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Availability and Usability of Behavioral Health Organization Encounter Data in MAX 2009

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Objective: To assess the availability, completeness, and quality of the Behavioral Health Organization (BHO) encounter data in MAX 2009.

Data Source: The Medicaid Analytic Extract (MAX) 2009.

Methods: We compared metrics of reporting completeness and quality for BHOs to similar metrics for six states that primarily cover MH and SA services on a FFS basis. For the IP file, number of encounters per 1,000 person months of enrollment were compared. In the OT file, we examined three completeness measures: the number of claims per PME, number of claims reported per BHO outpatient service user, and the number of OT claims per service user.

Principal Findings: Out of the 15 states reporting enrollment in BHO plans in MAX 2009, 10 reported complete capitation data. IP encounter data were available in four states (Arizona, Colorado, Florida, and Iowa), compared well to FFS ranges, and appear usable for research. OT data are available for five states, but our analysis suggests data are only sufficiently complete for analysis in Arizona and Iowa.

Conclusions: The initial assessment of the availability, completeness and quality of BHO encounter data in MAX 2009 suggests that only limited data are available and usable.

Keywords: behavioral health, managed care, MAX, Medicaid

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Mission Statement

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Introduction

Medicaid paid for 27 percent of all mental health (MH) and substance abuse (SA) services delivered in the United States in 2009, making it the largest single source of payment for these services (Substance Abuse and Mental Health Services Administration 2013). The Medicaid Analytic eXtract (MAX) files contain data on Medicaid enrollment and service utilization in all states and the District of Columbia and are enhanced to support research. In addition to claims for services provided through the fee-for-service (FFS) system, the MAX files include data from managed care organizations (MCOs) for services provided to beneficiaries in exchange for a flat capitation payment. These "encounter data" reflect services provided and diagnosis information, but not information on costs incurred by the Medicaid program. Encounter data are becoming more important in research on Medicaid MH and SA service provision because these services are increasingly being delivered through comprehensive MCOs that contract to provide the full range of medical services (also known as health maintenance organizations, or HMOs) and by those that contract to provide only behavioral health services (behavioral health organizations, or BHOs). Between 2004 and 2008, the percentage of Medicaid recipients enrolled in an MCO increased from 41 to 50 percent, and the percentage enrolled in a BHO increased from 13 to 22 percent (Borck *et al.,* 2012).

The availability, completeness, and quality of the MAX encounter data have been reviewed only recently and focused on encounter data reported by comprehensive MCOs (Dodd, Nysenbaum, & Zlatinov, 2012; Byrd, Dodd, Malsberger, & Zlatinov, 2012, Byrd & Dodd 2013). No studies have examined the availability and completeness

of BHO encounter data in MAX. This article is intended to fill this gap, providing researchers and policymakers with information on BHO encounter data in MAX so that they can make more informed decisions about whether to include these data in their analyses.

Methodology

This analysis is based on an examination of MAX 2009 data for BHO and FFS enrollees. To determine whether BHO encounter data can be used for research, we compared selected data quality metrics, calculated on each state's BHO encounter data, to similar metrics constructed using FFS claims in six states that primarily cover MH and SA services through FFS: Alabama, Alaska, Arkansas, Illinois, Louisiana, and Mississippi.[1] These states were selected based on having no BHOs, low MCO enrollment (less than 10%), and generally high quality FFS data.

To address variation in need across the Medicaid population, we conducted our analysis by eligibility group: adult, child, aged, and disabled. In addition to the expected variation in behavioral health service use by the Medicaid population, substantial variation exists across states in the behavioral health services covered by Medicaid. In addition, BHOs may contract with state Medicaid agencies to provide only a subset of the behavioral health services covered by the state. For example, a BHO might provide MH services, whereas SA treatment services might be delivered FFS. In addition, in states that use both comprehensive MCOs and BHOs to deliver services, both organizations may provide some level of coverage for MH and SA services. In these states, MCOs typically cover basic behavioral health services provided in primary care settings, whereas BHOs provide more specialized and complex services.[2] Finally, the services received by Medicaid enrollees with similar care needs may differ depending on whether they are delivered through a BHO or through FFS. This is because BHOs may help states control behavioral health care costs (Shirk, 2008) and, like all managed care plans, they may be expected to reduce utilization.

