

Table 31. Vaccination coverage for selected diseases among children aged 19–35 months, by race, Hispanic origin, poverty level, and location of residence in metropolitan statistical area: United States, selected years 1998–2017

Excel version (with more data years and standard errors when available): https://www.cdc.gov/nchs/hus/contents2018.htm#Table_031.

[Data are based on telephone interviews of a sample of the civilian noninstitutionalized population, supplemented by a survey of interview participants' immunization providers]

Vaccination and year	Race and Hispanic origin ¹							Poverty level ²		Location of residence			
	Not Hispanic or Latino							Hispanic or Latino	Below poverty level	At or above poverty level	Inside MSA ³		Non-MSA
	All	White only	Black or African American only	American Indian or Alaska Native only	Asian only ⁴	Native Hawaiian or Other Pacific Islander only ⁴	2 or more races				MSA, principal city	MSA, non-principal city	
Combined													
7-vaccine series: ⁵													
Percent of children aged 19–35 months													
2009	44.3	45.2	39.6	*	38.6	*	40.7	45.9	41.3	45.7	44.8	44.6	42.4
2010	56.6	56.9	54.5	64.1	59.3	*	61.3	55.5	52.8	58.7	56.5	57.2	55.2
2011	68.5	68.8	63.7	65.9	70.8	*	70.9	69.5	63.6	71.6	69.5	67.9	67.4
2012	68.4	69.3	64.8	*	71.6	*	71.5	67.8	63.4	71.6	67.6	69.4	68.0
2013	70.4	72.1	65.0	70.1	72.7	*	71.8	69.3	64.4	73.8	68.8	72.5	69.1
2014	71.6	72.6	65.4	*	69.5	*	68.5	74.3	65.7	75.4	70.8	72.7	71.2
2015	72.2	72.7	69.1	68.2	77.9	*	73.7	71.7	68.7	74.7	72.5	72.5	70.2
2016	70.7	72.2	64.1	68.5	72.3	*	71.5	71.0	66.0	72.5	71.3	71.1	67.0
2017	70.4	71.5	66.5	65.9	72.4	67.7	69.8	70.4	62.8	73.8	71.9	69.8	66.8
DTP/DT/DTaP													
