

*Michigan Department
of Community Health*



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**2010–2011 COORDINATION OF
CARE/MEDICAL SERVICES
UTILIZATION FOCUSED STUDY
REPORT**

March 2012



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Purpose

In its efforts to develop a service system that supports consumers with behavioral health and mental health conditions, the Michigan Department of Community Health (MDCH) contracts with public mental health agencies to ensure that services provided to these individuals are coordinated. These contracts require that the coordination would include Medicaid Health Plans (MHPs) that provide primary health care and other agencies in the community that are serving the individual. Public mental health agencies are to share medical information with these providers and identify and integrate any primary health care needs into the consumer's person-centered plan. In addition, the public mental health agencies are to oversee their subcontracted providers to ensure compliance with the requirements and have monitoring tools and processes in place for evaluating the providers' performance related to the requirement.

In FY 2010–2011, MDCH contracted Health Services Advisory Group, Inc. (HSAG), to conduct a focused study to describe the level of medical care utilization among consumers with developmental disability (DD) and serious mental illness (SMI). The study addresses three major questions:

1. What are the general medical service utilization patterns among beneficiaries diagnosed with SMI or DD?
2. To what extent are the medical service utilization patterns different between frequent users and non-frequent users of inpatient and emergency services?
3. What are the two most prevalent chronic conditions among these populations? To what extent are the medical service utilization patterns among these members suggestive of some level of care/service coordination?

In addition, HSAG also conducted two supplemental analyses:

1. Level of agreement between disability conditions submitted in MDCH's Quality Improvement (QI) file and those identified using claims files
2. Impact of continuous MHP enrollment on service utilization patterns

Methods

HSAG used Medicaid eligibility, MHP enrollment, and claims and encounters files to determine the study population. Consumers included in this study were at least 21 years of age as of September 30, 2010; continuously enrolled in the same MHPs for at least 320 days from October 1, 2009, through September 30, 2010.; and had a qualifying SMI or DD diagnosis based on claims or encounters between October 1, 2008, and September 30, 2010.¹⁻¹ Approximately 30,000 (n=29,932)

¹⁻¹ ICD-9-CM Diagnosis codes 290–313 and 316 were used to identify individuals with serious mental illness and codes 314–315, 317–319 and codes for impairments resulting from general neurological conditions (e.g., cerebral palsy) were used to identify individuals with developmental disabilities from the claims/encounter data.

percent) had a diagnosis of serious mental illness (SMI) and another 9.3 percent had a developmental disability (DD). One in 11 PIHP consumers had both diagnoses. Slightly more than one third of the study population (35.0 percent) was cared for by the Detroit-Wayne PIHP while the remaining two-thirds were served by the other 17 PIHPs with percentages of PIHP consumers ranging from 2.1 percent to 7.0 percent.

Findings

To examine the medical service utilization patterns for each disability group (DD, SMI, and dual diagnoses), HSAG reported the percentage of consumers using preventive/ambulatory, emergency room, and inpatient admission services during FY 2010. HSAG also described the average service use (e.g., number of ambulatory or ER visits or inpatient length of stay) per user.

At least 85 percent of consumers across all disability groups used preventive/ambulatory services, with SMI consumers having four more ambulatory visits than DD and two more visits than dual diagnoses consumers. SMI consumers were also more likely to have ER visits (about six out of 10 versus about 30 percent for DD and 40 percent for dual diagnoses) and had a higher number of ER visits during the study period (3.78 versus 2.27 for DD and 3.16 for dual diagnoses).

The majority of inpatient admissions with diagnoses excluding disability conditions were admissions for physical health care. Although SMI consumers had a higher likelihood of inpatient admissions (17.3 percent, versus 7.6 percent for DD and 9.1 for dual diagnoses), their frequency of use (total number of admissions and inpatient length of stay) was not statistically significantly different than the other two groups.

Frequent inpatient/ER users for each disability group were defined based on their corresponding frequency distribution of inpatient/ER usage. Although frequent users of inpatient/emergency room services in general accounted for 6 to 7 percent of each population with a disability condition, consumers with DD and dual diagnoses had a higher proportion of inpatient/ER users who were considered as frequent users than those with SMI (19.6 percent and 14.8 percent, respectively, versus 9.1 percent). Frequent inpatient/ER users were significantly more likely to use preventive/ambulatory services and had significantly more visits than non-frequent users for all disability groups. Comparing across the three disability groups, frequent inpatient/ER users with SMI had a significantly lower likelihood of using ambulatory services but had significantly more visits than the other two disability groups' frequent users.

HSAG identified disorders of lipid metabolism and essential hypertension as the two most prevalent chronic conditions across all three disability groups. Comparing the service utilization profiles among consumers with these conditions, consumers with essential hypertension were likely to use costly services (i.e., ER and inpatient). Consumers without these conditions are in general less likely to use preventive/ambulatory, emergency room, or inpatient services than those with at least one of these conditions. Their frequency of service use for these services was also lower than those who had these conditions.

Although over 85 percent of PIHP consumers identified as using claims/encounters had the same disability categorization in the Quality Improvement (QI) file, there were wide variations of level of agreement across disability groups. Consumers identified as having dual diagnoses had the lowest agreement (37.6 percent) in the QI file. For these consumers, the reason for the majority of mismatched disability categories was because only the DD or the SMI diagnosis was identified for these individuals in the QI file. For SMI consumers, more than one-third of the mismatches occurred because the consumers were identified as having DD or dual diagnoses in the QI file.

In evaluating the impact of continuous MHP enrollment on service utilization, HSAG found that the only significant difference identified across all disability groups was noted in the likelihood of using preventive/ambulatory services. Consumers with continuous MHP enrollment were significantly more likely to use preventive/ambulatory services than those with continuous FFS enrollment regardless of whether the consumers had a diagnosis of DD, SMI, or DD/SMI. Without taking statistical significance into account, consumers with continuous MHP enrollment were more likely to use ambulatory or emergency room services and less likely to use inpatient services than those with at least some FFS enrollment. At the same time, this group also had a higher number of ER visits and inpatient admissions. While these differences in utilization patterns could be related to different demographic and clinical characteristics associated with each enrollment group and disability condition, these findings should be interpreted with caution. Since only Medicaid claims and encounters were used for this study, the service utilization pattern for consumers with at least some FFS enrollment who are dually eligible for Medicare and Medicaid might not be complete.

Introduction

Michigan Department of Community Health (MDCH) is Michigan's single State Medicaid agency, providing health care coverage to over two million Medicaid and Children's Health Insurance Program (CHIP) beneficiaries. Within MDCH, the Behavioral Health and Developmental Disabilities Administration administers programs and services for adults with serious mental illness (SMI), children with severe emotional disturbance (SED), individuals with developmental disability and individuals with a substance use disorder. Michigan's public mental health system serves more than 200,000 consumers. The substance abuse system during any given year serves approximately 30,000 consumers.

The MDCH Medical Services Administration is responsible for providing medical health care via contracts with the 14 Medicaid Health Plans (MHPs) and through Fee for Service (FFS) Medicaid. Treatment services for individuals who have mild to moderate mental illness and who do not meet the eligibility criteria for SMI or SED are also provided through the MHPs and FFS.

The contracts between the MDCH Behavioral Health and Developmental Disabilities Administration and the public mental health agencies²⁻¹ require that services to each consumer are coordinated with primary health care providers, including Medicaid Health Plans, and other agencies in the community that are serving the individual. Public mental health agencies are to share medical information with MHPs/primary medical care providers, such as results from assessments and services provided. Needs for services for primary health care are to be identified and integrated into the consumer's person-centered plan. In addition, the public mental health agencies are required to ensure that any subcontracted providers are compliant with the care coordination requirements and to monitor the providers' performance related to the requirement. The agencies are to have agreements for care coordination with the MHPs, other public mental health agencies, and community-based organizations such as local health departments and Substance Abuse Coordinating Agencies.

The Mental Health and Substance Abuse Administration has several processes in place to evaluate compliance with standards and to provide guidance and feedback. The processes include an on-site review of Prepaid Inpatient Health Plans (PIHPs) coordinated by the Division of Program Development, Consultation and Contracts; the annual External Quality Review compliance monitoring review process conducted by HSAG; an assessment of the PIHPs' annual performance improvement project (PIP) reports; and the Policy and Performance Guidelines process.

The Michigan Department of Community Health (MDCH) contracted with Health Services Advisory Group, Inc. (HSAG), to conduct a focused study using data for consumers diagnosed with a serious mental illness (SMI) or developmental disability (DD). This focused study provides preliminary findings on patterns of medical service utilization among these populations.

²⁻¹ Medicaid Managed Specialty Supports and Services Concurrent 1915 (b)/(c) Waiver Program FY 09 Attachment P.6.4.5.1.A. Available at: <http://cmhamm.org/P.6.4.5.1A%20CMHSP-PIHP%20Model%20Agreement.pdf>. Accessed on: January 5, 2011.

Focused Study Questions

The FY 2010-2011 Coordination of Care/Medical Services Utilization focused study addressed the following questions:

1. What are the general medical service utilization patterns among consumers diagnosed with SMI or DD?
2. To what extent are the medical service utilization patterns different between frequent users and non-frequent users of inpatient and emergency services?
3. What are the two most prevalent chronic conditions among these populations? To what extent are the medical service utilization patterns among these consumers suggestive of some level of care/service coordination?

All findings are reported separately for the SMI-only consumers, the DD-only consumers, and the SMI-and-DD dually diagnosed consumers. In addition to examining these questions at the statewide level, HSAG also compared service use among the 18 participating PIHPs. The 18 PIHPs and their abbreviated names to be used in all tables and graphs are listed in Table 2-1.

Table 2-1—PIHP Full Names and Abbreviated Names in the Report	
PIHP	Abbreviated Names
Access Alliance of Michigan	Access Alliance
CMH Affiliation of Mid-Michigan	CMHAMM
CMH for Central Michigan	CMH Central
CMH Partnership of Southeastern Michigan	CMHPSM
Detroit-Wayne County of CMH Agency	Detroit-Wayne
Genesee County CMH	Genesee
Lakeshore Behavioral Health Alliance	Lakeshore
LifeWays	LifeWays
Macomb County CMH Services	Macomb
network180	network180
NorthCare	NorthCare
Northern Affiliation	Northern Affiliation
Northwest CMH Affiliation	Northwest CMH
Oakland County CMH Authority	Oakland
Saginaw County CMH Authority	Saginaw
Southwest Affiliation	Southwest Affiliation
Thumb Alliance PIHP	Thumb Alliance
Venture Behavioral Health	Venture

Methodology

Study Population and Data Source

The study population for the current study consisted of all Medicaid beneficiaries who meet the following eligibility criteria:

- ◆ Age 21 years and older as of September 30, 2010
- ◆ Continuously enrolled in the same MHPs for at least 320 days from October 1, 2009, through September 30, 2010.²⁻²
- ◆ At least one PIHP claim or encounter with a date of service between October 1, 2008, and September 30, 2010, with a qualifying SMI or DD diagnosis.²⁻³

Prior to the study, HSAG reviewed several data layout documents supplied by MDCH and prepared a data requirement document for data extraction. The following data files were extracted by MDCH and used for the current focused study:

- ◆ MHP AuthFY10 (MHP Enrollment File)
- ◆ FY09 Eligibility and FY10 Eligibility (Medicaid Eligibility Files)
- ◆ FY09a_MI and FY09a_SA (FY09 PIHP claims files)²⁻⁴
- ◆ MI2010_DATA (FY10 PIHP claims file)
- ◆ QI Records_LinkedtoEncBeneIDs (Quality Improvement file)
- ◆ Enc_Qi_CompdataFY10 (MHP claims/encounters file)
- ◆ FY 2010 FFS claims file

Analytic Approach

Upon receiving the requested files, HSAG conducted a preliminary file review to ensure that the data used for this focused study were logical and valid. Throughout this report, service utilization findings associated with consumers with one of three disability conditions (SMI, DD, and dual diagnoses) are reported. To answer the first question (i.e., What are the general medical service utilization patterns among consumers diagnosed with SMI or DD?), HSAG described the proportion of PIHP consumers using the following types of medical service use. Appendix A contains several tables with lists of codes used for identifying each service type.²⁻⁵

²⁻² There are different approaches to defining continuous enrollment, but the term is most commonly defined as having 12 months of enrollment with no more than one gap of a month or up to 45 days. For this study, HSAG took a less stringent approach to include all individuals with continuous enrollment for at least 320 days.

²⁻³ ICD-9-CM Diagnosis codes 290–316 except 314 and 315 were used to identify individuals with serious mental illness and codes 314–315 and 317–319 to identify individuals with developmental disabilities from the claims/encounter data. An individual was identified as belonging to a particular disability group when he or she had at least one claim with the specified diagnosis code during the review period. Claims beyond the measurement period were used in identifying members with chronic conditions for the third study question.

²⁻⁴ Please note that only FY09a and FY10 PIHP files were used. The FY09a_SA file, although sent by MDCH, contained PIHP claims for substance abuse and was not used for the current study.

²⁻⁵ For emergency room and inpatient admission, only those services with principal diagnoses not related to the specific disability types were included in the analyses.

- ◆ Preventive/ambulatory visit in an outpatient setting
- ◆ Emergency room (ER) visits
- ◆ Inpatient admission for physical health care
- ◆ Inpatient admission for mental health care

HSAG calculated the percentage of consumers with SMI and/or DD conditions who used each of these services during the measurement period (i.e., October 1, 2009–September 30, 2010). Only services submitted by the same MHP were included in this calculation.²⁻⁶ In addition to describing the general utilization patterns across these services, HSAG also identified the most prevalent ICD-9-CM diagnosis codes associated with each of these services for the three disability types.

To answer the second question (i.e., To what extent are the medical service utilization patterns different between frequent users and non-frequent users of inpatient and emergency services?), HSAG used frequency distribution of the sum of inpatient admissions and ER visits to determine the appropriate cut-off thresholds for defining frequent users for each disability group. Service utilization patterns on preventive/ambulatory visits were made between frequent inpatient/ER users and non-frequent users for the three disability groups.

To answer the third set of questions (i.e., What are the two most prevalent chronic conditions among these populations? To what extent are the medical service utilization patterns among these members suggestive of some level of care/service coordination?), HSAG used two common condition classification algorithms to identify two of the most chronic conditions for the three disability groups. HSAG reported the prevalence of PIHP consumers having these conditions and compared the service utilization patterns among consumers with none, one, or both of these conditions.

Supplemental Analyses

PIHPs are required to submit quality improvement data (i.e., a QI file) to MDCH monthly to report who from its entire service area/affiliation had received a service from the PIHP.²⁻⁷ One of the submission requirements is to provide disability designation information for those consumers included in the file. As part of the supplemental analyses, MDCH requested HSAG to evaluate the agreement of the information from these disability designation fields using the criteria of identifying SMI, DD, and dual diagnoses for the current study. HSAG first used the disability designation of each PIHP consumer from the main study and extracted the disability designation information from the QI file. Level of agreement was reported for each disability type, and discrepancies noted for each disability group were evaluated.

A second supplemental analysis focused on evaluating the extent to which consumers with continuous MHP enrollment had different service utilization patterns than those with continuous FFS eligibility or those who did not have continuous FFS or MHP enrollment during the

²⁻⁶ In general, consumers who were enrolled for at least 320 days were more likely to have a full-year enrollment with the MHP. Since the study focused on service utilization and extent of coordination by the MHP, services that were not provided by the MHP or FFS providers in which the consumers were continuously enrolled were not included in the study.

²⁻⁷ PIHP Reporting Requirements for Medicaid Specialty Supports and Services Beneficiaries. Effective 10/1/2008.

measurement period. HSAG anticipated that consumers with continuous MHP enrollment should have more coordinated care provided by the MHP, evidenced by a larger proportion of consumers using preventive services and a smaller proportion using emergency room or inpatient services. Alternatively, a consumer with no MHP enrollment or enrollment in both FFS and MHPs was likely to have discontinuity of care, characterized by higher emergency room and inpatient service use and a lower number of preventive/ambulatory visits.

Use of Confidence Interval in Statistical Comparison

Confidence intervals are also presented with most of the rates published in this report. For this report, confidence interval is defined as a statistical determination based on 95 percent confidence that, since the study population used in this report represents one of the many populations across all years, the true population rate is likely to fall within the range as denoted by the lower and upper confidence levels surrounding the reported rate. Confidence intervals from two reported rates could be used for statistical comparison (e.g., comparing the reported preventive/ambulatory visit rates between frequent inpatient/ER users and infrequent users). A statistically significant finding is established when the confidence intervals from these two rates are not overlapping.

3. Findings and Conclusions

This section begins with a brief description of the population identified in this study. Findings related to service utilization patterns are organized by study questions listed in the Overview section. Results are presented primarily by disability group (i.e., developmental disability (DD), serious mental illness (SMI), and dual diagnoses) to illustrate how the different types of services (ambulatory, emergency room, and inpatient services) were used by consumers with a particular disability condition. Where applicable, comparisons across disability groups are also included.

PIHP Consumers by Disability and by PIHP

Approximately 30,000 (n=29,932) PIHP consumers in FY 2010 were included in the focused study. These individuals:

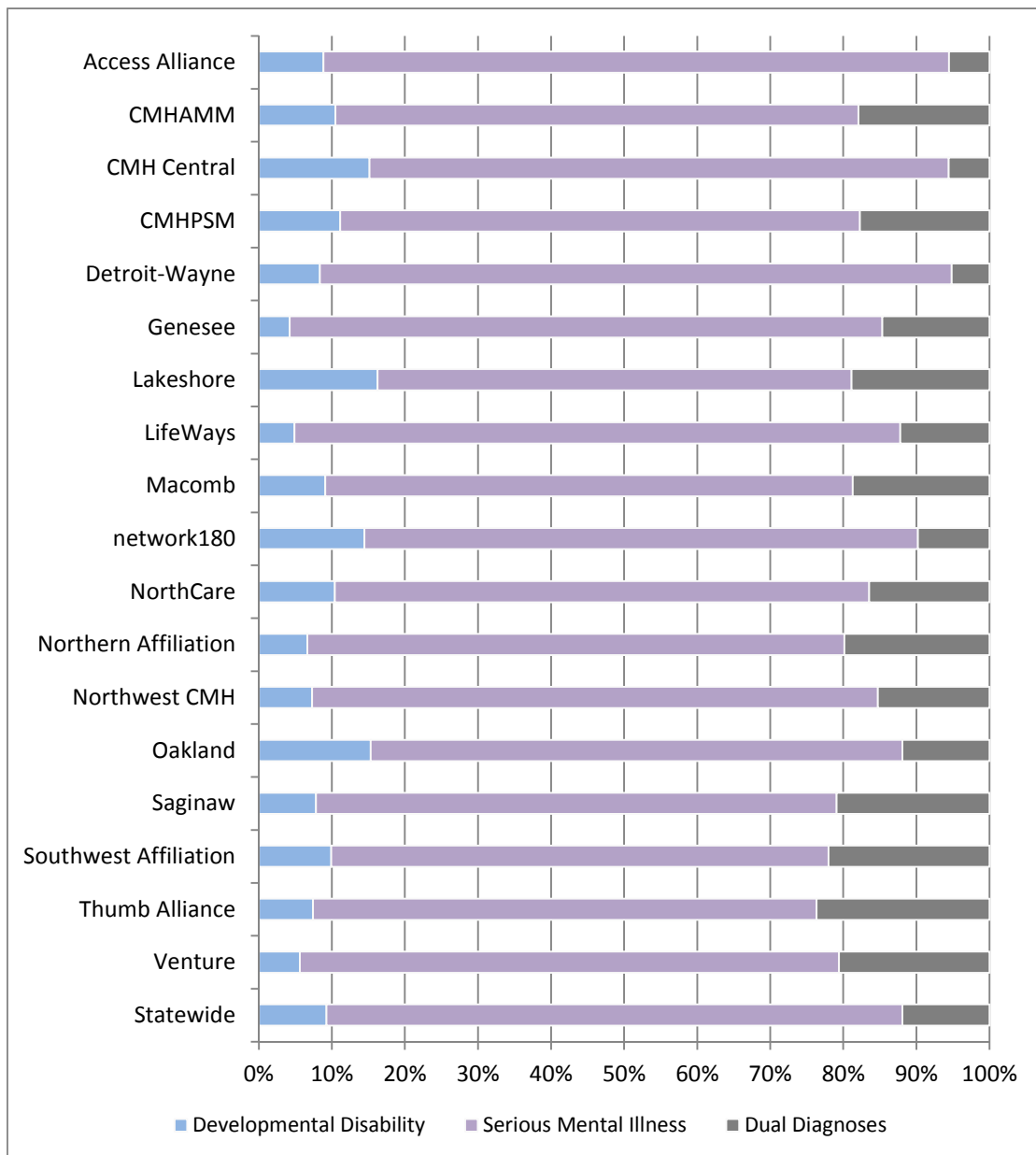
- ◆ Were at least 21 years old as of September 30, 2010.
- ◆ Were enrolled in the same MHPs for at least 320 days from October 1, 2009, to September 30, 2010.
- ◆ Had a qualifying SMI or DD diagnosis identified in PIHP claims between October 1, 2008, and September 30, 2010.
- ◆ Had at least one PIHP claim from October 1, 2009, to September 30, 2010.