We identified 18 states reporting BHO enrollment in the 2009 Medicaid Managed Care Enrollment Report (Centers for Medicare & Medicaid Services, 2009b).[3] Two of these states, Hawaii and Wisconsin, did not have MAX files available at the time of this analysis. For the remaining 16 states, we examined whether these states had reported BHO enrollment via the MAX plan type variable for any Medicaid enrollees. Utah was the only state that did not report enrollment data and it was excluded from further analysis. Next, for the remaining 15 states, we examined capitation claim reporting.[4] We then examined encounter data reporting completeness in the MAX inpatient (IP) and other services (OT) files (Exhibit 1).

In the IP file, we calculated the number of claims per 1,000 person-months of enrollment (PME). In the OT file, we calculated the number of claims per PME, the percentage of BHO enrollees with any encounter records, and the number of claims per user of services. In states and files with sufficiently complete data, we analyzed data quality in the IP and OT files by evaluating the percentage

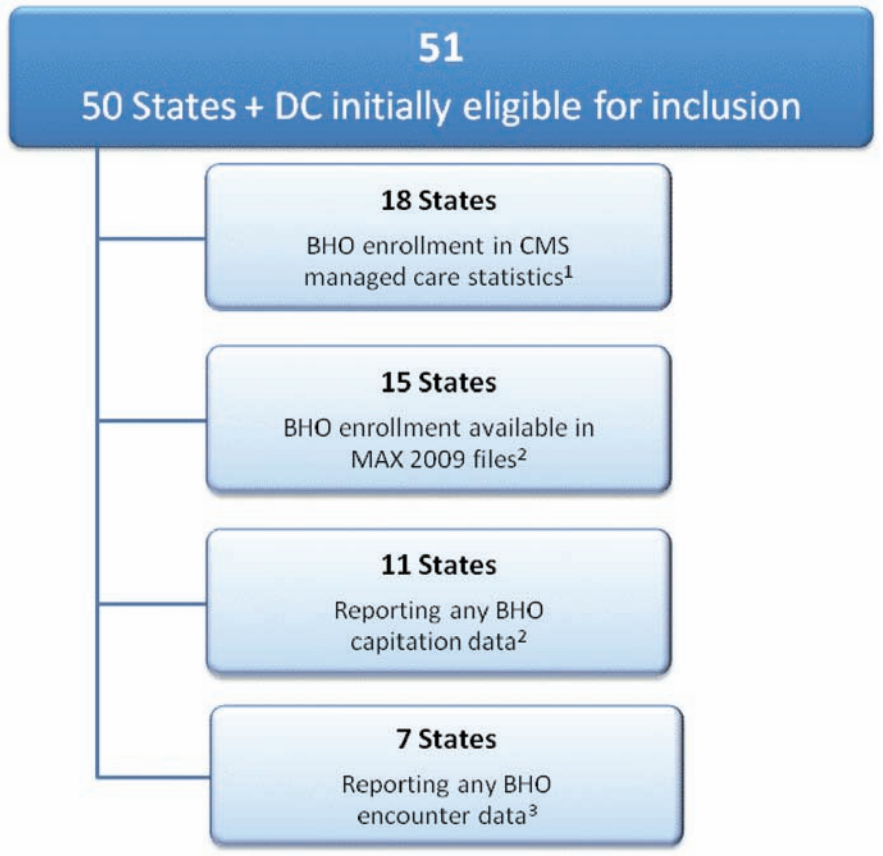
[1] In these states, we excluded from our analysis the small number of enrollees in comprehensive MCOs, including enrollees in PACE

[2] Encounter data for behavioral health services provided through MCOs was not analyzed.

[3] Georgia and New York reported some BHO data, but were not identified in the National Summary of State Medicaid Managed Care Programs as having a BHO in 2009. Georgia's Preadmission Screening and Annual Resident Review program plan became a FFS arrangement in 2007 and was phased out in 2009. New York reported a small number of BHO capitation claims. These data were considered a reporting error.

[4] We combined data for BHO plans, such as those in Kansas, that were reported under more than one plan identification number.

