

Assessing the Usability of Encounter Data for Enrollees in Comprehensive Managed Care Across MAX 2007–2009

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As growing numbers of Medicaid enrollees receive health benefits through comprehensive managed care, researchers and policymakers seeking to understand the service use of these enrollees must rely on encounter data that states receive from managed care plans. However, not all states report encounter data submitted by their plans into the Medicaid Statistical Information System (MSIS), and, until recently, little was known about the data's usability for research. This brief builds on previous reviews of MAX 2007 and 2008 encounter data by evaluating the MAX 2009 physician, outpatient, and clinic services (OT), inpatient hospital services (IP), and prescription drug services (RX) encounter data, and by assessing trends in the availability and usability of the encounter data across 2007–2009.

Introduction

Medicaid services have been traditionally delivered on a fee-for-service (FFS) basis, under which states pay providers directly for care. This delivery system has shifted in many states, especially over the last decade. States are turning increasingly to comprehensive managed care (CMC) plans, prepaid health plans, and primary care case-management arrangements to deliver health care services efficiently to Medicaid participants. Today over 50 percent of all full-benefit¹ Medicaid enrollees are enrolled with a managed care organization and receive at least some of their Medicaid services under some type of managed care delivery system (Borck et. al 2012). For researchers and policymakers seeking to understand service utilization among the Medicaid population, this mix of Medicaid delivery systems requires having access to both FFS and managed care data.

Since 1999, the Centers for Medicare & Medicaid Services (CMS) has required states to report FFS claims to the Medicaid Statistical Information System (MSIS), which subjects each quarter of data submitted by each state to quality and validation checks. The FFS claims account for dollars paid by states to providers for Medicaid services. In CMC arrangements, states contract with health

About This Series

The MAX Medicaid policy issue brief series highlights the essential role MAX data can play in analyzing the Medicaid program. MAX is a set of annual, person-level data files on Medicaid eligibility, service utilization, and payments that are derived from state reporting of Medicaid eligibility and claims data into the Medicaid Statistical Information System (MSIS). 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 MAX, please visit: <http://www.cms.gov/Research-Statistics-Data-and-Systems/Computer-Data-and-Systems/MedicaidDataSourcesGenInfo/MAXGeneralInformation.html>.

maintenance organizations (HMOs)/health insuring organizations (HIOs) to deliver comprehensive services to Medicaid recipients under capitated, risk-based arrangements.² States fairly consistently report enrollment in managed care plans and the capitation payments they make to HMOs/HIOs. However, service use among CMC enrollees is captured in encounter data, managed care claims records containing information on utilization but not expenditures. Encounter data do not undergo data quality and validation checks either in MSIS or in the production of Medicaid Analytic eXtract (MAX) files, which are derived from MSIS.

This brief assesses the availability, completeness, and quality of encounter data. The analysis builds on previous reviews of MAX 2007 and 2008 encounter data by evaluating the MAX 2009 physician, outpatient, and clinic services (OT), inpatient hospital services (IP), and prescription drug services (RX) encounter data, and by assessing trends in the availability and usability of encounter data across 2007–2009.

Methods

MAX was designed to enable research on Medicaid enrollment, service utilization, and expenditures by calendar year at the enrollee level. The analysis described in this brief used MAX data from 2007, 2008, and 2009. The analysis was limited to fully capitated (comprehensive) managed care HMO/HIO plans because they cover the widest range of services and are thought to have the highest quality encounter data.³

To facilitate more accurate cross-state comparisons, the data were analyzed using the enrollee's basis-of-eligibility (BOE) classification in Medicaid—adult, child, disabled, or aged. Because the mixture of Medicaid populations enrolled in capitated managed care programs varies widely by state, examining the volume of encounter records for all BOE groups across states could be misleading. Many states rolled out CMC to child and adult enrollees first, and fewer have enrolled the aged and disabled populations, where service utilization is often higher. Our analysis approach constructs more comparable groups across the state Medicaid programs, each of which imposes unique eligibility criteria and varied benefit packages for its CMC programs.

The analysis drills down on several types of service to evaluate completeness and quality within the MAX claims files. The OT file may contain up to 22 types of service, while IP may contain four, and RX two. For the OT analysis, we chose physician (type of service = 08), outpatient hospital (type of service = 11), and clinic (type of service = 12) services because these are services routinely sought and covered under Medicaid in all states, and managed care plans are accustomed to collecting and reporting these data for quality assurance, such as for the Healthcare Effectiveness Data and Information Set (HEDIS). Analyzing these types of service individually and together did not yield substantial differences, so physician, outpatient, and clinic services are presented as a whole in this brief. Because the analysis of the OT encounter data was first done with 2008 MAX data, no information on 2007 OT encounter data are included in this brief. Inpatient hospital (type of service = 01) services from the IP file were included because these represent the vast majority of claims and services in the inpatient setting (though the IP file may contain three other types of service). Prescribed drugs (type of service = 16) were included from the RX file, but durable medical equipment was not. There were too few long-term care (LT) encounter claims for a cross-state analysis.⁴

A state was considered to have managed care if at least 1 percent of enrollees participated in CMC at some point during the year. For prescription drug services, states whose managed care arrangements did not include prescription drug benefits were

excluded in all years of analysis; the tables note these exclusions where relevant. Because states with low managed care enrollment are less likely to devote resources to producing high quality encounter data, data for a particular BOE group were analyzed only if 10 percent or more of full-benefit Medicaid enrollees within that group were enrolled in an HMO/HIO plan. Because measures based on a small number of records could skew estimates, data for a particular BOE group in a state were not analyzed if the group had fewer than 200 claims.

