

Completeness of the CHIP and Dual Status Codes in 2017

October 2019

Brief #4132

2017 TAF version 2

TAF data quality brief—Eligibility information

This analysis focused on 46 states, the District of Columbia, and Puerto Rico. Mississippi, Missouri, Montana, and Nebraska were excluded from the analysis.

Key Findings

- This brief identifies states in which the CHIP code or the dual status code have high rates of missing values or the distribution of values does not conform to expected patterns. The CHIP code can be used to distinguish between Medicaid, Medicaid expansion CHIP, and the separate CHIP populations. The dual status code indicates whether a beneficiary is also dually eligible for Medicare, and if so, the level of Medicaid coverage to which they are entitled.
- Table 4 displays information on missingness and expected values for the CHIP code variable. Thirty-eight states have CHIP code data that present a low data quality concern, and an additional eight states have CHIP code data that present a medium data quality concern. In Tennessee, the CHIP code data presents a high data quality concern, because the state did not use the expected codes given the type of program operating in the state. Rhode Island reported no CHIP code data, rendering this data element unusable for analysis. Notably, many of the states in the medium- and high-concern categories had low rates of missing data, but the reported values were inconsistent with the type of CHIP program in the state.
- Table 5 displays information on missingness and expected values for the dual status code variable. Thirty-eight states have dual code data that present a low data quality concern, and another six states have data that present a medium data quality concern due to moderate rates of missing values. Four states have unusable dual code data because of very high rates of missing values.

Background

The T-MSIS Analytic Files (TAF) contain research-ready data on beneficiaries in Medicaid and the Children's Health Insurance Program (CHIP). These data include select program characteristics, which are critical to understanding the individuals served by the programs. This brief examines the completeness and face validity of the CHIP and dual status codes in the TAF Annual Demographic and Eligibility (DE) file; both codes are important for analytic purposes. Table 1 lists these variables, along with a brief description and their data element labels in the DE TAF.

Table 1. Key program variables in the DE TAF

Variable	Data element label	Description
CHIP code	CHIP_CD_LTST	A code used to distinguish among Medicaid, Medicaid CHIP expansion, and separate CHIP populations. The “last best” version of this variable represents the most recent non-missing value in the calendar year.
Dual status code	DUAL_ELGBL_CD_LTST	A code that indicates Medicare coverage for individuals entitled to either Part A and/or Part B benefits and eligible for some category of Medicaid benefits. The “last best” version of this variable in the DE represents the most recent non-missing value in the calendar year.

Source: TAF Data Dictionary

Methods

For this analysis, we used the 2017 TAF DE file to calculate the percentage of enrollment records with complete data.¹ For the CHIP code and dual status code variables, all non-missing values represent valid values.² We therefore considered the rate of non-missing values to represent the completeness of data for these variables.

We also examined the distribution of valid values for both codes to check for face validity. For the CHIP code variable, we examined whether the beneficiaries reported in each CHIP code group aligned with the type of CHIP program found in the state.^{3, 4} For the dual status code variable, we examined whether each state reported at least some beneficiaries in the non-dual, full dual, and partial dual categories. If we find no beneficiaries in any one of these groups, that would indicate a data quality concern. We mapped dual code values into the categories of non-dual, full dual, and partial dual as shown in Table 2.

¹ This analysis used the same TAF data as the T-MSIS Substance Use Disorder Data Book, which is not the version of the data that will be released as TAF Research Identifiable Files (RIFs).

² In the creation of the TAF, all invalid values for categorical variables are recoded to null. Therefore, no additional recoding is necessary when working with the TAF.

³ States may use CHIP funds to expand their Medicaid programs (referred to as Medicaid expansion, or M-CHIP); create a program separate from their existing Medicaid programs (referred to as separate CHIP, or S-CHIP); or adopt a combination of both approaches. More information on state CHIP programs is available at <https://www.medicaid.gov/chip/state-program-information/index.html> and <https://www.macpac.gov/subtopic/key-design-features/>.

⁴ CHIP_CD = 4 (individual was both Medicaid eligible and S-CHIP eligible during the same month) is not a valid value in later versions of the T-MSIS data dictionary. However, because four states (Georgia, Louisiana, Maine, and Texas) were still using the code for a small number of beneficiaries in 2017, we included it in tabulations presented in this brief.

