VACCINE PROVIDER
FLORIDA, 2007**

STATUS	TOTAL SAMPLE POP	% OF SAMPLE	CHD*		CHC†		PRIVATE PHYSICIAN		MILITARY		NO SOURCE	
			#	%	#	%	#	%	#	%	#	%
COMPLETE ^	1,607	86.4%	225	88.6%	46	90.2%	1152	92.8%	40	100.0%	144	49.7%
PARTIAL	249	13.6%	29	11.4%	5	9.8%	89	7.2%	0	0.0%	126	43.4%
NO SHOTS‡	20	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	20	6.9%
TOTAL	1,876	100%	254	100.0%	51	100.0%	1241	100.0%	40	100.0%	290	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 20 children with no shots.

**TABLE II
IMMUNIZATION STATUS OF SURVEYED TWO-YEAR-OLD CHILDREN
FLORIDA, 1990 - 2007**

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 (%)
‡2007	1,876	85.7	13.3	1.1	66.2	13.5	2.7	2.1	15.5	86.9	92.5	93.4	94.8	94.3	92.8
‡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 Levels of Two-Year-Olds
 Percent Immunized by Specific Vaccine and By Type of Provider
 Florida, 2007**

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§	254	13.5	81.1	79.5	80.7	100.0	80.7	81.1	96.9	97.2	81.1	86.2	92.1
PRIVATE PHYSICIAN	1241	66.2	102.3	103.1	102.7	100.0	102.1	102.4	98.7	101.5	102.3	100.5	102.0
CHC¶	51	2.7	113.7	113.7	107.8	100.0	115.7	113.7	109.8	102.0	98.0	103.9	100.0
MILITARY	40	2.1	72.5	75.0	85.0	100.0	70.0	90.0	87.5	95.0	87.5	80.0	87.5
NO SOURCE	290	15.5	108.3	105.9	106.2	100.0	109.3	105.2	108.3	96.6	109.0	112.1	100.0
TOTAL OR AVERAGE	1,876	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 1,876 includes 20 children with no shots.

Table I

**IMMUNIZATION STATUS OF TWO-YEAR-OLD CHILDREN
BY HIGH-RISK CHARACTERISTICS
FLORIDA, 2007**

		Mother's Education Level (Years)							
		<12	12		>12		Unknown		
Complete [^]		348	82.3%	494	85.0%	758	87.8%	7	77.8%
Incomplete [*]		75	17.7%	87	15.0%	105	12.2%	2	22.2%
		Age of Mother							
		<20	20-24		25-29		30+		Unknown
Complete [^]		171	84.2%	357	84.2%	378	84.8%	561	86.6%
Incomplete [*]		32	15.8%	67	15.8%	68	15.2%	87	13.4%
		Number of Siblings in Family							
		3+	2		1		0		Unknown
Complete [^]		148	77.9%	248	79.5%	528	86.1%	683	89.8%
Incomplete [*]		42	22.1%	64	20.5%	85	13.9%	78	10.2%
		Marital Status							
		No	Yes						
Complete [^]		N/A	0.0%	N/A	0.0%				
Incomplete [*]		N/A	0.0%	N/A	0.0%				
		Trimester of Initiation of Prenatal Care							
		3rd	2nd		1st				Unknown
Complete [^]		205	76.2%	218	81.6%	1184	88.4%		
Incomplete [*]		64	23.8%	49	18.4%	156	11.6%		

[^] 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 20 children with no shots

Table II

**IMMUNIZATION STATUS OF TWO-YEAR-OLD CHILDREN
HIGH-RISK VERSUS NON-HIGH-RISK
FLORIDA, 2007**

	Total	Complete [^]		Partial		No Shots	
		#	%	#	%	#	%
High-risk	880	727	82.6%	138	15.7%	15	1.7%
Non-high-risk	996	873	87.7%	118	11.8%	5	0.5%

[^] 4 DTaP, 3 Polio, 1 MMR

Department of Health
Immunization Levels in Two-Year-Old Children
Florida, by Racial and Ethnic Groups, 2007

	Sample Size	Survey Participants*	Complete 4/3/1 [†]	Partial 4/3/1 [†]	No Shots	Completion Percentage [^]								Partially Complete % 4/3/1 [†]	No Shots %				
						4/3/1 [†]	4/3/1/3 [‡]	4/3/1/3/3 [§]	4/3/1/3/3/1 ^{§§}	4/3/1/3/3/1 ^{§§}	4/3/1/3/3/1 ^{§§}	4/3/1/3/3/1 ^{§§}	4/3/1/3/3/1 ^{§§}						
Non-White	987	853	726	123	4	85.1	±	3.4	84.7	±	3.4	84.2	±	3.6	82.4	±	3.8	14.4	0.5
White	1202	1023	881	126	16	86.1	±	4.9	85.9	±	5.0	85.2	±	6.0	83.6	±	6.1	12.3	1.6
Statewide¶	2189	1876	1607	249	20	85.7	±	2.2	85.5	±	2.2	84.8	±	2.4	83.2	±	2.5	13.3	1.1
Black	409	355	294	60	1	82.8	±	5.2	82.8	±	5.3	81.9	±	5.6	80.5	±	5.9	16.9	0.3
Hispanic	470	391	332	58	1	84.9	±	4.2	84.9	±	4.2	84.7	±	4.5	83.1	±	5.0	14.8	0.3
White	1202	1023	881	126	16	86.1	±	4.9	85.9	±	5.0	85.2	±	6.0	83.6	±	6.1	12.3	1.6
Other	108	107	100	5	2	93.5	±	3.9	92.5	±	3.5	92.4	±	4.3	84.8	±	5.3	4.7	1.9
Statewide¶	2189	1876	1607	249	20	85.7	±	2.2	85.5	±	2.2	84.8	±	2.4	83.2	±	2.5	13.3	1.1

[^] % ± 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.