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CHIP Data in the Medicaid Statistical Information System (MSIS): Availability and Uses

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Since 1997, the Children's Health Insurance Program (CHIP) has played an important role in the U.S. health care system by providing coverage to uninsured children and pregnant women who are ineligible for Medicaid. In 2011, CHIP served 8 million children—ranging from 4,461 in Vermont to 1,763,831 in California (U.S. Department of Health and Human Services 2011)—with family income between 100 and 350 percent of the Federal Poverty Level (FPL). The program will be an integral component of the seamless system of health insurance coverage established under the Affordable Care Act (ACA). Until recently, there was no standardized source of person-level CHIP data to enable federal and state policymakers and researchers to study enrollment, utilization, and payment. However, in 2011, several states began reporting separate CHIP enrollment and claims data to the Medicaid Statistical Information System (MSIS). As demonstrated in this issue brief, these data can be used to evaluate policy options, such as express lane eligibility, monitor program transitions, compare costs across states, and plan implementation of ACA provisions. Additional study will be possible as more states report their data.

Background

States have three options for covering CHIP enrollees: (1) create Medicaid-expansion CHIP (M-CHIP) programs by expanding Medicaid, (2) create separate CHIP programs, or (3) implement a combination of the two. According to the Centers for Medicare & Medicaid Services (CMS), 9 states (including the District of Columbia) currently operate M-CHIP programs, 17 operate separate CHIP (S-CHIP) programs, and 25 operate combination programs (Centers for Medicare & Medicaid Services 2011).

Before fall 2010, there was no national standardized source of person-level demographic, enrollment, utilization, and payment data for CHIP. CMS only required that states submit aggregate CHIP demographic and enrollment data through the Statistical Enrollment Data System (SEDS) and CHIP Annual Reporting Template System (CARTS). States with M-CHIP programs also had to submit person-level M-CHIP enrollment and claims data to MSIS, but states with separate CHIP or combination programs could only submit limited eligibility data about separate CHIP enrollees.

As a result, national-level CHIP analyses and studies comparing CHIP programs have had to use survey data, or administrative data obtained directly from states. Several congressionally mandated evaluations and program performance assessments since the passage of the Children's Health Insurance Program Reauthorization Act of 2009 (CHIPRA) have relied upon data from national surveys such as the U.S. Census Bureau's Current Population Survey (CPS) and American Community

About This Series

The MAX Medicaid policy issue brief series highlights the essential role that MSIS and MAX data can play in analyzing Medicaid and CHIP. The MSIS collects, manages, analyzes, and disseminates standardized Medicaid and CHIP enrollment, utilization, and payment data. States submit five MSIS files—one eligibility file and four claims files—to the Centers for Medicare & Medicaid Services (CMS) for each quarter of the federal fiscal year. MAX is an enhanced, research-friendly version of MSIS that includes final adjudicated claims based on the date of service, and data that have undergone additional quality checks and corrections. CMS produces MAX specifically for research purposes. For more information about MSIS and MAX, please visit http://www.cms.gov/MedicaidDataSourcesGenInfo/07_MAXGeneralInformation.asp.

Survey (ACS) (Limpa-Amara et al. 2007; Kenney et al. 2011). These data have limitations, including documented enrollment undercounts (Kenney et al. 2011; Klerman et al. 2012). Other studies have performed specially designed surveys, but at significant expense. Still other studies have gathered administrative data directly from states, which required multiple data use agreements and labor-intensive standardization after the fact.

State-level cross-program analyses have been hindered by the lack of standardization of CHIP and Medicaid data. Many states use separate data systems for CHIP and Medicaid (Kaiser Family Foundation 2012). These systems often contain dissimilar personal identifiers and data elements making it difficult to compare enrollment and utilization, or to analyze transitions between programs.

Beginning October 1, 2010, CMS permitted states to submit complete CHIP data to MSIS. Mathematica Policy Research, under contract to CMS, has been providing technical assistance (TA) to states to help them do so. As of September 30, 2012, seven states (Table 1) are reporting more than limited eligibility data for separate CHIP enrollees (22 states are reporting limited eligibility data and 14 states are reporting no data). Three states—Delaware, Kentucky, and Michigan—are reporting complete eligibility and claims data. Two other states—Louisiana and Mississippi—are reporting complete eligibility data. In addition, Louisiana is reporting claims data for one of its separate CHIP populations (pregnant women). Colorado and Missouri are reporting partial eligibility data, meaning that they report CHIP data for more than the limited set of data elements, but not for all elements. Missouri is also reporting inpatient hospital (IP), long term care (LT), and prescription drug (RX) claims. Additional states are preparing to report CHIP data soon. As described in this brief, with reported MSIS data, CMS, states, and researchers can more readily answer operational, policy, and research questions regarding CHIP.

