

Table CIS-CH. Percentage of Children Up to Date on Recommended Immunizations (Combination 3) by their Second Birthday, as Submitted by States for the FFY 2018 Child Core Set Report (n = 43 states)

State	Population	Methodology	Denominator	Rate
State Mean				63.2
State Median				69.5
Alabama	Medicaid only	Administrative	22,322	66.5
Alabama	CHIP only	Administrative	2,373	71.6
Arizona	Medicaid only	Hybrid	3,745	70.9
California	Medicaid & CHIP	Hybrid	21,953	70.5
Connecticut	Medicaid & CHIP	Hybrid	411	80.0
Delaware	Medicaid & CHIP	Hybrid	411	77.9
Dist. of Col.	Medicaid & CHIP	Hybrid	925	66.2
Florida	Medicaid & CHIP	Administrative & Hybrid	111,551	73.7
Georgia	Medicaid & CHIP	Administrative	52,786	75.0
Hawaii	Medicaid & CHIP	Administrative & Hybrid	6,196	71.0
Illinois	Medicaid & CHIP	Administrative	71,045	63.2
Indiana	Medicaid & CHIP	Hybrid	1,233	64.0
Iowa	Medicaid only	Administrative	13,021	32.8
Iowa	CHIP only	Administrative	982	0.1
Kansas	Medicaid & CHIP	Hybrid	1,233	65.0
Kentucky	Medicaid & CHIP	Hybrid	2,055	65.6
Louisiana	Medicaid & CHIP	Administrative	38,461	68.4
Maryland	Medicaid & CHIP	Hybrid	3,110	75.5
Massachusetts	Medicaid & CHIP	Hybrid	2,447	76.0
Michigan	Medicaid only	Administrative & Hybrid	32,322	72.3
Minnesota	Medicaid & CHIP	Administrative	26,045	61.8
Mississippi	Medicaid only	Hybrid	822	73.4
Mississippi	CHIP only	Hybrid	822	81.1
Missouri	Medicaid & CHIP	Hybrid	2,480	54.6
Montana	CHIP only	Administrative	685	55.6
Nebraska	Medicaid & CHIP	Administrative	8,306	29.4
Nevada	Medicaid only	Hybrid	822	65.4
Nevada	CHIP only	Hybrid	544	81.6
New Hampshire	Medicaid & CHIP	Hybrid	822	74.7
New Jersey	Medicaid & CHIP	Hybrid	2,055	64.6
New Mexico	Medicaid & CHIP	Hybrid	1,644	67.1
New York	Medicaid & CHIP	Hybrid	6,094	75.3
North Carolina	Medicaid only	Administrative	64,388	71.2
Oklahoma	Medicaid & CHIP	Administrative	24,352	6.1
Oregon	Medicaid & CHIP	Administrative	13,573	69.5
Pennsylvania	Medicaid & CHIP	Hybrid	6,023	74.0
Rhode Island	Medicaid & CHIP	Hybrid	809	80.8
South Carolina	Medicaid & CHIP	Administrative	28,990	18.8
Tennessee	Medicaid only	Hybrid	4,110	70.6
Tennessee	CHIP only	Hybrid	411	71.3
Texas	Medicaid only	Administrative & Hybrid	130,103	71.2
Utah	Medicaid only	Administrative & Hybrid	6,311	72.3
Utah	CHIP only	Hybrid	656	83.5
Vermont	Medicaid & CHIP	Administrative	3,037	37.4
Virginia	Medicaid & CHIP	Administrative	NR	71.7
Washington	Medicaid & CHIP	Administrative & Hybrid	34,729	66.9
West Virginia	Medicaid only	Hybrid	1,233	67.1
West Virginia	CHIP only	Administrative	452	8.2
Wisconsin	Medicaid & CHIP	Administrative & Hybrid	NR	70.8
Wyoming	Medicaid only	Administrative	1,773	13.4

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Source: Mathematica analysis of MACPro reports for the FFY 2018 reporting cycle. More information on the Child Core Set is available at <https://www.medicaid.gov/medicaid/quality-of-care/performance-measurement/adult-and-child-health-care-quality-measures/child-core-set/index.html>.

Notes: This measure identifies the percentage of children who turned 2 years old during the measurement year and had specific vaccines and combinations of vaccines by their second birthday. This table shows reporting for the Combination 3 rate, which includes four doses of diphtheria, tetanus, and pertussis (DTaP) vaccines, three doses of polio vaccine (IPV), one dose of measles, mumps, and rubella (MMR) vaccine, three doses of haemophilus influenzae type b (HiB) vaccine, three doses of hepatitis B vaccine, one dose of varicella zoster virus (VZV) vaccine, and four doses of pneumococcal conjugate (PCV) vaccine.

