

Mission:

To protect, promote & improve the health of all people in Florida through integrated state, county & community efforts.



Rick Scott
Governor

Celeste Philip, MD, MPH
Surgeon General and Secretary

Vision: To be the Healthiest State in the Nation

MEMORANDUM

DATE: March 13, 2018
TO: County Health Department Directors/Administrators
FROM: Kelli T. Wells, MD *KTWellsMD*
Deputy Secretary for Health
SUBJECT: Survey of Immunization Levels in 2-Year-Old Children (2017)

INFORMATION ONLY

In December 2017, the Florida Department of Health's (Department) Immunization Section completed an annual immunization survey of 1,817 2-year-old children born in Florida. The Bureau of Vital Statistics' *Resident Live Births*, via the Florida State Health Online Tracking System (Florida SHOTS), was the source of the target population. The purpose of this survey was to estimate immunization coverage levels statewide and for 24 of the 67 counties with consistently higher annual birth counts. This survey year, Alachua, Lake, Okaloosa, and St. Lucie counties were included at the county-level.

The population was derived from children with birth certificate numbers who were born in January 2015. Children with a death certificate number were removed, as well as those who did not have a valid Vital Statistics County of Residence at Birth. Children were categorized by their county of residence at birth. As the survey involved estimating coverage levels across multiple counties, a stratified sampling methodology, where each of the 24 counties and all other counties grouped represent a stratum, was followed to derive the samples. The sample size was also based on each county's coverage rate for the prior year (excluding Alachua, Lake, Okaloosa, and St. Lucie), with a default margin of error ($\pm 6.5\%$), and a 95% confidence level.

The Advisory Committee on Immunization Practices (ACIP) recommends that 2-year-old children (from 24 to 35 months of age) should complete the 4:3:1:3:3:1:4 (expanded) immunization series by 24 months of age. The expanded immunization series consists of four or more doses of diphtheria, tetanus toxoids, and acellular pertussis (DTaP) vaccine; three or more doses of poliovirus vaccine (IPV); one or more doses of measles, mumps and rubella (MMR) vaccine; three or more doses of *Haemophilus influenzae* type b (Hib) vaccine; three or more doses of hepatitis B vaccine; one or more doses of varicella vaccine (VZV); and four or more doses of pneumococcal conjugate vaccine (PCV).

The Department's goal is to achieve 90 percent coverage, while the national goal (Healthy People 2020) is 80 percent. **The 2017 statewide immunization coverage level for the expanded immunization series is 85.0 percent.** The coverage rates for the 24 selected counties ranged from 75.9 percent to 94.3 percent, with a median rate of 84.7 percent (Enclosure 1).

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In 2009, the Department's immunization coverage goal was changed from the 4:3:1:3:3:1 (basic) immunization series to the expanded 4:3:1:3:3:1:4 series, which includes the four doses of PCV. The difference between the coverage rates for the basic and expanded series was 15.2 percent at that time (Enclosure 2). This gap has narrowed each year by a median of 2.7 percent annually. For 2017, Florida achieved an 86.1 percent coverage rate for the basic series (Enclosures 1 and 2), with a 1.1 percent gap between the basic and expanded series.

Since 2004, coverage levels for completion of the individual vaccines (other than DTaP and PCV) in the basic or expanded immunization series have been at ≥ 90 percent. In contrast, DTaP coverage levels fluctuated between 86.0 percent (2004) and 89.5 (2015) (Enclosure 3). While adding the requirement for timely completion of four PCV doses (i.e., the expanded series) has raised the bar for achieving our state immunization goal, it is important to note that the fourth dose of DTaP is as much a factor for falling short of the 90 percent state goal as is the fourth dose of PCV [see Statewide Total for Dose 4 of DTaP (only 1,593 doses of the 1,773 children) in Enclosure 4].

The survey participants were categorized by provider type and immunization status for the expanded series. Of the four provider types (county health department, community health center, private provider, and unknown source), private providers continued to lead in volume of childhood immunization service delivery (75.8 percent), while the county health department remains the lowest (3.4 percent). Private providers achieved the highest coverage levels (88.4 percent), followed by community health centers (86.3 percent), and county health departments (80.3 percent) (Enclosure 5).

