

Current Status of
Admission Records for Mental Health Consumers:
**Analysis of Behavioral Health Database
As a Representative Sample**

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Analysis of BH Database as a Representative Sample

Purpose

The purpose of this analysis is to investigate whether the admission records of individuals identified as mental health consumers in the BH database are representative of individuals for which mental health service claims were processed in SFY 2007.

Method and Rationale

A record in the BH database was identified as that of an MH consumer if the individual (as identified by his or her UCI) had received one or more mental health services (as identified by the MACSIS procedure code) during the 8+ years in which admission records have collected in the BH Module of the MACSIS billing system.

The 311,920 admission records for MH consumers in the BH database accumulated over the time period from July 1, 1999 through August 21, 2007. The total number of admission records found in the BH database is roughly equivalent to the 310,844 consumers served in SFY 2007, as reported in the MACSIS data mart. Analyses could be done to determine how typical a set of admission records for a given fiscal year are for that year's service population. However, for any given year between 1999 and 2007, it is estimated that less than 15% of all potential admission records are submitted for the population served that year. This yearly estimate of under-reporting is due to agencies that don't report at all and those that report for some, but not all consumers served. In addition, a certain number of mental health consumers enter the system of care and never drop out, suggesting that an admission made in 2003 would likely represent an individual continuing to receive services in 2006.

There is a much higher statistical probability that the accumulated set of 300,000+ admission records currently in the BH database is representative of a similar number of individuals for whom recent claims have been processed. For this reason, a more global approach was taken to testing hypotheses about the relationship between the individuals in the admissions and claims databases.

Analyses of Information

The following report details information about the distributions of:

- Admission records accumulated in the BH database by state fiscal year (SFY)

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- Agencies reporting claims during SFY 2007 that also have at least one admission record in the BH database
- Agencies reporting claims in SFY 2007 that do not have any admission records in the BH database
- Agencies that did not submit claims in SFY 2007, but sent admission records to the BH database prior to SFY 2007
- Agencies and consumers by type of agency certification
- Agencies and consumers by geographic classification
- Gender, race and age of consumers
- Age stratifications of consumers
- Consumers by age category and diagnostic classification

Summary of Findings

There are some variations in the distribution of records in the BH database compared to what might be expected if there were a matching record for claims in the MACSIS database, but these differences do not preclude using the BH database to infer information about consumers who received services in SFY 2007. The BH and SFY 2007 MACSIS databases are alike in terms of agency representation by demographic location. However, there is a big difference between the two databases on the variable of agency Certification type. The impact of this difference is mitigated by the use of claims records to define which consumers are “mental health” and which are viewed solely as receiving “drug and alcohol” services. It is worth noting that 13% of admissions records in the BH database represent individuals who received at least one mental health service from agencies with AOD-only Certification.

When compared to the SFY 2007 MACSIS database, there is a lower representation of Black and higher representation of White consumers in the BH database. This is probably due to a lower representation of records from urban boards and a higher representation of agencies from rural areas. Despite this difference in distribution, the statistical probability is high that the two databases are the same when it comes to consumers’ geographic location, age, gender, race, and diagnoses. The BH database can be used to infer information about consumers who received services in SFY 2007.