Exhibit 1. Overview of BHO Enrollment and Reporting, 2009



[1]CMS 2009 Medicaid Managed Care Enrollment Report.
[2]MAX 2009 PS file.
[3]MAX 2009 IP and OT files.
SOURCE: Mathematica analysis of the CMS 2009 Medicaid Managed Care Enrollment Report and MAX 2009 PS, IP, and OT files.

of claims that included a primary diagnosis, a principal procedure code, and a revenue code. In addition, in the IP file, we also assessed the average length of stay and the average number of diagnosis and revenue codes reported.

Using the 2009 National Summary of State Medicaid Managed Care Programs (Centers for Medicare & Medicaid Services, 2009a), we divided BHO plans into two groups: those covering only MH services (Colorado and Florida) and those covering both MH and SA services (Arizona, Iowa, and Kansas). We compared data completeness and quality metrics for the BHO plans to reference ranges created using data in the six FFS states. The ranges represent the minimum and maximum value of the completeness and quality metrics observed among FFS states in 2009. For example, the number of outpatient claims per enrolled month among the disabled ranged from 0.19 in Louisiana to 2.11 in Arkansas. When the encounter data metrics for each eligibility group were within or exceeded the range for the FFS states, we concluded that the BHO was likely to be reporting relatively complete data that could be used for research. Because of the variation in MH and SA service coverage across the states, exceeding the range observed for the FFS states likely indicates that a state's coverage exceeds that of the FFS states analyzed.

Results

Enrollment and Capitation Data Reporting

Exhibit 2 displays the level of BHO enrollment in the 15 states reporting enrollment. The share of beneficiaries enrolled varied widely, ranging from only 6 to 7 percent of beneficiaries enrolled per eligibility group in North Carolina to universal enrollment in Washington State. In some states, a low enrollment rate reflects a BHO operating in a limited area. For example, North Carolina's BHO operated in only 5 of 100 counties in 2009 (Centers for Medicare & Medicaid Services, 2009b).

Eleven states also reported capitation data (Exhibit 3). With the exception of Michigan, all states that had multiple plans and reported capitation data did so for every plan. We analyzed the ratio of capitation claims to PME at the plan level. A ratio close to one indicates that a capitation payment was reported for nearly every month that a beneficiary was enrolled in a managed care plan. Most BHO plans with both enrollment and capitation data had capitation claims per enrolled month ranging from 0.75 to 1.25, a reasonably good range.

Encounter Data Reporting

Seven states with both enrollment and capitation data also reported BHO encounter data: Arizona, Colorado, Florida, Iowa, Kansas, New Mexico, and North Carolina (Exhibit 3). North Carolina submitted very few encounter records, all in the OT file, and was dropped from the analysis. We also dropped New Mexico from the analysis due to substantial anomalous reporting; we do not recommend using its reported BHO encounter data.[5] Of the five remaining states, the volume of encounter data varied substantially. Arizona submitted over 9 million BHO records, whereas Kansas submitted about 3,000. All five states submitted encounter records in the OT file and

[5] Dental and primary care services appear to have been incorrectly assigned to the BHO plan.

Exhibit 2. Percentage of Medicaid Enrollees in BHOs by Basis of Eligibility, MAX 2009

	Adults	Children	Aged	Disabled
Arizona	90	92	61	76
Colorado	99	99	95	93
Florida	17	34	5	30
Iowa	62	100	3	98
Kansas	100	100	60	96
Massachusetts	41	35	2	35
Michigan	95	98	95	97
Nebraska	84	97	49	76
New Mexico	46	83	84	84
North Carolina	7	6	6	6
Oregon	96	95	88	92
Pennsylvania	97	97	55	96
Tennessee	100	100	100	100
Texas	9	13	6	11
Washington	100	100	100	100

SOURCE: Mathematica's analysis of MAX 2009, using the plan type variable.