MSIS Data Content

MSIS data files contain approximately 200 distinct data elements as specified in the MSIS File Specifications and Data Dictionary (Centers for Medicare & Medicaid Services 2010). CMS requires states to submit one eligible (EL) file and four claims files for each quarter (Q) of the federal fiscal year (FFY), generally no later than 45 days after the end of the reporting quarter (although states do not need to submit all five files simultaneously). States must report the same elements, except for the optional income code (although they can receive permission not to report the TANF flag). All state files undergo automated validation edits to check whether fields contain valid data that fall within established ranges and are consistent with data reported to other elements. In addition, all files also undergo a detailed content analysis to determine whether reporting is consistent with known program characteristics.

The EL file contains one record for each person enrolled for at least one day during the reporting quarter. Its record layout includes 28 quarterly and monthly variables (Table 2).

Quarterly variables provide demographic data, personal identifiers, and information regarding the year, quarter, and type of record for each enrollee. Demographic variables include dates of birth and death, sex, race and ethnicity, and the county and zip codes of the enrollee's residence. In the race ethnicity code field, states can report whether an enrollee has more than one race, or declares one or more race(s) *and* Hispanic/Latino ethnicity. Personal identifiers include Social Security number (SSN), MSIS identification number (MSIS ID), and

Table 1. State Reporting of Increased Separate CHIP Data to MSIS

		Overall Reporting Completeness		Claims File Reporting Completeness			
State	Program Type	Eligible	Claims	Inpatient	Long Term Care	Other	Prescription Drugs
Colorado	Separate	Partial	NR	NR	NR	NR	NR
Delaware	Combination	Complete	Complete	Complete	Complete	Complete	Complete
Kentucky	Combination	Complete	Complete	Complete	Complete	Complete	Complete
Louisiana	Combination	Complete	Partial	Partial	Partial	Partial	Partial
Michigan	Combination	Complete	Complete	Complete	Complete	Complete	Complete
Mississippi	Separate	Complete	NR	NR	NR	NR	NR
Missouri	Combination	Partial	Partial	Complete	Complete	NR	Complete

NR = not reporting.

an enrollee's Medicare health insurance claim (HIC) identification number, if applicable. States must report the SSN of each enrollee, but have the option of assigning the SSN or MSIS ID as the unique personal identifier associated with an enrollee's EL records and claims. Once a state assigns a unique permanent personal identification number, the state must use it consistently to identify an individual, even if the individual experiences a break in coverage of several years. Forty-four states—including the District of Columbia—use the MSIS ID as the unique personal identifier, whereas 7 states use the SSN.

Table 2. MSIS Eligible-File Elements

Data Element Name
Quarterly Fields
County Code*
Date of Birth*
Date of Death*
Federal Fiscal Year Quarter*
Sex*
HIC Number (Medicare ID)*
MSIS Identification Number (Medicaid or MSIS ID)*
MSIS Case Number (Medicaid case number)*
Race Codes (multiple fields)*
Ethnicity Code*
Race Ethnicity Code (combined field)*
Social Security Number (SSN)*
Type of Record (current, retroactive, or correction)*
Zip Code*
Monthly Fields
Basis of Eligibility (BOE or eligibility category)*
CHIP Code (Medicaid, M-CHIP, or Separate CHIP)*
Days of Eligibility (currently only to be reported for Medicaid and M-CHIP enrollees)
Dual Eligible Code
Eligibility Group*
Health Insurance (whether the individual has private insurance)
Income Code (optional)
Maintenance Assistance Status (MAS or pathway to eligibility)*
Plan ID (for managed care, multiple fields)
Plan Type (for managed care, multiple fields)
Restricted Benefits Flag (scope of benefits or benefits package)
Temporary Assistance for Needy Families (TANF) Cash Flag
Waiver ID (multiple fields)
Waiver Type (multiple fields)

* Fields that compose the limited subset that states could report for separate CHIP enrollees before October 2010.

