

SUPPLEMENTARY TABLE 1. Estimated vaccination coverage* for MMR, DTaP, and varicella vaccines among children enrolled in kindergarten, by vaccine and immunization program — United States and territories, 2018-2019 school year

Immunization Program	Kindergarten population [†]	No. (%) surveyed	Type of survey conducted [‡]	Local Data Available Online [¶]	MMR**	DTaP ^{††}	Varicella ^{§§}	
					2 doses (%)	5/4 doses (%)	1 dose (%)	2 doses (%)
National Estimate^{¶¶}	4,001,401	3,634,896			94.7	94.9	96.4	94.3
Median^{¶¶¶}					94.2	94.6	95.3	93.8
Alabama ^{***}	77,739	77,739 (100.0)	Census	Yes	≥90.6	≥90.6	≥90.6	NReq
Alaska	10,316	0	Voluntary response	No	NR	NR	NReq	NR
Arizona ^{***}	79,981	79,981 (100.0)	Census	Yes	92.9	92.7	95.6	NReq
Arkansas ^{§§§}	39,257	37,466 (95.4)	Census (public), voluntary response (private)	No	94.2	93.4	NReq	93.8
California ^{***,§§§}	568,947	555,735 (97.7)	Census	Yes	96.5	96.0	97.9	NReq
Colorado ^{***}	64,191	64,191 (100.0)	Census	Yes	87.4	90.3	NReq	86.5
Connecticut ^{***}	38,230	38,230 (100.0)	Census	Yes	95.9	96.1	NReq	95.7
Delaware	10,798	1,021 (9.5)	Stratified 2-stage cluster sample	No	97.8	97.8	NReq	97.6
District of Columbia ^{***}	NA	NA	NA	No	NR	NR	NReq	NR
Florida ^{***,†††}	224,641	224,641 (100.0)	Census	Yes	≥93.8	≥93.8	NReq	≥93.8
Georgia ^{***}	131,275	131,275 (100.0)	Census	No	≥93.6	≥93.6	NReq	≥93.6
Hawaii	16,051	1,081 (6.7)	Stratified 2-stage cluster sample	No	91.5	92.4	94.0	NReq
Idaho	22,995	22,769 (99.0)	Census	Yes	89.5	88.8	NReq	88.3
Illinois ^{***}	143,876	143,876 (100.0)	Census	Yes	94.7	94.7	NReq	94.4
Indiana	82,324	79,350 (96.4)	Census	Yes	91.2	94.4	NReq	93.5
Iowa ^{***}	40,624	40,624 (100.0)	Census	Yes	≥93.3	≥93.3	NReq	≥93.3
Kansas ^{†††,§§§}	37,838	8,744 (23.1)	Stratified 2-stage cluster sample	Yes	90.8	91.0	NReq	89.2
Kentucky ^{†††,§§§}	55,587	55,024 (99.0)	Census	Yes	93.4	94.1	NReq	92.8
Louisiana ^{***}	56,203	56,203 (100.0)	Census	Yes	95.5	97.7	NReq	95.4
Maine	13,419	12,875 (95.9)	Census	Yes	93.8	94.5	95.9	NReq
Maryland ^{***, §§§}	71,431	71,423 (100.0)	Census	Yes	97.4	97.7	NReq	97.1
Massachusetts ^{***,§§§}	65,279	65,279 (100.0)	Census	Yes	96.9	97.1	NReq	96.5
Michigan ^{***}	118,632	118,632 (100.0)	Census	Yes	94.6	94.8	NReq	94.3
Minnesota ^{†††}	70,085	68,779 (98.1)	Census	Yes	92.6	92.5	NReq	92.0
Mississippi ^{***}	37,775	37,775 (100.0)	Census	Yes	≥99.2	≥99.2	NReq	≥99.2
Missouri ^{***}	72,687	72,687 (100.0)	Census	No	94.8	94.8	NReq	94.5
Montana ^{***}	12,480	12,480 (100.0)	Census	No	93.3	93.0	NReq	92.9
Nebraska ^{§§§}	26,925	26,548 (98.6)	Census	No	96.9	97.4	NReq	96.3
Nevada	37,971	1,811 (4.8)	Stratified 2-stage cluster sample	No	95.1	95.0	NReq	94.7
New Hampshire ^{***}	12,421	12,421 (100.0)	Census	No	≥91.8	≥91.8	NReq	≥91.8
New Jersey ^{***}	109,161	109,161 (100.0)	Census	Yes	≥95.0	≥95.0	≥95.0	NReq
New Mexico	25,269	25,170 (99.6)	Census	No	96.1	96.0	NReq	95.7
New York (including New York City) ^{***}	220,495	220,495 (100.0)	Census	Yes	97.2	96.7	NReq	96.7
New York City ^{***}	96,912	96,912 (100.0)	Census	No	97.7	97.0	NReq	97.1
North Carolina ^{†††,§§§}	124,343	113,074 (90.9)	Census (public), voluntary response (private)	No	93.2	93.2	NReq	93.1
North Dakota	10,382	10,315 (99.4)	Census	Yes	93.6	93.6	NReq	93.8
Ohio	139,679	132,589 (94.9)	Census (public), voluntary response (private)	No	91.6	91.9	NReq	91.2
Oklahoma ^{†††}	54,806	50,456 (92.1)	Census (public), voluntary response (private)	Yes	92.2	92.7	95.8	NReq
Oregon ^{***,§§§}	45,870	45,870 (100.0)	Census	Yes	93.0	92.4	94.3	NReq
Pennsylvania	143,560	133,945 (93.3)	Census (public), voluntary response (private)	Yes	96.4	96.6	NReq	95.8
Rhode Island ^{***,†††,§§§}	10,964	10,964 (100.0)	Census	Yes	97.4	97.4	NReq	97.0
South Carolina	58,442	15,797 (27.0)	Stratified 1-stage cluster sample	No	94.2	94.6	NReq	93.5
South Dakota	12,062	12,052 (99.9)	Census	Yes	96.2	95.8	NReq	95.5
Tennessee ^{***,†††}	78,630	78,630 (100.0)	Census	Yes	96.5	96.2	NReq	96.2
Texas (including Houston) ^{†††,§§§}	390,034	387,530 (99.4)	Census	Yes	96.9	96.7	NReq	96.5
Houston ^{†††,§§§}	37,897	37,675 (99.4)	Census	No	96.6	96.6	NReq	95.9
Utah ^{***}	50,179	50,179 (100.0)	Census	Yes	92.8	92.4	NReq	92.5