(4 doses or more): ⁶													
1998	83.9	86.6	77.3	82.9	89.1	---	---	80.5	79.5	86.1	81.6	85.4	85.1
2000	81.7	84.4	76.1	77.8	84.5	*	81.5	78.6	76.2	83.5	79.9	82.8	82.9
2005	85.7	87.1	84.0	*	88.8	*	86.3	83.6	81.8	87.4	84.8	87.0	84.7
2009	83.9	85.8	78.6	82.1	86.6	93.1	81.8	82.9	80.1	85.7	83.8	84.2	84.2
2010	84.4	84.5	83.7	81.8	88.3	*	82.8	84.4	80.8	86.1	84.0	85.0	83.7
2011	84.6	85.0	81.3	72.7	92.0	93.0	87.1	84.1	81.0	86.8	86.1	83.8	82.2
2012	82.5	83.6	79.6	88.2	88.1	*	85.6	80.8	78.5	85.0	82.4	83.4	80.5
2013	83.1	85.3	74.7	78.1	89.0	*	83.1	82.3	77.8	86.0	81.8	84.7	82.4
2014	84.2	85.5	79.1	*	87.4	*	79.6	85.4	79.1	87.4	83.6	85.3	83.1
2015	84.6	85.2	82.0	79.6	90.0	*	82.5	84.5	80.2	87.1	85.4	84.3	82.7
2016	83.4	84.8	76.8	83.5	86.4	83.2	83.6	83.3	79.2	85.1	83.3	84.8	78.8
2017	83.2	83.0	79.7	74.4	89.1	78.7	81.7	84.7	78.5	85.2	85.0	82.6	78.1
Polio													
(3 doses or more):													
1998	90.8	92.2	87.8	85.1	93.4	---	---	88.9	89.9	91.7	89.3	91.3	92.9
2000	89.5	90.6	86.6	90.8	92.7	91.2	91.2	87.9	86.9	89.9	88.1	90.1	91.1
2005	91.7	91.4	91.0	*	92.9	*	93.8	92.3	89.7	92.4	90.6	92.6	92.2
2009	92.8	93.3	90.9	92.2	94.0	97.3	92.8	92.5	92.0	93.3	93.5	92.1	92.1
2010	93.3	93.2	94.0	94.6	92.8	95.1	90.2	93.8	92.4	93.6	92.7	94.1	93.1
2011	93.9	93.9	93.9	88.1	96.5	96.6	93.5	93.8	93.6	94.2	94.3	93.4	94.2
2012	92.8	93.0	92.9	95.2	92.3	*	93.3	92.5	91.8	93.4	92.6	92.9	92.8
2013	92.7	93.7	91.2	92.2	95.5	*	90.8	91.6	89.2	94.4	91.9	93.2	93.4
2014	93.3	93.3	92.0	93.8	93.2	93.8	94.0	93.8	92.0	94.5	92.7	94.2	92.7
2015	93.7	93.1	93.3	91.8	96.9	92.8	92.4	94.5	91.8	94.6	93.9	94.0	91.7
2016	91.9	92.5	90.3	92.4	94.7	91.3	89.4	91.7	90.6	92.5	92.0	92.2	90.8
2017	92.7	92.3	91.5	89.7	96.7	91.2	93.2	93.2	91.4	93.3	93.2	92.9	90.1