Of the five high-risk indicators known to impede timely childhood immunizations, "Number of Siblings in Family" had the highest impact to children not completing the expanded series by 24 months of age. For children born to mothers who already have three or more children, only 76.8 percent completed the series on time, compared to 87.6 percent of children whose mothers have no other children. Children whose mothers began receiving prenatal care in the first trimester of pregnancy had a much higher completion rate (86.6 percent) compared to those who did not begin until the second (77.3 percent) or third trimester (77.5 percent) (Enclosure 6).

Forty-seven percent of the survey participants were white, 30 percent were Hispanic, 19 percent were black, percent were Asian, and 2 percent were other races. Of the three largest groups, black children had the lowest series completion rate (82.8 percent), white children were at 83.0 percent, and Hispanic children had the highest completion rate (86.0 percent). White children continue to have the highest rate of religious exemption from immunization, with 29 of the 849 children (3.4 percent) (Enclosure 7).

Recommendations:

We prevent dangerous outbreaks and help ensure a healthy future for our children through immunization. Therefore, we must continue to find ways to increase coverage levels for our 2-year-old children with the understanding that more than 75 percent of Florida's childhood immunization service delivery comes from the private sector. Following are recommended best practices to improve childhood immunization coverage rates in your county.

Administer simultaneously all vaccines a child is eligible to receive at the time of each visit.

Utilize all clinical encounters to screen and, when indicated, immunize children.

Conduct quarterly audits, at a minimum, via Florida SHOTS, to ensure complete immunization coverage of children whose immunization home is a county health department.

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Regularly schedule automated reminder and recall processes via Florida SHOTS to improve overall compliance with the recommended immunization schedule, particularly for the fourth dose of DTaP and PCV vaccines.

Identify and target child care facilities with a high rate of children immunized on an alternative schedule. Meet with the director of the facility to possibly promote timely immunizations.

Ensure the *Survey of Immunization Levels in 2-Year-Old Children (2017)* report is distributed to county health departments and immunization partners.

Increase partnerships with local private providers and managed care organizations to promote Florida SHOTS, as well as the *Standards for Pediatric Immunization Practices* located at www.hhs.gov/nvpo/nvac/reports-and-recommendations/the-standards-for-pediatric-immunization-practice/index.html.

If you have questions or comments concerning this survey, or have found other successful methods to improve your community's immunization levels, please contact Amy Wilson at 850-901-6806.

KTW/RG/aw

Enclosures

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Florida Department of Health

Immunization Levels in 2-Year-Old Children¹ By Selected Counties and Statewide Florida, 2017