The monthly variables describe each enrollee's eligibility status and coverage. They include maintenance assistance status (MAS), which indicates the individual's pathway to eligibility (for example, as a cash-related, poverty-related, or 1115 expansion waiver enrollee); basis of eligibility (BOE), which describes the individual's eligibility category (such as, child or foster care child); and eligibility group, which identifies the individual's eligibility group as defined in an eligibility crosswalk submitted by the state (for example, children ages 1 to 6 with family income between 133 and 185 percent of the FPL). The CHIP code identifies whether the individual is enrolled in Medicaid, M-CHIP, or separate CHIP.

Before October 2010, states could only report the quarterly variables plus MAS, BOE, Eligibility Group, and CHIP code for separate CHIP enrollees. Now states can report complete information concerning enrollees' monthly status, including their scope of benefits, managed care plan enrollment, and waiver enrollment. CMS did not add new data elements to the MSIS Data Dictionary to enable separate CHIP reporting, but it did add values for some elements in its August 2010 release (Release 3.1). For example, it added a value to the restricted benefits flag element so that states could report CHIP enrollees' receipt of the supplemental dental wraparound benefit to employer-sponsored insurance, when appropriate.

The four claims files—inpatient (IP), long term care (LT), other (OT), and prescription drugs (RX)—have distinct file formats. Table 3 summarizes the data elements found in each file.

Table 3. MSIS Claims File Type Summary

File Type	Claims/Services Reported	Number of Data Elements Included
IP	Acute care inpatient hospital services	121
LT	Services provided in nursing facilities (NF), institutional care facilities for the mentally retarded (ICFs-MR), psychiatric hospitals, and independent psychiatric wings of acute care hospitals	31
OT	Provider claims for non-institutional services and services received in hospitals/NFs/ICFs-MR that are not billed as part of long term care or inpatient claims; capitation payment claims; claims for medical and non-medical services received under a waiver	31
RX	Claims for prescription drugs and durable medical equipment provided by a pharmacist under a prescription	23

Fifteen elements (Table 4) are common to all claims file types, including MSIS ID, Medicaid amount paid, type of service (as described in the *Code of Federal Regulations*), and type of claim (TOC). The TOC element generally indicates what kind of payment was covered by the claim (for example, fee-for-service or capitation). To distinguish claims for separate CHIP enrollees from those for Medicaid or M-CHIP enrollees, the Data Dictionary (Release 3.1) includes new alphabetical values "A" through "E" for separate CHIP that correspond to numeric values "1" through "5" for Medicaid and M-CHIP. For example, TOC value "C" represents encounter records for separate CHIP enrollees, whereas "3" represents encounter records for Medicaid and M-CHIP enrollees.

Other important data elements included in one or more claims file types include beginning date of service, ending date of service, diagnosis code, procedure code, place of service, and national drug code.

Table 4. Common Data Elements in MSIS Claims Files

Data Element Name
MSIS ID
Day of Payment Adjudication
Original Internal Control Number (ICN or unique claim identifier)
Adjustment Indicator (original, void, resubmittal, or adjustment)
Adjusted Internal Control Number (ICN or unique claim identifier)
Type of Claim (for example, separate CHIP capitation payment)
Amount Charged
Medicaid Amount Paid
Plan ID (for managed care)
Other Third-Party Payment
National Provider ID (NPI)
Billing Provider ID
Provider Taxonomy
Type of Service (for example, transportation)
Program Type (for example, Early and Periodic Screening, Diagnosis, and Treatment [EPSDT])

Data Availability

Once approved by CMS, the data reported to MSIS are available in three forms: granular, pre-aggregated, and enhanced. In addition to analysts and researchers working outside of government, state policymakers who have difficulty performing in-house data analyses due to long programming queues or other resource or systems constraints might find the data useful.

Granular (person-level) MSIS data for special analyses, like those described in the next section, can be obtained from the Division of Information Analysis & Technical Assistance in CMS' Center for Medicaid and CHIP Services.