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[Data are based on telephone interviews of a sample of the civilian noninstitutionalized population, supplemented by a survey of interview participants' immunization providers]

Vaccination and year	Race and Hispanic origin ¹							Poverty level ²		Location of residence			
	Not Hispanic or Latino							Hispanic or Latino	Below poverty level	At or above poverty level	Inside MSA ³		Non-MSA
	All	White only	Black or African American only	American Indian or Alaska Native only	Asian only ⁴	Native Hawaiian or Other Pacific Islander only ⁴	2 or more races				MSA, principal city	MSA, non-principal city	
Measles, mumps, rubella (1 dose or more): ⁷													
Percent of children aged 19–35 months													
1998	92.0	93.1	88.8	91.4	92.2	---	---	91.0	90.1	93.1	91.3	92.4	92.4
2000	90.5	91.6	87.7	89.4	89.3	94.5	88.1	90.0	88.9	90.9	89.7	91.0	90.8
2005	91.5	91.4	91.9	89.7	91.9	90.3	93.7	91.1	89.3	92.1	91.6	91.8	90.4
2009	90.0	90.8	88.2	94.9	90.7	96.9	88.5	89.3	88.8	90.6	91.1	88.6	88.6
2010	91.5	90.6	92.1	93.4	91.7	96.9	89.7	92.9	91.3	91.4	92.4	90.5	91.4
2011	91.6	91.1	90.8	94.8	93.9	98.7	91.1	92.4	91.3	91.7	92.0	91.2	91.5
2012	90.8	90.9	90.9	92.0	89.8	*	92.3	90.7	89.9	91.4	90.1	91.0	92.4
2013	91.9	91.5	90.9	96.3	96.7	90.4	91.5	92.1	90.5	92.5	91.5	92.4	91.3
2014	91.5	91.2	90.3	96.5	95.7	95.7	90.5	91.9	89.5	92.8	91.9	91.2	91.2
2015	91.9	91.8	90.7	88.5	92.5	92.0	93.0	92.3	90.3	92.9	92.4	91.7	90.7
2016	91.1	91.6	89.4	91.3	93.6	86.1	91.0	90.6	89.0	92.1	91.3	91.7	88.5
2017	91.5	91.2	89.5	89.5	95.1	90.1	91.8	92.2	88.7	92.7	92.5	90.9	89.9
Hib (full series): ⁸													
2009	54.8	55.3	51.2	*	54.6	*	53.7	55.4	51.4	56.5	55.5	54.9	53.0
2010	66.8	67.5	65.4	77.1	69.5	*	70.1	64.8	61.3	69.7	66.5	68.4	63.4
2011	80.4	81.0	74.6	73.7	83.5	*	82.0	81.6	75.5	83.4	81.4	80.3	77.8
2012	80.9	82.2	77.5	84.7	86.1	*	82.5	79.5	76.4	84.0	80.5	81.8	79.9
2013	82.0	84.2	74.9	82.9	82.0	*	84.9	80.9	75.8	85.3	80.6	84.3	79.7
2014	82.0	83.8	75.2	83.8	83.1	*	78.7	82.8	76.3	85.5	81.4	82.7	81.6
2015	82.7	83.0	78.9	81.4	87.0	*	82.4	83.0	78.1	85.5	82.3	83.6	80.9
2016	81.8	83.0	75.6	82.9	83.5	*	83.0	82.1	77.4	83.6	81.5	83.2	78.2
2017	80.7	81.0	77.4	77.1	87.3	74.1	79.3	81.0	75.2	83.2	81.6	80.7	77.3
Hepatitis A (2 doses or more):													
2009	46.6	46.2	41.3	33.2	50.9	*	47.8	49.3	47.3	46.2	48.2	46.9	42.0
2010	49.7	45.8	48.6	*	50.8	*	49.8	57.0	51.0	49.1	52.4	48.8	45.1
2011	52.2	50.0	50.9	*	56.9	*	50.2	56.3	50.7	53.4	55.0	50.9	47.6
2012	53.0	52.6	52.0	*	57.5	*	49.4	54.4	49.4	55.4	54.7	53.0	48.2
2013	54.7	53.4	49.1	*	67.3	*	57.8	56.6	53.5	56.1	55.5	55.2	50.1
2014	57.5	55.4	56.7	*	67.7	*	53.7	61.6	54.0	59.2	58.9	58.1	51.2
2015	59.6	58.7	59.3	61.3	67.8	*	54.1	60.9	56.0	61.7	60.5	59.6	55.7
2016	60.6	60.0	53.9	69.8	69.7	*	57.4	63.6	56.9	61.9	62.1	60.5	55.6
2017	59.7	58.3	54.0	53.4	68.9	56.5	59.5	63.5	56.0	61.4	61.1	59.2	56.5

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[Data are based on telephone interviews of a sample of the civilian noninstitutionalized population, supplemented by a survey of interview participants' immunization providers]