Immunization Program	Kindergarten population [†]	No. (%) surveyed	Type of survey conducted [§]	Local Data Available Online [¶]	MMR ^{**}	DTaP ^{††}	Varicella ^{§§}	
					2 doses (%)	5/4 doses (%)	1 dose (%)	2 doses (%)
Vermont ^{***}	6,126	6,126 (100.0)	Census	Yes	93.0	92.9	NReq	92.3
Virginia	100,394	4,422 (4.4)	Stratified 2-stage cluster sample	Yes	95.0	98.0	NReq	93.6
Washington ^{†††}	87,510	84,771 (96.9)	Census	Yes	90.8	90.8	NReq	89.7
West Virginia ^{¶¶¶}	19,442	15,426 (79.3)	Voluntary response	Yes	98.8	98.7	NReq	98.5
Wisconsin ^{†††,§§§}	66,344	1,530 (2.3)	Stratified 2-stage cluster sample	No	92.6	96.2	NReq	91.6
Wyoming	7,734	7,734 (100)	Census	No	95.1	95.3	NReq	94.7
American Samoa ^{¶¶, ¶¶¶}	NA	NA	Not conducted	No	NA	NA	NA	NA
Guam	2,563	735 (28.7)	Stratified 2-stage cluster sample	No	88.4	90.7	NReq	NReq
Marshall Islands ^{¶¶}	1,114	1,114 (100.0)	Census	No	95.1	83.8	NReq	NReq
Federated States of Micronesia ^{¶¶}	1,786	1,786 (100.0)	Census	No	91.3	80.2	NReq	NReq
N. Mariana Islands ^{¶¶}	812	812 (100.0)	Census	No	97.7	79.4	NA	98.2
Palau ^{¶¶, ¶¶¶, ¶¶¶¶}	304	304 (100.0)	Census	No	100.0	100.0	NReq	NReq
Puerto Rico	26,353	1,545 (5.9)	Stratified 2-stage cluster sample	No	94.7	91.4	NA	94.7
U.S. Virgin Islands	NA	NA	Not conducted	No	NA	NA	NA	NA