At the time of publication, MAX 2009 did not include data from Hawaii, Idaho, Missouri, New Hampshire, Oklahoma, Utah, and Wisconsin because the corresponding MSIS files were unavailable or contained significant data problems. To evaluate trends in encounter data from 2007 to 2009, states that had no data available in 2009 were also removed from the 2007 and 2008 analyses in this brief. Therefore, the 2007 and 2008 results shown in this brief will differ from previously published briefs (Dodd et al. 2012 and Byrd et al. 2012). Of these seven states, we know that Hawaii, Missouri, and Wisconsin enroll more than 1 percent of their Medicaid population in CMC.

Metrics

To be usable, encounter data need to be both complete and of comparable quality to FFS data. This analysis took place in two phases to account for these two requirements. To judge completeness, two measures were used to assess the volume of encounter data—the average number of claims per person and the percentage of enrollees with claims. To evaluate quality, metrics were used to assess the amount or quality of information on the encounter itself. For the analysis of the OT encounter claims, two quality measures were used for both the diagnosis code and procedure code fields—one indicating whether the field was filled and the second analyzing the format of the data in the field. We expected that the diagnosis code field would be filled at a high rate, because few physician, outpatient, and clinic services claims are paid without a diagnosis code. To determine whether the diagnosis codes on encounter claims were comparable in their level of specificity to those reported on FFS claims, the length of the diagnosis code was evaluated; the more characters in the diagnosis code (beyond the three requisite characters), the more specific the diagnosis is on the claim or encounter. Similarly, we expected the procedure code field to be filled at a high rate, but the heavy reliance of some states on procedure codes specific to the state made a national analysis more complicated. We examined whether the procedure codes were filled and whether the reported data were in the standard national format. For the IP file, one quality measure was created for each of the four fields that undergo

scrutiny during the MSIS data-quality and validation-review process. For the RX file, one quality measure was created for each of the two fields that we expect to see routinely filled on FFS claims.

Because managed care coverage varies by state and type of enrollee, the completeness and quality measures for OT, IP, and RX data were evaluated separately for each BOE category for each state in each year. To create comparison metrics, the average value and standard deviation were calculated for each completeness and quality metric for each BOE category using the full-benefit, nondual⁵ FFS population across all states with substantial FFS participation for each calendar year. For each comparison metric, the average FFS value was used as the midpoint of the reference range. The top of the reference range was set at two standard deviations above the FFS average, and the bottom at two standard deviations below the FFS average. This approach approximates the construction of confidence intervals typically used in statistical analysis. The FFS reference range was considered to be the acceptable range of values for each year's encounter data for that metric. For certain measures, state values were highly skewed, but typically they were either close to 100 percent or 0 percent for both FFS and encounter data. Rather than use the reference range based on the average value, we defined a "good" value as 90 percent or greater for these measures.

For each BOE category that met the analysis criteria, the state's value was compared to the FFS reference metric constructed for the same year to determine if it fell within the acceptable range; the ranges for 2009 are presented in Table 1 (reference ranges for MAX 2007 and MAX 2008 data appear in previous issue briefs; see Dodd et al. 2012 and Byrd et al. 2012). The number of states that fell within the range is shown in parentheses for each measure. For example, in 20 of the 23 states that met the thresholds for our analysis of OT data for adults in 2009, the average number of OT encounter claims per enrollee was between 0.64 and 12.69. A state's encounter data did not have to meet all completeness and quality measures to be considered usable. For the OT, IP, and RX data, "complete" was defined as having values within the acceptable range for at least one of the two completeness metrics for that data type. For the OT data, "comparable quality" was defined as satisfying at least four of the five quality measures; for the IP data, it was defined as satisfying at least three of the four quality measures; and for the RX data, it was defined as satisfying at least one of the two quality measures. A BOE within a state was considered to have usable data if the encounter data for that BOE met both the "complete" and "comparable quality" criteria.

Findings

Of states meeting the CMC enrollment threshold for the analysis, the number of states submitting encounter data stayed the same or increased over the three years for each of the BOE groups. The percentage of states submitting encounter data comparable in completeness and quality to FFS data and usable for research rose for adult, child, and disabled groups from 2007 to 2009. The most notable changes over time were an increase in both the usability of RX data for the aged (2 states in 2007 versus 7 states in 2009) and an increase in the usability of IP encounter data for the disabled (7 states in 2007 versus 12 states in 2009). Generally, states that enrolled at least 10 percent of one BOE category in an earlier year continued to meet the enrollment threshold for the same BOE categories in later years. States whose data were usable in one year were often usable in the next year; however, usability in one year did not guarantee usability in the next year.