Vaccination and year	Race and Hispanic origin ¹							Poverty level ²		Location of residence			
	Not Hispanic or Latino							Hispanic or Latino	Below poverty level	At or above poverty level	Inside MSA ³		Non-MSA
	All	White only	Black or African American only	American Indian or Alaska Native only	Asian only ⁴	Native Hawaiian or Other Pacific Islander only ⁴	2 or more races				MSA, principal city	MSA, non-principal city	
Hepatitis B													
(3 doses or more):													
Percent of children aged 19–35 months													
1998	87.0	88.3	83.7	81.6	89.0	---	---	85.7	85.3	87.7	85.3	88.3	87.4
2000	90.3	91.4	88.8	91.9	89.5	93.1	92.6	88.2	87.3	91.4	89.4	90.3	92.3
2005	92.9	93.1	92.7	90.1	92.7	*	94.4	92.7	91.4	93.5	91.8	93.9	93.4
2009	92.4	92.3	91.6	92.5	93.1	96.2	93.3	92.6	92.3	92.7	92.8	91.8	91.8
2010	91.8	91.4	92.1	97.2	91.7	96.7	89.9	92.5	91.5	92.0	91.2	92.0	92.7
2011	91.1	90.3	92.1	92.6	95.5	91.1	90.7	91.5	91.8	91.2	91.0	90.7	92.5
2012	89.7	89.3	89.7	94.0	93.2	*	92.2	89.4	89.4	89.8	89.5	89.6	90.7
2013	90.8	91.0	91.1	96.1	92.0	94.9	90.7	89.7	88.3	92.0	89.6	91.8	91.4
2014	91.6	90.7	92.3	98.5	92.9	95.2	92.9	91.9	91.3	92.0	90.5	92.5	91.9
2015	92.6	92.0	93.3	92.4	95.5	94.1	91.4	93.2	92.5	92.7	92.9	92.5	92.1
2016	90.5	91.3	90.0	91.0	93.8	86.0	88.8	89.1	90.5	90.5	90.9	89.9	91.2
2017	91.4	91.1	91.8	88.1	94.7	90.7	91.1	91.3	89.8	92.1	92.6	90.4	90.7
Varicella													
(1 dose or more): ⁷													
1998	43.2	41.9	42.4	28.0	52.6	---	---	46.9	40.5	44.1	45.1	45.2	34.3
2000	67.8	66.3	67.6	65.8	76.3	*	69.7	70.2	63.5	69.2	69.0	69.8	60.2
2005	87.9	86.1	90.6	82.2	91.9	*	90.1	89.2	87.3	87.7	88.4	88.2	85.7
2009	89.6	89.2	88.2	89.2	89.5	97.5	90.6	90.7	89.0	90.2	90.6	88.5	88.5
2010	90.4	88.9	91.5	95.7	92.5	92.7	88.9	92.3	89.6	90.6	90.8	90.1	90.0
2011	90.8	89.6	91.2	90.1	93.5	99.0	91.9	92.0	90.2	90.9	90.9	91.0	89.8
2012	90.2	89.8	90.4	92.5	91.9	*	90.9	90.9	89.7	90.6	90.1	90.0	91.3
2013	91.2	90.0	92.1	95.4	96.0	88.7	91.0	92.0	90.3	91.6	91.1	91.6	90.3
2014	91.0	90.3	90.1	95.7	95.3	94.9	90.0	92.1	89.9	91.9	91.4	91.1	89.8
2015	91.8	91.2	91.8	87.8	93.4	91.8	92.1	92.7	90.6	92.5	92.5	91.5	89.9
2016	90.6	90.8	89.9	90.9	94.2	86.7	89.3	90.2	89.3	91.2	91.2	90.7	88.0
2017	91.0	90.3	89.3	88.1	95.7	86.1	92.9	91.8	88.9	92.0	92.3	90.4	88.3
PCV													
(4 doses or more): ⁹													
2005	53.7	57.3	46.2	*	56.2	*	54.2	50.5	44.6	57.1	51.7	57.7	48.4
2009	80.4	83.4	73.2	76.2	72.5	*	73.1	80.6	74.8	83.2	79.7	81.8	81.8
2010	83.3	84.2	79.7	85.3	78.9	*	83.0	83.9	78.7	85.6	82.6	84.3	82.6
2011	84.4	85.3	81.3	75.3	84.9	93.1	84.0	84.6	80.6	86.9	85.0	84.6	82.3
2012	81.9	83.5	77.1	*	80.7	*	84.1	82.1	76.7	85.3	80.4	84.0	80.8
2013	82.0	84.1	76.1	79.0	85.6	*	83.0	80.4	74.5	86.1	80.7	84.1	79.9
2014	82.9	84.5	78.0	*	80.9	93.1	82.1	83.2	76.9	86.9	81.4	84.5	82.9
2015	84.1	85.0	81.4	77.1	85.0	*	83.7	84.0	78.9	87.2	83.9	85.5	80.4
2016	81.8	84.1	74.5	80.1	81.0	82.9	82.9	81.4	76.8	84.2	82.5	82.1	78.4
2017	82.4	84.2	78.1	72.5	82.1	80.0	82.3	81.8	75.9	85.3	83.6	82.0	79.1