Table 3-1 presents the frequency distribution of consumers by PIHP. Slightly more than one third of the study population (35.0 percent) were cared for the Detroit-Wayne PIHP while the remaining two-thirds were serviced by the remaining 17 PIHPs with percentages of PIHP consumers ranging from 2.1 percent to 7.0 percent.

Table 3-1—Frequency Distribution of Consumers by PIHP		
PIHP	Number of Consumers	Percent
Access Alliance	1,377	4.6
CMHAMM	1,261	4.2
CMH Central	878	2.9
CMHPSM	1,077	3.6
Detroit-Wayne	10,479	35.0
Genesee	1,952	6.5
Lakeshore	837	2.8
LifeWays	779	2.6
Macomb	1,433	4.8
network180	1,307	4.4
NorthCare	741	2.5
Northern Affiliation	619	2.1
Northwest CMH	714	2.4
Oakland	2,082	7.0
Saginaw	641	2.1
Southwest Affiliation	1,163	3.9
Thumb Alliance	849	2.8
Venture	1,743	5.8
Statewide	29,932	100.0

Of these 29,932 consumers, the majority (78.8 percent) had a diagnosis of serious mental illness (SMI) and another 9.3 percent had a diagnosis of developmental disability (DD). Nearly 12 percent of PIHP consumers had both diagnoses. The average age for consumers with DD was 32.9 years, compared to 41.8 years for consumers with SMI and 34.3 years for those with dual diagnoses. Figure 3-1 shows that the percentage of PIHP consumers by disability type varied by PIHP. PIHP-specific proportions of consumers with DD ranged from 4.2 percent to 16.2 percent, similar to those consumers with dual diagnoses, which ranged from 5.2 percent to 23.7 percent. Conversely, PIHP-specific proportions of consumers with SMI ranged from 64.9 percent to 86.5 percent.

Figure 3-1—Percentage of PIHP Consumers by PIHP and Disability Type

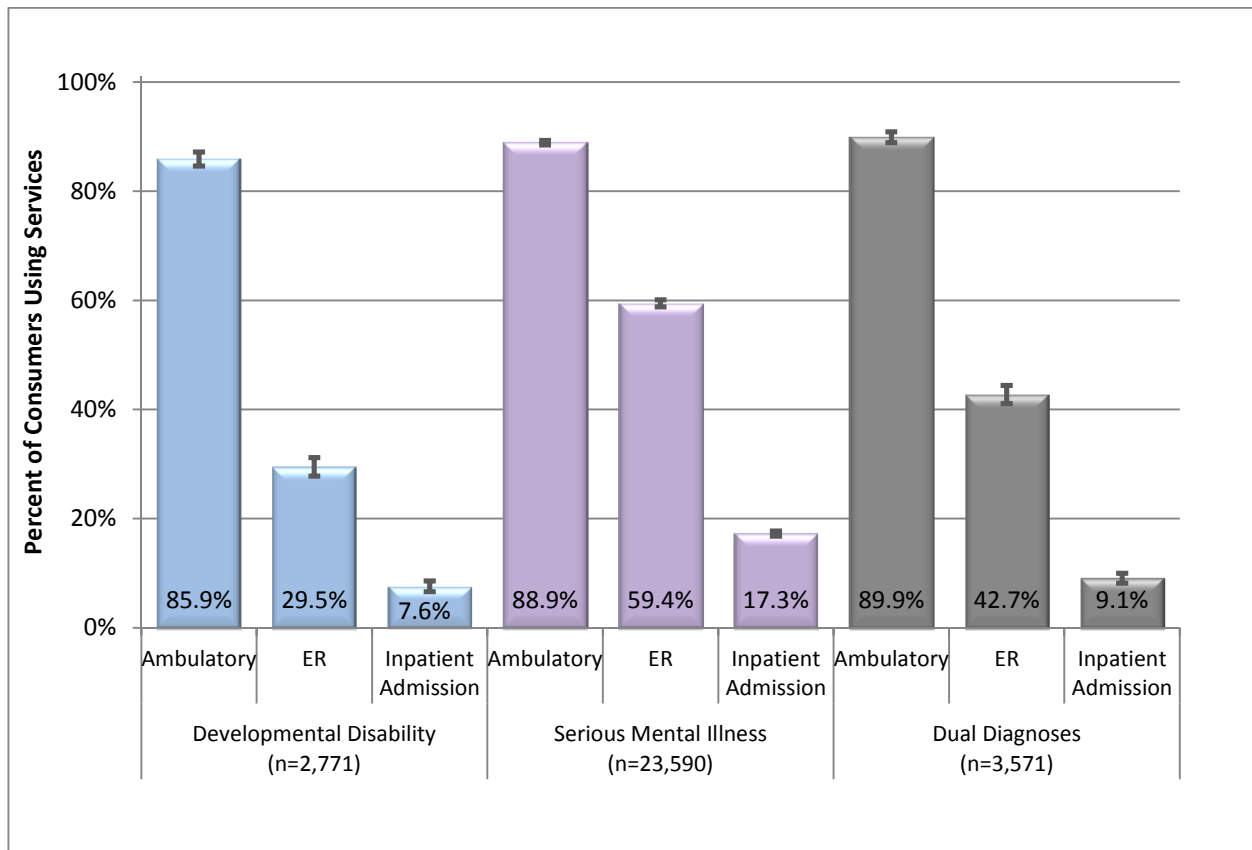


General Medical Service Utilization Patterns

Service Utilization Profiles

Figure 3-2 presents the statewide utilization patterns associated with preventive/ambulatory services, emergency room (ER) services, and inpatient admission for the three disability groups during FY 2010. PIHP-specific rates and frequency of service use for each disability group can be found in Appendix B.

Figure 3-2—Statewide Percentage of Consumers Using Selected Services by Disability Type

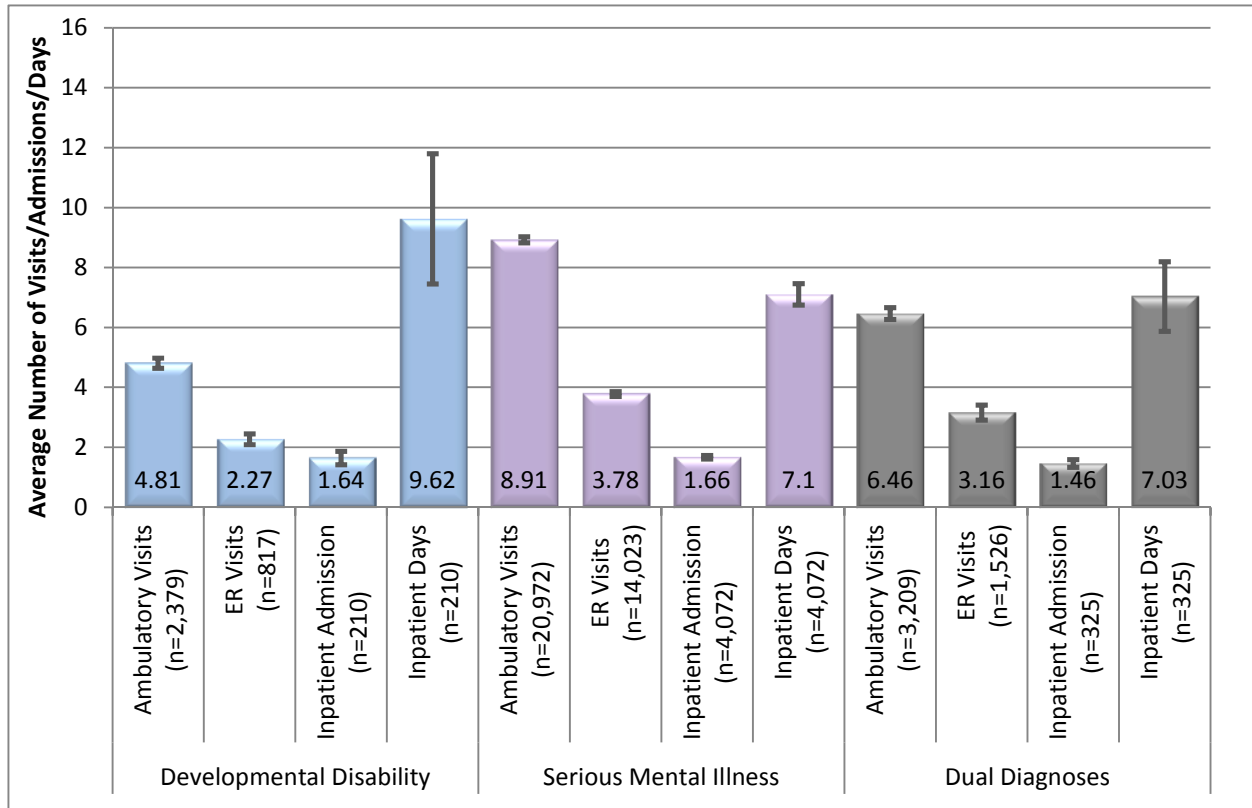


Across all the disability groups, at least 85 percent of PIHP consumers used ambulatory/preventive services, at least 25 percent used emergency room services, and at least seven percent used inpatient services. PIHP consumers with DD were significantly less likely to use any services compared to those with SMI or dual diagnoses. PIHP consumers with SMI were significantly more likely to use emergency room and inpatient services than those with DD and dual diagnoses. Those with dual diagnoses were more significantly likely to use ambulatory/preventive services than consumers with DD.³⁻¹

³⁻¹ Throughout the section, the word ‘significantly’ is used exclusively to describe those relationships achieving statistical significance where the confidence interval of one group does not overlap with the other group in comparison.

Figure 3-3 displays the average number of ambulatory visits, ER visits, inpatient admissions, and length of inpatient stays per user for all disability groups.³⁻² In general, consumers with DD had significantly fewer preventive/ambulatory visits and ER visits than those with SMI and dual diagnoses. Consumers with SMI had the highest average number of ambulatory visits and ER visits among the three disability groups. There were no statistically significant differences across the three disability groups in terms of number of inpatient admission and inpatient length of stay.

Figure 3-3—Statewide Utilization Statistics for Selected Service Types by Disability Type



To summarize, the three disability groups had different service utilization profiles. Not only were the consumers with SMI significantly more likely to use emergency room and inpatient services, but their usage of these services were also significantly higher than the other two disability groups. Although statistically significant differences in the likelihood of ambulatory/preventive service use were identified only between consumers with SMI and those with DD, they had a significantly higher average number of visits than the other two disability groups.

³⁻² The average number of visits or admissions per user was calculated by using the total sum of visits/admissions divided by the total number of users for a particular service type. In general, since not all consumers used a service, this number should be higher than the average number per consumer, which used the total number of consumers as the denominator.

Clinical Reasons for Service Use

This section presents top diagnoses with different service types. Table 3-2 displays the top 10 diagnoses associated with preventive/ambulatory visits for the three disability groups. These diagnoses accounted for 36.8 percent, 35.2 percent, and 31.5 percent of visits by consumers with DD, SMI, and dual diagnoses, respectively. Within the top six diagnoses, four diagnoses were identified as common conditions across all three disability groups (i.e., General medical examination, Epilepsy and recurrent seizures, Essential hypertension, and Diabetes mellitus). These conditions accounted for at least 15 percent of all ambulatory visits made by consumers with these disability conditions.

Developmental Disability	Serious Mental Illness	Dual Diagnoses
V70: General medical examination (9.22%)	724: Other and unspecified disorders of back (8.12%)	V70: General medical examination (5.96%)
780: General symptoms (5.95%)	401: Essential hypertension (6.00%)	250: Diabetes mellitus (4.48%)
345: Epilepsy and recurrent seizures (5.05%)	250: Diabetes mellitus (5.27%)	780: General symptoms (4.19%)
401: Essential hypertension (3.60%)	719: Other and unspecified disorders of joint (2.92%)	401: Essential hypertension (3.55%)
343: Infantile cerebral palsy (3.40%)	V70: General medical examination (2.73%)	724: Other and unspecified disorders of back (3.11%)
250: Diabetes mellitus (2.83%)	780: General symptoms (2.35%)	345: Epilepsy and recurrent seizures (2.86%)
465: Acute upper respiratory infections of multiple or unspecified sites (1.91%)	786: Symptoms involving respiratory system and other chest symptoms (2.22%)	719: Other and unspecified disorders of joint (2.45%)
477: Allergic rhinitis (1.68%)	729: Other disorders of soft tissues (2.04%)	786: Symptoms involving respiratory system and other chest symptoms (1.70%)
272: Disorders of lipid metabolism (1.64%)	789: Other symptoms involving abdomen and pelvis (1.83%)	V72: Special investigations and examinations (1.66%)
V72: Special investigations and examinations (1.56%)	V72: Special investigations and examinations (1.70%)	272: Disorders of lipid metabolism (1.53%)

Table 3-3 shows the top 10 diagnoses associated with emergency room visits for the three disability groups. These diagnoses accounted for 30 percent, 33.4 percent, and 34.1 percent of emergency room visits for consumers with DD, SMI, and dual diagnoses, respectively. Three diagnoses accounted for at least 10 percent of the visits in each disability group. These diagnoses were:

- ◆ General symptoms (780)
- ◆ Symptoms involving respiratory system and other chest symptoms (786)
- ◆ Other symptoms involving abdomen and pelvis (789)

Table 3-3—Top Diagnoses Based on Emergency Room Visits by Disability Type		
Developmental Disability	Serious Mental Illness	Dual Diagnoses
345: Epilepsy and recurrent seizures (6.42%)	786: Symptoms involving respiratory system and other chest symptoms (6.70%)	789: Other symptoms involving abdomen and pelvis (6.05%)
780: General symptoms (4.48%)	789: Other symptoms involving abdomen and pelvis (5.72%)	786: Symptoms involving respiratory system and other chest symptoms (5.72%)
789: Other symptoms involving abdomen and pelvis (3.67%)	724: Other and unspecified disorders of back (4.03%)	780: General symptoms (5.18%)
786: Symptoms involving respiratory system and other chest symptoms (3.35%)	780: General symptoms (3.24%)	345: Epilepsy and recurrent seizures (4.19%)
873: Other open wound of head (2.43%)	784: Symptoms involving head and neck (2.84%)	724: Other and unspecified disorders of back (2.30%)
599: Other disorders of urethra and urinary tract (2.43%)	338: Pain, not elsewhere classified (2.57%)	682: Other cellulitis and abscess (2.22%)
493: Asthma (1.89%)	682: Other cellulitis and abscess (2.15%)	599: Other disorders of urethra and urinary tract (2.20%)
787: Symptoms involving digestive system (1.83%)	346: Migraine (2.13%)	784: Symptoms involving head and neck (2.13%)
486: Pneumonia, organism unspecified (1.78%)	493: Asthma (2.04%)	787: Symptoms involving digestive symptoms (2.09%)
465: Acute upper respiratory infections of multiple or unspecified sites (1.73%)	599: Other disorders of urethra and urinary tract (1.94%)	466: Acute bronchitis and bronchiolitis (1.97%)

Table 3-4 lists the top 10 diagnoses based on inpatient admissions for physical health care for each disability group. These top 10 diagnoses accounted for about 54 percent, 30 percent, and 39 percent of DD, SMI, and dual diagnoses inpatient admissions, respectively.

Table 3-4—Top 10 Diagnoses Based on Inpatient Admission for Physical Health Care by Disability Type		
Developmental Disability	Serious Mental Illness	Dual Diagnoses
345: Epilepsy and recurrent seizures (11.88%)	493: Asthma (4.06%)	345: Epilepsy and recurrent seizures (10.74%)
038: Septicemia (8.70%)	250: Diabetes mellitus (3.89%)	486: Pneumonia, organism unspecified (5.68%)
507: Pneumonitis due to solids and liquids (6.96%)	491: Chronic bronchitis (3.78%)	038: Septicemia (4.21%)
560: Intestinal obstruction without mention of hernia (6.38%)	682: Other cellulitis and abscess (3.25%)	682: Other cellulitis and abscess (3.58%)
486: Pneumonia, organism unspecified (5.51%)	969: Poisoning by psychotropic agents (3.22%)	996: Complications peculiar to certain specified procedures (2.95%)
996: Complications peculiar to certain specified procedures (3.48%) ³⁻³	786: Symptoms involving respiratory system and other chest symptoms (2.67%)	560: Intestinal obstruction without mention of hernia (2.95%)
282: Hereditary hemolytic anemias (3.48%)	038: Septicemia (2.59%)	780: General symptoms (2.32%)
518: Other diseases of lung (3.19%)	345: Epilepsy and recurrent seizures (2.51%)	786: Symptoms involving respiratory system and other chest symptoms (2.32%)
250: Diabetes mellitus (2.61%)	486: Pneumonia, organism unspecified (2.32%)	493: Asthma (2.32%)
530: Diseases of esophagus (2.03%)	780: General Symptoms (2.14%)	555: Regional enteritis (2.11%)

Only three diagnoses were found commonly shared among the three disability groups (Septicemia, Epilepsy and recurrent seizures, and Pneumonia, organism unspecified). These conditions accounted for at least 20 percent of inpatient admissions for consumers with DD or dual diagnoses but only about 7 percent for those with SMI.

³⁻³ Further investigation on those inpatient admissions with 996 as the first three digits of the ICD-9-CM diagnosis code for all disability groups showed that slightly over 10 percent of admissions were related to ICD-9 Code 99649 (Other mechanical complication of other internal orthopedic device, implant, and graft), followed by 99662 (Infection and inflammatory reaction due to other vascular device, implant, and graft) and 9962 (Mechanical complication of nervous system device, implant, and graft).

Frequent and Non-Frequent Inpatient/Emergency Room Users

Defining Frequent Users

HSAG examined PIHP consumers with either ER visits or inpatient admissions during FY 2010 and identified frequent users. Figure 3-4 shows the distribution of PIHP consumers from the three disability groups by the sum of inpatient admissions and ER visits.³⁻⁴ The three disability groups differed notably in terms of the proportion of consumers who did not have any inpatient admissions or ER visits. More specifically, consumers with SMI were less likely to be non-users for inpatient admissions or ER visits (34 percent, versus 70 percent for developmental disability and 53 percent for dual diagnoses). Nonetheless, the percentage of consumers having either one inpatient admission or one ER visit was very similar across the three disability groups. Figure 3-4 also shows that a higher proportion of consumers with serious mental illness had two or more inpatient admissions or ER visits than consumers with DD or dual diagnoses.

Figure 3-4—Frequency Distribution of PIHP Consumers by Number of Inpatient Admissions/ER Visits, by Disability Type

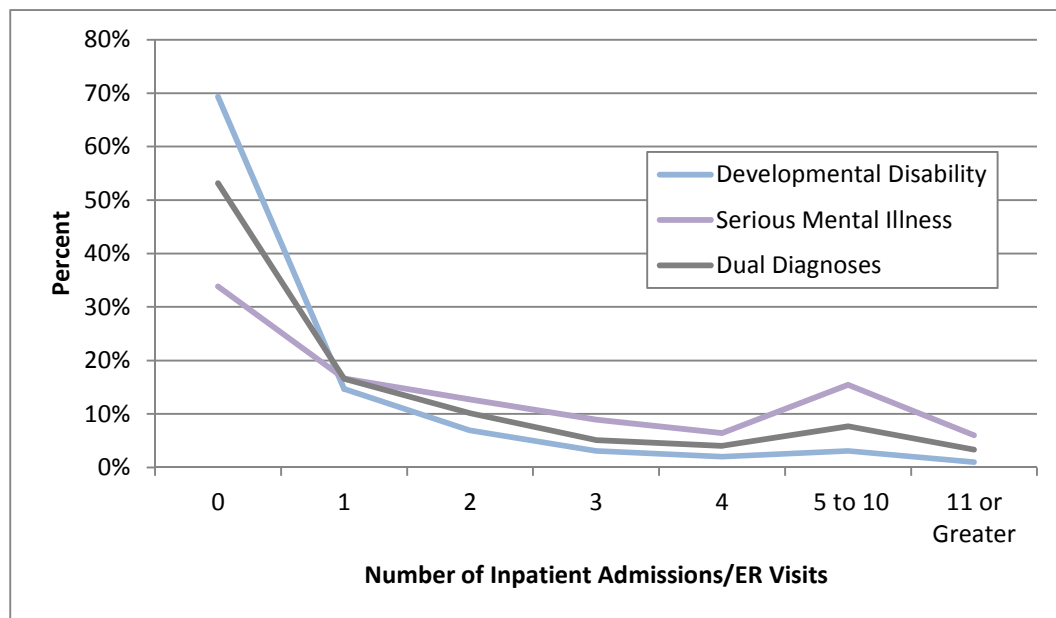


Figure 3-4 suggests that the potential cut-off points used in defining frequent inpatient/ER users should vary by disability type. As an example, four inpatient admission/ER visits would be an appropriate cut-off point for the DD group but would be too low for the SMI group. Table 3-5 presents the cut-off points used to define frequent users in each disability group. It also displays the proportion of frequent users based on these cut-off points. The frequent users in each disability group accounted for six to seven percent of their entire population. Among those consumers using

³⁻⁴ All ER visits and inpatient admissions, including those with principal diagnoses relating to the consumer’s disability designation were used to determine whether he/she was a frequent user.