OT Encounter Data

Table 2 summarizes the availability and usability of the OT encounter data for each state by BOE category in MAX 2008 and 2009. A majority of states meeting the CMC enrollment threshold for the analysis submitted data of comparable completeness and quality to FFS data in both years, and the usability of data improved for each BOE category. For example, in 2008, of states meeting the CMC enrollment threshold for adults, 66 percent submitted data that was considered usable. In 2009, the usability share rose to 73 percent. Sixteen states submitted usable data in each year for each reported BOE: Arizona, Delaware, Georgia, Illinois, Indiana, Kansas, Kentucky, Michigan, Nebraska, New Jersey, New Mexico, New York, Oregon, Tennessee, Texas, and Virginia. California and Florida submitted usable data in both years for some BOEs but not all. The usability of data improved for at least one BOE in Colorado, Minnesota, and Rhode Island.

Figure 1 illustrates how many states met the CMC enrollment threshold for the OT encounter data analysis. Among those states, it shows how many met the threshold for usability, how many did not meet the threshold, and how many did not submit more than the minimum number of encounter records for the analysis. For example, in 2008, 29 states met the CMC enrollment threshold for their adult Medicaid population. Of those 29, 8 states did not submit more than 200 OT claims; 2 states submitted more than 200 claims, but those claims did not meet completeness and quality thresholds; and 19 states submitted OT encounters that met completeness and quality thresholds and were deemed usable for research. In 2009, 30 states met the

Table 1. Metrics Developed to Analyze Medicaid Encounter Data in MAX 2009

Data Element	Reference Range (number of states meeting metric)			
	Adult	Child	Disabled	Aged
OT—Physician, Clinic, and Outpatient Visits				
Completeness Measures				
Average number of OT encounter claims per enrollee	0.64–12.69 (20 of 23)	1.25–9.68 (22 of 25)	8.69–30.39 (16 of 20)	0.15–21.89 (15 of 16)
Percentage of enrollees with OT encounter claims	30.20–93.37 (23 of 23)	31.69–95.92 (24 of 25)	58.59–98.72 (16 of 20)	18.48–96.23 (15 of 16)
Quality Measures				
Percentage of OT encounter claims with place of service code	87.36–100 (23 of 23)	83.51–100 (25 of 25)	84.85–100 (20 of 20)	86.37–100 (16 of 16)
Percentage of OT encounter claims with primary diagnosis code	93.66–100 (22 of 23)	94.14–100 (24 of 25)	94.39–100 (18 of 20)	94.00–100 (16 of 16)
Percentage of OT encounter claims with a primary diagnosis code length greater than 3 characters	89.18–98.81 (23 of 23)	86.82–100 (24 of 25)	88.65–99.98 (19 of 20)	88.30–100 (16 of 16)
Percentage of OT encounter claims with procedure (service) code	72.59–100 (21 of 23)	78.63–100 (24 of 25)	79.59–100 (17 of 20)	80.49–100 (14 of 16)
Percentage of OT encounter claims with a procedure code in CPT-4 or HCPCS format	46.21–100 (22 of 23)	62.75–100 (24 of 25)	68.63–100 (19 of 20)	69.87–100 (15 of 16)
IP—Inpatient Hospital				
Completeness Measures				
Average number of IP encounter claims per enrollee	0.01–0.36 (20 of 23)	0.02–0.15 (17 of 23)	0.09–0.58 (13 of 18)	0.00–0.48 (6 of 6)
Percentage of enrollees with IP encounter claims	0.06–29.91 (22 of 23)	1.44–12.65 (18 of 23)	7.54–26.82 (14 of 18)	3.30–25.06 (6 of 6)
Quality Measures				
Average length of stay	2.04–4.07 (21 of 23)	1.93–6.63 (22 of 23)	4.81–9.43 (15 of 18)	1.78–12.78 (6 of 6)
Average number of diagnosis codes	2.33–6.71 (21 of 23)	1.82–4.58 (20 of 23)	3.12–9.97 (16 of 18)	3.21–10.83 (5 of 6)
Percentage of IP claims with procedure codes	47.55–100 (20 of 23)	23.88–77.34 (21 of 23)	31.23–72.28 (15 of 18)	28.59–75.11 (5 of 6)
Percentage of IP claims with UB accommodation codes	Values of ≥ 90% (18 of 23)	Values of ≥ 90% (17 of 23)	Values of ≥ 90% (13 of 18)	Values of ≥ 90% (3 of 6)
RX—Prescription Drugs				
Completeness Measures				
Average number of RX encounter claims per enrollee	0.00–13.72 (12 of 14)	1.26–6.83 (14 of 14)	14.29–51.05 (11 of 11)	0–48.74 (8 of 8)
Percentage of enrollees with RX encounter claims	13.59–89.83 (13 of 14)	16.53–82.95 (14 of 14)	51.87–98.74 (11 of 11)	12.25–89.45 (7 of 8)
Quality Measures				
Percentage of RX claims with date prescribed	Values of ≥ 90% (13 of 14)	Values of ≥ 90% (13 of 14)	Values of ≥ 90% (10 of 11)	Values of ≥ 90% (7 of 8)
Percentage of RX claims with quantity	Values of ≥ 90% (8 of 14)	Values of ≥ 90% (8 of 14)	Values of ≥ 90% (7 of 11)	Values of ≥ 90% (4 of 8)

Source: MAX 2009.

Note: The parenthetical data show the number of states that had values within the acceptable range, out of the total number of states that had sufficient participation and encounter claims submitted for analysis.