County	Sample Size	Survey Participants ²	No Shots ³		4:3:1:3:3:1 ⁴		4:3:1:3:3:1:4 ⁵	
	#	#	#	% ⁶	# ⁷	% ⁶	# ⁷	% ⁶
Alachua	66	61	1	1.6 (± 3.2)	55	90.2 (± 7.5)	55	90.2 (± 7.5)
Brevard	104	94	3	3.2 (± 3.6)	79	84.0 (± 7.4)	78	83.0 (± 7.6)
Broward	109	101	3	3.0 (± 3.3)	91	90.1 (± 5.8)	91	90.1 (± 5.8)
Collier	88	77	3	3.9 (± 4.3)	61	79.2 (± 9.1)	60	77.9 (± 9.3)
Dade	116	94	1	1.1 (± 2.1)	84	89.4 (± 6.2)	84	89.4 (± 6.2)
Duval	95	84	2	2.4 (± 3.3)	73	86.9 (± 7.2)	71	84.5 (± 7.7)
Escambia	83	65	0	0.0 (± 0.0)	58	89.2 (± 7.5)	58	89.2 (± 7.5)
Hillsborough	71	61	0	0.0 (± 0.0)	55	90.2 (± 7.5)	54	88.5 (± 8.0)
Lake	67	60	1	1.7 (± 3.2)	53	88.3 (± 8.1)	46	76.7 (± 10.7)
Lee	67	63	3	4.8 (± 5.3)	56	88.9 (± 7.8)	56	88.9 (± 7.8)
Leon	49	44	1	2.3 (± 4.4)	39	88.6 (± 9.4)	39	88.6 (± 9.4)
Manatee	60	53	0	0.0 (± 0.0)	50	94.3 (± 6.2)	50	94.3 (± 6.2)
Marion	69	59	2	3.4 (± 4.6)	55	93.2 (± 6.4)	54	91.5 (± 7.1)
Okaloosa	64	45	0	0.0 (± 0.0)	40	88.9 (± 9.2)	40	88.9 (± 9.2)
Orange	131	116	1	0.9 (± 1.7)	93	80.2 (± 7.3)	88	75.9 (± 7.8)
Osceola	117	105	2	1.9 (± 2.6)	87	82.9 (± 7.2)	85	81.0 (± 7.5)
Palm Beach	59	54	1	1.9 (± 3.6)	45	83.3 (± 9.9)	44	81.5 (± 10.4)
Pasco	105	89	1	1.1 (± 2.2)	71	79.8 (± 8.3)	69	77.5 (± 8.7)
Pinellas	61	54	1	1.9 (± 3.6)	42	77.8 (± 11.1)	42	77.8 (± 11.1)
Polk	86	79	1	1.3 (± 2.5)	69	87.3 (± 7.3)	68	86.1 (± 7.6)
Sarasota	84	75	4	5.3 (± 5.1)	64	85.3 (± 8.0)	64	85.3 (± 8.0)
Seminole	82	74	1	1.4 (± 2.6)	59	79.7 (± 9.2)	59	79.7 (± 9.2)
St. Lucie	67	64	3	4.7 (± 5.2)	55	85.9 (± 8.5)	55	85.9 (± 8.5)
Volusia	92	77	6	7.8 (± 6.0)	62	80.5 (± 8.8)	62	80.5 (± 8.8)
Other	84	69	3	4.4 (± 4.8)	58	84.1 (± 8.6)	58	84.1 (± 8.6)
Statewide⁸	2,076⁹	1,817	44	2.2 (± 0.4)	1,554	86.1 (± 1.0)	1,530	85.0 (± 1.1)

¹Children in this survey were born in January 2015.

²Excludes 10 children whose parents refused to participate, 245 who could not be located, and four deleted from the database.

³Includes two children with no vaccines for the immunization measures, and 42 children with a religious exemption.

⁴4:3:1:3:3:1 = Measure of four or more doses of diphtheria, tetanus toxoids, and acellular pertussis (DTaP) vaccine, three or more doses of poliovirus vaccine (IPV), one or more doses of measles, mumps and rubella (MMR) vaccine, three or more doses of *Haemophilus influenzae* type b (Hib) vaccine, three or more doses of hepatitis B vaccine, and one or more doses of varicella vaccine (VZV).

⁵4:3:1:3:3:1:4 = 4:3:1:3:3:1 measure, plus four or more doses of pneumococcal conjugate vaccine (PCV).

⁶Immunization levels (unweighted) presented as point estimate (%) ± 95% confidence interval.

⁷Number of children who received all vaccines necessary to complete the measures by 24 months of age.

⁸Statewide immunization levels (weighted) based on the number of births in each county.

⁹Includes four children deleted from the database.