ER/inpatient services, DD consumers had the highest proportion of frequent users (i.e., one in five receiving four or more visits).

Table 3-5—Percent of Frequent Inpatient/ER Users by Disability Type

Disability Type	Total Number of PIHP Consumers	Total Number of Inpatient/ER Users	Cut-Off Point (Inpatient Admission/ER Visits)	Frequent Inpatient/ER Users		
				Number of Users	Percent of PIHP Consumers	Percent of Inpatient/ER Users
Developmental Disability	2,771	849	4	166	6.0%	19.6%
Serious Mental Illness	23,590	15,604	11	1,419	6.0%	9.1%
Dual Diagnoses	3,571	1,674	7	247	6.9%	14.8%

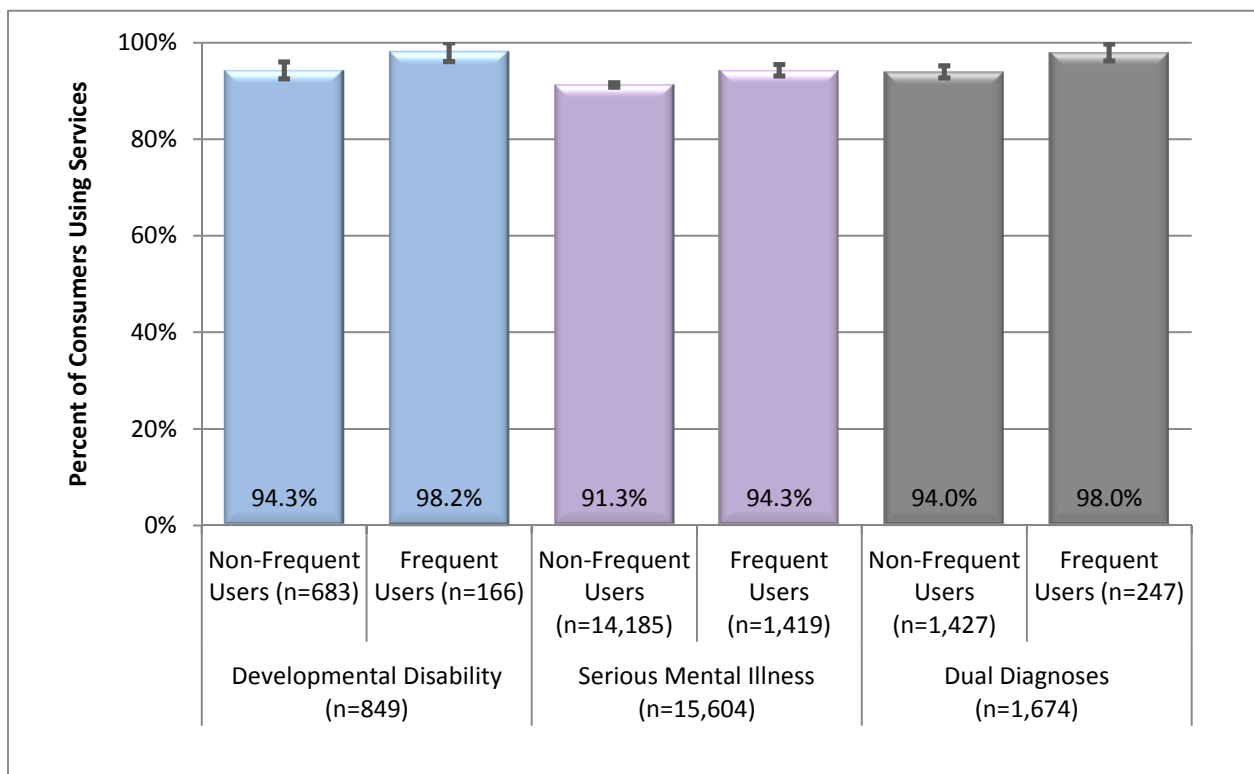
PIHP-specific rates can be found in Appendix B. There were wide variations on how many inpatient/ER users are frequent users among the PIHPs for all three disability groups. Inpatient/ER users with DD had the largest PIHP variation (PIHP rates ranged from 0 percent to 31.6 percent),³⁻⁵ whereas the variation among PIHPs for SMI consumers was smaller (from 5.8 percent to 14.0 percent).

³⁻⁵ For nearly all of the PIHPs, these wide ranges could be related to small denominators. For the DD group, eight PIHPs had denominators less than 30. Caution should be applied when comparing percentages generated from small denominators.

Comparison on Preventive/Ambulatory Service Utilization

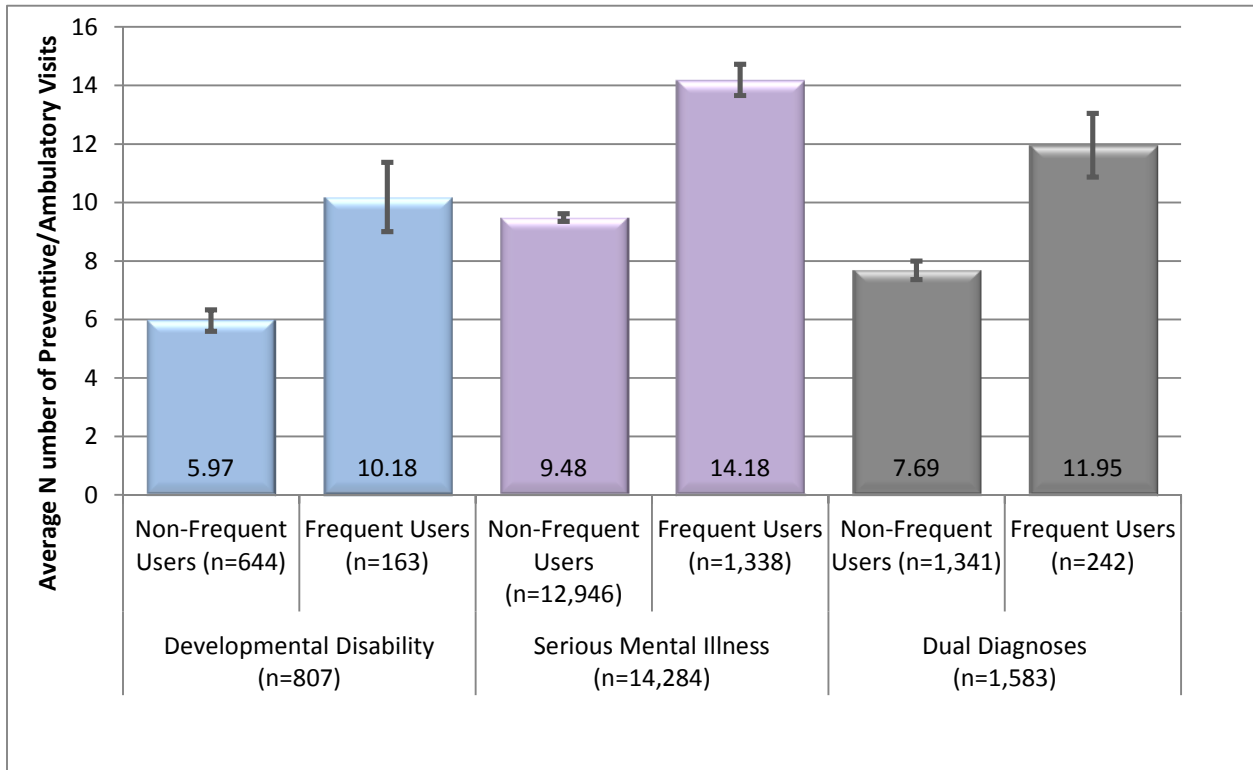
Figure 3-5 compares preventive/ambulatory visit patterns between frequent and non-frequent inpatient/ER users for the three disability groups. Non-users of inpatient and emergency services were excluded from the comparison. In general, for all disability groups, nine out of 10 users, whether they were frequent users or not, used preventive/ambulatory services. Across all disability groups, frequent users are significantly more likely to use preventive/ambulatory services than non-frequent users. Additionally, frequent inpatient/ER users with SMI were significantly less likely to use ambulatory services than those with DD or dual diagnoses.

Figure 3-5—Comparison of Percent of Preventive/Ambulatory Service Usage, Frequent Versus Non-Frequent Inpatient/ER Users, Statewide Results by Disability Type



Not only were frequent inpatient/ER users more likely to use preventive/ambulatory services, they also made more visits than non-frequent users within each disability group (see Figure 3-6). Comparing across the three disability groups, frequent users with SMI had significantly more visits than frequent users with either DD or dual diagnoses.

Figure 3-6—Comparison of Average Preventive/Ambulatory Visits Per User Between Frequent and Non-Frequent Inpatient/ER Users, Statewide Results by Disability Type

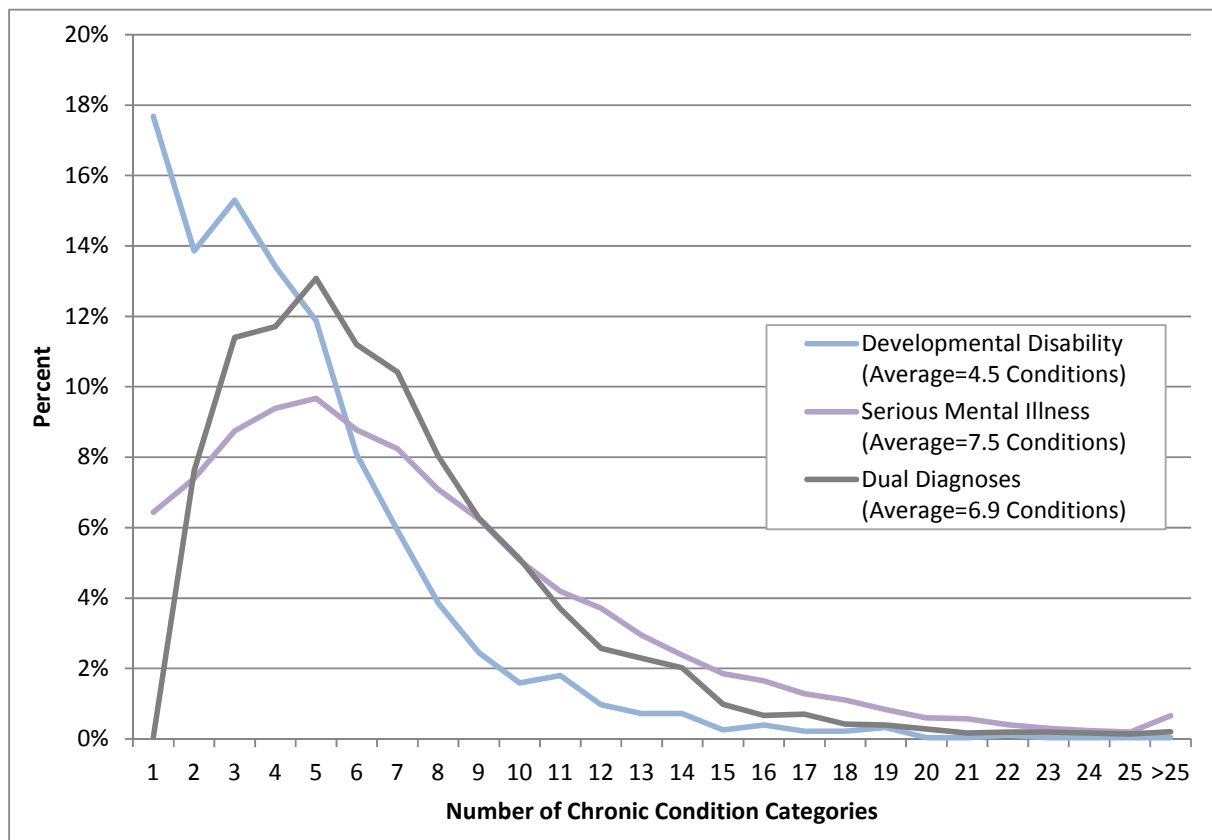


Most Prevalent Chronic Conditions

Prevalence of Chronic Conditions

HSAG used two classification algorithms to assist with identifying the two most prevalent conditions in the study population (n=29,932). First, HSAG used the Chronic Condition Indicator (CCI)³⁻⁶ to determine whether a diagnosis is a chronic condition. All diagnoses submitted in all fee-for-service claims, PIHP claims, and MHP encounters with date of service from October 1, 2008, to September 30, 2010, were included in this analysis. Diagnoses that were identified as chronic using CCI were further grouped into condition/disease categories using the Clinical Classification System (CCS)³⁻⁷. Figure 3-7 compares the frequency distributions of PIHP consumers in terms of number of chronic conditions.

Figure 3-7—Frequency Distribution of PIHP Consumers by Number of Chronic Conditions, by Disability Type



³⁻⁶ The Chronic Condition Indicator (CCI) was developed as part of a Federal-State-Industry partnership called Healthcare Cost and Utilization Project, sponsored by the Agency for Healthcare Research and Quality. This tool assists researchers to categorize ICD-9-CM diagnosis codes into chronic or not chronic categories. The algorithm can be downloaded from the AHRQ Web site: <http://www.hcup-us.ahrq.gov/toolssoftware/chronic/chronic.jsp>

³⁻⁷ Similar to CCI, the Clinical Classification System (CCS) was also developed as part of the Healthcare Cost and Utilization Project sponsored by the Agency for Healthcare Research and Quality. This diagnosis and procedure categorization scheme is commonly used for identifying populations for disease- or procedure-specific studies. The software can be downloaded from the AHRQ Web site: <http://www.hcup-us.ahrq.gov/toolssoftware/ccs/ccs.jsp>

On average, consumers with DD had 4.5 conditions; about 18 percent had only one chronic condition and about 72 percent had five or fewer chronic conditions. SMI consumers had the highest average number of conditions (7.5) among the three disability groups. Consumers with dual diagnoses had an average of 6.9 conditions, while nearly half (47 percent) had three to six chronic conditions.

After a list of chronic conditions was generated for each disability group, an HSAG clinician narrowed the list down to two commonly shared chronic conditions. This step was important because some of the chronic conditions listed might be disability conditions or conditions resulting from the treatment of disability conditions by pharmaceutical means. Table 3-6 lists the top 10 chronic condition categories for each disability group.

Developmental Disability	Serious Mental Illness	Dual Diagnoses
Development Disorders	Mood Disorders	Developmental Disorders
Paralysis	Schizophrenia and Other Psychotic Disorders	Mood Disorders
Genitourinary Symptoms and Ill-Defined Conditions	Essential Hypertension	Schizophrenia and Other Psychotic Disorders
Epilepsy; Convulsions	Anxiety Disorders	Anxiety Disorders
Disorders of Lipid Metabolism	Screening and History of Mental Health and Substance Abuse Codes	Attention-Deficit, Conduct, and Disruptive Behavior Disorders
Essential Hypertension	Disorders of Lipid Metabolism	Disorders of Lipid Metabolism
Other Congenital Anomalies	Diabetes Mellitus without Complication	Essential Hypertension
Thyroid Disorders	Other Nervous System Disorders	Disorders Usually Diagnosed in Infancy, Childhood, or Adolescence
Other Upper Respiratory Disease	Asthma	Thyroid Disorders
Other Nutritional; Endocrine; and Metabolic Disorders	Substance-Related Disorders	Epilepsy; Convulsions

Using DD as an example to illustrate how prevalent conditions were identified, developmental disorders are also likely to be associated with paralysis, genitourinary symptoms and ill-defined conditions, epilepsy convulsions, other congenital anomalies, and thyroid disorders. Consequently, the remaining conditions, disorders of lipid metabolism and essential hypertension, were considered the two most prevalent chronic conditions for the DD group in this study.

Although each disability group had different top 10 chronic condition categories, disorders of lipid metabolism and essential hypertension were considered by an HSAG clinician as the two most prevalent conditions identified across all three groups in this study. Table 3-7 shows how many consumers from each disability group had these chronic conditions. At least one in five consumers across the three disability groups had the disorders of lipid metabolism. For essential hypertension, at least one in six consumers had this chronic condition. The prevalence rates for both of these conditions were much higher among consumers with SMI than those with either DD or dual diagnoses.

Disability Type	Total Number of PIHP Consumers	Disorders of Lipid Metabolism ¹		Essential Hypertension ¹	
		Number	Percent of Total	Number	Percent of Total
Developmental Disability	2,771	541	19.5%	471	17.0%
Serious Mental Illness	23,590	8,174	34.7%	9,692	41.1%
Dual Diagnoses	3,571	982	27.5%	867	24.3%

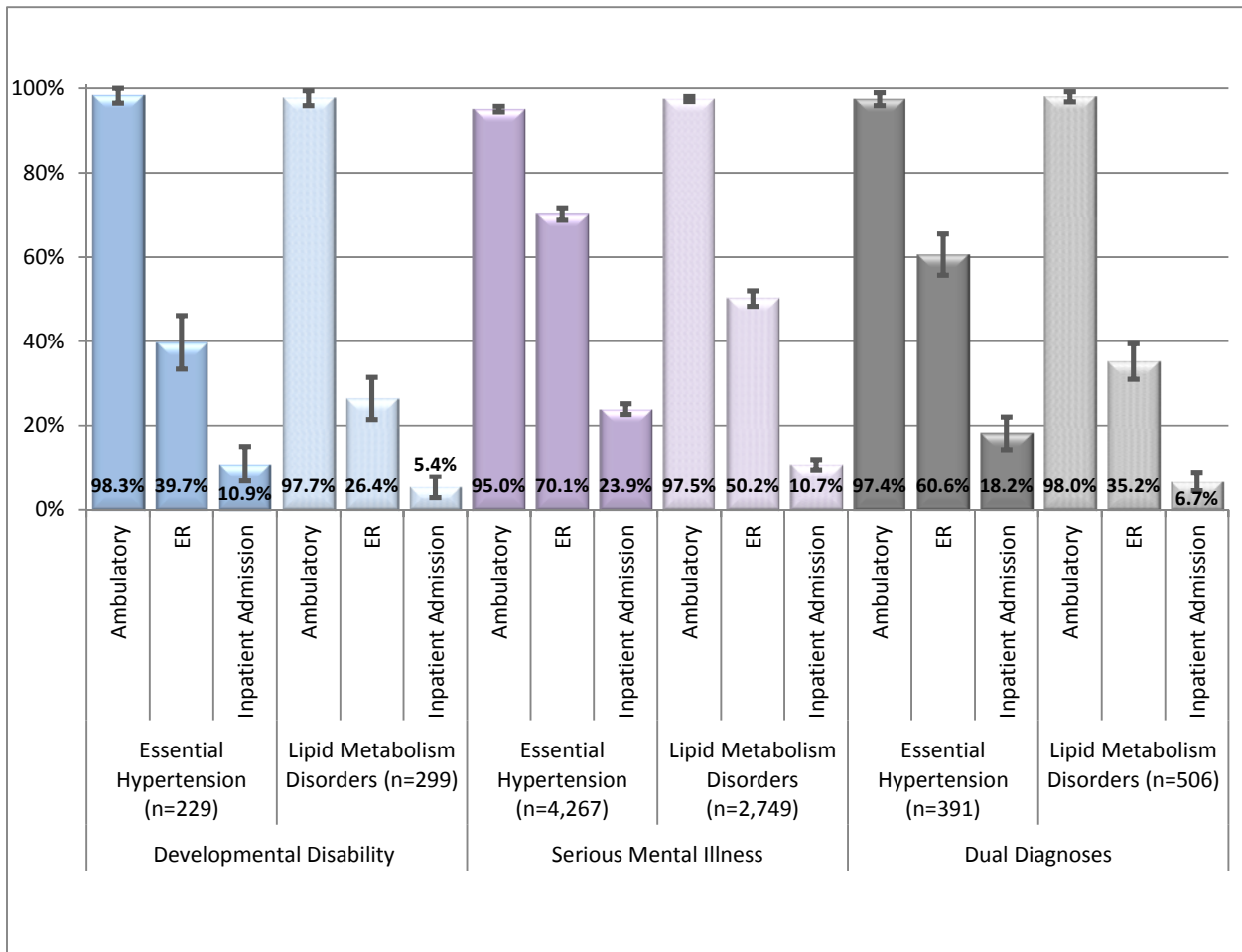
¹Numbers presented for these conditions are not mutually exclusive. This means that there were some consumers having both disorders of lipid metabolism and essential hypertension.