Table 2. Categorization of Medicare-Medicaid dual beneficiaries in the TAF

DUAL_ELGBL_CD_LTST	Dual-eligibility groups	Category
00	Not a Medicare beneficiary (not a dual)	Non-dual
01	Qualified Medicare beneficiary (QMB) only	Partial dual
02	QMB plus	Full dual
03	Specified low-income Medicare beneficiaries (SLMB) only	Partial dual
04	SLMB plus	Full dual
05	Qualified disabled and working individual (QDWI)	Partial dual
06	Qualified individual (QI)	Partial dual
08	Other	Full dual
09	Eligible is entitled to Medicare—other (this code is to be used only with specific approval from Centers for Medicare & Medicaid Services [CMS]) ^a	Other dual
10	Separate CHIP eligible is entitled to Medicare ^b	Other dual

Source: Additional background information is available in “CMS Guidance: Reporting Expectations for Dual-Eligible Beneficiaries, Updated,” which is available in the T-MSIS coding blog <https://www.medicaid.gov/medicaid/data-and-systems/macbis/tmsis/tmsis-blog/?entry=51064> and in the Annual DE TAF Data Dictionary.

^a DUAL_ELGBL_CD = 09 is classified as “other” dual because states use this code for participation in state-specific programs. Only two states (Vermont and Wisconsin) are reporting beneficiaries in this group.

^b DUAL_ELGBL_CD = 10 is classified as “other” dual because these beneficiaries are dually enrolled in separate CHIP and Medicare, and not in Medicaid and Medicare as is the case for all other dual eligibles.

For each variable, we classified the states into categories of low, medium, and high concern about the quality of the CHIP and dual code information based on the percentage of records with missing values and any unexpected patterns in the data, using the criteria shown in Table 3. For the CHIP code analysis, we considered whether the CHIP code values the state reported aligned with the type of CHIP program in the state. For example, we would not expect to see any M-CHIP (CHIP code of 2) beneficiaries in a state with only an S-CHIP program. For the analysis of the dual status code, we considered whether states reported at least some beneficiaries into each of the three expected categories of non-duals, full duals, and partial duals. After evaluating the extent of missing data and unexpected patterns, we categorized each state in the highest level of concern that applied.

Table 3. Classification of states into concern categories

Concern category	CHIP code	Dual code
Low concern	<ul style="list-style-type: none"> 10 percent or less of records with missing values; AND Non-missing values aligned with type of CHIP program in the state (Medicaid expansion, separate, or combination)⁵ 	<ul style="list-style-type: none"> 10 percent or less of records with missing values; AND At least some beneficiaries reported into all three categories of non-dual, partial dual, and full dual
Medium concern	<ul style="list-style-type: none"> Between 10 and 20 percent of records with missing values; OR Exclusive use of separate CHIP code despite having a technical combination program due to ACA conversions⁶ 	<ul style="list-style-type: none"> Between 10 and 20 percent of records with missing values; OR 10 percent or less of records with missing values AND no beneficiaries reported in at least one of the categories of non-dual, partial dual, and full dual
High concern	<ul style="list-style-type: none"> Between 20 and 50 percent of records with missing values; OR Mis-alignment of CHIP code values in the data with the type of CHIP program operating in the state 	<ul style="list-style-type: none"> Between 20 and 50 percent of records with missing values
Unusable	<ul style="list-style-type: none"> More than 50 percent of records with missing values; OR CHIP code did not identify any CHIP beneficiaries in the state 	<ul style="list-style-type: none"> More than 50 percent of records with missing values; OR Dual code did not identify any dual beneficiaries in the state

Our analysis did not evaluate whether the counts of CHIP and dually-eligible beneficiaries using these data elements aligned with external benchmarks for those programs.