Exhibit 3. Summary of Enrollment, Capitation, and Encounter Data Reporting in States with BHOs, MAX 2009

	Any Capitation Data Reported	All Plans Reporting Capitation Data	Any OT Encounter Data Reported	Any IP Encounter Data Reported	All Plans Reporting Encounter Data
Arizona	X	X	X	X	X
Colorado	X	X	X	X	—
Florida	X	X	X	X	—
Iowa	X	X	X	X	X
Kansas	X	X	X	—	X
Massachusetts	X	X	—	—	—
Michigan	X	—	—	—	—
Nebraska	—	—	—	—	—
New Mexico	X	X	X[a]	X[a]	X
North Carolina	X	X	X[b]	—	X
Oregon	—	—	—	—	—
Pennsylvania	X	X	—	—	—
Tennessee	X	X	—	—	—
Texas	—	—	—	—	—
Utah	—	—	—	—	—
Washington	—	—	—	—	—
Total States	**11**	**10**	**7**	**—**	**5**

NOTES: At least 10 claims, by type, had to be present in the MAX files for the state to count as having submitted data. Hawaii and Wisconsin were excluded from the analysis because, at the time of this analysis, their Medicaid Statistical Information System files (the source for MAX files) were unavailable or contained significant data problems.

[a] New Mexico submitted BHO encounter data in the IP and OT file, but we identified substantial anomalous reporting, including dental and primary care claims labeled as BHO claims. Thus, we excluded the state from our analysis.

[b] There are only 24 OT BHO encounter records for North Carolina.

SOURCE: Mathematica's analysis of the MAX 2009 PS, IP, and OT files.

four of them (Arizona, Colorado, Florida, and Iowa) submitted data in the IP file (Exhibit 3).

Encounter Data Completeness

Our analysis of encounter data completeness included only BHO plans that reported a substantial number of encounter records and had no significant reporting anomalies identified in the IP and the OT files. When we looked at the data at the plan level, we found that two plans out of six in Colorado reported no (or very few) encounter records despite substantial enrollment in the BHO plan. Thus, our analysis of data completeness in Colorado is limited to the four reporting plans.

BHOs in four states (Arizona, Colorado, Florida, and Iowa) reported IP encounter data (Exhibit 4). IP encounter records for adults, children, and the disabled were reported in all four of these states; IP encounter records for the aged were reported in Arizona and Florida. In all four states, the reported number of encounters per 1,000 PME was within or exceeded the range of the FFS states for all eligibility groups. We conclude that the IP encounter data for these four states appears to be complete enough for analysis among plans reporting encounter data. It should be noted that data for Florida was reported for each plan at the county level and two plans did not report data for every county. Similarly, in

Exhibit 4. Comparison of FFS and BHO IP Claims per Month Enrolled, MAX 2009

	Number of IP Claims per 1,000 Months Enrolled[a]			
State	**Disabled**	**Adults**	**Children**	**Aged**
BHOs Covering MH and SA	0.70–10.10	0.05–1.73	0.01–0.70	0.13–3.20
FFS reference range				
Arizona	2.73	1.02	0.09	0.14
Iowa	3.71	1.90	0.87	NA
BHOs Covering Only MH	0.51–6.14	0.04–1.20	0.01–0.70	0.10–3.15
FFS reference range				
Colorado	1.20	0.12	0.22	NA
Florida	0.55	0.67	0.30	3.10

NOTES: Each BHO plan had to have at least 10 capitation and 10 BHO encounter records to be included in this analysis. All plans were included for Arizona and Iowa. Two plans out of six in Colorado were excluded because they did not meet this threshold for encounter reporting. Florida reported data at the county level, which was rolled up to the plan level in this analysis. Some counties in plans 720029300 and 725000200 did not report any IP data.

[a] Because of the small number of IP claims per enrolled month, we scaled this metric by 1,000 for analysis.

NA = not available

SOURCE: Mathematica's analysis of MAX 2009, IP File.

Colorado IP encounter data was not reported for three of the four reporting plans.

In the OT file, we examined three completeness measures: the number of claims per PME, the percentage of enrollees with an OT encounter record, and the number of OT claims per service user (Exhibits 5 and 6). In Arizona, the number of claims per PME was within the FFS reference range for children and the aged, and exceeded this range for adults and the disabled. In addition, Arizona's data were within or slightly above the FFS ranges observed for the percentage of enrollees with an OT claim and the number of claims per user for all eligibility groups, with the exception of the percentage of enrollees with a claim for the aged group. It is possible that behavioral health service use in Arizona exceeded the level in the FFS states because Arizona is more generous in its coverage of behavioral health services. Arizona also covers an optional Medicaid eligibility group, childless adults who may, on average, have greater need for behavioral health services than adults typically enrolled in Medicaid. Overall, the OT file encounter data for Arizona appear to be well reported and usable for analysis.