The term “states” includes the 50 states and the District of Columbia.

Means are calculated as the unweighted average of all state rates. When a state reported separate rates for its Medicaid and CHIP populations, the mean and median rates were calculated using the rate for the larger measure-eligible population.

Unless otherwise specified, states used Child Core Set specifications, based on National Committee for Quality Assurance 2018 specifications. The following states used National Committee for Quality Assurance 2017 specifications: NV and OR. This table excludes TX (CHIP), which used Child Core Set specifications to calculate the measure but did not provide data for the Combination 3 rate.

Unless otherwise specified, the measurement period for this measure was January 1, 2017 to December 31, 2017. AZ reported data for FFY 2016.

The Child Core Set specifications include guidance for calculating this measure using the administrative method or the hybrid method. The hybrid method uses a combination of administrative and medical records data to identify services included in the numerator or to determine exclusions from the denominator based on diagnoses or other criteria. Unless otherwise specified, administrative data sources are the state’s MMIS and/or data submitted by managed care plans; medical record data sources are paper and/or electronic health records.

Denominators are assumed to be the measure-eligible population for states using the administrative method; states using the hybrid method often reported the sample size for the medical chart review rather than the measure-eligible population. Some states reported exclusions from the denominator, as noted in the state-specific comments below.

ADHD = Attention-Deficit/Hyperactivity Disorder; CCO = Coordinated Care Organization; CHIP = Children’s Health Insurance Program; CMS = Centers for Medicare & Medicaid Services; CPT = Current Procedural Terminology; CY = Calendar Year; ED = Emergency Department; EPSDT = Early and Periodic Screening, Diagnostic, and Treatment; EQRO = External Quality Review Organization; FFS = Fee for Service; FFY = Federal Fiscal Year; HEDIS = Healthcare Effectiveness Data and Information Set; HMO = Health Maintenance Organization; ICD = International Classification of Diseases; LOINC = Logical Observation Identifiers Names and Codes; MACPro = Medicaid and CHIP Program System; MCO = Managed Care Organization; MMIS = Medicaid Management Information System; NCQA = National Committee for Quality Assurance; NR = Not Reported; PCCM = Primary Care Case Management; PCP = Primary Care Practitioner.

State-Specific Comments:

- AL: Medicaid rate includes FFS and PCCM populations. Data source is state immunization registry.
- AL: CHIP rate includes separate CHIP population. Rate excludes children enrolled in Medicaid-expansion CHIP; these children are included in the state’s Medicaid rate. Data source is state immunization registry.
- AZ: Rate includes managed care population (9 MCOs), representing 92 percent of the population. Rate excludes FFS population and state long-term care elderly, physically, or developmentally disabled population, representing 8 percent of the population. Denominator is the sample size; measure-eligible population is 33,327. State conducted an internal validation of the data.
- CA: Rate includes managed care population (26 MCOs) continuously enrolled in the same health plan the entire continuous enrollment period, representing 76 percent of the population. Rate excludes FFS population and managed care enrollees who were not in the same MCO for the entire continuous enrollment period, representing 24 percent of the population. Denominator is the sample size; measure-eligible population is 186,876. Administrative data sources are MCO data systems and immunization registry. MCO rates were audited by certified HEDIS auditors.
- CT: Rate includes FFS population. Denominator is the sample size; measure-eligible population is 11,636. Rate was audited by a certified HEDIS auditor.
- DE: Rate includes managed care population (1 MCO), representing 86 percent of the population. Rate excludes FFS population and enrollees in one MCO, representing 14 percent of the population. Denominator is the sample size; measure-eligible population is 3,215.