The average age of consumers with disorders of lipid metabolism and those with essential hypertension was similar—45.5 years and 46.5 years, respectively. Regardless of whether the consumers had disorders of lipid metabolism or essential hypertension, consumers with SMI were, on average, older than consumers with DD or dual diagnoses. The average age of consumers with disorders of lipid metabolism having an SMI diagnosis was 46.7 years, which was about 7 years greater than the average age of those having a DD or dual diagnoses. For those with essential hypertension, the average-age gap between SMI and DD/dual diagnosis populations was about 6 years (47.3 years versus 40.4/41.22 years, respectively.)

Lipid Metabolism Disorders and Essential Hypertension—Service Utilization Profiles

Figure 3-8 displays the percentage of consumers with lipid metabolism disorders only or essential hypertension only who used any of the selected services (i.e., preventive/ambulatory, ER, or inpatient admission) for each disability group.³⁻⁸ In general, a much larger proportion of consumers from each disability group used preventive/ambulatory services than emergency room and inpatient services. Across all disability groups, Figure 3-8 shows that significant differences in the likelihood of using emergency room services were noted between consumers with only the essential hypertension condition and those with only the lipid metabolism condition. Significant differences in using preventive/ambulatory services (for consumers with SMI) and in using inpatient services (for consumers with SMI and with dual diagnoses) were also noted.

Figure 3-8—Proportion of Consumers With Essential Hypertension Only or Lipid Metabolism Disorders Only Using Selected Services, Statewide Results by Disability Type

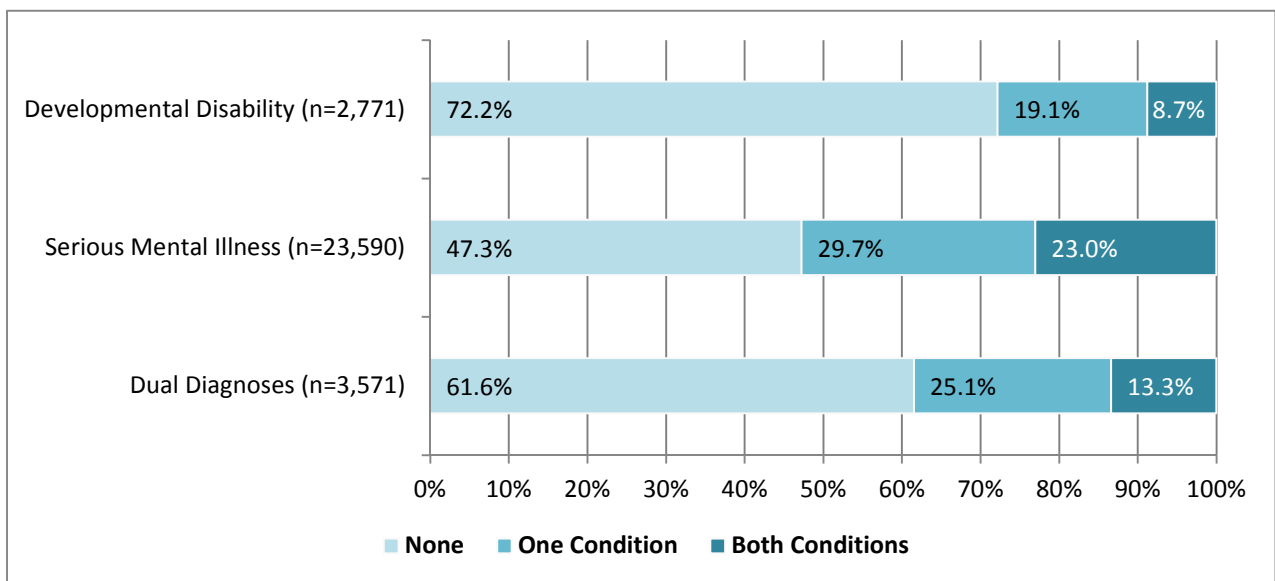


³⁻⁸ Figure 3-8 compares the percentage of service utilization between consumers with disorders of lipid metabolism only and those with essential hypertension only. Service utilization patterns for those with both conditions are reported in the *Accumulated Impact* section of this report.

Accumulated Impact of Most Prevalent Chronic Conditions on Service Utilization Patterns

Although it would be interesting to compare service utilization patterns for consumers with disorders of lipid metabolism to those with essential hypertension, the etiology of these conditions does not yield adequate meaningful interpretation of the utilization results. A more pertinent question would be whether consumers with these conditions used more services than those who did not have these conditions. Figure 3-9 compares the proportions of consumers with none, one, or both of these conditions.

Figure 3-9—Proportion of PIHP Consumers With None, One, or Both Identified Conditions, Statewide Results by Disability Type



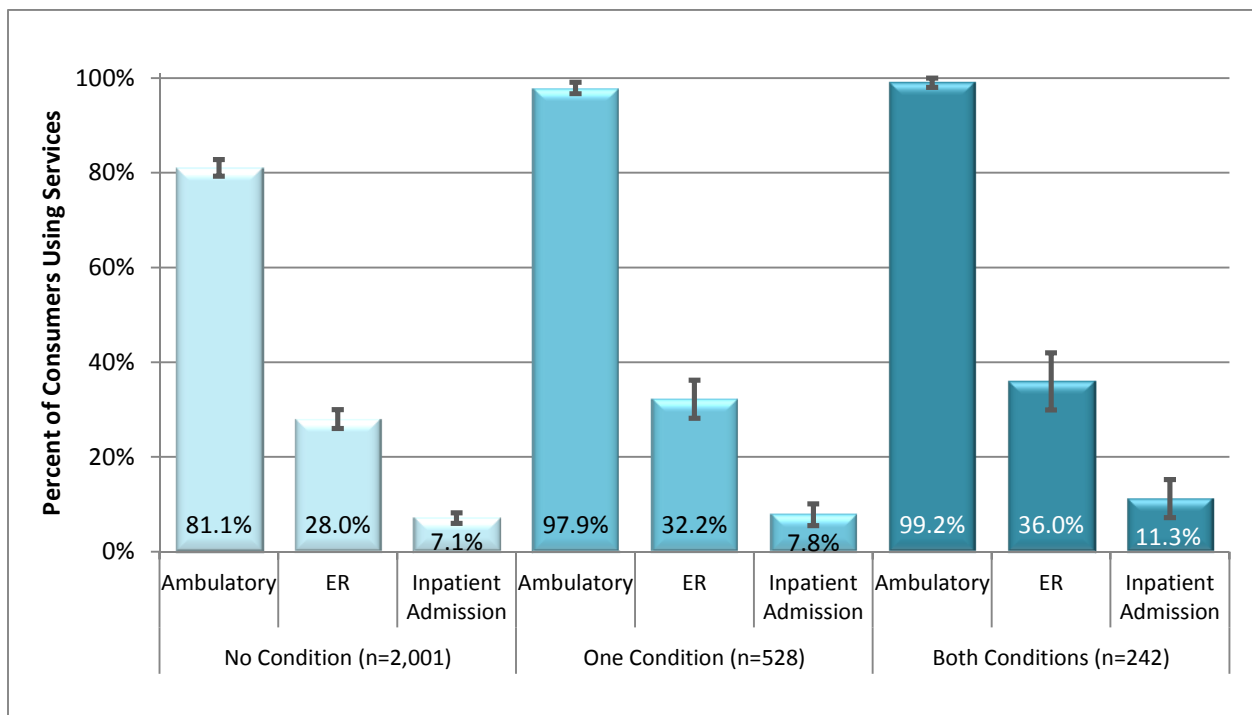
About one in 11 consumers with a diagnosis of DD, one in four consumers with SMI, and one in eight consumers with a dual diagnoses had both chronic conditions. Slightly over half (52.7 percent) of consumers with serious mental illness had at least one of the two prevalent chronic conditions. The following section compares the service utilization patterns for the three groups:

- ◆ Consumers with none of these conditions
- ◆ Consumers with one of these conditions
- ◆ Consumers with both of these conditions

Developmental Disability

Figure 3-10 compares the service utilization patterns among DD consumers with none, one, or both of the identified chronic conditions. Consumers who did not have disorders of lipid metabolism or essential hypertension were significantly less likely to have any preventive/ambulatory visits than those who have these conditions. More specifically, slightly over 80 percent of consumers with none of these conditions had used preventive/ambulatory services, compared to over 95 percent for consumers with at least one of these conditions.

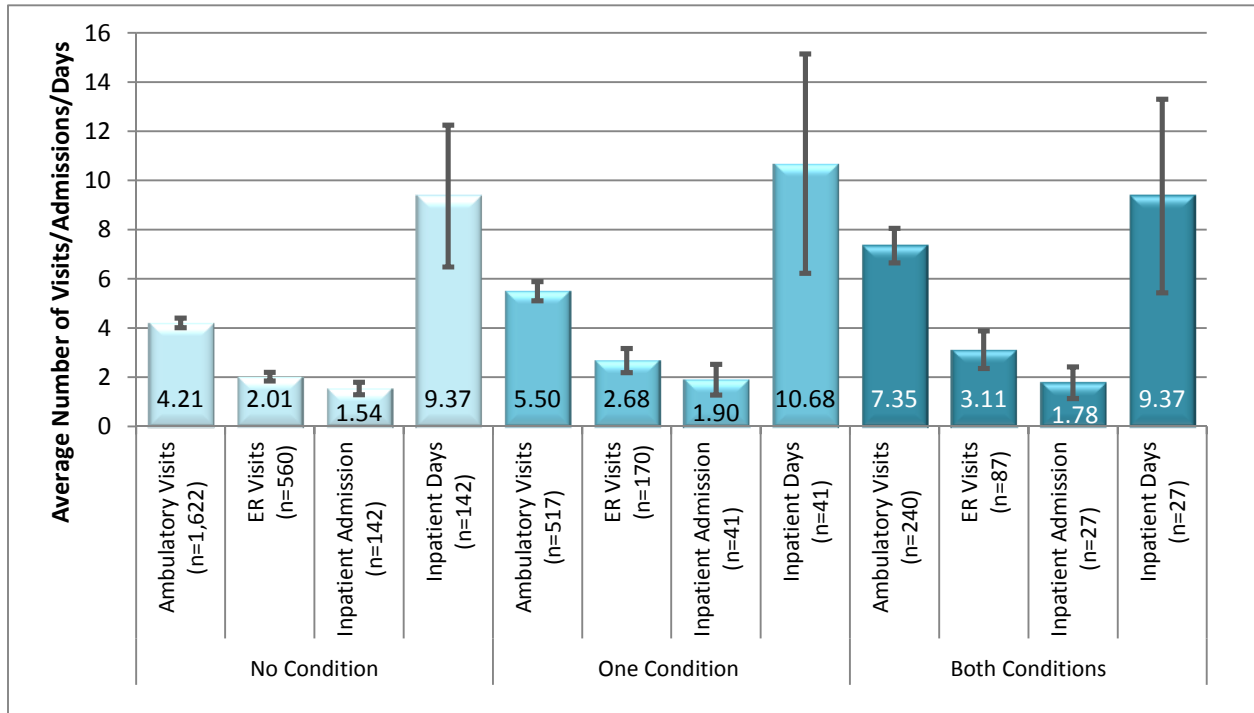
Figure 3-10—Comparison of Proportion of PIHP Consumers With Developmental Disability Using Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions



Regarding ER use, although the proportion of consumers with no conditions using an ER was about four percentage points lower than those with one condition, and eight percentage points lower than those with both conditions, the differences were not statistically significant. For inpatient hospital admissions, there were no statistical significant differences in the likelihood of being admitted to hospitals for physical health care for consumers with or without these conditions.

Figure 3-11 compares the utilization statistics for ambulatory, ER, and hospital services. There were statistically significant differences in the number of preventive/ambulatory visits per service user among consumers with none, one, or both of the chronic conditions. Preventive/ambulatory service users who did not have disorders of lipid metabolism or essential hypertension typically made four visits to their physicians during the review period, as compared to 5.5 visits by those with one condition and 7.4 visits by those with both conditions.

Figure 3-11—Service Use Statistics by PIHP Consumers With Developmental Disability Who Used Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions

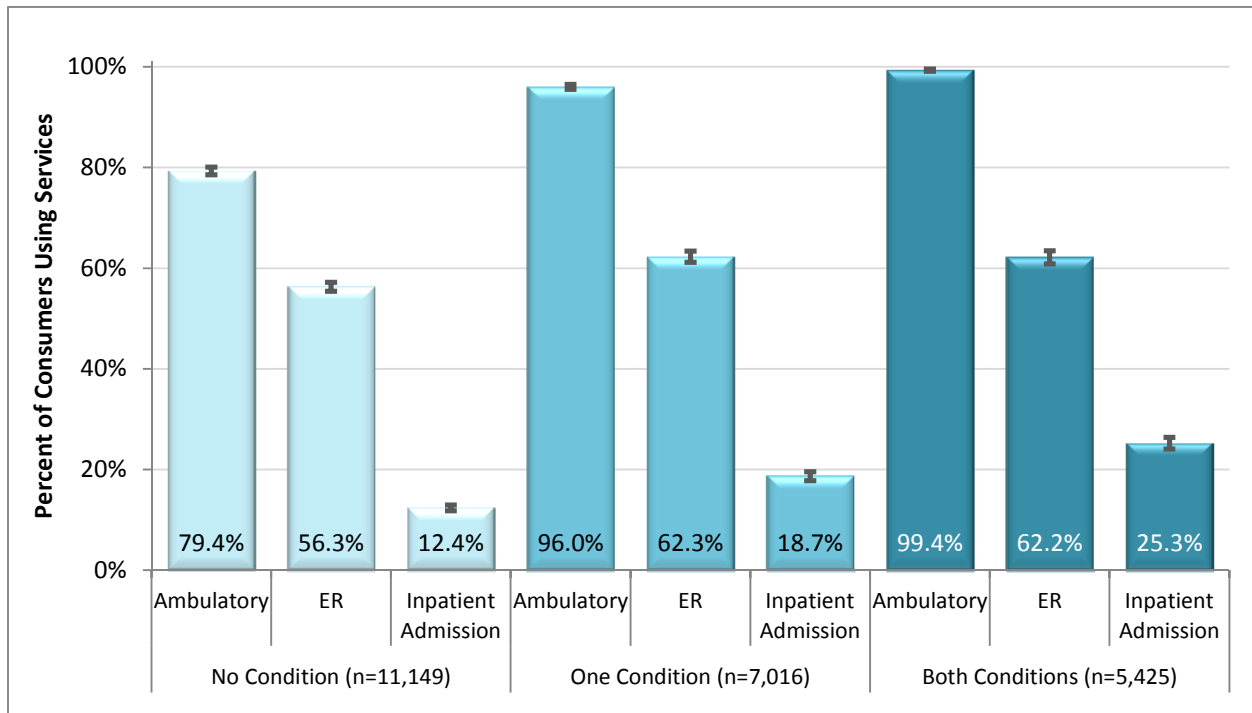


Among ER service users, those who did not have either of the two identified chronic conditions had significantly fewer ER visits than those who had both of these conditions (two visits versus 3.1 visits). There were no statistically significant differences in the number of inpatient admissions or hospital days per user among consumers with none, one, or both of the identified chronic conditions.

Serious Mental Illness

Figure 3-12 compares the service utilization patterns among consumers with SMI who had none, one, or both of the identified chronic conditions. Within this disability group, there were statistically significant differences in the likelihood of using all three types of services (i.e., preventive/ambulatory, ER, and inpatient admission) by consumers with or without these conditions. Consumers who did not have disorders of lipid metabolism or essential hypertension were significantly less likely to have any of these services than those who have these conditions. Compared to consumers without any of these conditions, those with both conditions were 25 percent more likely to use ambulatory services,³⁻⁹ 10 percent more likely to have an emergency room visit, and twice as likely to be admitted to a hospital for physical health care. There was no significant difference in the likelihood of using emergency room services between consumers with one condition and those with both conditions.

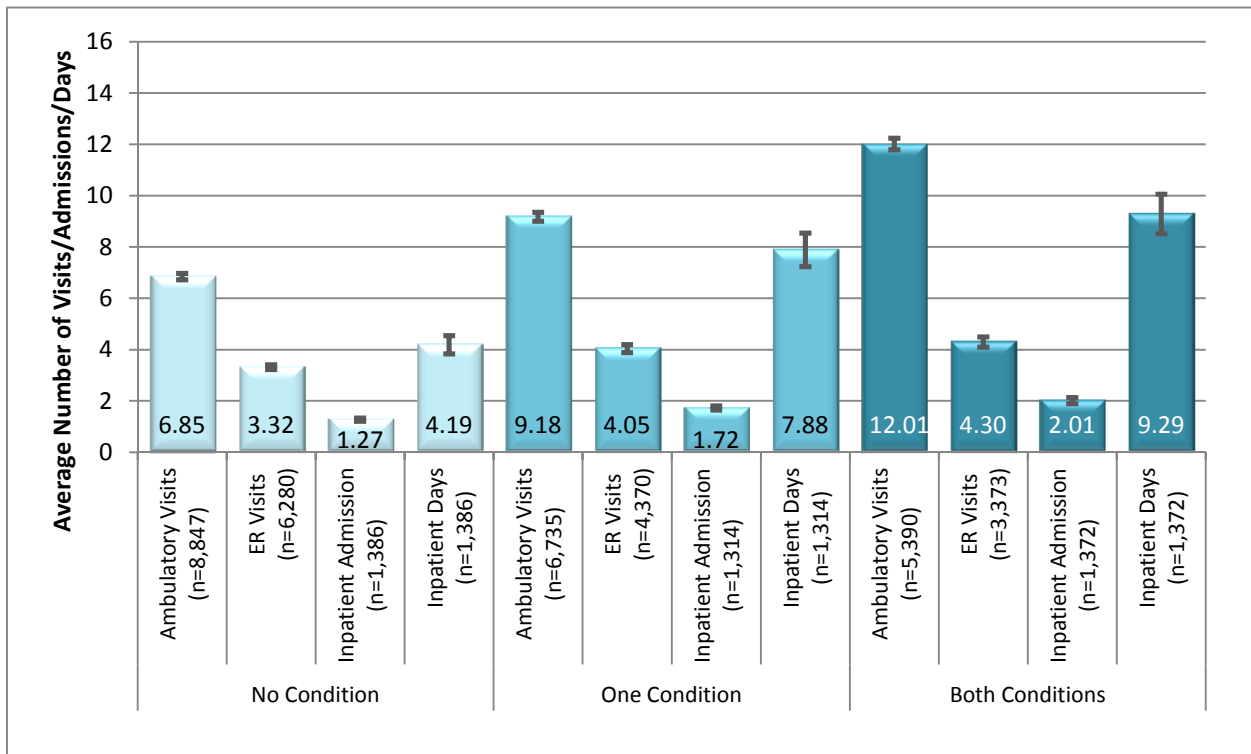
Figure 3-12—Comparison of Proportion of PIHP Consumers With Serious Mental Illness Using Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions



³⁻⁹ The degree/magnitude of likelihood of using a particular type of service is calculated by dividing the proportion of one group by the proportion of another group. Using ambulatory services as an example, the percentage of consumers with two conditions who had at least one ambulatory service was 99.4 percent and for consumers with no condition was 79.4 percent. Consumers with two conditions are about 25 percent more likely than those without any of these conditions to have at least one ambulatory service $[(99.4-79.4)/79.4=0.2519]$.

Figure 3-13 compares the utilization statistics for ambulatory, ER, and hospital services. There were statistically significant differences in the frequency of ambulatory visits and inpatient admission among consumers with none, one, or both of the chronic conditions. Significant differences were also noted in the number of emergency room visits and number of inpatient days between consumers without these conditions and those with both conditions.