Iowa's number of OT file claims per enrolled month fell within the range of the FFS states for all eligibility groups. Iowa's data for all eligibility groups were within or exceeded the FFS range for the percentage of enrollees with an OT encounter record and the number of claims per user. Based on these comparisons, we conclude that Iowa's data are complete enough for analysis.

Findings on the completeness of Florida's OT file data are mixed. The state's data did not fall within the FFS ranges for claims per month of enrollment for children and the disabled, but did fall within this range for adults and the aged. Florida's rates for the percentage of enrollees with an OT claim and the number of claims per user provide further evidence that data for children and the disabled may be incomplete, whereas data for Florida's adults and the aged are within the FFS range. The lower number of overall claims in Florida (reflected in the claims per PME measure) may be due to incomplete reporting in a subset of plans; claims per PME varied across the five

Exhibit 5. Comparison of FFS and BHO OT Claims per Month Enrolled, MAX 2009

	Disabled	Adults	Children	Adults
BHOs Covering MH and SA				
FFS reference range	0.19–2.11	0.02–0.22	0.05–0.44	0.04–0.34
Arizona	2.97	0.61	0.30	0.17
Iowa	0.40	0.19	0.12	0.11
Kansas[a]	0.00	0.00	0.00	0.00
BHOs Covering Only MH				
FFS reference range	0.18–1.85	0.01–0.13	0.05–0.41	0.02–0.28
Colorado	0.11	0.01	0.01	0.02
Florida	0.04	0.06	0.03	0.04

NOTES: Each BHO plan had to have at least 10 capitation and 10 BHO encounter records to be included in this analysis. All plans were included in the analysis for Arizona, Iowa, and Kansas. Two plans out of six in Colorado were excluded because they did not meet this threshold for encounter reporting.

[a] Kansas has two BHOs. One covers only MH services and the other covers only SA services. Both plans are part of the state's 1915 b/c Mental Health and Substance Abuse Services program and enroll the same members. Therefore, data for these two plans were combined for the completeness analysis. The state reported BHO encounter records for all eligibility groups, but the rate of OT claims per person-month of enrollment was less than .01 and was rounded to zero.

SOURCE: Mathematica's analysis of MAX 2009, OT File.

Exhibit 6. Percentage of Enrollees with an OT File Claim and the Number of Claims per Service User, MAX 2009

	Percentage of Enrollees with an OT BHO Claim				Number of OT Claims per Service User			
	Disabled	Adults	Children	Aged	Disabled	Adults	Children	Aged
BHOs Covering MH and SA								
FFS reference range	19.0–36.2	5.4–11.8	4.6–16.7	6.1–22.6	10.7–61.8	3.2–14.2	7.7–44.7	2.8–29.0
Arizona	38.8	13.1	6.9	4.7	80.0	38.6	39.5	36.9
Iowa	29.8	16.7	13.3	10.2	14.6	9.1	9.1	5.8
Kansas[a]	0.2	0.2	0.2	0.0	3.2	1.9	2.6	3.3
BHOs Covering Only MH								
FFS reference range	11.7–26.1	1.8–6.8	1.9–9.6	2.4–11.3	16.4–75.3	6.3–15.9	15.8–62.1	5.6–44.6
Colorado	8.4	1.7	1.8	1.5	12.9	4.6	5.8	11.5
Florida	3.1	3.6	3.9	3.1	12.9	9.9	4.9	9.1

NOTES: Each BHO plan had to have at least 10 capitation and 10 BHO encounter records to be included in this analysis. All plans were included in the analysis for Arizona, Iowa, and Kansas. Two plans out of six in Colorado were excluded because they did not meet this threshold for encounter reporting.

[a] Kansas has two BHOs. One covers only MH services and the other covers only SA services. Both plans are part of the state's 1915 b/c Mental Health and Substance Abuse Services program and enroll the same members. Therefore, data for these two plans were combined for the completeness analysis. The state reported BHO encounter records for all eligibility groups, but the percentage of enrollees with an OT claim was less than .01 and was rounded to zero for the aged.

SOURCE: Mathematica's analysis of MAX 2009, OT File.