Florida Department of Health

Immunization Levels in 2-Year-Old Children¹
 Historic Data by Year and Immunization Measure 2009–2017
 Florida, 2017

Year ²	Survey Participants ³	No Shots ⁴		4:3:1:3:3:1 ⁵			4:3:1:3:3:1:4 ⁶		
	#	#	% ⁷	# ⁸	% ⁷	# ⁸	% ⁷		
2017	1,817	44	2.2 (± 0.4)	1,554	86.1 (± 1.0)	1,530	85.0 (± 1.1)		
2016	1,831	36	2.1 (± 0.4)	1,525	84.1 (± 1.2)	1,510	83.4 (± 1.2)		
2015	1,828	36	1.6 (± 0.3)	1,528	85.5 (± 1.1)	1,511	84.5 (± 1.1)		
2014	1,740	35	1.9 (± 0.4)	1,481	85.7 (± 1.1)	1,446	83.6 (± 1.1)		
2013	1,759	33	1.4 (± 0.3)	1,512	86.7 (± 1.1)	1,447	82.9 (± 1.2)		
2012	1,755	28	1.6 (± 0.4)	1,440	83.0 (± 1.2)	1,363	78.0 (± 1.3)		
2011	1,780	25	1.1 (± 0.3)	1,515	86.1 (± 1.1)	1,474	83.2 (± 1.2)		
2010	1,716	22	0.8 (± 0.2)	1,354	81.1 (± 1.3)	1,288	76.2 (± 1.5)		
2009	1,822	N/A	N/A N/A	1,589	87.2 ⁹ (± 1.8)	1,312	72.0 ⁹ (± 2.7)		

¹Children in these surveys were born in January two years prior to the survey year.

²2016–2017 state goal was based on the 4:3:1:3:3:1:4 measure. 2009–2015 state goal was based on the 4:3:1:3:3:1 measure.

³Excludes children who could not be located, were deleted from the database, or whose parents refused to participate.

⁴Includes children with no vaccines for the measure and children with a religious exemption.

⁵4:3:1:3:3:1 = Measure of four or more doses of diphtheria, tetanus toxoids, and acellular pertussis (DTaP) vaccine, three or more doses of poliovirus vaccine (IPV), one or more doses of measles, mumps and rubella (MMR) vaccine, three or more doses of *Haemophilus influenzae* type b (Hib) vaccine, three or more doses of hepatitis B vaccine, and one or more doses of varicella vaccine (VZV).

⁶4:3:1:3:3:1:4 = 4:3:1:3:3:1 measure, plus four or more doses of pneumococcal conjugate vaccine (PCV).

⁷Immunization levels (weighted by the number of births in each county) presented as point estimate (%) ± 95% confidence interval.

⁸Number of children who received all vaccines necessary to complete the measure by 24 months of age.

⁹2009 both measures exclude Hib vaccinations. The completion rate for the 4:3:1:3:3:1 measure including Hib vaccinations was rate 81.9%. The completion for the 4:3:1:3:3:1:4 measure including Hib vaccinations was 67.6%.

Immunization Levels in 2-Year-Old Children¹
 Historic Data 1998–2017
 Florida, 2017