Figure 3-13—Service Use Statistics by PIHP Consumers With Serious Mental Illness Who Used Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions

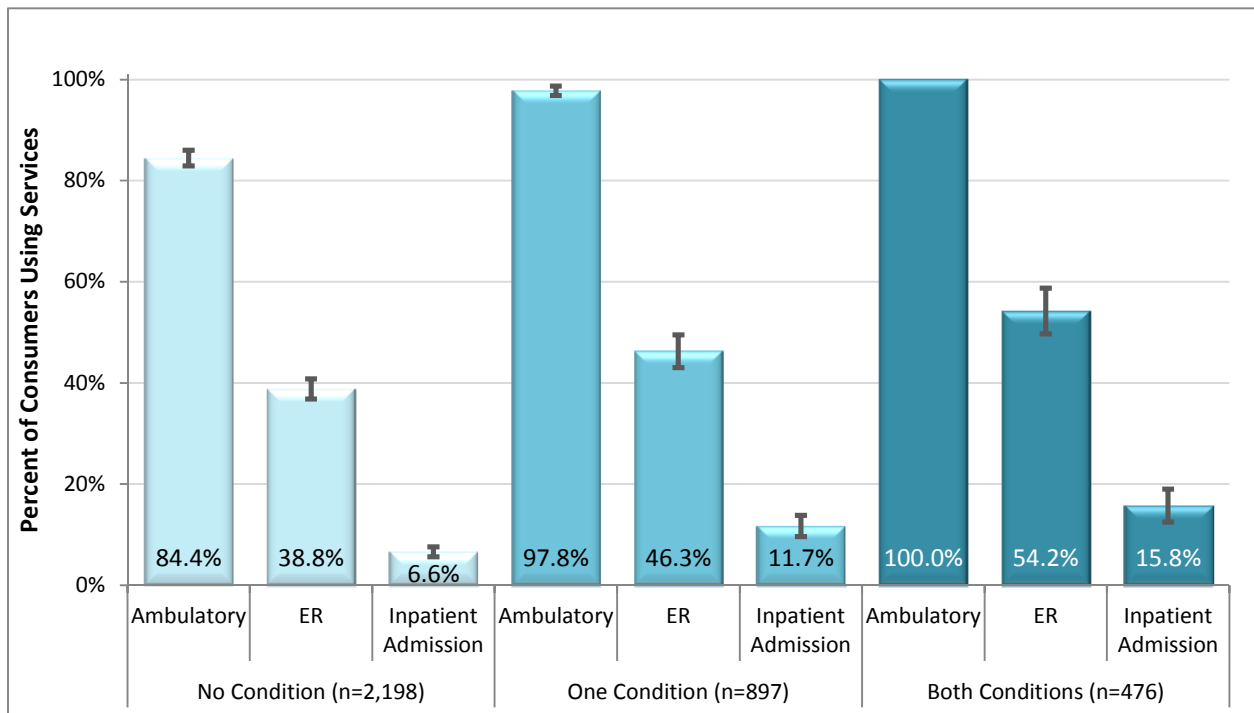


During the review period, preventive/ambulatory service users who did not have disorders of lipid metabolism or essential hypertension had on average nearly seven preventive/ambulatory visits with their physicians; visited the ER slightly more than three times; and were admitted to the hospital once, staying about four days. Comparatively, consumers with both disorders of lipid metabolism and essential hypertension had five more ambulatory visits, nearly one additional ER visit, nearly one additional hospital admission, and stayed in hospitals for approximately five days longer.

Dual Diagnoses

Figure 3-14 compares the service utilization patterns among consumers with dual diagnoses who had none, one, or both of the identified chronic conditions. Within this disability group, there were statistically significant differences in the likelihood of using preventive/ambulatory services and emergency room services among all groups and of using inpatient services between consumers who had at least one of these conditions and those who did not.

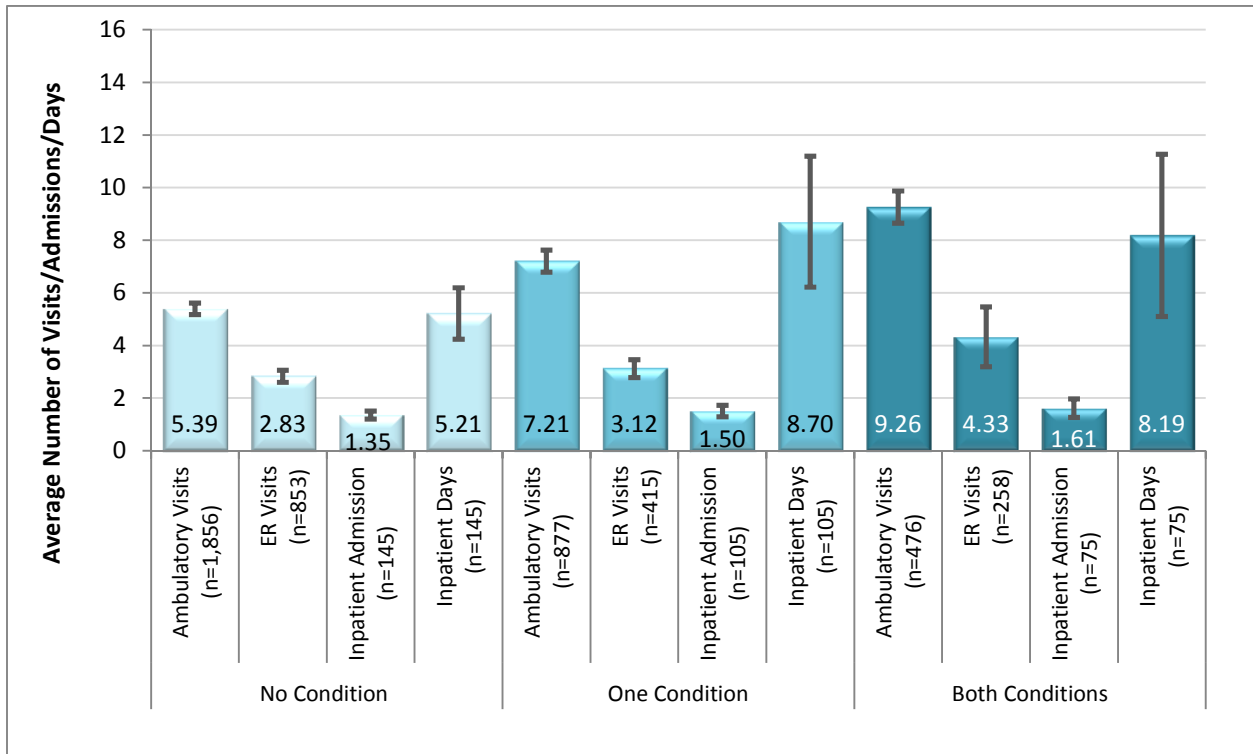
Figure 3-14—Comparison of Proportion of PIHP Consumers With Dual Diagnoses Using Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions



Compared to consumers without any of these conditions, those with both conditions are 18 percent more likely to use ambulatory services, 35 percent more likely to have an ER visit, and 1.3 times more likely to be admitted to a hospital for physical health services.

Figure 3-15 compares the utilization statistics for ambulatory, ER, and inpatient services for physical health care between consumers with or without these conditions. Although there were statistically significant differences in the frequency of preventive/ambulatory service use, the differences observed in the number of ER visits and of inpatient admissions and inpatient hospital days were not statistically significant. Consumers who have both lipid metabolism and essential hypertension disorders had on average three more ambulatory visits, 1.5 additional ER visits, and stayed on average 3.5 more days in hospitals than those without these conditions.

Figure 3-15—Service Use Statistics by PIHP Consumers With Dual Diagnoses Who Used Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions



Supplemental Analyses

To What Extent Did the Number of SMI/DD Consumers Vary by Data Source (Quality Improvement File Versus PIHP Encounters)?

HSAG understands that MDCH has been using the Quality Improvement (QI) file to identify Medicaid beneficiaries with an SMI or DD diagnosis for program initiatives and monitoring purposes. Using the QI file would be convenient because State staff would not need to revert to claims or encounters to identify these individuals. The value of the QI file depends on how accurately beneficiaries with these diagnoses are reported in the file. As such, HSAG compared the number of PIHP consumers identified for this study using claims/encounters to the consumers identified with one of the three disability groups in the QI file. Table 3-8 shows the level of agreement between the two data sources. Appendix C presents service utilization patterns for consumers included in this study but categorized according to the QI file.

Disability	Denominator	Numerator	Rate	Lower CL	Upper CL
Developmental Disability	2,771	2,368	85.5%	84.1%	86.8%
Serious Mental Illness	23,590	22,515	95.4%	95.2%	95.7%
Dual Diagnoses	3,571	1,342	37.6%	36.0%	39.2%
Statewide	29,932	26,225	87.6%	87.2%	88.0%

Overall, about 17 out of 20 PIHP consumers identified using claims/encounters had the same disability categorization in the QI file. There were wide variations of level of agreement across disability groups. PIHP consumers in this study diagnosed with SMI had the highest (95.4 percent) level of agreement versus individuals with dual diagnoses, who had the lowest (37.6 percent) level of agreement.

Among 3,707 consumers who did not have a disability type match in the QI file, Table 3-9 shows the magnitude of discrepancies in the QI file. For consumers who were identified as having DD only in this study but had a mismatch with the QI file, over 85 percent of the discrepancies were due to the consumer having an additional SMI designation in the QI file (hence, rendering them to be categorized as having dual diagnoses in the QI file). For consumers identified in the dual diagnoses group in this study, three out of five consumers (59.7 percent) who had a mismatch in categorization in the QI file had only a DD designation in the QI file. As for consumers who were identified as having SMI in this study, over one-third (35.1 percent) of consumers with mismatched type did not have DD, SMI, or dual diagnoses designation in the QI file; and just under another one-third (34.7 percent) were identified as also having a DD designation in the QI file.

Table 3-9—Magnitude of Discrepancies in Disability Designation

Disability Designation in Claims/ Encounters	Number of Consumers With Mismatched Type	Disability Designation Based on Quality Improvement File			
		No Disability	Developmental Disability	Serious Mental Illness	Dual Diagnoses
Developmental Disability	403	1.7%		12.2%	86.1%
Serious Mental Illness	1,075	35.1%	34.7%		30.2%
Dual Diagnoses	2,229	0.3%	59.7%	40.0%	

Variations in the level of agreement were also noted at the PIHP level. Figure 3-16 to Figure 3-18 present the PIHP-specific levels of agreement for each disability group. Variation was the smallest for consumers with SMI, with individual PIHP rates ranging from 85.4 percent to 98.6 percent (a 13.2 percentage point difference). On the other hand, rate variation was largest for consumers with dual diagnoses; individual PIHP rates ranged from 10.3 percent to 71.6 percent (a 61.3 percentage point difference). The implication of not having high-level agreement is that inadequate services might be provided for the individuals in the incorrectly identified disability groups.

Figure 3-16—PIHP Variations in Level of Agreement With QI File in Identifying Consumers With Developmental Disability

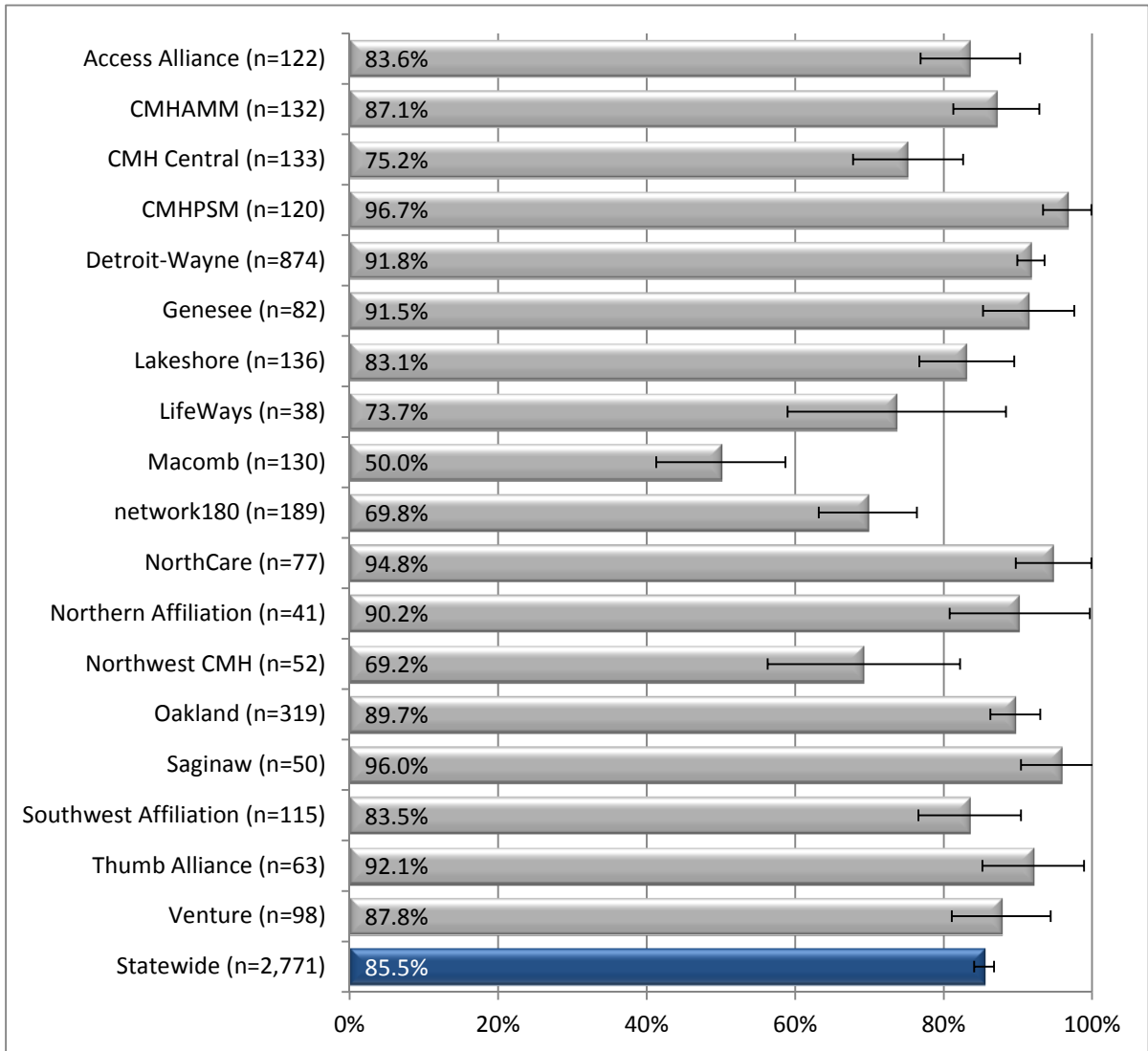


Figure 3-17—PIHP Variations in Level of Agreement With QI File in Identifying Consumers With Serious Mental Illness

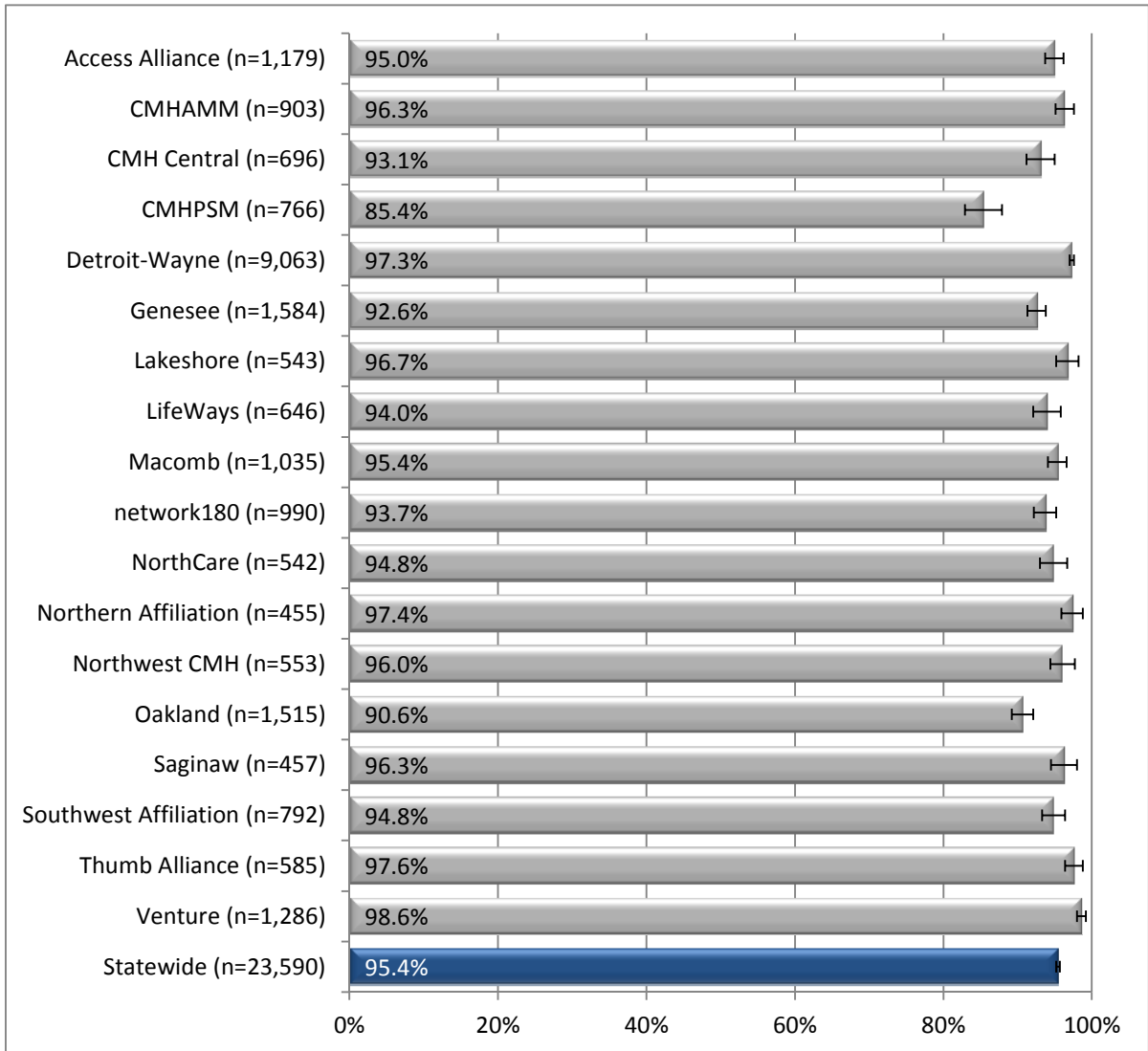
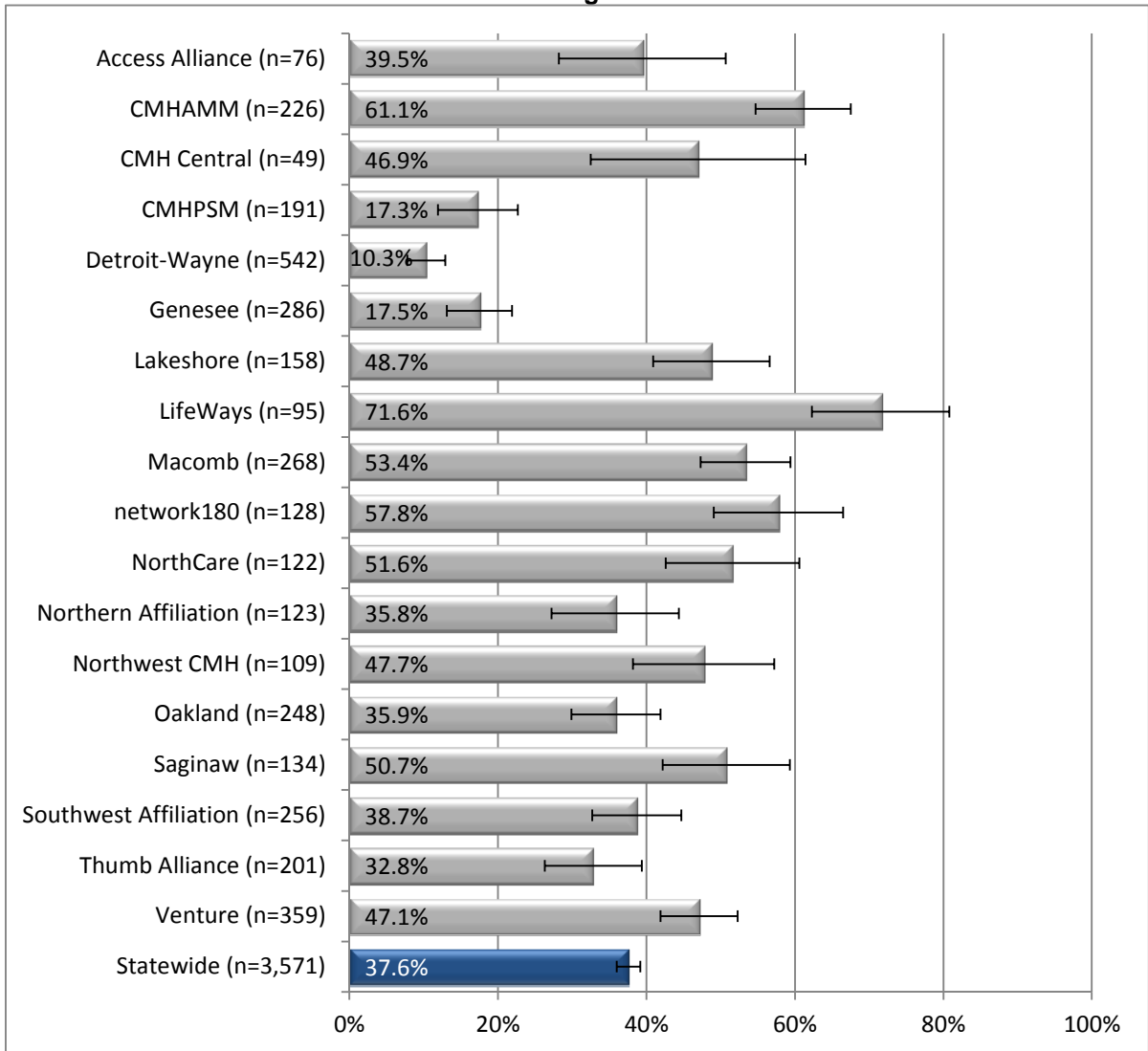