Findings

Overall, we found that CHIP code is fairly well reported with the expected pattern of enrollment. Thirty-eight states fall into the low-concern category. Eight states fall into the medium-concern category. Three of these states (Arizona, Arkansas, and Idaho) have a missing CHIP code on over 15 percent of records, although the distribution of non-missing CHIP code values conform to expectations, given the states’ CHIP program type. The other five are S-CHIP states that are considered to have “technically combination” programs due to the children who converted from S-CHIP to Medicaid under the ACA continuing to qualify for Title XXI CHIP funding. However, none of these states reported M-CHIP children in their data

⁵ There was one situation in which we considered mis-aligned CHIP code data to not be a data quality problem. Section 2101(f) of the Affordable Care Act (ACA) requires states to convert to S-CHIP any Medicaid children who lost eligibility after January 1, 2014 due to the loss of income disregards. This requirement applied even to states that did not have an operating S-CHIP program. As a result, we consider it appropriate to see CHIP code 3 (S-CHIP) reported in states with only an M-CHIP program in the first few years after ACA passage.

⁶ The ACA required states to expand Medicaid eligibility for all children up to 133 percent FPL. In a number of states, this requirement caused some children to move from the state’s S-CHIP program into the state’s Medicaid program. The ACA allows states to continue receiving enhanced Title XXI funding for these converted beneficiaries through September 30, 2019 under the maintenance of effort provision in the ACA, even though they are enrolled in Medicaid. Since these Medicaid-enrolled children qualify for Title XXI funding, they are in effect M-CHIP beneficiaries, and we expect them to be reported using CHIP code 2 (M-CHIP) even in states with no other M-CHIP program. However, due to the nuanced nature of CHIP code reporting in this case, we categorized affected states with misalignment between the reported CHIP codes and the CHIP program in the state into the medium- rather than high-concern category.

and they were classified as medium concern. Tennessee falls into the high-concern category. Although it has a very low missing rate, it reports a CHIP code that is unexpected, given the type of CHIP program operating in the state. Rhode Island reports no CHIP code data, rendering its information unusable.

Thirty-nine states have dual status code data that present a low level of data quality concern, and five states fall into the medium-concern category (Table 5). Four states (Alabama, Arkansas, Michigan, and Utah) are considered to have unusable dual status code information. For all four of these states, dual status code 00 (designating non-dual beneficiaries) is either not reported or reported at a much lower rate than for other states (Table 5). The high level of missingness in these states suggests that they may not be reporting dual status code or may be reporting an invalid code for beneficiaries who are not duals.

Table 4. Percentage of beneficiaries in each CHIP code and CHIP program type, by level of data quality concern, 2017

State	Number of records	CHIP program type	Does CHIP code distribution align with type of CHIP program?	Percent missing	Percentage of beneficiaries in each CHIP code				
					0: Not Medicaid and not CHIP ^a	1: Medicaid	2: M-CHIP	3: S-CHIP	4: M-CHIP and S-CHIP
Low data quality concern (n = 38 states)									
California	17,468,412	Combination	Aligned	0.0	0.0	90.7	9.2	0.1	0.0
Florida	5,227,826	Combination	Aligned	0.0	0.0	92.7	3.2	4.1	0.0
Iowa	978,663	Combination	Aligned	0.0	0.0	92.1	2.5	5.4	0.0
Illinois	3,673,460	Combination	Aligned	0.0	0.0	92.0	2.7	5.4	0.0
Louisiana	1,983,085	Combination	Aligned	0.0	0.0	93.4	5.7	0.9	0.0
Massachusetts	2,234,106	Combination	Aligned	0.0	0.0	90.5	4.2	5.3	0.0
Michigan	2,909,774	Combination	Aligned	0.0	0.0	97.3	2.6	0.1	0.0
Minnesota	1,361,527	Combination	Aligned	0.0	0.0	99.7	<0.1	0.3	0.0
North Carolina	2,509,045	Combination	Aligned	0.0	0.0	88.6	6.5	4.9	0.0
New Jersey	2,240,367	Combination	Aligned	0.0	0.0	89.1	4.5	6.4	0.0
Oklahoma	1,042,230	Combination	Aligned	0.0	0.0	85.0	2.2	12.8	0.0
Virginia	1,437,392	Combination	Aligned	0.0	0.0	89.0	5.0	6.1	0.0
Alaska	233,821	M-CHIP	Aligned	0.0	0.0	93.9	6.1	0.0	0.0
District of Columbia	289,733	M-CHIP	Aligned	0.0	0.0	95.3	4.7	<0.1	0.0
Hawaii	427,279	M-CHIP	Aligned	0.0	0.0	100.0	0.0	0.0	0.0
Maryland	1,600,452	M-CHIP	Aligned	0.0	0.0	89.5	10.5	0.0	0.0
New Hampshire	260,179	M-CHIP	Aligned	0.0	0.0	92.5	7.5	0.0	0.0
New Mexico	1,010,936	M-CHIP	Aligned	0.0	0.0	95.3	4.7	0.0	0.0
South Carolina	1,452,452	M-CHIP	Aligned	0.0	0.0	93.5	6.5	0.0	0.0
Vermont	209,055	M-CHIP	Aligned	0.0	0.0	97.1	2.8	0.1	0.0
Connecticut	1,084,299	S-CHIP	Aligned	0.0	0.0	97.8	0.0	2.2	0.0