Year ⁶	Survey Participants ²	Complete ³	Partial	No Shots ⁴	Private Provider ⁵	County Health Dept. ⁵	Community Health Ctr. ⁵	No Source ⁵	≥4 DTaP	≥3 Polio	1 MMR	3 Hib	3 Hep B	1 VZV	4 PCV
	#	%	%	%	%	%	%	%	%	%	%	%	%	%	%
2017 ⁷	1817	85.0	12.8	2.2	79.3	2.2	5.4	13.0	87.9	94.3	93.8	94.1	94.7	93.8	84.3
2016 ⁷	1,831	83.4	14.5	2.1	78.3	3.8	5.2	12.7	87.2	94.8	93.8	94.0	94.5	93.5	82.0
2015 ⁷	1,828	85.5	12.9	1.6	75.3	4.2	7.1	13.3	89.5	94.8	93.4	94.8	94.3	94.3	84.7
2014 ⁷	1,740	85.7	12.4	1.9	75.1	4.7	5.9	14.3	88.2	95.5	94.4	96.1	94.1	95.2	81.0
2013 ⁷	1,759	86.7	11.9	1.4	73.7	7.0	4.6	14.7	89.3	96.2	93.3	95.8	95.0	94.0	80.5
2012 ⁷	1,755	83.0	15.5	1.6	76.7	6.0	4.7	12.5	87.8	95.5	92.5	96.7	92.3	93.3	78.3
2011 ⁷	1,780	86.1	12.8	1.1	70.9	10	4.8	14.3	89.4	95.2	93.6	94.0	94.6	94.9	84.1
2010 ⁷	1,716	81.1	18.1	0.8	65.9	9.6	5.4	19.1	88.0	94.2	93.3	91.3	93.0	93.9	80.7
2009 ^{7,8}	1,822	87.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2008	1,958	83.4	16.0	0.6	60.1	15.8	3.9	20.2	86.7	93.8	94.5	94.8	94.5	94.0	N/A
2007	1,876	83.2	15.7	1.1	68.3	13.5	2.7	15.5	86.9	92.5	93.4	94.8	94.3	92.8	N/A
2006	1,648	79.2	20.2	0.6	64.8	16.8	2.9	0.1	87.4	93.2	93.3	94.1	93.3	92.3	N/A
2005	1,901	86.6	13.1	0.5	75.2	17.2	4.5	3.0	86.4	93.2	93.7	95.1	94.0	90.6	N/A
2004	1,540	85.3	14.0	0.6	75.6	18.4	4.5	1.4	86.0	92.5	93.1	93.8	92.8	90.0	N/A
2003	1,190	79.4	20.3	0.3	76.1	16.9	3.4	3.6	80.2	93.5	93.9	78.7	92.3	85.3	N/A
2002	1,159	85.3	14.0	0.7	76.0	17.5	3.6	2.8	86.6	93.7	95.8	96.7	92.0	89.2	N/A
2001 ⁷	1,092	85.5	14.3	0.2	76.2	16.9	3.0	3.7	87.9	93.6	95.2	96.7	95.2	75.5	N/A
2000 ⁷	1,113	86.6	12.5	0.9	70.8	22.3	2.9	3.1	88.8	93.5	95.2	96.9	96.1	57.7	N/A
1999 ⁷	1,064	86.2	13.4	0.4	69.6	24.5	2.8	2.6	87.1	94.5	94.0	97.9	94.1	31.3	N/A
1998 ⁷	1,498	82.9	16.6	0.5	67.1	27.9	2.8	1.7	86.6	95.0	92.4	94.8	93.0	N/A	N/A

¹Children in these surveys were born in January, two years prior to the survey year.

²Excludes children who could not be located, were deleted from the database, or whose parents refused to participate.

³Children have received all vaccines necessary to complete the measure by 24 months of age and do not have a religious exemption.

⁴Includes children with no vaccines for the measure and children with a religious exemption.

⁵Provider type of children's immunization home.

⁶2016–2017 state goal was based on the 4:3:1:3:3:1:4 measure. 4:3:1:3:3:1:4 = Measure of four or more doses of diphtheria, tetanus toxoids, and acellular pertussis (DTaP) vaccine, three or more doses of poliovirus vaccine (IPV), one or more doses of measles, mumps and rubella (MMR) vaccine, three or more doses of *Haemophilus influenzae* type b (Hib) vaccine, three or more doses of hepatitis B vaccine, one or more doses of varicella vaccine (VZV), and four or more doses of pneumococcal conjugate vaccine (PCV). 2006–2015 state goal was based on the 4:3:1:3:3:1 measure, which is 4:3:1:3:3:1.4 minus the four doses of PCV vaccine. 1998–2005 state goal was based on the 4:3:1 measure which is four doses of DTaP vaccine, three doses of IPV, and one dose of MMR vaccine.

⁷Complete and partial percentage weighted by the number of births in each county.

⁸2009 uses the 4:3:1:3:3:1 measure, excluding the Hib vaccinations. Including the Hib vaccinations, the completion percentage is was 67.6%.