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Caveat

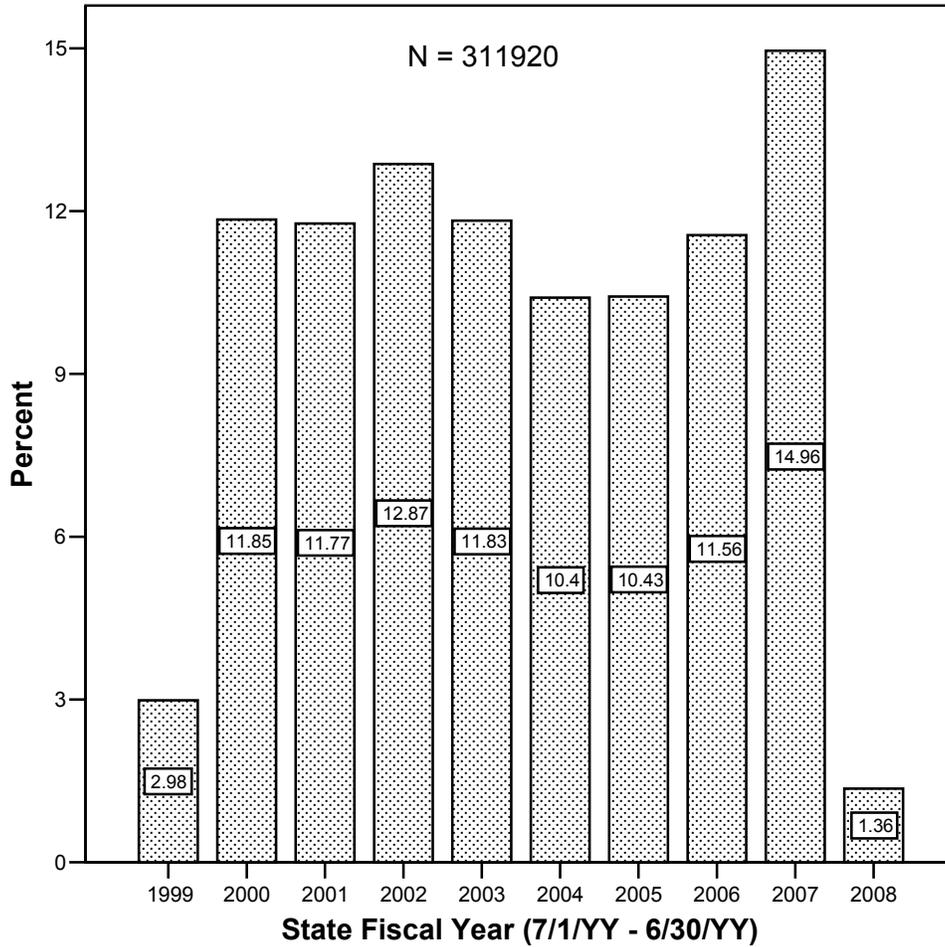
This analysis indicates that it would be valid to infer behavioral health information such as the incidence of trauma or other special population characteristics from the BH admissions database to the claims database for SFY 2007. This conclusion does not, however, say anything about the *reliability* of the information being inferred. It might be *valid* to infer that 25% of consumers served during SFY 2007 had some indication of trauma upon admission, but whether or not that 25% reflects an accurate estimate of reality is a separate question that cannot be answered by this study. This is because data may not have been entered reliably or updated with changes in the consumer's circumstances.

Recommendations

The present study was based on an assumption that existing business associate agreements (BAAs) between the Boards and the Department sufficiently cover the reality of admissions records as these data currently flow from providers to Boards and the Department of Alcohol and Drug Addiction Services. When the BAAs were drafted and signed over four years ago, three boards did not sign agreements for ODMH to permit analysis of BH data for oversight purposes. These refusals were based on the premise that the boards in question served only mental health consumers and did not use or have responsibility for BH admission records. The position taken at the time was that BH records from agencies located in the board area involved only ADA consumers served by separate boards. Since that time, all but four boards have become combined ADA and MH entities. In addition, dually certified agencies have not made sharp distinctions about admission records, as there is no field on the admission record to designate whether the individual's services are being funded by mental health or drug and alcohol service dollars. Before further analyses and data management strategies can be recommended for the BH database of mental health consumers, the Department will need to review the adequacy of existing business associate agreements with the Boards.

Overview of Behavioral Health Module Admission Records

Figure 1.
Percent of Unique Client Admission Records by State Fiscal Year



There are 311,920 unique client admission records in the Behavioral Health Database for consumers receiving at least one mental health service at any time between July 1, 1999 and August 21, 2007. Figure 1 shows the percentage of admission records received during each state fiscal year over that eight-year time period. Raw numbers for each fiscal year are provided in the sidebar to the right.