UB = uniform billing, CPT-4 = Current Procedural Terminology version 4, HCPCS = Healthcare Common Procedure Coding System

Table 2. Usability of MAX 2008–2009 OT Encounter Claims by Basis of Eligibility Category

	2008 OT Encounter Data Are Usable for Research				2009 OT Encounter Data Are Usable for Research			
	A	C	D	E	A	C	D	E
Alabama								
Alaska								
Arizona	Y	Y	Y	Y	Y	Y	Y	Y
Arkansas								
California	Y	Y	Y	N	Y	Y	Y	N
Colorado	N	N	N	N	0	N	N	Y
Connecticut					Y	Y		
Delaware	Y	Y	Y	Y	Y	Y	Y	Y
District of Columbia	0	0	0		Y	N	N	
Florida	Y	N	N	Y	Y	Y	Y	Y
Georgia	Y	Y			Y	Y		
Hawaii ^a								
Idaho ^a								
Illinois		Y				Y		
Indiana	Y	Y	Y		Y	Y	Y	
Iowa								
Kansas	Y	Y			Y	Y		
Kentucky	Y	Y	Y	Y	Y	Y	Y	Y
Louisiana								
Maine								
Maryland	N	N	N		N	N	N	
Massachusetts	0	0	0		0	0	0	
Michigan	Y	Y	Y	Y	Y	Y	Y	Y
Minnesota	Y	Y	N	Y	Y	Y	Y	Y
Mississippi								
Missouri ^a								
Montana								
Nebraska	Y	Y	Y	Y	Y	Y	Y	Y
Nevada	0	0			0	0		
New Hampshire ^a								
New Jersey	Y	Y	Y	Y	Y	Y	Y	Y
New Mexico	Y	Y	Y	Y	Y	Y	Y	Y
New York	Y	Y	Y	Y	Y	Y	Y	Y
North Carolina								
North Dakota								
Ohio	0	0	0	0	0	0	0	0
Oklahoma ^a								
Oregon	Y	Y	Y	Y	Y	Y	Y	Y
Pennsylvania	0	0	0	0	0	0	0	0
Rhode Island	Y	Y	N		Y	Y	Y	
South Carolina	0	0	0		0	0	0	0
South Dakota								
Tennessee	Y	Y	Y	Y	Y	Y	Y	Y
Texas	Y	Y	Y	Y	Y	Y	Y	Y
Utah ^a								
Vermont								
Virginia	Y	Y	Y	Y	Y	Y	Y	Y
Washington	0	0			Y	Y		
West Virginia	0	0			0	0		
Wisconsin ^a								
Wyoming								
Total meeting CMC threshold	29	30	24	18	30	31	24	19
Total submitting data	21	22	19	16	23	25	20	16
Total submitting usable data	19	19	14	14	22	22	17	15

(continued)

Table 2. (continued)

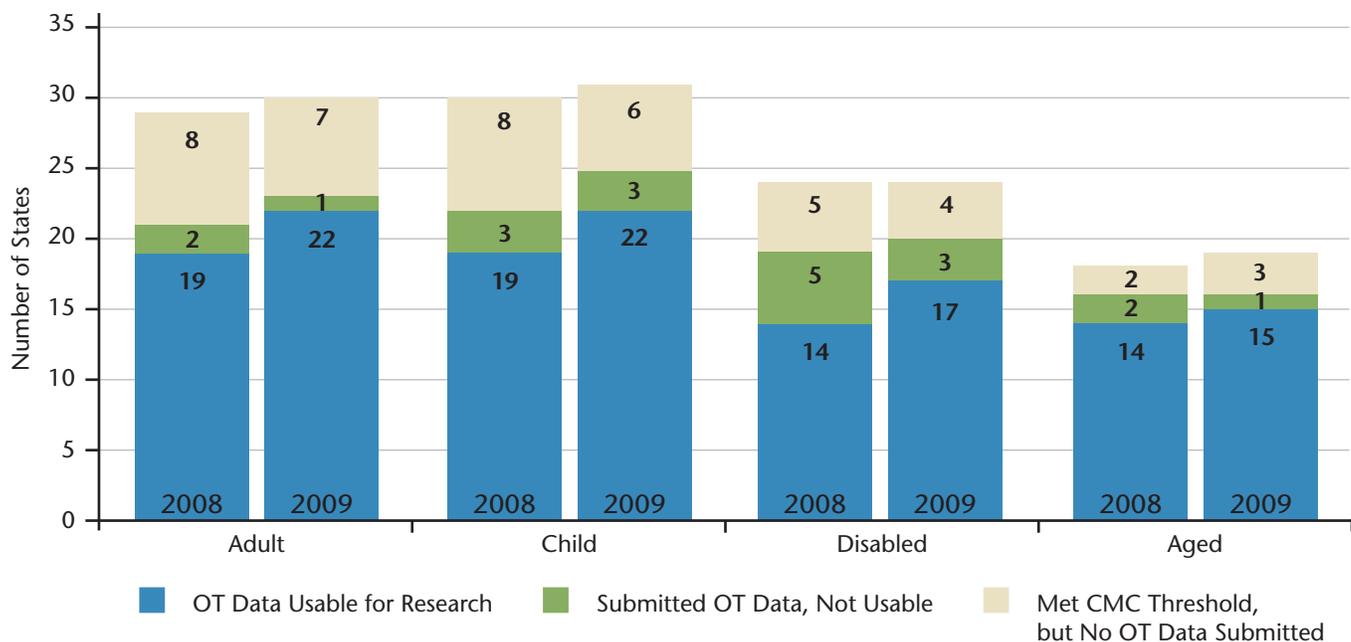
	2008 OT Encounter Data Are Usable for Research				2009 OT Encounter Data Are Usable for Research			
	A	C	D	E	A	C	D	E
Of states meeting CMC enrollment threshold, percentage that submitted usable data	66%	63%	58%	78%	73%	71%	71%	79%

Source: MAX 2008 and 2009.