Pre-aggregated MSIS data can be found on CMS' web site at: http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MSIS-Tables.html. After CMS approves all of a state's MSIS file submissions for a federal fiscal year, it loads the data into a granular data warehouse and makes some of it publicly available through its State Summary DataMart accessible via the web. The DataMart displays the pre-aggregated data for pre-determined dimensions and measures (also called cubes), which reflect the most commonly asked statistical questions. The quarterly cube, for example, includes summary information on eligibility and utilization and provides national and state measures including: unique eligible count, total claims count, and total paid amount. The monthly data is restricted to eligibility information and contains measures, such as total months eligible. The CHIP dimension allows users to generate statistics for Medicaid, M-CHIP, or separate CHIP enrollees. The DataMart currently contains FFY 2010 data, including any separate CHIP data reported for that year (note: users are advised not to use the values in the CHIP dimension prior to FFY 2009). CMS also posts over 20 Excel tables containing high-level, aggregated state-by-state statistics, such as Medicaid Managed Care Enrollment by Plan Type for FFY 1999–2009.

Medicaid Analytic eXtract (MAX) files are enhanced Medicaid administrative files produced once CMS approves most MSIS file submissions for a federal fiscal year. The annual MAX person-summary file consists of a record summarizing enrollment, utilization, and payment for each individual with an eligibility record or claim in that calendar year (CY). In producing the MAX file for CMS, Mathematica generates validation tables for each state containing thousands of measures for the current year, as well as the prior two years. The tables are available to states and researchers at http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MAX-Validation-Reports.html and can be used to perform cross-state comparisons. Tables containing CY 2009 data are currently available for most states. Because states could report only limited eligibility data until October 2010, these tables contain very few separate CHIP measures, all of which are enrollment-related. MAX validation tables for future years could include additional separate CHIP enrollment and utilization measures, such as percent of managed care enrollees with encounter claims or average amount paid for individuals with only separate CHIP enrollment. Individually identifiable MAX data for approved academic research projects and certain government agencies are available through a data use agreement with CMS.

Potential Uses of Person-Level MSIS Data

Using person-level MSIS data, CMS staff, state officials, and researchers can perform cross sectional and longitudinal within-state, cross-program, and cross-state analyses. Following are examples that CHIP officials or researchers might be interested in performing.

Studying Express Lane Eligibility (ELE) and Presumptive Eligibility

Per CHIPRA, states can choose to streamline the application and enrollment process for children by relying upon eligibility findings made by "express lane" agencies, or by utilizing income tax data collected on state returns. Express Lane agencies are entities identified by the state Medicaid or CHIP agency as being capable of making a finding regarding one or more programmatic eligibility requirements, using information the express lane agencies already collect. Express lane agencies may include, among others, state TANF and Supplemental Nutrition Assistance Program (SNAP) offices. Since 2009, several states have adopted this option for their Medicaid and CHIP programs.

By designating MSIS eligibility group codes specifically for children enrolled via the express lane, states can monitor and study ELE enrollment trends. Louisiana implemented ELE in its Medicaid program in late 2009 and started reporting its ELE enrollees to two MSIS eligibility group codes shortly thereafter. Children in these ELE groups can be compared to all other children reported to MSIS during the same period. Our analysis shows that ELE children enrolled from April to July 2011 were more likely than other children enrolled in Medicaid to have valid SSNs and a known race on their records, possibly because the SNAP agency concentrates on collecting this information (Table 5). These findings could demonstrate the integrity of ELE determinations. The differences were apparent in multiple quarters (data not shown). State officials can monitor whether they persist by generating simple summary statistics for children and the ELE groups before or after submitting the quarterly EL file. Other states with ELE programs could perform similar analyses by designating specific codes for ELE enrollees in Medicaid and/or CHIP.

Table 5. Differences Between ELE Enrollees and Other Children in Louisiana, Q3 FFY 2011

	Invalid SSN	Unknown Race
Children in ELE	0.5%	2.5%
All Other Children	3.0%	7.7%

Notes: "All other children" includes non-disabled children not in foster care or the ELE groups.

Similarly, if states designate specific eligibility group codes for presumptively eligible children or pregnant women, they can compare them to children and pregnant women enrolled using traditional eligibility processes. For example, they can perform longitudinal analyses of eligibility and procedure code data to determine whether presumptively eligible pregnant women receive more regular services than other pregnant women.

Monitoring Program Transitions

It is well established that Medicaid and CHIP enrollees "churn" in and out and between programs. MSIS data can help states understand these transitions. By linking quarterly MSIS files using personal identifiers, it is possible to identify the number of children enrolled in one or more programs over a period of time in combination CHIP states. Delaware has a combination CHIP program that covers children ineligible for Medicaid with family income up to 200 percent of the FPL. Specifically, infants with family income above the Medicaid standard are covered under M-CHIP and older children with family income above the applicable Medicaid standard are covered under separate CHIP. Of the 114,704 children enrolled from Q1 FFY 2011 to Q2 FFY 2012, 9,715 (8.5 percent) were enrolled in both Medicaid and separate CHIP for at least one month during these six quarters (Table 6). To better understand these children's transitions, the data can be further analyzed by age, gender, race, ethnicity, income code (if submitted), and geographic area. County-level analyses can be particularly useful for monitoring performance in states that organize their eligibility offices by county. In this example, program transitions were consistent across the state's three counties.