BHO plans reporting encounter data in Florida (data not shown). Overall, OT data for Florida may be usable for research, but analysts should be cautious and may need to limit their analysis to plans with substantial OT file reporting.

The observed OT file utilization metrics for Kansas and Colorado were substantially below the range observed in the FFS states. We concluded that the behavioral health organization OT encounter data reported in these states are likely incomplete.

Encounter Data Quality

We reviewed the quality of BHO encounter data at the plan level in four states (Exhibit 7). Kansas was dropped due to incomplete data. For the IP file, we assessed encounter quality based on having at least one diagnosis code and one revenue code. We also looked at whether reported length of stay, number of diagnosis codes per claim, and number of revenue codes per claim were within the range of the FFS comparison states. Nearly all of the IP encounter records reported in Arizona, Colorado, and Florida had both a diagnosis code and a revenue code. However, only three of the five plans reporting in Florida, and only one of the four plans reporting in Colorado, reported 10 or more IP encounter records. In Iowa, all IP encounter records included a diagnosis code, but none included revenue codes.

Average length of stay varied widely across the plans, ranging from 4.9 to 15.5 days per stay. For plans covering both MH and SA services, Iowa's plan was within the reference range of 4.7–11.1 days and Arizona's plan was above it. For plans covering only MH services, three of the four plans fell within the reference range of 5.8–12.1 days. The variation in length of stay may be related to differences in severity of illness across the population enrolled, in the proportions of various populations enrolled (for example, the disabled versus children), and in the levels and types of care covered by a plan. Regardless, all but one plan was within or exceeded the expected range. For all the BHO states, the average number of diagnosis codes reported was within the range for the FFS states. In Arizona and Colorado, the average number of revenue codes reported was in the range for the FFS states. In Florida, among plans reporting IP encounter data, the number of revenue codes reported per claim exceeded the number reported in the FFS states. As noted previously, Iowa reported no revenue code information on its IP encounter data. We conclude that Arizona, Colorado, and Florida's IP encounter data is high quality while Iowa's data has some limitations.

Although Colorado's OT encounter data overall was judged likely incomplete, some of the four plans reporting data in the state may have a sufficient volume of data to be useful for analysis. Therefore, we included Colorado in the quality analysis while excluding Kansas, which only had one plan with very incomplete data. For the OT file, we reviewed whether at least one diagnosis code and one procedure code were listed on the encounter records. Among the FFS comparison states, nearly 100 percent of OT claims had at least one diagnosis code and at least one procedure code. In Arizona, Iowa, and Colorado, all OT file encounter records had at least one diagnosis and one procedure code. Florida reported encounter data for five plans, with the share of encounter records with a diagnosis code ranging from 80.3 to 84.3 percent across the plans. For all of Florida's plans, over 95 percent of encounter records had a procedure code. We conclude that all four states have fairly high quality OT encounter data.

Caveats

In our analysis, we used selected FFS-based metrics to make a preliminary judgment about the completeness and quality of BHO encounter data. These metrics were limited to the experience of

Exhibit 7. Quality of Encounter Data Coding, MAX 2009

	Percentage of OT Claims		Percentage of IP Claims		Average Among IP Claims		
	With Principal Diagnosis Code	With Principal Procedure Code	With Principal Diagnosis Code	With Initial Revenue Code	Length of Stay	Number of Diagnosis Codes	Number of Revenue Codes
				BHOs Covering MH and SA			
FFS reference range	97.9–100.0	99.0–100.0	100.0–100.0	77.2–100.0	4.7–11.1	1.7–6.7	2.9–5.8
Arizona	100.0	100.0	100.0	99.7	15.5	2.4	4.0
BHS (079999)							
Iowa	100.0	100.0	100.0	0.0	5.7	1.9	0.0
Merit Behavioral Care (0177394)							
				BHOs Covering Only MH			
FFS reference range	100.0–100.0	99.1–100.0	100.0–100.0	76.9–100.0	5.8–12.1	1.7–6.4	2.7–7.9
Colorado							
Behavioral Healthcare Inc. (04033007)	100.0	100.0	NA	NA	NA	NA	NA
Access Behavioral Care (04034062)	100.0	100.0	100.0	99.7	10.2	5.0	5.0
Colorado Health Partnerships (40358313)	100.0	100.0	NA	NA	NA	NA	NA
Foothills Behavioral Health (95122567)	100.0	100.0	NA	NA	NA	NA	NA
Florida[a]							
Lakeview Center (015030400)	80.3	95.7	NA	NA	NA	NA	NA
Magellan Behavioral (720029300)	82.8	96.8	100.0	100.0	6.7	3.9	8.9
Public Health Trust of Dade County (720030700)	82.0	96.7	100.0	100.0	5.8	2.8	8.8
NO. Florida Behavioral (720032300)	81.4	96.8	NA	NA	NA	NA	NA
Florida Health Partners (725000200)	84.0	96.8	100.0	100.0	4.9	3.2	8.7