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[Data are based on telephone interviews of a sample of the civilian noninstitutionalized population, supplemented by a survey of interview participants' immunization providers]

Vaccination and year	Race and Hispanic origin ¹							Poverty level ²		Location of residence			
	Not Hispanic or Latino							Hispanic or Latino	Below poverty level	At or above poverty level	Inside MSA ³		Non-MSA
	White only	Black or African American only	American Indian or Alaska Native only	Asian only ⁴	Native Hawaiian or Other Pacific Islander only ⁴	2 or more races	MSA, principal city				MSA, non-principal city		
Rotavirus vaccine: ¹⁰													
Percent of children aged 19–35 months													
2009	43.9	46.4	38.0	*	41.7	*	38.4	43.7	37.7	47.1	44.6	46.6	35.6
2010	59.2	60.2	52.7	*	62.6	*	57.7	60.5	51.5	62.9	59.2	62.2	51.6
2011	67.3	68.3	62.5	57.7	66.9	*	67.8	68.3	61.1	71.1	68.9	67.4	62.7
2012	68.6	70.5	60.4	*	69.9	*	69.3	70.0	63.0	72.5	68.8	70.5	62.5
2013	72.6	74.8	62.1	*	74.9	*	72.8	73.7	64.3	76.9	72.4	74.7	66.7
2014	71.7	74.8	61.6	*	72.4	*	73.9	71.3	62.8	76.9	71.2	73.2	68.4
2015	73.2	74.6	69.7	*	75.6	*	70.6	72.9	66.8	76.8	72.7	75.1	68.6
2016	74.1	77.3	67.2	*	71.8	*	73.4	73.0	65.5	78.2	74.9	74.2	70.3
2017	73.2	76.6	65.7	66.4	73.0	69.8	73.4	71.1	64.4	77.9	73.8	73.3	70.5
Not Hispanic or Latino													
Vaccination and year	White only		Black or African American only		Hispanic or Latino								
	Below poverty level ²	At or above poverty level ²	Below poverty level ²	At or above poverty level ²	Below poverty level ²	At or above poverty level ²							
Combined													
7-vaccine series: ⁵													
Percent of children aged 19–35 months													
2009	43.2	45.6	37.8	43.5	43.5	48.5							
2010	48.7	59.0	53.4	56.3	55.0	55.2							
2011	59.8	71.8	61.0	68.0	67.9	71.1							
2012	58.2	72.1	62.7	68.5	68.1	68.3							
2013	61.3	74.9	60.4	69.1	68.6	70.2							
2014	61.2	75.4	61.5	71.0	71.8	79.4							
2015	64.1	75.4	65.8	73.2	72.9	70.1							
2016	61.2	74.6	65.0	64.4	70.8	68.9							
2017	64.0	74.2	61.7	73.8	61.8	71.7							

Table 31. Vaccination coverage for selected diseases among children aged 19–35 months, by race, Hispanic origin, poverty level, and location of residence in metropolitan statistical area: United States, selected years 1998–2017

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[Data are based on telephone interviews of a sample of the civilian noninstitutionalized population, supplemented by a survey of interview participants' immunization providers]

* Estimates are considered unreliable. For data prior to 2007 (shown in spreadsheet version), percentages are not shown if the unweighted sample size for the numerator was less than 30, or the confidence interval half-width divided by the estimate was greater than 50%, or the confidence interval half-width was greater than 10. Starting with 2007 data, percentages are not shown if the unweighted sample size for the denominator was less than 30, or the confidence interval half-width divided by the estimate was greater than 58.8%, or the confidence interval half-width was greater than 10.

-- Data not available.

¹Persons of Hispanic origin may be of any race. Starting with 2000 data, estimates were tabulated using the 1997 *Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity*. Estimates for earlier years were tabulated using the 1977 Standards on Race and Ethnicity. See Appendix II, Hispanic origin; Race.