Comparing Payments Across States and Programs

Medicaid and CHIP costs are of great interest to many stakeholders. Table 7 shows average Medicaid and separate CHIP capitation payments for children ages 6 to 18 in the three states—Delaware, Kentucky, and Michigan—that currently report complete CHIP claims. Such comparisons of states in the same region or managed care market could be useful to them, as would more in-depth analyses of the OT file data. For example, our in-depth analysis (not shown) by managed care plan type and plan ID shows that Delaware actually makes a higher capitation payment to its comprehensive managed care plans for Medicaid enrollees than CHIP enrollees, but that the overall average Medicaid capitation payment is lower because Delaware makes a $6 capitation payment for non-emergency medical transportation services for children in Medicaid. Analyses like this one could help states and CMS understand the potential impact, in terms of enrollment and costs, of the ACA provision that raises the minimum Medicaid income standard for children ages 6 to 18 from 100 percent to 133 percent of the FPL, which will result in the shifting of children to Medicaid in states, like Delaware, that currently cover them under CHIP.

Table 6. Program Enrollment of Children in Delaware, Q1 FFY 2011-Q2 FFY 2012

	County of Residence				
	Out-of-State (County Code "000")	Kent County (County Code "001")	New Castle County (County Code "003")	Sussex County (County Code "005")	Total
Medicaid Only	2,380	18,912	55,014	23,142	99,448
M-CHIP Only	0	2	19	9	30
S-CHIP Only	36	869	3,159	1,162	5,226
Medicaid and M-CHIP	0	22	62	16	100
Medicaid and S-CHIP	76	1,735	5,562	2,342	9,715
M-CHIP and S-CHIP	0	0	7	2	9
Medicaid, M-CHIP, and S-CHIP	0	11	19	9	39
Not eligible all year	10	13	84	30	137
Total	**2,502**	**21,564**	**63,926**	**26,712**	**114,704**

Note: Age is defined as of October 1, 2011.

Table 7. Average Capitation Payments for Children Ages 6 to 18, Q4 FFY 2011

Delaware	
Medicaid	$117.19
Separate CHIP	$151.57
Kentucky	
Medicaid/M-CHIP	$56.54
Separate CHIP	$72.97
Michigan	
Medicaid/M-CHIP	$65.00
Separate CHIP	$27.55

Note: Data in this table are from original, non-crossover claims with service end dates after October 1, 2010.

Discussion

Despite their potential, MSIS data do have limitations. Data are not current for all states. States submit some files late or in such poor quality that they require resubmissions, which cause further delays. The MSIS file record layouts do not include all data elements that CMS, states, and researchers would like to have in order to better understand enrollee health and program performance. For example, they lack provider characteristic and program integrity data. In addition, many states do not submit Medicaid or CHIP managed care encounter claims. Of the 35 states with comprehensive Medicaid managed care, most are reporting encounter data but the quality and completeness varies significantly by state and BOE (Byrd 2012). States commonly fail to report the data because of the time and burden required to collect the claims from multiple managed care plans and map them into the MSIS format. CMS is moving forward with a plan to overcome these issues and transform MSIS by 2014.

Conclusion

In 2011, several states with combination or separate CHIP programs began to report complete person-level demographic, enrollment, and claims data to MSIS. These data provide opportunities for federal and state officials, as well as researchers, to more readily study the program as CMS and states implement the ACA. This brief describes the availability and potential uses of the data. Usability will increase as more states report CHIP data.

As a contractor to CMS, Mathematica has provided comprehensive technical assistance (TA) to states to report their separate CHIP data. Since 2011, six states that have received TA have subsequently reported more data. Mathematica can provide additional TA to states through the spring of 2013. Mathematica has also developed resources that may assist states, including a reporting guide for state officials (Hodges et al. 2012) and programmer's supplement (Camillo et al. 2012). They can be found on the CMS web site at http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/S-CHIP.html.

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