Florida Department of Health
 Immunization Levels in 2-Year-Old Children¹
 By Specific Vaccine and Provider Type
 Florida, 2017

Provider Type	Participants w/Shots ²		Number of Doses Given											
			DTaP			Polio		MMR	Hib	Hep B	VZV	PCV ³		
	# ⁴	% ⁵	Dose 1	Dose 3	Dose 4	Dose 1	Dose 3	Dose 1	Dose 3	Dose 3	Dose 1	Dose 1	Dose 3	Dose 4
County Health Department	63	3.6	66	70	88	68	71	91	75	73	90	66	74	77
Private Provider	1,371	77.3	1,313	1,258	1,248	1,311	1,253	1,311	1,236	1,271	1,306	1,301	1,257	1,167
Community Health Center	115	6.5	110	109	105	110	110	100	111	107	105	112	110	98
Unknown	224	12.6	278	298	152	275	279	194	290	271	196	285	275	176
Statewide	1,773	100.0	1,767	1,735	1,593	1,764	1,713	1,696	1,712	1,722	1,697	1,764	1,716	1,518

¹Children in this survey were born in January 2015.

²Excludes 10 children whose parents refused to participate, 245 children who could not be located, three children deleted from the database, 42 children with a religious exemption and five children with no vaccinations for the 4:3:1:3:3:1:4 measure.

³Pneumococcal conjugate (PCV) vaccine.

⁴Children grouped by vaccine provider type for the majority of the the vaccines for the measure. 4:3:1:3:3:1:4 = Measure of four or more doses of diphtheria, tetanus toxoids, and acellular pertussis (DTaP) vaccine, three or more doses of poliovirus vaccine (IPV), one or more doses of measles, mumps, and rubella (MMR) vaccine, three or more doses of *Haemophilus influenzae* type b (Hib) vaccine, three or more doses of hepatitis B vaccine, one or more doses of varicella vaccine (VZV), and four or more doses of pneumococcal conjugate vaccine (PCV).

⁵Children by vaccine provider type presented as point estimate (%).

Florida Department of Health
 Immunization Levels in 2-Year-Old Children¹
 By Vaccine Provider Type²

4:3:1:3:3:1:4 ³	Survey Participants ⁴		County Health Department		Community Health Center		Private Provider		No Source or Unknown Source	
	#	% ⁵	#	% ⁵	#	% ⁵	#	% ⁵	#	% ⁵
Complete ⁶	1,554	85.5	49	80.3	101	86.3	1,218	88.4	186	71.3
Partial	219	12.1	12	19.7	16	13.7	160	11.6	31	11.9
No Shots ⁷	44	2.4	0	0.0	0	0.0	0	0.0	44	16.9
Statewide	1,817	100	61	3.4	117	6.4	1,378	75.8	261	14.4

¹Children in this survey were born in January 2015.

²Children grouped by vaccine provider type for the majority of the vaccines for the measure.

³4:3:1:3:3:1:4 = Measure of four or more doses of diphtheria, tetanus toxoids, and acellular pertussis (DTaP) vaccine, three or more doses of poliovirus vaccine (IPV), one or more doses of measles, mumps, and rubella (MMR) vaccine, three or more doses of *Haemophilus influenzae* type b (Hib) vaccine, three or more doses of hepatitis B vaccine, one or more doses of varicella vaccine (VZV), and four or more doses of pneumococcal conjugate vaccine (PCV).

⁴Excludes 10 children whose parents refused to participate in the survey, 245 children who could not be located, and four children deleted from the database.

⁵Immunization levels presented as point estimate (%).

⁶Children have received all vaccines necessary to complete the measure by 24 months of age and do not have a religious exemption.

⁷Includes two children with no vaccines for the measure and 42 children with a religious exemption.

Florida Department of Health
 Immunization Status in 2-Year-Old Children¹
 By High-Risk² Characteristics for 4:3:1:3:3:1:4³
 Florida, 2017

		Mother's Education Level (Years)							
		<12 ²		12		>12		Unknown	
Complete ⁴		193	82.3%	477	82.8%	851	85.2%	9	100.0%
Incomplete ⁵		40	17.2%	99	17.2%	148	14.8%	0	0.0%

		Age of Mother									
		<20 ²		20–24		25–29		≥30		Unknown	
Complete ⁴		86	80.4%	366	83.6%	467	85.9%	607	84.0%	4	80.0%
Incomplete ⁵		21	19.6%	72	16.4%	77	14.1%	116	16.0%	1	20.0%