NOTES: Each BHO plan had to have at least 10 BHO encounter records in the respective file to be included in this analysis. NA = not available. [a] Florida reported data at the county level, which was rolled up to the plan level in this analysis. Some counties in plans 720029300 and 725000200 did not report any IP data.

SOURCE: Mathematica's analysis of MAX 2009, IP, and OT Files.

only six FFS states—and FFS data are not without quality issues. Data users should be mindful of the fact that we conducted a preliminary analysis across plans, states, and populations. Although we focused on BHO plans covering a broad scope of services, we expect some variation to remain in the generosity of service coverage in the FFS states and BHO plans. In addition, we expect variation in the populations served. Therefore, we accepted a broad range of values for the metrics. A state's or plan's data may meet our broad ranges although data for specific subpopulations or services were not reported. Thus, more comprehensive and targeted validation of the data should be undertaken before conclusions are drawn about the suitability of BHO encounter data for a particular study.

Conclusions

The initial assessment of the availability, completeness, and quality of BHO encounter data in MAX 2009 suggest that only limited data are available and usable. Although 18 states operated BHOs in 2009, complete capitation data are currently available for only 10 states and encounter data are only available for four to five states, depending on the type of file (IP or OT). In the IP file, encounter data are available for four states (Arizona, Colorado, Florida, and Iowa); preliminary analysis indicates that these data are sufficiently complete for analysis (Exhibit 8). These data generally have high quality reporting in commonly analyzed fields, although data for Iowa are missing revenue codes (Exhibit 7). In the OT file, encounter data are available for five states, but our analysis suggests the data are only sufficiently complete for analysis in Arizona and Iowa. The findings for Florida were mixed. At the state level, the Florida encounter data do not appear complete; however, reporting varied by plan and may be sufficiently complete for a subset of plans.

Exhibit 8. Completeness and Quality of Encounter Data, MAX 2009

	IP File: Completeness	IP File: Quality	OT File: Completeness	OT File: Quality
Arizona	Data complete for analysis	Data met quality checks	Data complete for analysis	Data met quality checks
Colorado	Data complete for analysis for 4/6 of plans	Data met quality checks for 1/6 of plans	Data appear incomplete	Data met quality checks
Florida	Data complete for analysis for 3/5 of plans	Data met quality checks for 3/5 of plan	Data appear incomplete[a]	Data quality varied by BHO plan
Iowa	Data complete for analysis	Data are missing revenue codes	Data complete for analysis	Data met quality checks
Kansas[b]	No data submitted	No data submitted	Data appear incomplete	Data were not analyzed

NOTES: Each BHO plan had to have at least 10 capitation and BHO encounter records to be included in this analysis. All plans were included in the analysis for Arizona, Iowa, and Kansas. Two plans out of six in Colorado were excluded because they did not meet this threshold for encounter reporting, but they did have substantial reported enrollment.

[a] Data appear incomplete overall for the five plans reporting encounter data in Florida's OT file. Reported claims per person-month of enrollment varied substantially by plan. Reporting for a subset of plans may be complete.

[b] We did not analyze Kansas's data for quality because it reported no IP file data and very few OT file claims per enrolled month.

SOURCE: Mathematica's analysis of MAX 2009.

Although Medicaid is the largest source of payment for MH and SA services, and almost a quarter of Medicaid enrollees received care through a BHO plan, the MAX 2009 data are limited in terms of their ability to provide information on the services provided through BHOs. Reporting by states of accurate and complete encounter data into MSIS will be increasingly vital for behavioral health research—especially as the use of managed care in the Medicaid program is further expanded.

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