Table 4 (continued)

State	Number of records	CHIP program type	Does CHIP code distribution align with type of CHIP program?	Percent missing	Percentage of beneficiaries in each CHIP code				
					0: Not Medicaid and not CHIP ^a	1: Medicaid	2: M-CHIP	3: S-CHIP	4: M-CHIP and S-CHIP
Washington	2,222,609	S-CHIP	Aligned	0.0	0.0	95.9	0.0	4.1	0.0
Puerto Rico	3,157,270	M-CHIP	Aligned	0.0	0.0	94.1	5.9	0.0	0.0
Delaware	291,623	Combination	Aligned	0.0	0.0	95.0	0.6	4.4	0.0
South Dakota	153,830	Combination	Aligned	0.0	0.0	86.2	10.1	3.6	0.0
Wisconsin	1,432,971	Combination	Aligned	0.0	10.5	84.3	1.5	3.7	0.0
Georgia ^b	2,490,925	S-CHIP ^b	Aligned	0.0	0.0	90.9	2.7	6.4	0.0
Oregon ^b	1,363,602	S-CHIP ^b	Aligned	0.0	0.0	93.8	5.4	0.8	0.0
Kentucky	1,660,887	Combination	Aligned	0.1	0.0	93.1	4.2	2.7	0.0
Maine	363,686	Combination	Aligned	0.1	0.0	95.7	2.5	1.7	0.0
Alabama ^b	1,455,113	S-CHIP ^b	Aligned	0.1	0.0	84.0	8.3	7.6	0.0
Ohio	3,620,327	M-CHIP	Aligned	0.1	0.0	99.3	0.6	0.0	0.0
Indiana	1,818,441	Combination	Aligned	0.2	0.0	92.0	5.5	2.3	0.0
North Dakota	72,344	Combination	Aligned	0.2	0.0	86.2	6.3	7.3	0.0
Nevada	868,280	Combination	Aligned	0.3	0.0	93.4	1.9	4.5	0.0
Colorado	1,697,599	Combination	Aligned	1.6	6.1	80.7	6.1	5.5	0.0
West Virginia ^b	684,933	S-CHIP ^b	Aligned	2.4	0.0	75.2	18.6	3.8	0.0
New York	8,433,237	Combination	Aligned	4.1	0.0	81.2	5.4	9.4	0.0
Medium data quality concern (n = 8 states)									
Pennsylvania ^b	3,922,125	S-CHIP ^b	Not aligned	0.0	3.0	80.6	0.0	16.4	0.0
Utah ^b	429,816	S-CHIP ^b	Not aligned	0.0	0.0	93.5	0.0	6.5	0.0
Kansas ^b	517,407	S-CHIP ^b	Not aligned	0.0	0.0	90.3	0.0	9.7	0.0
Texas ^b	5,936,044	S-CHIP ^b	Not aligned	0.1	5.3	83.9	0.0	10.1	0.6
Wyoming ^b	90,585	S-CHIP ^b	Not aligned	8.4	0.0	91.6	0.0	0.0	0.0

Table 4 (continued)