SFY	# of Admissions	% of Total Admissions
1999	9308	2.98
2000	36949	11.85
2001	36723	11.77
2002	40139	12.87
2003	36887	11.83
2004	32454	10.40
2005	32522	10.43
2006	36050	11.56
2007	46656	14.96
2008	4232	1.36
Total	311920	100

Agency Level Analyses

Research Questions: 1) How many agencies that billed for services in SFY 2007 do not have a record in the BH database? 2) How many agencies with records in the BH database billed for services in SFY 2007? 3) How many did not bill for services in SFY 2007?

Figure 2.
Overlap Between Agency Records in MACSIS SFY 2007 and BH Databases

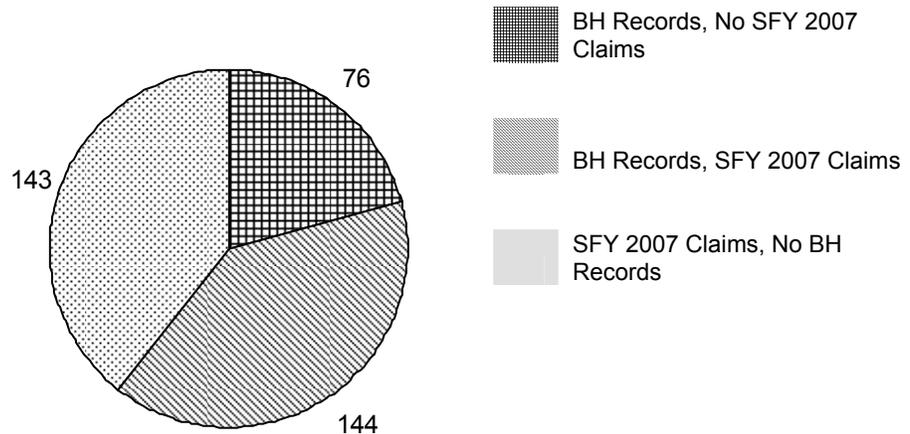


Figure 2 illustrates the number of agencies that reported at least one BH admission record and service claims in 2007. Also shown is the number of agencies that reported only claims in 2007 and no BH records. These are in contrast to those agencies that submitted BH records prior to 2007 but did not submit claims during that fiscal year. In 2007, there were 287 agencies that billed for MH services. Of those 287 agencies, 144 (about half) submitted at least one BH record.

There are 220 agencies with records in the BH database. Among these, 76 agencies did not bill for services in 2007 or 2006. These 76 agencies in BH database account for 43,438 unique client records—about 17% of all the records in the database.

A total of 311,920 unique consumer records are currently in the BH database. Of that total, there are 254,489 unique records from agencies (N = 144) that billed for services in 2007. A total of 310,844 consumers were served by Mental Health agencies in 2007. Under the authority governing the parameters of the present analysis, the analyst is not permitted to determine what percentage of the 254,489 admissions is associated with services provided in 2007.

Question 2. When agencies are organized by demographic group for their county of location, what is the proportional distribution of agencies among those that billed for claims versus those with records in the BH database?

Table 1.
Demographic Distribution of Agencies

County Demographic Group	# of Agencies with Claims in SFY 2007	% of Total	# of Agencies with BH Records	% of Total	# of Agencies with SFY 2007 Claims & BH Records	% of Total
Rural Appalachian	35	0.12	24	0.11	18	0.12
Rural Non Appalachian	40	0.14	42	0.20	31	0.22
Suburban	48	0.17	35	0.16	23	0.16
Metropolitan	163	0.57	113	0.53	72	0.50
Totals ¹	286	1.00	214	1.00	144	1.00

Table 1 shows the distribution of agencies in the MACSIS database for SFY 2007 and the BH database for SFY1999-2007. The proportion of vendor-providers in rural, non Appalachian counties is slightly larger in the BH database compared to the universe of all agencies that billed for services in SFY 2007. The proportion of agencies in metropolitan counties is slightly smaller in the BH database. Despite this variation, the Pearson's *r* correlation for these two demographic distributions indicated a 98.5% similarity at a statistical significance of < .01.

¹ In some cases, the county in which an agency is or was located could not be identified. This accounts for the difference in totals reported on Table 1 and those reported in the preceding section under Figure 1.