Note: Blank cells indicate the state’s enrollment in CMC did not meet the enrollment threshold for the analysis in that BOE category - A = Adult, C = Child, D = Disabled, E = Aged. 0 indicates the state met the enrollment threshold for the analysis but did not submit more than 200 encounter records in that BOE category. N indicates the state met the enrollment threshold for the analysis and submitted more than 200 encounter records in that BOE category but the data did not meet completeness and quality thresholds. Y indicates the state met the enrollment threshold for the analysis and submitted more than 200 encounter records in that BOE category, the data met completeness and quality thresholds, and are therefore usable.

^a Hawaii, Idaho, Missouri, New Hampshire, Oklahoma, Utah, and Wisconsin were not included in the analysis because the corresponding MSIS files were unavailable or contained significant data problems in 2009.

Figure 1. Usability of MAX 2008–2009 OT Encounter Claims by Basis of Eligibility Category



Source: MAX 2008 and 2009.

CMC enrollment threshold for their adult Medicaid population. Of those 30, 7 did not submit more than 200 OT claims; one state submitted more than 200 claims, but those claims did not meet completeness and quality thresholds; and 22 states submitted OT encounters that met completeness and quality thresholds and were deemed usable for research. More states met the CMC enrollment threshold for the adult, child, and aged populations in 2009 than in 2008, and in every BOE category, the number of states submitting usable data increased.

IP Encounter Data

Table 3 and Figure 2 summarize the number of states that met the CMC enrollment threshold and the availability and usability

of the IP encounter data for each state by BOE in MAX 2007, 2008, and 2009. The number of states submitting encounter data increased between 2007 and 2009 for adult, child, and disabled BOE categories, and the usability of the data improved each year for encounters in the adult, child, and disabled BOE categories. For example, by 2009, 23 of the 30 states meeting the CMC enrollment threshold for adults submitted encounter data, and 67 percent of states that met the threshold submitted usable data. In contrast, among the aged BOE category, the number of states meeting the CMC enrollment threshold rose across the three years but the usability increased from 5 states in 2007 to 12 states in 2008, and then dropped back to 5 states in 2009. This is most likely due to states experiencing complications as they begin collecting encounter data for new populations (Byrd et al. 2011).

Table 3. Usability of MAX 2007–2009 IP Encounter Claims by Basis of Eligibility Category

	2007 IP Encounter Data Are Usable				2008 IP Encounter Data Are Usable				2009 IP Encounter Data Are Usable			
	A	C	D	E	A	C	D	E	A	C	D	E
Alabama												
Alaska												
Arizona	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Arkansas												
California	Y	N	N	N	Y	Y	N	N	Y	N	N	N
Colorado	0	0	0	0	N	0	N	0	0	0	N	0
Connecticut	0	0							N	N		
Delaware	N	N	0		Y	N	N	Y	Y	0	0	0
District of Columbia	0	0	0		0	0	0		Y	N	0	
Florida	0	0	0	0	Y	N	N	Y	Y	Y	Y	Y
Georgia	0	0			0	0			Y	Y		
Hawaii ^a												
Idaho ^a												
Illinois						N				N		
Indiana	Y	Y	Y		Y	Y	Y		Y	Y	Y	
Iowa												
Kansas	Y	Y			Y	Y			Y	Y		
Kentucky	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	0
Louisiana												
Maine												
Maryland	Y	Y	N		Y	Y	N		Y	Y	Y	
Massachusetts	0	0	0		0	0	0		0	0	0	
Michigan	N	N	N		Y	N	N	N	Y	N	N	0
Minnesota	Y	Y		Y	Y	Y	N	Y	Y	Y	N	0
Mississippi												
Missouri ^a												
Montana												
Nebraska	Y	Y			Y	Y	Y	Y	Y	Y	Y	0
Nevada	0	0			0	0			0	0		
New Hampshire ^a												
New Jersey	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
New Mexico	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	
New York	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
North Carolina												
North Dakota												
Ohio	0	0	0		0	0	0	0	0	0	0	0
Oklahoma ^a												
Oregon	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	0
Pennsylvania	0	0	0		0	0	0	0	0	0	0	0
Rhode Island	N	N	N		N	N	N	0	N	N	N	0
South Carolina	0	0			0	0	0		0	0	0	0
South Dakota												
Tennessee	Y	Y	N	0	Y	Y	N	N	Y	Y	Y	0
Texas	N	Y	N	Y	N	Y	N	Y	N	Y	N	0
Utah ^a												
Vermont												
Virginia	Y	Y	N		Y	Y	Y	Y	Y	Y	Y	Y
Washington	Y	Y			Y	Y			Y	Y		
West Virginia	0	0			0	0			0	0		
Wisconsin ^a												
Wyoming												
Total Meeting CMC threshold	30	30	21	9	29	30	24	18	30	31	24	19
Total submitting data	19	19	14	6	21	21	19	15	23	23	18	6
Total submitting usable data	14	15	7	5	17	16	9	12	20	17	12	5