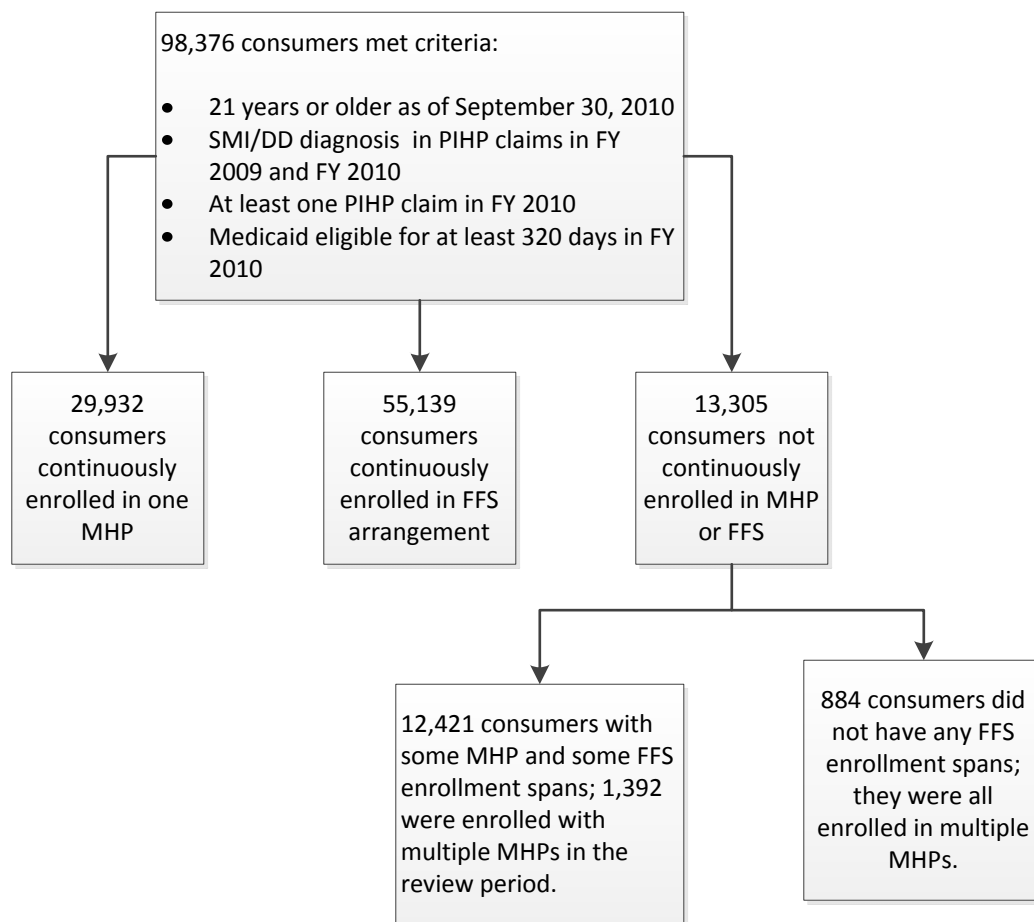
Figure 3-18—PIHP Variations in Level of Agreement With QI File in Identifying Consumers With Dual Diagnoses



To What Extent Did MHP Continuous Enrollment Affect Service Utilization Patterns?

Since continuous MHP enrollment may affect how likely a PIHP consumer may receive coordinated care, HSAG examined the extent to which continuous MHP enrollment is common among PIHP consumers. Figure 3-19 shows the classification of PIHP consumers by enrollment pattern. Nearly 99,000 PIHP consumers (n=98,376) in FY 2010 were identified as (1) at least 21 years old as of September 30, 2010, (2) had a qualifying SMI or DD diagnosis identified in PIHP claims between October 1, 2008, and September 30, 2010, (3) had at least one PIHP claim from October 1, 2009, to September 30, 2010, and (4) were eligible for Medicaid for at least 320 days in FY 2010.

Figure 3-19—Distribution of PIHP Consumers by MHP/FFS Enrollment Pattern

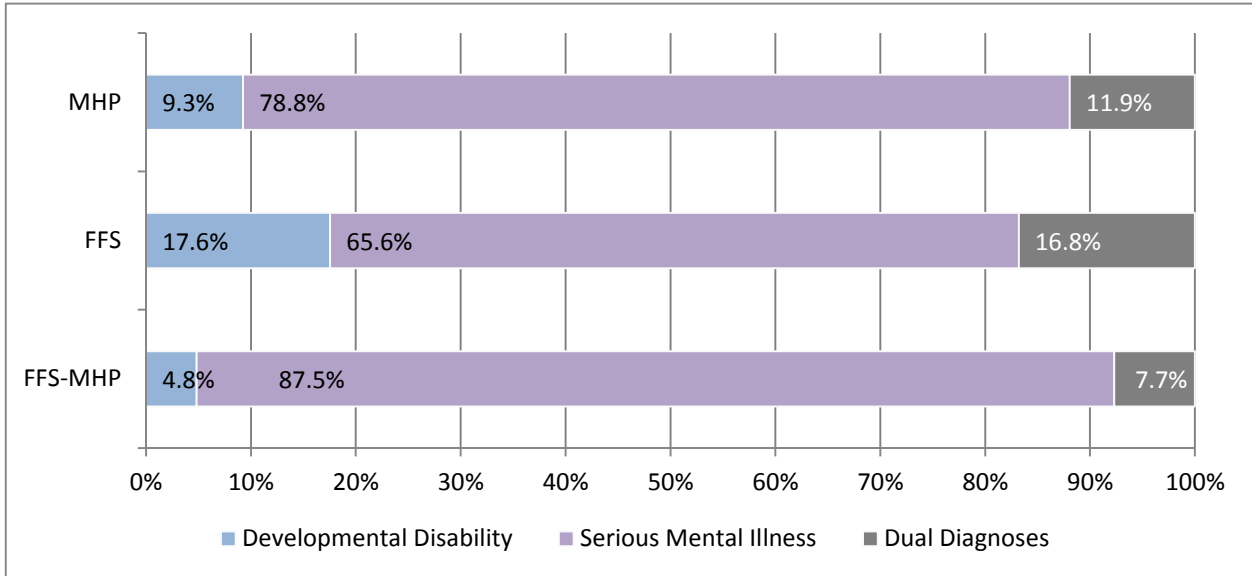


Of the 98,376 consumers, 29,932 (30.4 percent) were continuously enrolled for at least 320 days in the same MHP and were included in the main focused study (MHP group). Over half (56.0 percent, n=55,139) were continuously enrolled for at least 320 days in a fee-for-service arrangement (FFS group). Another 13.5 percent (n=13,305) were not continuously enrolled in MHP or FFS during FY 2010 (FFS-MHP group). The majority of these individuals (n=12,421) were enrolled in an FFS and MHP sometime during the review period. The following sections present comparison findings by disability group for these three groups of enrollment patterns (i.e., MHP, FFS, and FFS-MHP).

Are some groups more likely to be continuously enrolled in MHP or FFS than others?

Figure 3-20 displays the frequency distribution of PIHP consumers with DD, SMI, and dual diagnoses by enrollment pattern. Compared to the MHP enrollment group (where consumers had at least 320 days of MHP enrollment during the study period), the FFS group had a significantly higher proportion of consumers with DD or dual diagnoses, and the FFS-MHP group had a significantly higher proportion of consumers with an SMI.

Figure 3-20—Proportion of PIHP Consumers by Disability Type and MHP/FFS Enrollment Pattern



Developmental Disability

Figure 3-21 compares the service utilization patterns among DD consumers with different enrollment patterns (i.e., MHP, FFS, and FFS-MHP. The FFS-MHP enrollment group represents consumers without continuous enrollment). Consumers with MHP continuous enrollment were significantly more likely to have preventive/ambulatory visits than those with FFS enrollment and those without continuous enrollment. They were also significantly less likely to use inpatient services than the other two enrollment groups. Consumers with continuous FFS enrollment were significantly more likely than the other two enrollment groups to have an inpatient admission.

Figure 3-21—Comparison of Proportion of PIHP Consumers With Developmental Disability Using Preventive/Ambulatory, ER, or Inpatient Services, by MHP/FFS Enrollment Pattern

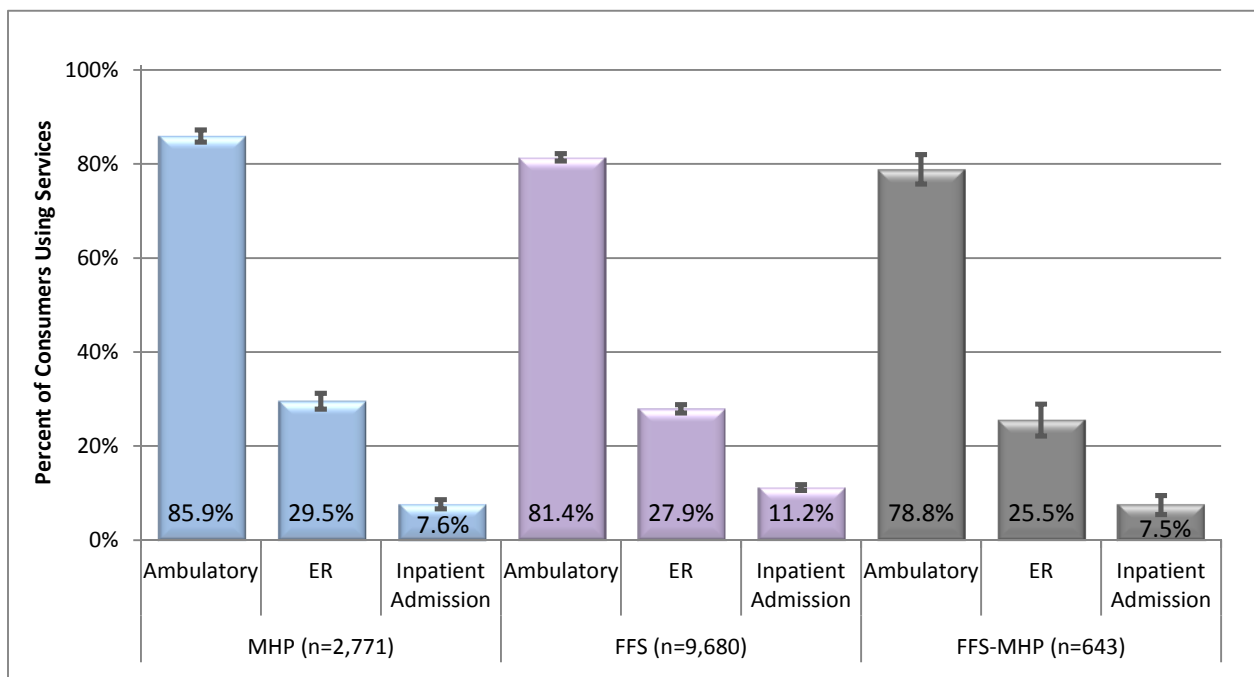
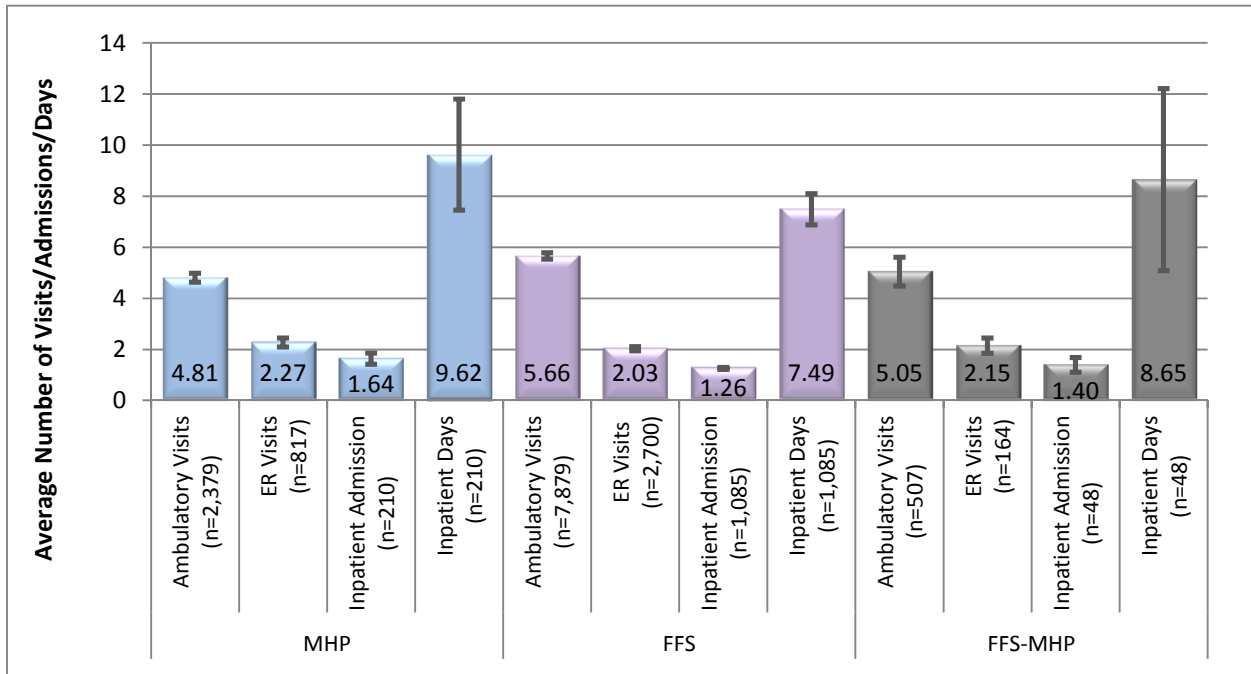


Figure 3-22 compares the utilization statistics for ambulatory, ER, and hospital services. DD consumers with MHP continuous enrollment had significantly fewer ambulatory visits but more hospital days than those with FFS continuous enrollment. There were no significant differences in the number of ER visits and inpatient days across all enrollment groups.

Figure 3-22—Service Use Statistics by PIHP Consumers With Developmental Disability Who Used Preventive/Ambulatory, ER, or Inpatient Services, by MHP/FFS Enrollment Pattern



Further investigation revealed that those with continuous FFS enrollment are generally older, more likely to have one of the two prevalent chronic conditions (i.e., lipid metabolism and essential hypertension disorders) and had more chronic conditions than the other two enrollment groups. These characteristics appeared to be associated with a utilization profile consisting of (1) a lower likelihood of using ambulatory services, (2) a greater number of ambulatory visits, and (3) a higher likelihood of using inpatient services.

Serious Mental Illness

Figure 3-23 compares the service utilization patterns among SMI consumers with different enrollment patterns. Consumers who had continuous MHP enrollment were significantly more likely to have any preventive/ambulatory visits, ER visits, or inpatient admissions than those with continuous FFS enrollment. Compared to those with at least some MHP enrollment (FFS-MHP), consumers with continuous MHP enrollment were significantly less likely to use emergency visits and inpatient services.

Figure 3-23—Comparison of Proportion of PIHP Consumers With Serious Mental Illness Using Preventive/Ambulatory, ER, or Inpatient Services, by MHP/FFS Enrollment Pattern

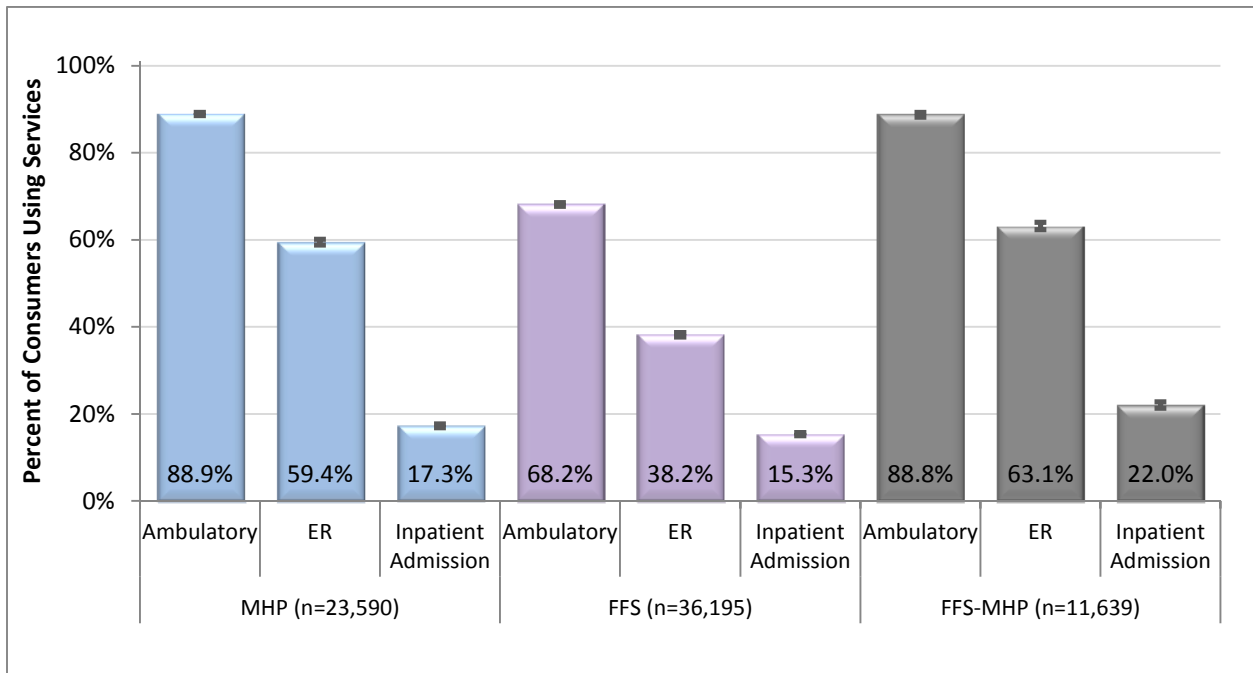
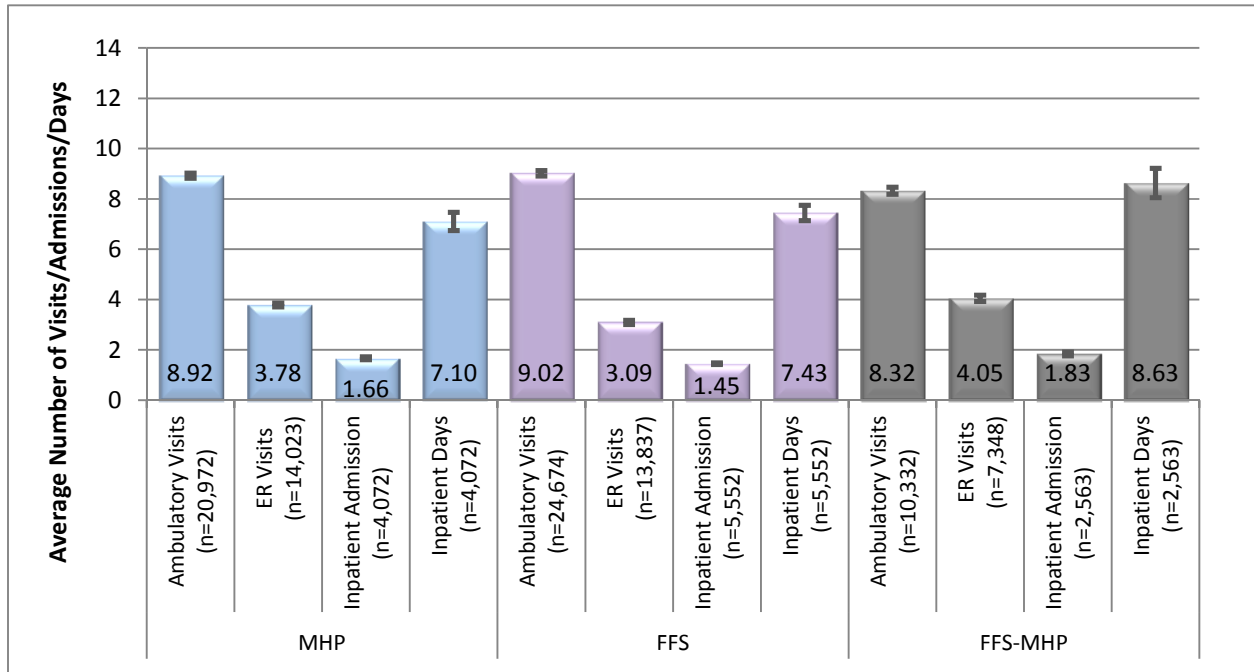


Figure 3-24 compares the utilization statistics for ambulatory, ER, and hospital services. Consumers with continuous MHP enrollment had significantly more ER visits and inpatient admissions than those with continuous FFS enrollment. However, they had significantly fewer ER visits, inpatient admission, and hospital days than those without continuous enrollment (FFS-MHP). Consumers with some but not continuous MHP/FFS enrollment during FY 2010 (FFS-MHP) had significantly fewer ambulatory visits but more ER and inpatient service usage than the other two groups.