Analysis of BH Database as a Representative Sample

Table 2.
Demographic Distribution of Consumers

County Demographic Group	# of Consumers for Agencies with Claims in SFY 2007	% of Total	# of Consumers for Agencies with BH Records	% of Total
Rural Appalachian	41335	0.13	45996	0.15
Rural Non Appalachian	34995	0.11	78335	0.25
Suburban	46935	0.15	40392	0.13
Metropolitan	187579	0.60	146656	0.47
Totals ²	310844	1.00	311379	1.00

Table 2 shows the distributions of consumers in the MACSIS SFY 2007 and BH databases. There is a larger percentage of admissions records for consumers served by providers in rural, non Appalachian counties, and a lower percentage of records for those from urban counties. Despite this variation, the Pearson's *r* correlation for these two demographic distributions indicated a similarity of 91.7%, with statistical significance at < .05.

² In some cases, an agency's county of location could not be identified. This was particularly true in cases where the agency has not billed for services in several years. For that reason, 451 admission records in the BH database were dropped from the analysis.

Question 3: When agencies are categorized by certification type, what is the proportional distribution of agencies and unique records for consumers served by those agencies?

Table 3.
Distribution of Agencies by Agency Certification
In SFY 2007 MACSIS and BH Databases

	# Agencies with MH Claims in SFY 2007	% of total	# of Agencies with BH Records	% of total
MH-only Certification	181	0.64	84	0.41
AOD Certification	3	0.01	27	0.13
Dual Certification	100	0.35	95	0.46
Totals ³	284	1.00	206	1.00

Table 3 shows the distribution of agencies by Certification type in the SFY 2007 MACSIS and BH databases. There are a total of 284 agencies with MH-paid claims in the SFY 2007 MACSIS database, compared to 206 in the BH database. Only 41% of agencies in the BH database are Certified as MH-only agencies, compared to 64% in the SFY 2007 MACSIS database. MH-only Certified agencies are under-represented in the BH database compared to the SFY 2007 claims database. With 13% of agencies in the BH database identified as AOD-Certified, this group is over-represented compared to the proportion of AOD-Certified agencies that billed for an MH service in SFY 2007. The closest proportional representation between agencies in the BH database and those that billed for services in SFY 2007 is among the dually-Certified, with a respective representation of 46% and 35%. The correlation of the two databases is 79.3%, with no statistical significance. The two distributions of agencies on the Certification-type variable are not alike.

³ In some cases, the certification of an agency could not be verified, particularly in the case of agencies that have not billed for services in several years. Those cases were removed from the analysis, resulting in a lower total number of agencies for the BH Database than reported elsewhere in Figure 1 or Table 1.

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Table 4.
Distribution of Consumers by Agency Certification
In SFY 2007 MACSIS and BH Databases

	# Consumers with Claims in SFY 2007		# of Consumers with BH Records	
		% of total		% of total
MH-only Certification	160045	0.51	94297	0.30
AOD Certification	411	0.001	1453	0.01
Dual Certification	50388	0.48	214134	0.68
Totals ⁴	310844	1.00	309884	1.00

Table 4 shows the distribution of consumers by agency Certification category in the SFY 2007 MACSIS and BH databases. In the BH database, only 30% of consumers are served by MH-only agencies, compared to 51% in the SFY 2007 MACSIS database. While AOD-Certified agencies billed for approximately .001% of MH Consumers in SFY 2007, over time this may have accumulated such that .01 of MH consumers in the BH database were served by AOD-only agencies. Sixty-eight percent of MH consumers in the BH database were served by dually-certified agencies, compared to 48% of those in the SFY 2007 database.

The correlation of the two databases on is 79.3%, with no statistical significance. The two distributions of consumers on the agency Certification variable are not alike.

⁴ In some cases, the certification of an agency could not be verified, particularly in the case of agencies that have not billed for services in several years. Those cases were removed from the analysis, resulting in a lower total number of consumers for the BH Database than reported in Tables 5 and 7.