(continued)

Table 3. (continued)

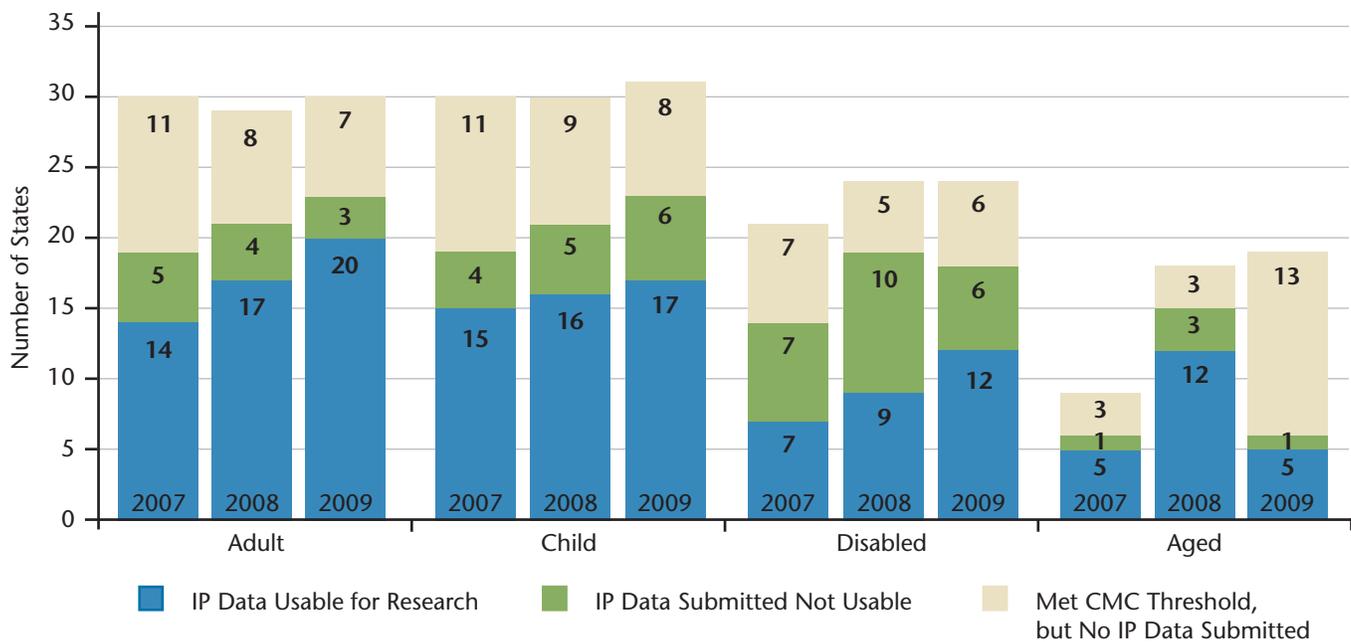
	2007 IP Encounter Data Are Usable				2008 IP Encounter Data Are Usable				2009 IP Encounter Data Are Usable			
	A	C	D	E	A	C	D	E	A	C	D	E
Of states meeting CMC threshold, percentage that submitted usable data	47%	50%	33%	56%	59%	53%	38%	67%	67%	55%	50%	26%

Source: MAX 2007, 2008, and 2009.

Note: Blank cells indicate the state’s enrollment in CMC did not meet the enrollment threshold for the analysis in that BOE category - A = Adult, C = Child, D = Disabled, E = Aged. 0 indicates the state met the enrollment threshold for the analysis but did not submit more than 200 encounter records in that BOE category. N indicates the state met the enrollment threshold for the analysis and submitted more than 200 encounter records in that BOE category but the data did not meet completeness and quality thresholds. Y indicates the state met the enrollment threshold for the analysis and submitted more than 200 encounter records in that BOE category, the data met completeness and quality thresholds, and are therefore usable.

^a Hawaii, Idaho, Missouri, New Hampshire, Oklahoma, Utah, and Wisconsin were not included in the analysis because the corresponding MSIS files were unavailable or contained significant data problems in 2009.

Figure 2. Usability of MAX 2007–2009 IP Encounter Claims by Basis of Eligibility Category



Source: MAX 2007, 2008, and 2009.

RX Encounter Data

States that use CMC to deliver comprehensive services sometimes choose to exclude prescription drugs, or to “carve out” prescription drug services from the CMC arrangements. Exclusions and carve-outs have increased over the three years of analysis, although the number of states that rely on CMC to deliver prescription drugs to the disabled and aged populations rose from 2007 to 2009. Table 4 summarizes the availability and usability of the RX encounter data for each state by BOE in MAX 2007, 2008, and 2009. Figure 3 illustrates how many states met the CMC enrollment threshold for the RX encounter data analysis, broken down by whether the state submitted at least the minimum number of encounter records and whether or not the data were deemed usable. Although there are fewer states available for analysis in 2009 than in 2007 for adults and children, the number of

states and the percentage of states that submitted usable data remained the same or increased for every BOE in 2009 relative to 2007.