State	Number of records	CHIP program type	Does CHIP code distribution align with type of CHIP program?	Percent missing	Percentage of beneficiaries in each CHIP code				
					0: Not Medicaid and not CHIP ^a	1: Medicaid	2: M-CHIP	3: S-CHIP	4: M-CHIP and S-CHIP
Arizona ^b	2,385,689	S-CHIP ^b	Aligned	15.0	2.9	73.2	4.7	4.2	0.0
Arkansas	1,966,254	Combination	Aligned	15.0	2.9	73.2	4.7	4.2	0.0
Idaho	443,085	Combination	Aligned	15.7	0.0	77.2	0.4	6.8	0.0
High data quality concern (n = 1 state)									
Tennessee	1,835,052	Combination	Not aligned	0.0	0.0	99.6	0.5	0.0	0.0
Unusable (n = 1 state)									
Rhode Island	382,380	Combination	Not applicable	100.0	0.0	0.0	0.0	0.0	0.0
Excluded from analysis (n = 4 states)									
Mississippi	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ
Missouri	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ
Montana	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ
Nebraska	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ	DQ

Source: 2017 TAF as of January 2019.

Note: The CHIP program types can be found at the Medicaid.gov site at <https://www.medicaid.gov/chip/downloads/chip-map.pdf>. States are categorized in this table based on their level of data quality concern and CHIP program type and ordered from lowest to highest percentage of beneficiaries with missing CHIP code for each category. States are categorized based on their level of data quality concern and ordered from lowest to highest percentage of beneficiaries with missing dual status code for each category (see Table 3).

DQ = Not reported because of concerns about the low volume of claims.

^aThe TAF Data Dictionary considered CHIP code of 0 a valid value in 2017, so it is included in this table. The most recent TAF Data Dictionary no longer considers CHIP code of 0 to be a valid value, so the few states still using this code should phase out its use.

^bTen states (Alabama, Arizona, Georgia, Kansas, Oregon, Pennsylvania, Texas, Utah, West Virginia and Wyoming) classify themselves as S-CHIP states, but their CHIP program is a combination due to the children who transitioned to Medicaid as required by the ACA continuing to qualify for Title XXI CHIP funding as do M-CHIP children. We expect these states to report these transitioned children using CHIP code of 2 (M-CHIP).

Table 5. Percentage of beneficiaries in each dual status category, by level of data quality concern

State	Number of records	Does dual code distribution align with expected reporting?	Percent missing	Percentage of beneficiaries in each dual category			
				Not Medicare (non-dual)	Full duals	Partial duals	Other duals
Low data quality concern (n = 39 states)							
Alaska	233,821	Aligned	0.0	90.9	8.7	0.5	0.0
California	17,468,412	Aligned	0.0	90.1	9.5	0.3	0.0
Connecticut	1,084,299	Aligned	0.0	81.7	7.7	10.6	0.0
District of Columbia	289,733	Aligned	0.0	86.9	8.8	4.3	0.0
Georgia	2,490,925	Aligned	0.0	85.4	6.9	7.7	0.0
Illinois	3,673,460	Aligned	0.0	88.9	10.1	1.1	0.0
Minnesota	1,361,527	Aligned	0.0	88.2	10.6	1.3	0.0
New Mexico	1,010,936	Aligned	0.0	88.6	7.5	3.9	0.0
Nevada	868,280	Aligned	0.0	89.8	4.8	5.5	0.0
Oklahoma	1,042,230	Aligned	0.0	87.3	10.3	2.4	0.0
Pennsylvania	3,922,125	Aligned	0.0	89.1	8.3	2.6	0.0
Puerto Rico	3,157,270	Aligned	0.0	78.3	21.7	0.0	0.0
Rhode Island	382,380	Aligned	0.0	86.6	11.6	1.9	0.0
South Carolina	1,452,452	Aligned	0.0	87.2	10.7	2.1	0.0
Tennessee	1,835,052	Aligned	0.0	83.6	8.7	7.7	0.0
Texas	5,936,044	Aligned	0.0	86.7	7.2	6.1	0.0
Virginia	1,437,392	Aligned	0.0	84.9	10.2	4.9	0.0
Colorado	1,697,599	Aligned	0.0	93.9	1.6	4.5	0.0
Massachusetts	2,234,106	Aligned	<0.1	82.8	16.1	1.1	0.0
Maryland	1,600,452	Aligned	<0.1	89.6	6.1	4.3	0.0
New Hampshire	260,179	Aligned	<0.1	84.9	9.3	5.8	0.0
Delaware	291,623	Aligned	<0.1	88.3	5.4	6.3	0.0
South Dakota	153,830	Aligned	<0.1	84.4	9.8	5.8	0.0