Abbreviations: MMR = measles, mumps, and rubella vaccine; DTaP = diphtheria and tetanus toxoids and acellular pertussis vaccine; NA = not available; NR = not reported to CDC; NReq = not required for school entry.

*Estimates are adjusted for nonresponse and weighted for sampling where appropriate. Estimates based on a completed vaccine series (i.e., not vaccine-specific) use the “≥” symbol. Coverage might include history of disease or laboratory evidence of immunity.

[†]The kindergarten population is an approximation provided by each program. The national total excludes the 8,075 kindergartners from the District of Columbia for which data were not reported.

[§]Sample designs varied by state/area: census = program attempted to include all schools (public and private), and all children within schools in the assessment, and had a student response rate of ≥90%; 1-stage or 2-stage cluster sample = schools were randomly selected, and all children in the selected schools were assessed (1-stage) or a random sample of children within the schools was selected (2-stage); voluntary response = a census with a student response rate of <90% (does not imply that participation was optional).

[¶]Some programs publish kindergarten vaccination data online that are more detailed than the state-level estimates in this table. Examples of more detailed data include county, parish, school district, and school-level estimates.

^{**}Most states require 2 doses of MMR; Alaska, New Jersey, and Oregon require 2 doses of measles, 1 dose of mumps, and 1 dose of rubella vaccines. Georgia, New York, New York City, North Carolina, and Virginia require 2 doses of measles and mumps, 1 dose of rubella vaccines. Iowa requires 2 doses of measles and 2 doses of rubella vaccines.

^{††}Pertussis vaccination coverage might include some diphtheria and tetanus toxoids, and pertussis vaccine (DTP) vaccinations if administered in another country or by a vaccination provider who continued to use DTP after 2000. Most states require 5 doses of DTaP for school entry, or 4 doses if the fourth dose was received on or after the fourth birthday; Illinois, Maryland, Virginia, and Wisconsin require 4 doses; Nebraska requires 3 doses. The reported coverage estimates represent the percentage of kindergartners with the state-required number of DTaP doses, except for Kentucky, which requires ≥5 but reports ≥4 doses of DTaP.

^{§§}Reporting of varicella vaccination status for kindergartners with a history of varicella disease varied within and among states; some were reported as vaccinated against varicella and others as medically exempt.

^{¶¶}National coverage estimates and medians calculated from data from 49 states (i.e., does not include Alaska or the District of Columbia). Other jurisdictions excluded were Houston, New York City, American Samoa, Guam, Marshall Islands, Federated States of Micronesia, N. Mariana Islands, Palau, Puerto Rico, or U.S. Virgin Islands). Data reported from 3,634,896 kindergartners assessed for coverage. Coverage estimates represent rates for population of 3,991,088 kindergartners.

^{¶¶¶}The proportion surveyed likely was <100%, but is reported as 100% based on incomplete information about the actual current enrollment.

^{¶¶¶¶}Did not include some types of schools, such as online schools or those located in military bases or correctional facilities, or tribal lands.

^{§§§}Counted some or all vaccine doses received regardless of Advisory Committee on Immunization Practices recommended age and time interval; vaccination coverage rates reported might be higher than those for valid doses.

^{¶¶¶¶}Reported public school data only.

^{¶¶¶¶¶}For Palau, estimates represent coverage among children in first grade.