Caveats

In this brief, we used selected FFS-based metrics to make a judgment about the quality and completeness of the data for inpatient hospitalization services, physician services, outpatient hospital services, clinic services, and prescription medication across three calendar years. This approach has been useful because it illustrates that a reasonable quantity of encounter data is available in MAX, and that the data appear to be of good quality on basic measures. We assume that, like the FFS data, the MAX data falling within acceptable ranges accurately depict what is happening in the state. This analysis is limited, however, by its

Table 4. Usability of MAX 2007–2009 RX Encounter Claims by Basis of Eligibility Category

	2007 RX Encounter Data Are Usable				2008 RX Encounter Data Are Usable				2009 RX Encounter Data Are Usable			
	A	C	D	E	A	C	D	E	A	C	D	E
Alabama												
Alaska												
Arizona	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Arkansas												
California	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Colorado	0	0	0	0	0	0	0	0	0	0	0	0
Connecticut ^{a,b}	0	0										
Delaware ^{a,b,c}												
District of Columbia	0	0	0		0	0	0		0	0	0	
Florida	0	0	0	0	N	N	0	Y	Y	Y	Y	Y
Georgia	Y	Y			Y	Y			Y	Y		
Hawaii ^d												
Idaho ^d												
Illinois ^{a,b,c}												
Indiana	Y	Y	Y		Y	Y	Y		Y	Y	Y	
Iowa ^{a,b,c}												
Kansas	Y	Y			Y	Y			Y	Y		
Kentucky	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
Louisiana												
Maine												
Maryland	Y	Y	Y		Y	Y	Y		Y	Y	Y	
Massachusetts	0	0	0		0	0	0		0	0	0	
Michigan	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
Minnesota	N	N		N	N	N	N	N	N	N	N	N
Mississippi												
Missouri ^d												
Montana												
Nebraska ^{a,b,c}												
Nevada	0	0			0	0			0	0		
New Hampshire ^d												
New Jersey ^{a,b}	Y	Y	N									
New Mexico	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
New York ^{a,b,c}												
North Carolina												
North Dakota												
Ohio	0	0	0		0	0	0	0	0	0	0	0
Oklahoma ^d												
Oregon ^{a,b}	0	0	0	0								
Pennsylvania	0	0	0		0	0	0	0	0	0	0	0
Rhode Island	Y	Y	Y		Y	Y	Y		Y	Y	Y	
South Carolina	0	0			0	0	0		0	0	0	0
South Dakota												
Tennessee ^{a,b,c}												
Texas ^{a,b,c}												
Utah ^d												
Vermont												
Virginia	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y
Washington	Y	Y			0	Y			Y	Y		
West Virginia ^{a,b,c}												
Wisconsin ^{a,b,d}												
Wyoming												
Total meeting CMC threshold	24	24	17	6	21	21	17	11	21	21	17	12
Total submitting data	14	14	10	3	13	14	10	8	14	14	11	8
Total submitting usable data	13	13	9	2	11	12	9	7	13	13	10	7

(continued)

Table 4. (continued)

	2007 RX Encounter Data Are Usable				2008 RX Encounter Data Are Usable				2009 RX Encounter Data Are Usable			
	A	C	D	E	A	C	D	E	A	C	D	E
Of states meeting CMC threshold, percentage that submitted usable data	54%	54%	53%	33%	52%	57%	53%	64%	62%	62%	59%	58%

Source: MAX 2007, 2008, and 2009.

Note: Blank cells indicate the state’s enrollment in CMC did not meet the enrollment threshold for the analysis in that BOE category - A = Adult, C = Child, D = Disabled, E = Aged. 0 indicates the state met the enrollment threshold for the analysis but did not submit more than 200 encounter records in that BOE category. N indicates the state met the enrollment threshold for the analysis and submitted more than 200 encounter records in that BOE category but the data did not meet completeness and quality thresholds. Y indicates the state met the enrollment threshold for the analysis and submitted more than 200 encounter records in that BOE category, the data met completeness and quality thresholds, and are therefore usable.