Table 5 (continued)

State	Number of records	Does dual code distribution align with expected reporting?	Percent missing	Percentage of beneficiaries in each dual category			
				Not Medicare (non-dual)	Full duals	Partial duals	Other duals
Kentucky	1,660,887	Aligned	0.1	86.9	7.6	5.4	0.0
Vermont	209,055	Aligned	0.1	82.0	10.9	4.2	2.9
Washington	2,222,609	Aligned	0.2	89.9	6.4	3.5	0.0
Maine	363,686	Aligned	0.3	72.8	16.4	10.5	0.0
Kansas	517,407	Aligned	0.6	85.2	9.2	5.1	0.0
North Carolina	2,509,045	Aligned	0.7	84.5	11.4	3.4	0.0
Florida	5,227,826	Aligned	1.2	80.5	10.4	7.9	0.0
Oregon	1,363,602	Aligned	1.3	89.1	5.7	4.0	0.0
New Jersey	2,240,367	Aligned	1.6	87.0	11.4	0.1	0.0
Hawaii	427,279	Aligned	1.7	86.6	10.3	1.4	0.0
West Virginia	684,933	Aligned	2.3	83.2	8.8	5.7	0.0
Indiana	1,818,441	Aligned	2.3	84.6	9.4	3.8	0.0
Arizona	2,385,689	Aligned	2.7	86.5	8.6	2.2	0.0
Ohio	3,620,327	Aligned	2.7	86.5	7.2	3.6	0.0
Louisiana	1,983,085	Aligned	4.2	83.1	8.1	4.6	0.0
Wyoming	90,585	Aligned	5.4	81.3	9.4	3.9	0.0
Medium data quality concern (n = 5 states)							
Wisconsin	1,432,971	Aligned	10.1	74.0	10.9	1.6	3.5
North Dakota	72,344	Aligned	12.4	76.4	8.4	2.9	0.0
New York	8,433,237	Aligned	13.5	73.3	11.1	2.1	0.0
Iowa	978,663	Aligned	16.3	74.9	7.4	1.5	0.0
Idaho	443,085	Not aligned	16.3	78.8	0.0	4.9	0.0
Unusable (n = 4 states)							
Alabama	1,455,113	Not aligned	83.7	0.0	6.8	9.6	0.0
Michigan	2,909,774	Not aligned	87.5	0.0	10.4	2.1	0.0

Table 5 (continued)

State	Number of records	Does dual code distribution align with expected reporting?	Percent missing	Percentage of beneficiaries in each dual category			
				Not Medicare (non-dual)	Full duals	Partial duals	Other duals
Utah	429,816	Not aligned	91.8	0.0	7.3	0.9	0.0
Arkansas	1,966,254	Aligned	99.2	0.6	0.1	0.1	0.0
Excluded from analysis (n = 4 states)							
Mississippi	DQ	DQ	DQ	DQ	DQ	DQ	DQ
Missouri	DQ	DQ	DQ	DQ	DQ	DQ	DQ
Montana	DQ	DQ	DQ	DQ	DQ	DQ	DQ
Nebraska	DQ	DQ	DQ	DQ	DQ	DQ	DQ

Source: 2017 TAF as of January 2019.

Note: States are categorized based on their level of data quality concern and ordered from lowest to highest percentage of beneficiaries with missing dual status code for each category (see Table 3).

DQ = Not reported because of concerns about the low volume of claims.

Tasnuva Khan¹, Edward Weizenegger¹, Kimberly Proctor², and Jessie Parker². “Completeness of the CHIP and Dual Status Codes in 2017.” TAF DQ Brief #4132. Baltimore, MD: CMS, 2019.

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