²Poverty level is based on family income and family size using U.S. Census Bureau poverty thresholds. In 2017, 3.9% of the 15,333 children with provider-reported vaccination history data, 8.2% of Hispanic, 2.3% of non-Hispanic white, and 5.3% of non-Hispanic black children were missing information about poverty level and were omitted from the estimates of vaccination coverage by poverty level (unweighted percentages). See Appendix II, Family income; Poverty. See Appendix I, National Immunization Surveys (NIS).

³MSA is metropolitan statistical area. See Appendix II, Metropolitan statistical area (MSA).

⁴Prior to data year 2000, the category Asian included Native Hawaiian or Other Pacific Islander.

⁵The combined 7-vaccine series consists of 4 or more doses of either the diphtheria, tetanus toxoids, and pertussis vaccine (DTP), the diphtheria and tetanus toxoids vaccine (DT), and the diphtheria, tetanus toxoids, and acellular pertussis vaccine (DTaP); 3 or more doses of any poliovirus vaccine; 1 or more doses of a measles-containing vaccine (MCV); 3 or more doses or 4 or more doses of *Haemophilus influenzae* type b vaccine (Hib) depending on Hib vaccine product type (full series Hib); 3 or more doses of hepatitis B vaccine; 1 or more doses of varicella vaccine; and 4 or more doses of pneumococcal conjugate vaccine (PCV). The vaccine shortage that ended in September 2004 might have reduced coverage with the fourth dose of PCV among children in the 2007 National Immunization Survey (NIS)—Child. See footnote 8 for additional information on (Hib) vaccination.

⁶Includes the diphtheria, tetanus toxoids, and pertussis vaccine (DTP), the diphtheria and tetanus toxoids vaccine (DT), and the diphtheria, tetanus toxoids, and acellular pertussis vaccine (DTaP).

⁷Includes children who may have been vaccinated with at least 1 dose of measles, mumps, rubella, and varicella vaccine.

⁸*Haemophilus influenzae* type b vaccine (Hib) full series includes primary series and the booster dose. Before January 2009, NIS did not distinguish between Hib vaccine product types; therefore, children who received 3 doses of a vaccine product that requires 4 doses were misclassified as fully vaccinated. In addition, there was a Hib vaccine shortage during December 2007–September 2009. For more information, see: CDC. Changes in measurement of *Haemophilus influenzae* serotype b (Hib) vaccination coverage—National Immunization Survey, United States, 2009. MMWR Morb Mortal Wkly Rep 59(33):1069–72. Available from: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5933a3.htm?s_cid=mm5933a3_e%0d%0a.

⁹PCV is pneumococcal conjugate vaccine. Recommended in 2000. Data collection for PCV began in July 2001. Data for 4 doses of PCV are not available prior to 2005.

¹⁰Rotavirus vaccine includes 2 or more or 3 or more doses, depending on the product type received. Recommended in 2006. Data collection for rotavirus began in 2009.

NOTES: Vaccine coverage estimates were based on provider-reported vaccination data. Complex statistical methods were used to adjust vaccination estimates to account for refusals, households without telephones, and children whose vaccination histories could not be verified through their providers. Starting in 2010, the MSA estimates presented in Child Vax View use imputed data. See Appendix II, Metropolitan statistical area (MSA), Vaccination. Starting in 2011, the NIS sampling frame was expanded from a single-landline frame to dual-landline and cellular telephone sampling frames. See Appendix I, National Immunization Surveys (NIS). Additional information on childhood immunizations is available from: <https://www.cdc.gov/vaccines/schedules/index.html>. Data for additional years are available. See the Excel spreadsheet on the *Health, United States* website at: <https://www.cdc.gov/nchs/hus.htm>.

SOURCE: NCHS and National Center for Immunization and Respiratory Diseases (NCIRD) (data for 1998–2014); NCIRD (data for 2015 onwards), National Immunization Survey—Child. Available from: <https://www.cdc.gov/vaccines/imz-managers/nis/data-tables.html>. See Appendix I, National Immunization Surveys (NIS).