Figure 3-24—Service Use Statistics by PIHP Consumers With Serious Mental Illness Who Used Preventive/Ambulatory, ER, or Inpatient Services, by MHP/FFS Enrollment Pattern



Further investigation showed that consumers who had continuous MHP enrollment were more likely to use any of the services examined in this study than those with continuous FFS enrollment; and these consumers were also more likely to be female, have one of the two prevalent chronic conditions (i.e., lipid metabolism and essential hypertension disorders) and had more chronic conditions.

Dual Diagnoses

Figure 3-25 compares the service utilization patterns among dually diagnosed consumers with different enrollment patterns. Consumers who had continuous MHP enrollment were significantly more likely to have preventive/ambulatory visits and ER visits but less likely to be admitted to hospitals for physical health care than those with continuous FFS enrollment. They were also significantly more likely to use ambulatory services but less likely to use ER or inpatient services than those without any continuous enrollment (FFS-MHP). Consumers with continuous FFS enrollment were also significantly less likely to use any ER service than those without any continuous enrollment.

Figure 3-25—Comparison of Proportion of PIHP Consumers With Dual Diagnoses Using Preventive/Ambulatory, ER, or Inpatient Services, by MHP/FFS Enrollment Pattern

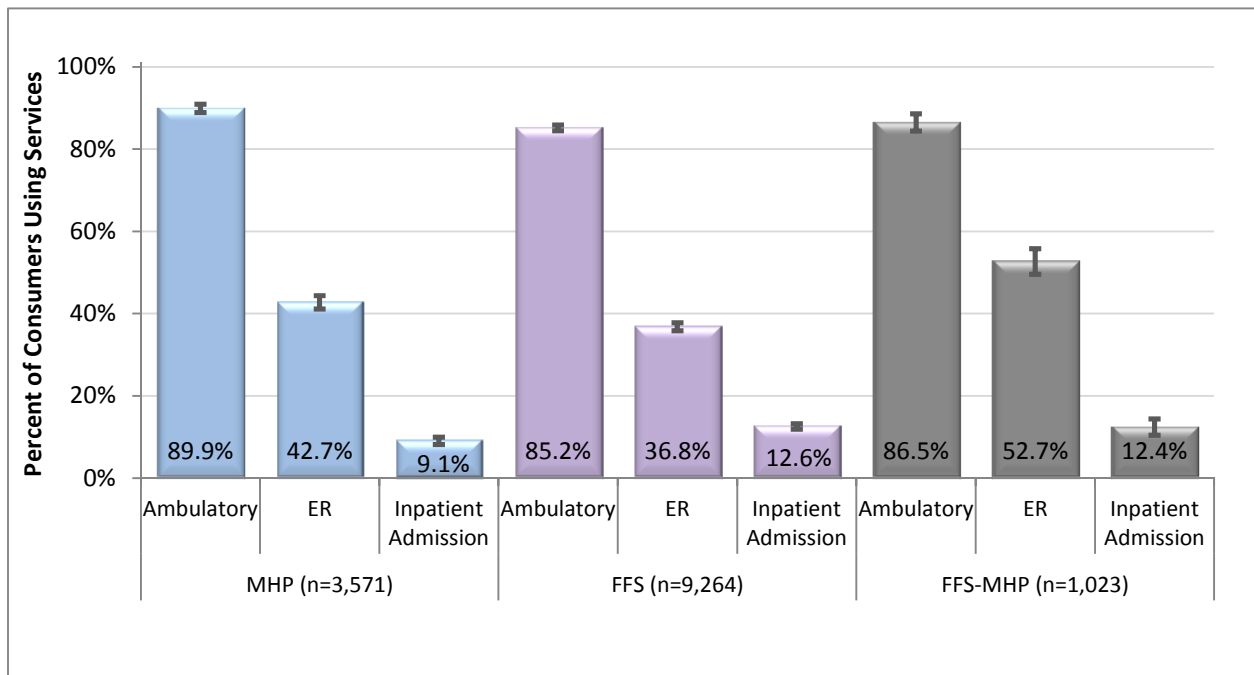
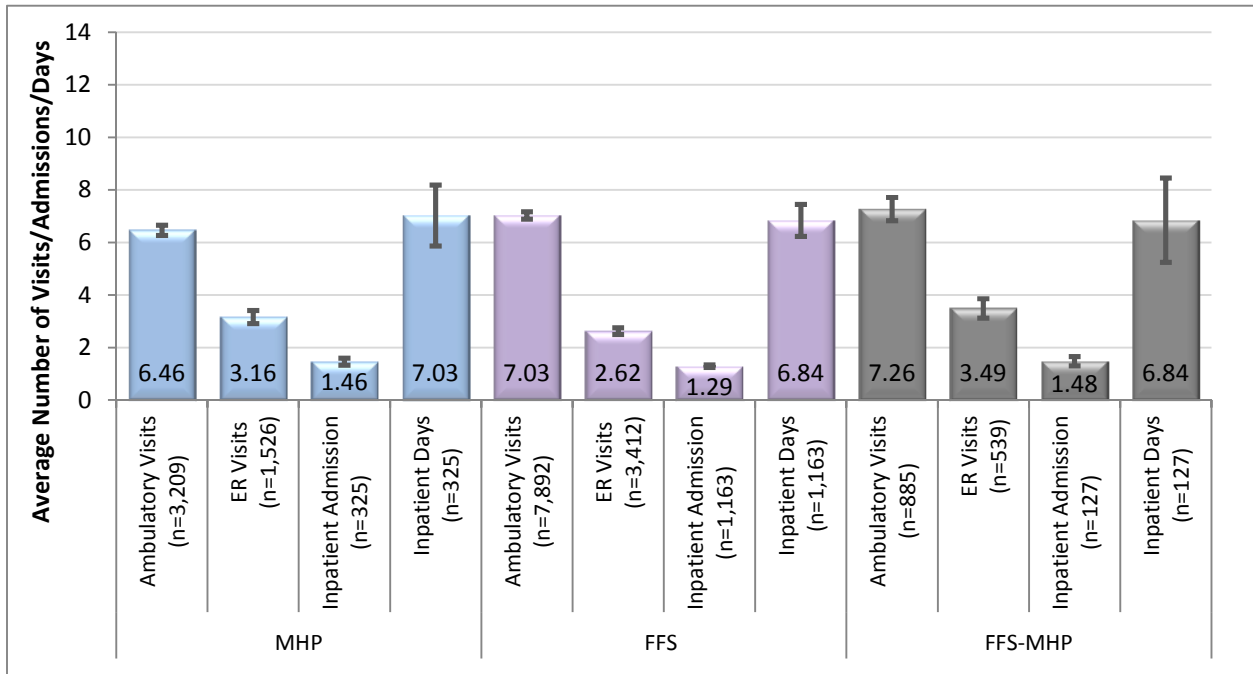


Figure 3-26 compares the utilization statistics for ambulatory, ER, and hospital services for consumers with dual diagnoses. It is interesting to note that consumers with continuous MHP enrollment had fewer ambulatory visits than the other two enrollment groups. They also had more ER visits than consumers with continuous FFS enrollment.

Figure 3-26—Service Use Statistics by PIHP Consumers With Dual Diagnoses Who Used Preventive/Ambulatory, ER, or Inpatient Services, by MHP/FFS Enrollment Pattern



Further analyses indicated that the continuous FFS group were older, more likely to be female, more likely to have one of the two prevalent chronic conditions (i.e., lipid metabolism and essential hypertension disorders) and had more chronic conditions.

Conclusion and Limitations

The current study aims at describing the medical service utilization patterns among PIHP consumers with three disability conditions (developmental disability, serious mental illness, and dual diagnoses). Using FY 2009 and FY 2010 claims and encounters, HSAG identified nearly 30,000 consumers with one of these conditions.

Of these 29,932 consumers, nearly 80 percent (78.8 percent) had a diagnosis of serious mental illness (SMI) and another 9.3 percent had a diagnosis of developmental disability (DD). About 12 percent of PIHP consumers had both diagnoses. The percentage of consumers within each disability group varied by PIHP.

General Medical Service Utilization Patterns

Overall, at least 17 out of 20 (85 percent) of PIHP consumers with any of these conditions used preventive/ambulatory services. Depending on the disability condition, the likelihood of using emergency rooms and being admitted to hospitals for physical health care varied. Among the three disability groups, consumers with SMI had a significantly higher likelihood of using ER and inpatient services. In terms of intensity of service use, consumers with DD had significantly fewer preventive/ambulatory visits and ER visits than those with SMI and dual diagnoses. Consumers with SMI appeared to have the highest average number of ambulatory and ER visits among the three disability groups. These findings suggest that for consumers with SMI, the use of preventive/ambulatory services did not seem to mitigate the high use of emergency room services.

It is interesting to note that although consumers with dual diagnoses were expected to have more intense use of services than consumers with either DD or SMI, the results indicated that their service utilization profiles and clinical diagnosis profiles mostly mimicked those with DD. Further investigation revealed that when comparing the full clinical condition category profiles, the dual diagnoses group shared more of their top 10 diagnoses with the DD group than with the SMI group. Additionally, the SMI group had a significantly higher average number of chronic condition categories (7.5 conditions) than either the DD group (4.5 conditions) or the dual diagnoses group (6.9 conditions). Coupled with another finding that consumers with dual diagnoses were younger than those with SMI, these results may shed light on why consumers with dual diagnoses were less likely to use more services than those with SMI.

Ambulatory Service Use Between Frequent and Non-Frequent Inpatient/ER Users

Since the three disability groups displayed a different distribution of consumers who had an inpatient admission or emergency room visits, HSAG used different cut-off points for each disability group to identify frequent inpatient/ER users. Frequent inpatient/ER users, in general, accounted for 6 to 7 percent of consumers in each disability group, with at least one out of 11 inpatient or ER users being identified as frequent users.

Across all disability groups, frequent users of inpatient/ER services were more likely to make ambulatory visits and had more ambulatory visits than non-frequent users. Although frequent users

with SMI were significantly less likely to have ambulatory visits, their ambulatory service users had significantly more ambulatory visits than those with either DD or dual diagnoses. Based on the findings, ambulatory visit use did not appear to reduce emergency room or inpatient services use.

Impact of Most Prevalent Conditions on Service Utilization

Using the Chronic Condition Indicator and the Clinical Classification System, HSAG identified disorders of lipid metabolism and essential hypertension as the two most prevalent chronic conditions in this study population. In general, although statistical significance varied by disability group, consumers with essential hypertension were more likely to use ER and inpatient services and used more of both preventive and institutional services.

To further understand the impact of these prevalent conditions on PIHP consumers, HSAG compared service utilization patterns among consumers with none, one, or two of these chronic conditions. Results across the disability groups showed that consumers with none of these conditions were significantly less likely to use ambulatory services and had significantly fewer ambulatory visits. Although there was no consistently statistically significant difference in the likelihood of using emergency room services across all disability groups, these consumers also had significantly fewer ER visits. There were no statistically significant differences in the likelihood of using inpatient services or in the number of inpatient admissions or hospital days among consumers with none, one, or both of these conditions.

Supplemental Analyses

In addition to the main focused study questions, HSAG also examined two supplemental analysis questions. In evaluating the level of agreement in disability categorization from the quality improvement (QI) file to that used for the main study, HSAG found that over 85 percent of PIHP consumers identified using claims/encounters had the same disability categorization in the QI file. Nonetheless, there were wide variations of level of agreement across disability groups, ranging from 37.6 percent of agreement for the dual diagnoses group to 95.4 percent for the SMI group. Variations in the level of agreement were also noted at the PIHP level, with the smallest variation among the SMI group (13.2 percentage point difference) and the largest in the dual diagnoses group (61.3 percentage point difference). Without understanding how the disability designation was assigned in the QI file, it was difficult to identify areas for improvement. Nonetheless, a low level of agreement between the QI file and the designation derived for this study may suggest that a substantial number of consumers may not be receiving adequate assessment and treatment plans based on their disability conditions.

A second supplemental analysis question addressed the impact of continuous MHP enrollment on service utilization patterns. To answer this question, HSAG developed two additional groups of consumers with different enrollment patterns. One group had continuous FFS enrollment and the other had a mixture of FFS and MHP enrollment history during FY 2010. Service utilization patterns of these groups were compared to those of the consumers with continuous MHP enrollment. Results showed that the FFS group had a significantly higher proportion of consumers with DD or dual diagnoses than the MHP group. Additionally, the FFS-MHP group had a

significantly higher proportion of consumers with SMI. Since the analysis only focused on FY 2010, HSAG was not able to determine whether a consumer's disability condition would affect his/her decision in enrolling in an MHP or whether consumers in the FFS-MHP group would continue to have the same enrollment pattern for subsequent years. Future studies would be able to help answer these questions.

The only significant difference identified across all disability groups was noted in the likelihood of using preventive/ambulatory services. Consumers with continuous MHP enrollment were significantly more likely to use preventive/ambulatory services than those with continuous FFS enrollment regardless of whether the consumers had a diagnosis of DD, SMI, or DD/SMI. Statistically significant differences in the intensity/frequency of using ambulatory, ER, or inpatient services for physical health care were not consistently identified across all disability groups. Without taking statistical significance into account, consumers with continuous MHP enrollment were more likely to use ambulatory or emergency room services and less likely to use inpatient services than those with either continuous FFS enrollment or those without any continuous enrollment. However, consumers with continuous MHP enrollment also appeared to use more emergency room services and inpatient services than the other two groups. While these differences in utilization patterns could be related to different demographic and clinical characteristics associated with each enrollment group and disability condition, comparison of service utilization by enrollment patterns in this study should be interpreted with caution. It is possible that some of these consumers were dually enrolled in Medicare and Medicaid, and most of their services were covered by Medicare rather than by Medicaid. Since Medicare FFS claims were not available to HSAG for analyses, the information presented in this report for consumers with at least some FFS enrollment may not be complete. With the additional Medicare FFS claims data, future studies could focus on how age, disability, and enrollment patterns affect service utilizations.

Study Limitations

The current focused study provided a unique opportunity to examine medical service utilization patterns among consumers with a developmental disability, serious mental illness, and dual diagnoses. In the absence of an integrated data system to track and monitor behavioral health and physical health claims and encounters for consumers with these disabilities, HSAG received separate data files from MDCH to complete this study, with the aim of using the information presented in this report to provide insights on how the care for these consumers could best be coordinated.

During the course of the study, HSAG identified several limitations. First, using claims and encounters to reconstruct service utilization profiles presents a unique challenge. Since these data are historically used for billing or administrative purposes, incomplete data submission may affect the ability to compare utilization patterns across different disability groups. This challenge was more pronounced when HSAG attempted to evaluate the impact of continuous MHP enrollment on service use by comparing service utilization patterns of consumers with continuous MHP enrollment to those not continuously enrolled in the MHP. Although it is generally believed that FFS claims data should be more complete than encounters, results from this study suggested that consumers with continuous MHP enrollment appeared to use more services. The relatively lower service use among consumers with continuous FFS enrollment or those enrolled in the MHP some

of the time during the review period could be because most of these individuals were enrolled in both Medicare and Medicaid programs, and Medicare claims were not available to be included in this study. Consequently, the service utilization patterns of PIHP consumers with at least several months of FFS enrollment portrayed in this study may not be complete.

Second, there were substantial challenges in defining each service type examined in this study. Since it is possible for providers to submit several different claims for the same visit/service for their consumers, special attention was paid to ensure that the visit/admission was distinct. As such, HSAG analysts used several data fields to create unique visit or admission keys. The use of multiple data fields (e.g., beneficiary ID, date of service, provider ID, diagnosis) may result in different visit or admission rates for the population. Since some of the supplied files did not contain provider ID, it was challenging to use a proxy data field to create the visit or admission key. The reliability of these data fields may therefore affect the proper matching of claims/encounters to unique visits/admissions.

Furthermore, the more data fields being used, the more visits/admissions will be defined, resulting in higher visit or admission rates. At the same time, HSAG analysts would need to examine the possibility of having many multiple visits/admissions that occurred on the same date. Since HEDIS specifications were primarily used for identify visits, in some cases, the same claim may have contained elements that could satisfy the requirements for an ambulatory visit, an ER visit, or even an inpatient admission. To that end, HSAG analysts needed to establish a hierarchy to evaluate the appropriateness to define the services reflected in the claim to belong to only one of these service types, or to more than one service type.

Appendix A. Procedure/Diagnoses Codes Used

Table A-1 lists all the codes used for identifying an ambulatory/preventive visit. Preventive/ambulatory visits were defined using beneficiary ID, line date of service, and provider ID. This means that claims with the same date of service with the same provider ID were defined as a single visit. Ambulatory visits identified from an inpatient or emergency room setting were excluded from the analyses.

Table A-1—Codes Used for Identifying Ambulatory/Preventive Visits				
Description	CPT	HCPCS	ICD-9-CM Diagnosis	UB Revenue
Office or other outpatient services	99201–99205, 99211–99215, 99241–99245			
Home services	99341–99350			
Nursing facility care	99301–99303, 99304–99310, 99311–99313, 99318			
Domiciliary, rest home or custodial care services	99321–99323, 99324–99328, 99331–99333, 99334–99337			
Preventive medicine	99385–99387, 99395–99397, 99401–99404, 99411–99412, 99420, 99429	G0344		0770, 0771, 0779
Clinic				051x
Freestanding clinic				052x
Professional fees, outpatient services				0982
Professional fees, clinic				0983
General medical examination			V70.0, V70.3, V70.5, V70.6, V70.8, V70.9	

Table A-2 lists all the codes used for identifying emergency room visits. Emergency room visits were defined using data source (PIHP and MHP data file), beneficiary ID, and line date of service. This means that claims with the same date of service were defined as a single visit. ER visits identified from the professional file that did not have a corresponding institutional claim were excluded from the analyses. Additionally, based on the criteria below, it is possible that an ER visit occurred at the beginning of an inpatient stay.