		Number of Siblings in Family									
		≥3 ²		2		1		0		Unknown	
Complete ⁴		136	76.8%	238	79.6%	500	84.3%	651	87.6%	5	100.0%
Incomplete ⁵		41	23.2%	61	20.4%	93	15.7%	92	12.4%	0	0.0%

		Marital Status			
		No ²		Yes	
Complete ⁴		774	84.9%	756	83.5%
Incomplete ⁵		138	15.1%	149	16.5%

		Trimester of Initiation of Prenatal Care							
		3rd ²		2nd		1st		Unknown	
Complete ⁴		62	77.5%	290	77.3%	1,095	86.6%	83	84.7%
Incomplete ⁵		18	22.5%	85	22.7%	169	13.4%	15	15.3%

¹Children in this survey were born in January 2015.

²Categories that place children at high risk for completing immunizations by 24 months of age: Being born to a mother without a high school diploma or equivalent, being born to a mother less than 20 years of age, having three or more siblings, being born to an unmarried mother, or receiving no prenatal care until the mother's third trimester of pregnancy.

³4:3:1:3:3:1:4 = Measure of four or more doses of diphtheria, tetanus toxoids, and acellular pertussis (DTaP) vaccine, three or more doses of poliovirus vaccine (IPV), one or more doses of measles, mumps, and rubella (MMR) vaccine, three or more doses of *Haemophilus influenzae* type b (Hib) vaccine, three or more doses of hepatitis B vaccine, one or more doses of varicella vaccine (VZV), and four or more doses pneumococcal conjugate vaccine (PCV).

⁴Completion of the measure by 24 months of age.

⁵Includes children with no vaccines for the measure and children with a religious exemption.

Florida Department of Health
 Immunization Levels in 2-Year-Old Children¹
 By Race, Florida 2017

Race	Sample Size	Survey Participants ²	No Shots ³			4:3:1:3:3:1:4 ⁴					
						Complete ⁵			Partial		
			#	% ⁶	(±)	#	% ⁶	(±)	#	% ⁶	(±)
Asian	58	50	0	0.0	(± 0.0)	45	90.0	(± 8.3)	5	10.0	(± 8.3)
Black	367	337	6	1.8	(± 1.4)	279	82.8	(± 4.0)	52	15.4	(± 3.9)
Hispanic	584	537	8	1.5	(± 1.0)	462	86.0	(± 2.9)	67	12.5	(± 2.8)
White	1,005	849	29	3.4	(± 1.2)	705	83.0	(± 2.5)	115	13.6	(± 2.3)
Other	57	43	1	2.3	(± 4.5)	38	88.4	(± 9.6)	4	9.3	(± 8.7)
Unknown	5	1	0	0.0	(± 0.0)	1	100.0	(± 0.0)	0	0.0	(± 0.0)
Statewide	2,076⁷	1,817	44	2.4	(± 0.7)	1,530	84.2	(± 1.7)	243	13.4	(± 1.6)

¹Children in this survey were born in January 2015.

²Excludes 10 children whose parents refused to participate in the survey, 245 children who could not be located, and four children deleted from the database.

³Includes children with no vaccines for the measure and 42 children with a religious exemption.

⁴4:3:1:3:3:1:4 = Measure of four or more doses of diphtheria, tetanus toxoids, and acellular pertussis (DTaP) vaccine, three or more doses of poliovirus vaccine (IPV), one or more doses of measles, mumps, and rubella (MMR) vaccine, three or more doses of *Haemophilus influenzae* type b (Hib) vaccine, three or more doses of hepatitis B vaccine, one or more doses of varicella vaccine (VZV), and four or more doses of pneumococcal conjugate vaccine (PCV).

⁵Children have received all of the vaccines necessary to complete the measure by 24 months of age and do not have a religious exemption.

⁶Immunization levels presented as point estimate (%) ± 95% confidence interval.

⁷Statewide sample size includes four children deleted from the database; however, these four children are not included in the individual race sample sizes.