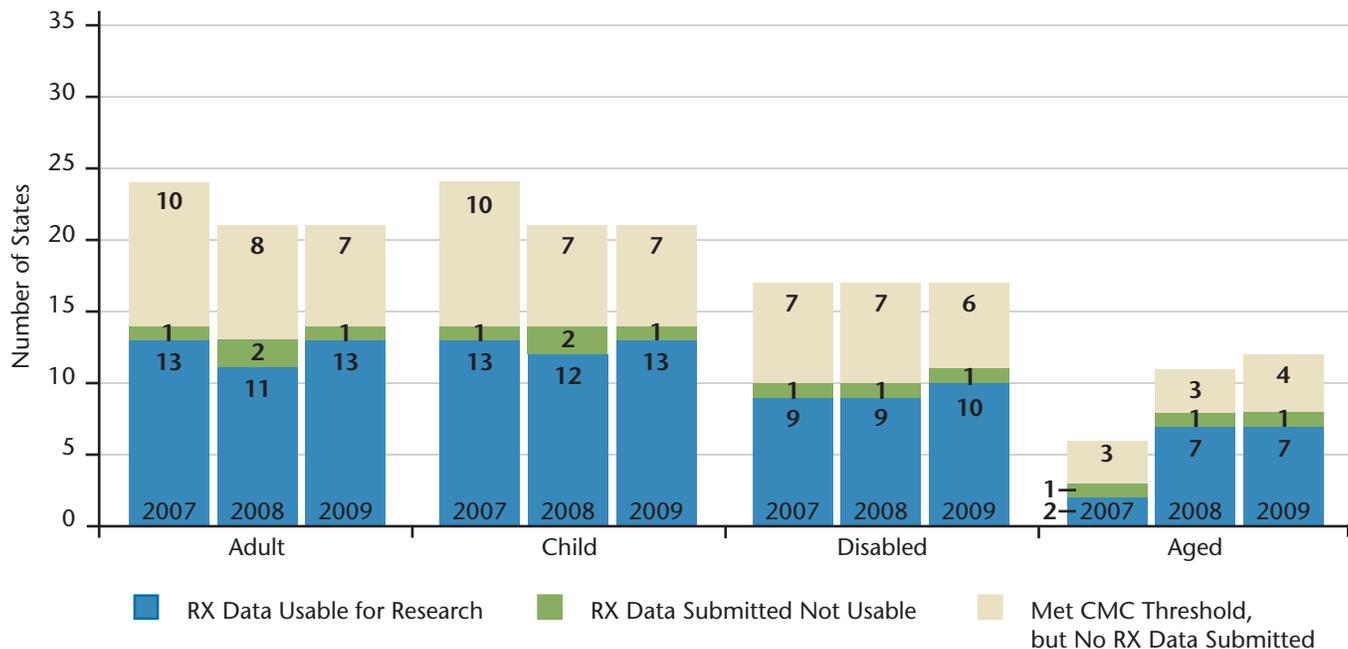
^a Connecticut, Delaware, Illinois, Iowa, Nebraska, New Jersey, New York, Oregon, Tennessee, Texas, West Virginia, and Wisconsin had comprehensive managed care but did not include prescription drugs in the HMO benefit package during 2008 (Bagchi et al. 2012).

^b Connecticut, Delaware, Illinois, Iowa, Nebraska, New Jersey, New York, Oregon, Tennessee, Texas, West Virginia, and Wisconsin had comprehensive managed care but did not include prescription drugs in their HMO benefit package during 2009 (Smith et al. 2009).

^c Delaware, Illinois, Iowa, Nebraska, New York, Tennessee, Texas, and West Virginia had comprehensive managed care but did not include prescription drugs in the HMO benefit package during 2007 (CMS 2011).

^d Hawaii, Idaho, Missouri, New Hampshire, Oklahoma, Utah, and Wisconsin were not included in the analysis because the corresponding MSIS files were unavailable or contained significant data problems in 2009.

Figure 3. Usability of MAX 2007–2009 RX Encounter Claims by Basis of Eligibility Category



Source: MAX 2007, 2008, and 2009.

assumption that FFS data provide a reasonable benchmark for judging the encounter data, which may not be the case, depending on the particular populations a state chooses to enroll in managed care. While populations receiving services through comprehensive managed care plans are likely to differ from FFS populations in important ways, metrics within two standard deviations were used to account for differences in utilization patterns that may reflect differences in populations or inherent differences between the FFS and managed care delivery systems.

The use of two standard deviations is consistent with confidence intervals typically used in statistical analyses, but for measures with a lot of variation in the FFS data, this sometimes resulted in a wide reference range. Additionally, extending the analysis of selected OT measures to other types of services in the OT file may be difficult, as it will depend on the type of service, whether the type of service is covered by managed care arrangements, and how consistently services are billed across states or within plan arrangements.

Conclusions

This brief assesses OT, IP, and RX encounter data included in the MAX 2007, 2008, and 2009 data files to shed light for researchers and policymakers on the availability and usability of the data for research. In many states the quality of the data improved over the years of analysis. The number of states that met the CMC enrollment threshold for the analysis was at its highest in 2009 in the OT and IP files, particularly within the disabled and aged populations, which reflects the growing trend to include more populations under managed care arrangements across states. Most states that have comprehensive managed care arrangements improved encounter reporting within the BOEs for selected OT, IP, and RX encounter data over the years of analysis. This analysis provides tools to assist researchers and policymakers in determining which states' encounter data to analyze. For those assessing utilization data across the mix of Medicaid delivery systems, the increase in reporting and usability of the encounter data makes including these data a more viable option than in the past.

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Endnotes

- ¹ A full-benefit Medicaid enrollee is defined here as an enrollee with a restricted benefits flag equal to one for any month of enrollment in the calendar year, meaning the individual is eligible for Medicaid or the Children's Health Insurance Program (CHIP) and entitled to the full scope of Medicaid or CHIP benefits.
- ² The Program of All-Inclusive Care for the Elderly (PACE) is also a comprehensive managed care arrangement, but the number of enrollees is very small (less than one percent of total enrollment in each state) and therefore they are not included in this analysis.
- ³ A forthcoming issue brief in this series analyzes the availability and usability of encounter data for prepaid behavioral health plans in MAX 2009.
- ⁴ Encounter claims in the LT file are clustered among very few states in MAX data. After imposing our analysis criteria, there were too few encounters for a cross-state analysis of LT data.
- ⁵ We excluded enrollees with dual eligibility—that is, eligible for both Medicaid and Medicare—because the volume of encounter data is lower than for those for non-dual enrollees, since many services they receive are covered by Medicare (Young et al. 2012).

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