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DC:	Rate includes managed care population (3 MCOs), representing 66 percent of the population. Rate excludes FFS population and one MCO, representing 34 percent of the population. Denominator is the sample size; measure-eligible population is 2,637. MCO rates were audited by certified HEDIS auditors.
FL:	Rate includes FFS, PCCM, and managed care populations (21 MCOs). Rate was derived using both administrative and hybrid method data. Rates for the FFS population and two MCOs were calculated using the administrative method, while rates for 19 MCOs were calculated using the hybrid method. Denominator is the measure-eligible population. MCO rates were audited by a certified HEDIS auditor.
GA:	Rate includes FFS and managed care populations (4 MCOs). Rate was validated by the state's EQRO.
HI:	Rate includes managed care population (5 MCOs). Rate was derived using both administrative and hybrid method data. One MCO used the administrative method and four MCOs used the hybrid method. Denominator is the measure-eligible population. Rate was validated by the state's EQRO.
IL:	Rate includes FFS, PCCM, and managed care populations (13 MCOs). Data sources are registry data and immunization data from the state Departments of Public Health and Human Services. Rate was validated by the state's EQRO.
IN:	Rate includes managed care population (3 MCOs), representing more than 90 percent of the population. Rate excludes FFS population, representing less than 10 percent of the population. Denominator is the sample size; measure-eligible population is 30,869. MCO rates were audited by certified HEDIS auditors.
IA:	Medicaid rate includes FFS and managed care populations (3 MCOs). State applied most optional exclusions, except for the following: polio (IPV) exclusions of anaphylactic reaction to streptomycin, polymycin B or neomycin; and anaphylactic reaction to common baker's yeast. The 14-day rule was not applied to the Hepatitis B rate.
IA:	CHIP rate includes managed care population (3 MCOs). State applied most optional exclusions, except for the following: polio (IPV) exclusions of anaphylactic reaction to streptomycin, polymycin B or neomycin; and anaphylactic reaction to common baker's yeast. The 14-day rule was not applied to the Hepatitis B rate. State attributes lower rate to beneficiaries receiving services in community-based centers or Federally Qualified Health Centers, which are not included in the state's reported rates.
KS:	Rate includes managed care population (3 MCOs). Denominator is the sample size; measure-eligible population is 13,499. Rate was validated by the state's ERQO.
KY:	Rate includes managed care population (5 MCOs), representing 95 percent of the population. Rate excludes FFS population, representing 5 percent of the population. Denominator is the sample size; measure-eligible population is 25,869. Rate was validated by certified HEDIS auditors.
LA:	Rate includes FFS and managed care populations (5 MCOs). Rate was calculated using HEDIS-certified code and the state conducted an internal validation of the data.
MD:	Rate includes managed care population (8 MCOs), representing 95 percent of the population. Rate excludes FFS population, representing 5 percent of the population. Denominator is the sample size; measure-eligible population is 24,337. Rate was audited by certified HEDIS auditors.
MA:	Rate includes PCCM and managed care populations (5 MCOs), representing 74 percent of the population. Rate excludes FFS population, representing 26 percent of the Medicaid population and 18 percent of the CHIP population, but the majority of these children would not have been measure-eligible, including children who have other primary insurance, children with limited Medicaid benefits, children in premium assistance programs, new enrollees who have not yet enrolled in an MCO, and children in state custody. Denominator is the sample size; measure-eligible population is 21,144.
MI:	Rate includes managed care population (11 MCOs), representing 80 percent of the population. Rate excludes FFS population, representing 20 percent of the population. Rate was derived using both administrative and hybrid method data. One MCO used the administrative method and ten MCOs used the hybrid method. Denominator is the measure-eligible population. MCO rates were validated by the state's EQRO.
MN:	Rate includes FFS and managed care populations (8 MCOs). Rate includes paid claims only. Data sources are MMIS and state immunization registry data. Rate was audited by a certified HEDIS auditor.
MS:	Medicaid rate includes managed care population (2 MCOs), representing 64 percent of the population. Rate excludes FFS population, representing 36 percent of the population. Denominator is the sample size; measure-eligible population is 13,736.
MS:	CHIP rate includes managed care population (2 MCOs). Denominator is the sample size; measure-eligible population is 1,142.
MO:	Rate includes managed care population (3 MCOs), representing 72 percent of the Medicaid population and 49 percent of the CHIP population. Rate excludes FFS population as well as enrollees who did not meet continuous enrollment requirements for an MCO, representing 28 percent of the Medicaid population and