Consumer Level Analyses

Question 4. On the basis of gender, race, and age, how representative are consumers in the BH database versus consumers served in SFY 2007?

Table 5.
Percentage of Consumers by Gender, Age & Race
In 2007 MACSIS Compared to BH Database

# Consumers →	N=310844 % in 2007 MACSIS	N=311920 % in BH Database
<u>Gender</u>		
Male	47.8	48.4
Female	52.2	51.6
<u>Age</u>		
Under 18	36.0	36.0
18 or Older	64.0	64.0
<u>Race</u>		
Black	22.3	17.7
White	73.1	78.9
Other	3.0	1.0
Unknown	1.6	2.4

Table 5 shows the distribution of consumers by percent of sample totals and subtotals. In the gender, age, and race comparison, there were a total of 311,920 consumers in the BH database (for all years) and 310,844 consumers in the MACSIS database for SFY 2007. The largest difference in distribution occurs in the race category for percentage of Black versus White consumers in each database. This difference is probably due to the over-representation of rural-based agencies and the under-representation of urban-based agencies in the BH database.

The correlation of the two databases on the Gender and Age variables is 100%, with statistical significance at < .01. The Race variable is also highly correlated at 99.6%, with statistical significance at < .01.

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Table 6.
 Percentage of Consumers by Age Groups
 In BH Database Compared to 2007 MACSIS Database

# Under 18 →	N=110488	N=112313
	% in 2007 MACSIS	% in BH Database
0-5 yrs.	9.1	9.3
6-12 yrs.	46.4	42.4
13-17 yrs.	44.5	48.3

# 18 or Older →	N=208982	N=199607
	% in 2007 MACSIS	% in BH Database
18-24 yrs.	15.5	20.3
25-34 yrs.	22.7	25.9
35-44 yrs.	23.6	23.9
45-54 yrs.	23.3	17.6
55-64 yrs.	10.4	7.4
65+ yrs.	4.5	4.9

Table 6 shows the distribution of consumers by age strata within the “Below 18 years old” and “18 Years and Older.” The strata are roughly equivalent, with the greatest variation between the two databases occurring in the “transitional age” groupings of 13-17 years and 18-24 years.

The correlation of the two databases on the Under 18 Age variable is 98.3%, with statistical significance at < .05. The correlation of the two on the Over 18 Age variable is lower at 89.5%, with statistical significance at < .01.

Question 2. On the basis of diagnostic group, how representative are consumers in the BH database of consumers served in SFY 2007?

Table 7.
Percentage of Consumers by Age Category and Diagnostic Groupings
In BH Database Compared to SFY 2007 MACSIS Database

Total Consumers →	N=310844	N=311920
# Under 18 →	N=110488	N=112313
	% in 2007 MACSIS	% in BH Database
Att Deff & Disruptive BH		
DO	42.1	39.9
Adjustment DO	22.0	30.1
Mood DO	17.6	13.7
Anxiety DO	6.9	5.4
All Other Dx	6.1	2.3
All Oth ICA Dx	2.5	2.3
Developmental DO	1.7	1.1
Psychotic DO	0.6	0.3
Missing	0.5	4.9
# 18 and Above →	N=208982	N=199607
	% in 2007 MACSIS	% in BH Database
Mood DO	49.4	44.2
Psychotic DO	16.1	10.3
Adjustment DO	9.9	20.3
All Other Dx	9.5	5.5
Anxiety DO	8.7	8.7
Substance Abuse DO	4.3	6.4
Missing	1.2	3.3
Personality DO	0.9	1.3

Table 7 shows the distribution of consumers by diagnostic groups in the BH database and the SFY 2007 MACSIS database. The largest difference in diagnostic group distribution for both adults and children/adolescents involves the adjustment disorder category. This disparity may be explained by the stability of the original diagnosis in the BH admission record versus the last diagnosis assigned to a series of service claims.

The correlation of the two databases on the Under 18 Diagnoses variable is 96.8%, with statistical significance at < .05. The correlation of the two on the Over 18 Diagnoses variable is lower at 94.4%, with statistical significance at < .01.