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	51 percent of the CHIP population. Denominator is the sample size; measure-eligible population is 9,265. MCO rates were audited by a HEDIS certified vendor.
MT:	Rate includes FFS population. Rate excludes services provided by Federally Qualified Health Centers and Rural Health Clinics because claims for these services are processed separately.
NE:	Rate includes FFS and managed care populations (3 MCOs).
NV:	Medicaid rate includes managed care population (3 MCOs). Rate excludes FFS population. Denominator is the sample size; measure-eligible population is 10,975.
NV:	CHIP rate includes managed care population (3 MCOs). Rate excludes FFS population. Denominator is the sample size, which is equivalent to the measure-eligible population.
NH:	Rate includes managed care population (2 MCOs), representing 88 percent of the population. Rate excludes FFS population, representing 12 percent of the population. Denominator is the sample size; measure-eligible population is 3,501. MCO rates were audited by certified HEDIS auditors.
NJ:	Rate includes managed care population (5 MCOs), representing 93 percent of the population. Rate excludes FFS population, representing 7 percent of the population. Denominator is the sample size; measure-eligible population is 30,717.
NM:	Rate includes managed care population (4 MCOs). Denominator is the sample size; measure-eligible population is 14,909. MCO rates were audited by certified HEDIS auditors.
NY:	Rate includes managed care population (18 MCOs), representing more than 90 percent of the population. Rate excludes FFS population, representing less than 10 percent of the population. Denominator is the sample size; measure-eligible population is 86,049. State conducted an internal validation of the data.
NC:	Rate includes FFS and PCCM populations. Data source is state immunization registry. Rate was validated by an NCQA-certified vendor.
OK:	Rate includes FFS and PCCM populations. Rate excludes enrollees in home- and community-based services waivers. State attributes lower performances to services that are under-reported due to providers not using immunization codes during well-child visits.
OR:	Rate includes managed care population (16 CCOs), representing 88 percent of the population. Rate excludes FFS population, representing 12 percent of the population. State used CVX codes to identify vaccines based on state analysis of coding practices for immunizations in the state. Data source is state immunization registry.
PA:	Rate includes managed care population (19 MCOs). Denominator is the sample size; measure-eligible population is 51,144. Data were submitted by MCOs and compiled by the state's EQRO.
RI:	Rate includes managed care population (2 MCOs), representing 85 percent of the population. Rate excludes FFS population, representing 15 percent of the population. Denominator is the sample size; measure-eligible population is 5,158.
SC:	Rate includes managed care population (5 MCOs).
TN:	Medicaid rate includes managed care population (4 MCOs). Denominator is the sample size; measure-eligible population is 42,743. Rate was validated by the state's EQRO.
TN:	CHIP rate includes the CHIP Health Plan Administrators and Medical Benefits Managers population. Denominator is the sample size; measure-eligible population is 486. Rate was validated by the state's EQRO.
TX:	Rate includes FFS and managed care populations (29 MCOs). Rate was derived using both administrative and hybrid method data. The rates for the state's FFS population and one MCO were calculated using the administrative method. Twenty-eight MCOs used the hybrid method. Denominator is the measure-eligible population. Rate was validated by the state's EQRO.
UT:	Medicaid rate includes managed care population (4 MCOs), representing 85 percent of the population. Rate excludes FFS population, representing 15 percent of the population. Rate was derived using both administrative and hybrid method data. One MCO used the administrative method and three MCOs used the hybrid method. Denominator is the measure-eligible population. MCO rates were audited by certified HEDIS auditors.
UT:	CHIP rate includes managed care population (2 MCOs). Denominator is the sample size; measure-eligible population is 660. MCO rates were audited by certified HEDIS auditors.
VT:	Rate includes statewide 1115 waiver population enrolled in a public non-risk prepaid inpatient health plan population, representing the total Medicaid population. Data sources are MMIS and state immunization registry.
VA:	Rate includes managed care population (6 MCOs). State obtained rate from the NCQA Quality Compass and denominator is not available.

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WA:	Rate includes managed care population (5 MCOs), representing 97 percent of the population. Rate excludes FFS and PCCM populations, representing 3 percent of the population. Rate also excludes managed care populations who met the continuous eligibility requirement for Medicaid or CHIP but who were not enrolled in a single plan during the continuous enrollment period. State-level rate is based on a mix of administrative and hybrid method data. Four MCOs used the hybrid method and one MCO used the administrative method. Denominator is the measure-eligible population. Rate was audited by the state's EQRO.
WV:	Medicaid rate includes managed care population (4 MCOs), representing 86 percent of the population. Rate excludes FFS population, representing 14 percent of the population. Denominator is the sample size; measure-eligible population is 7,260.
WV:	CHIP rate includes FFS population. State attributes lower rate to transition in data systems, which resulted in incomplete claims data and to missing information about services provided by Federally Qualified Health Centers and Rural Health Centers.
WI:	Rate includes managed care population (18 MCOs), representing 80 percent of the population. Rate excludes FFS population, representing 20 percent of the population. Rate was derived using administrative and hybrid method data. Four MCOs used the administrative method and 14 MCOs used the hybrid method. Measure-eligible population is not available.
WY:	Rate includes FFS population.