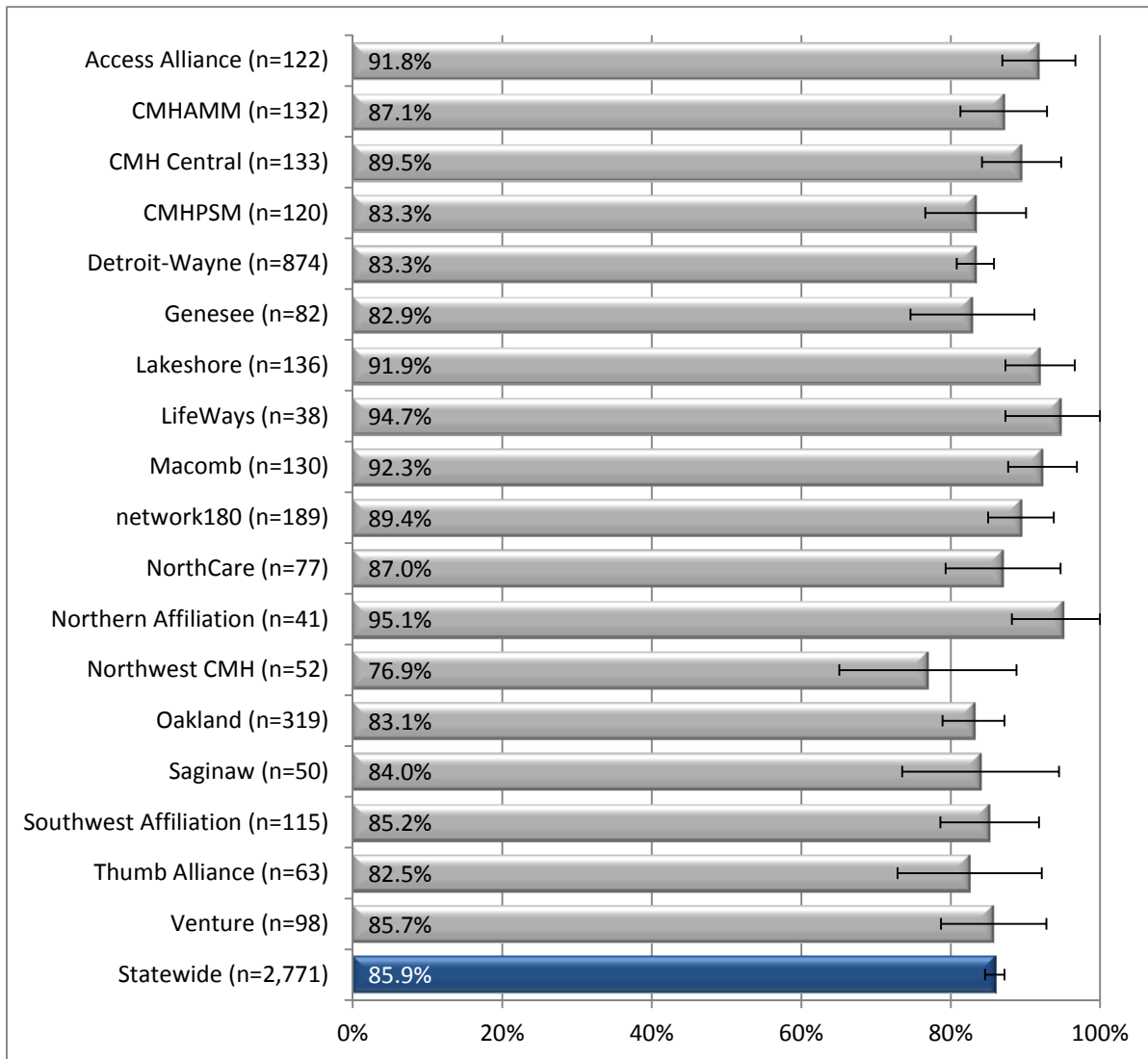
Table A-2—Codes Used for Identifying Emergency Room Visits			
ICD-9-CM Diagnosis	CPT	UB Revenue	
All principal diagnosis codes <i>except:</i> <ul style="list-style-type: none"> ◆ 290–316 for SMI and 317–319 for DD ◆ 960–979 with a secondary diagnosis of chemical dependency (<i>poisoning by drugs</i>) 	99281–99285	045x, 0981	
<i>OR</i>			
ICD-9-CM Diagnosis	CPT		POS
All principal diagnosis codes <i>except:</i> <ul style="list-style-type: none"> ◆ 290–316 for SMI and 317–319 for DD ◆ 960–979 with a secondary diagnosis of chemical dependency <ul style="list-style-type: none"> ▪ V30–V39 	10040–69979	<i>AND</i>	23

Table A-3 lists all the codes used for identifying inpatient admissions. Since it is likely to have providers submitting multiple claims for PIHP consumers admitting to a hospital, the following were collapsed into one inpatient episode: admission and discharge dates, claims that have the same source (PIHP or MHP data file), beneficiary ID, provider ID, and the first three digits of the first diagnosis and an overlapping admission-discharge date range. Length of stay for an inpatient admission was defined as the difference in days between the discharge date and the admission date after multiple institutional claims were collapsed into one inpatient stay. However, if the admission and discharge occurred on the same day, the length of stay was considered as one day.

Table A-3—Codes Used for Identifying Inpatient Admissions			
Inpatient Admission for Mental Health Care			
ICD-9-CM	Revenue Code		POS
All principal diagnosis codes <i>except:</i> <ul style="list-style-type: none"> ◆ 290–316 for SMI and 317–319 for DD ◆ 960–979 with a secondary diagnosis of chemical dependency 	0100, 0101, 0114, 0124, 0134, 0154	<i>WITH</i>	73 (Community), 22 (State Hospital), 68 (IMD), 65 (Mt Pleasant ICF/MR)
Inpatient Admission for Physical Health Care			
ICD-9-CM	UB Type of Bill		
All principal diagnosis codes <i>except:</i> <ul style="list-style-type: none"> ◆ 290–316 for SMI and 317–319 for DD ◆ 960–979 with a secondary diagnosis of chemical dependency 	11x, 12x, 41x, 42x, 84x		

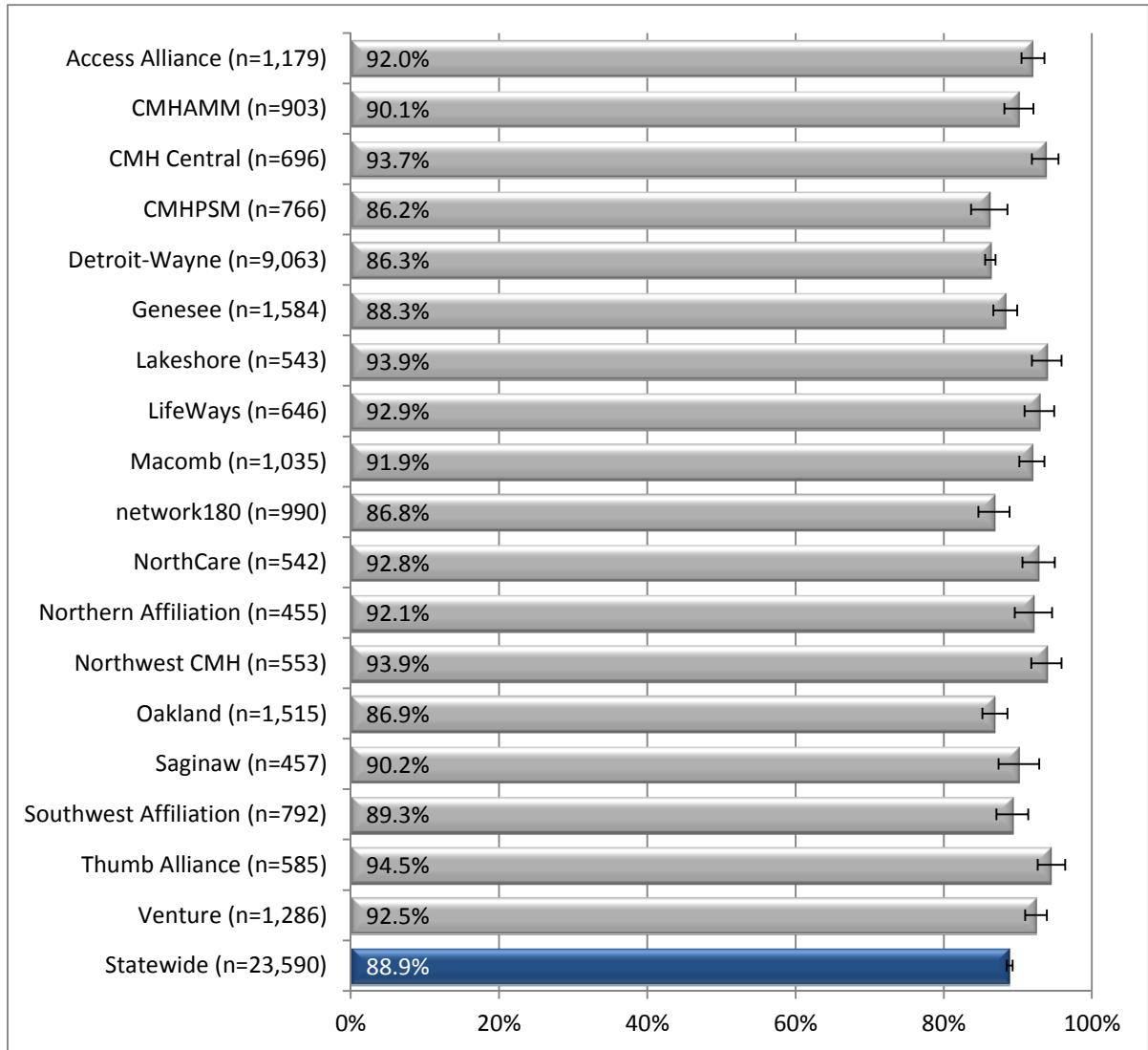
Appendix B. PIHP Variations in Service Utilization

Figure B-1—PIHP-Specific Rates for Preventive/Ambulatory Service Use Among Consumers With Developmental Disability



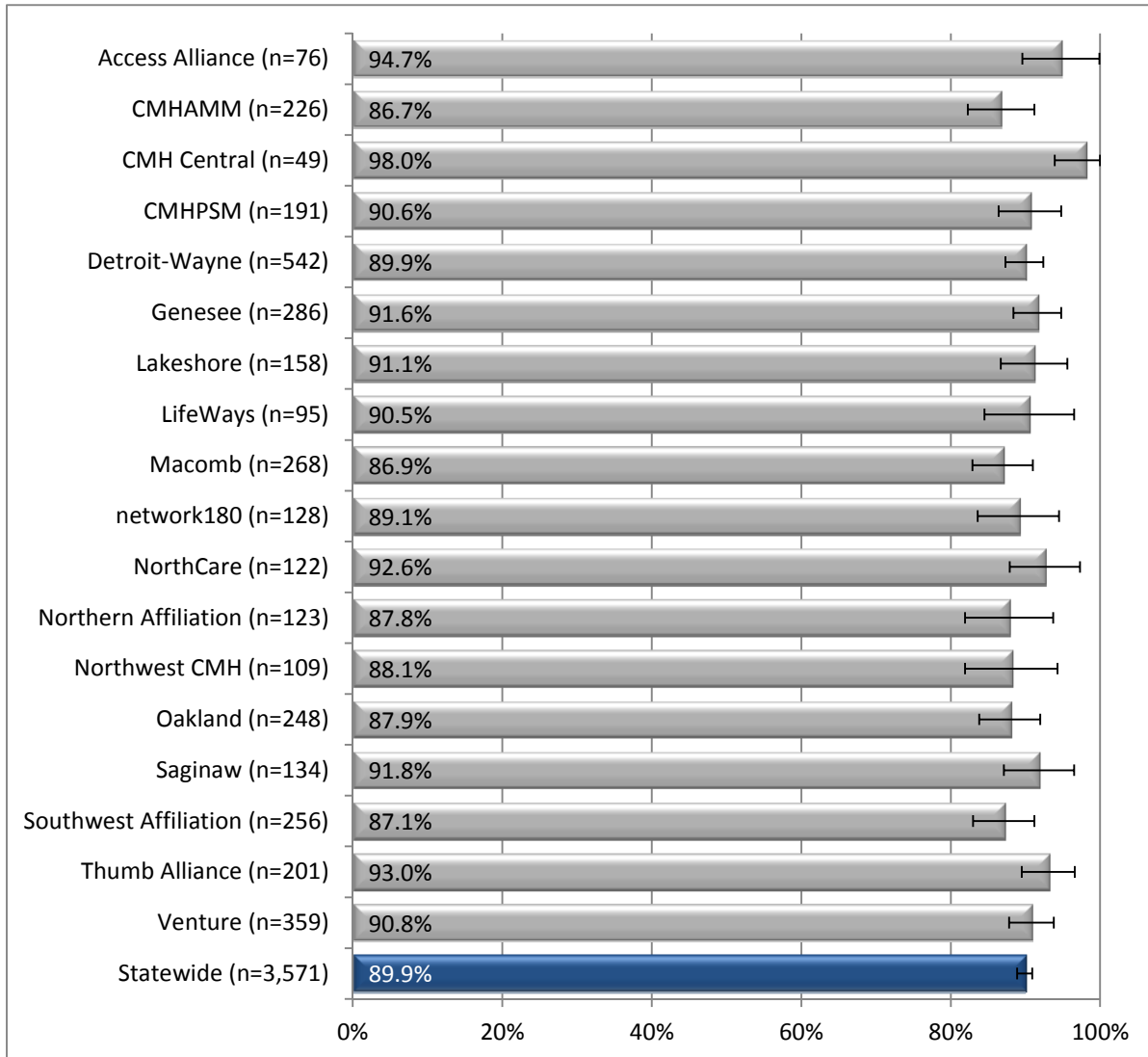
Note: Although these results were reported by the PIHPs, preventive/ambulatory services were authorized by the MHP.

Figure B-2—PIHP-Specific Rates for Preventive/Ambulatory Service Use Among Consumers With Serious Mental Illness



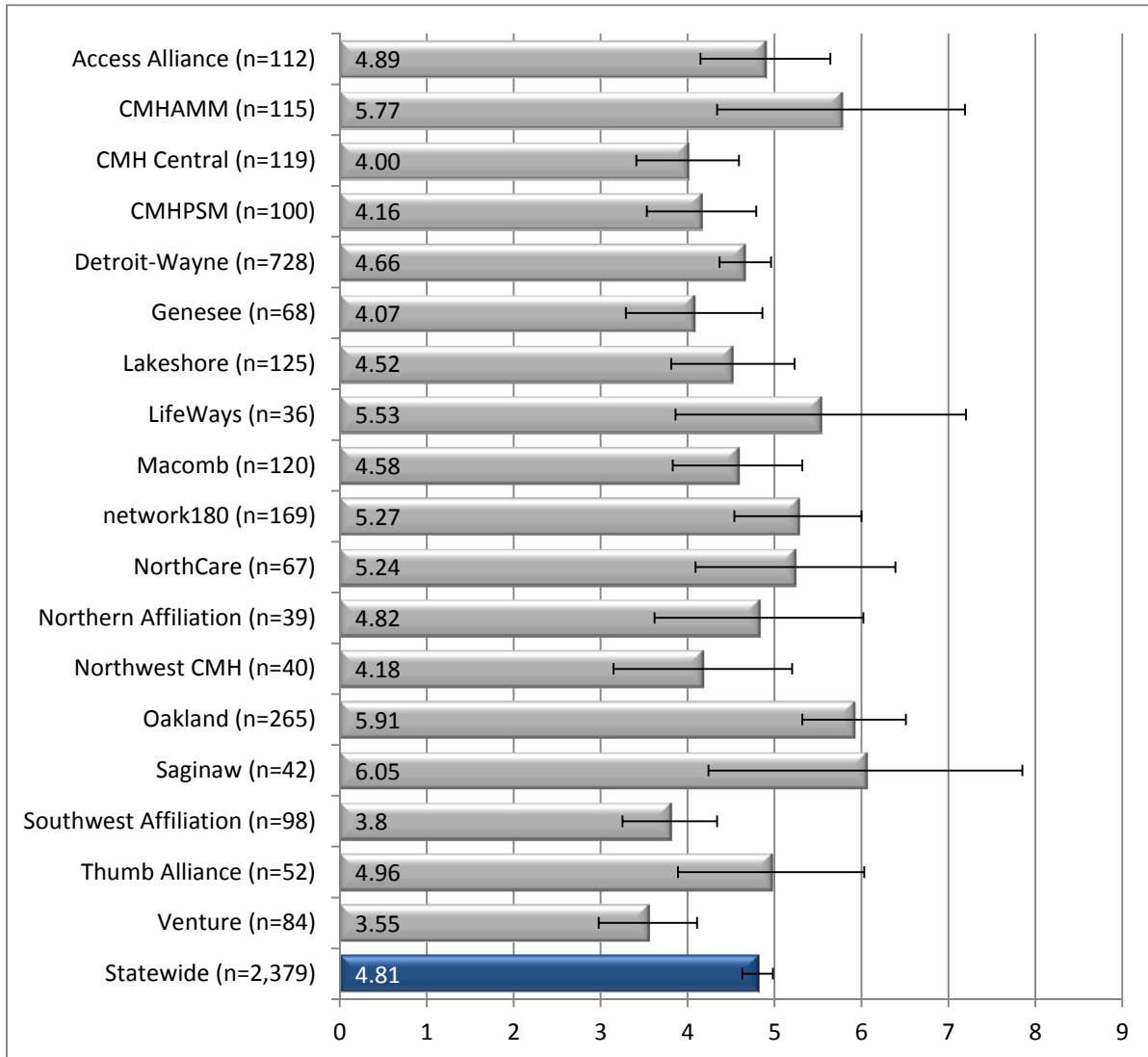
Note: Although these results were reported by the PIHPs, preventive/ambulatory services were authorized by the MHP.

Figure B-3—PIHP-Specific Rates for Preventive/Ambulatory Service Use Among Consumers With Dual Diagnoses



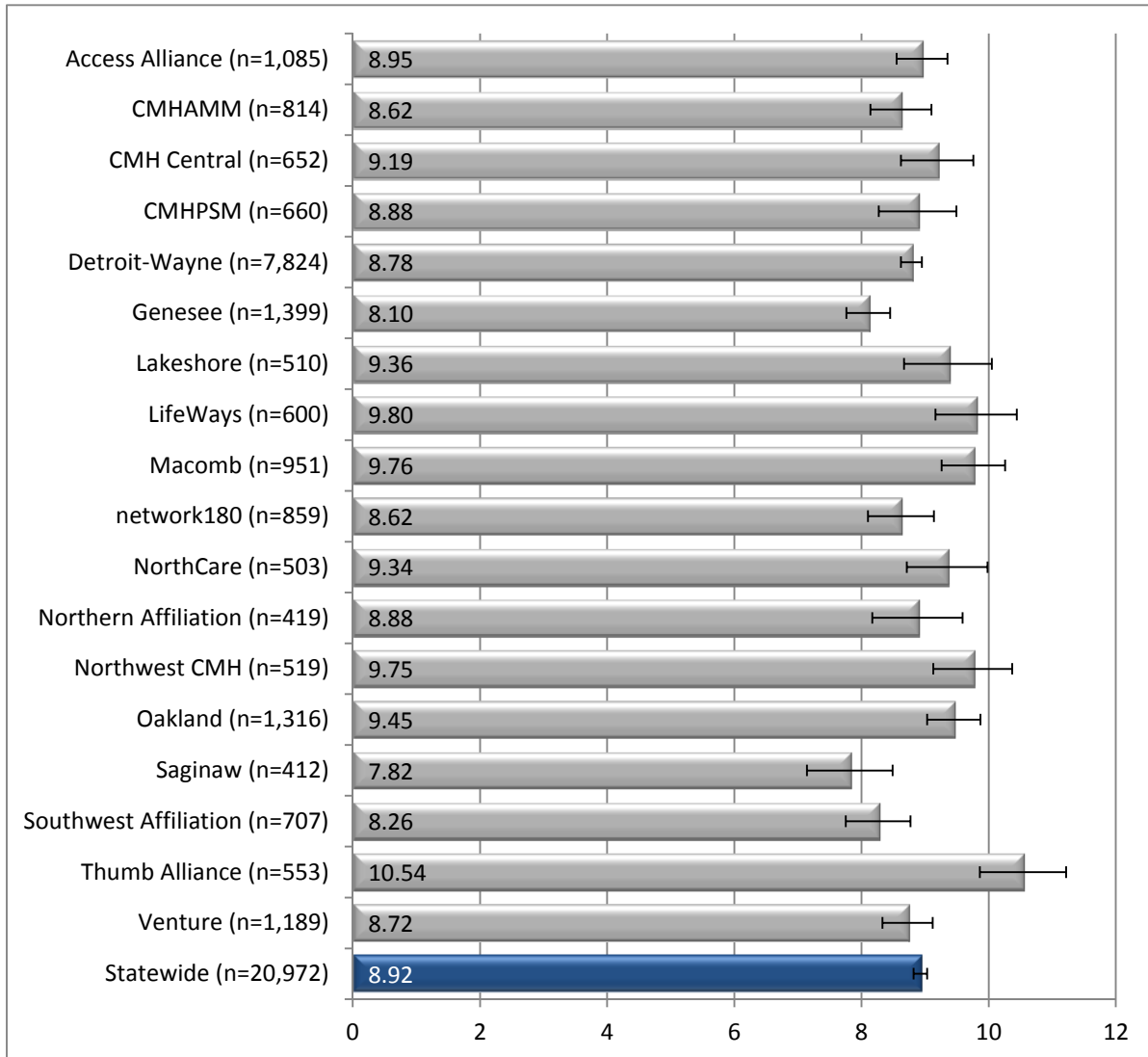
Note: Although these results were reported by the PIHPs, preventive/ambulatory services were authorized by the MHP.

Figure B-4—Average Number of Preventive/Ambulatory Visits Per User Among Consumers With Developmental Disability



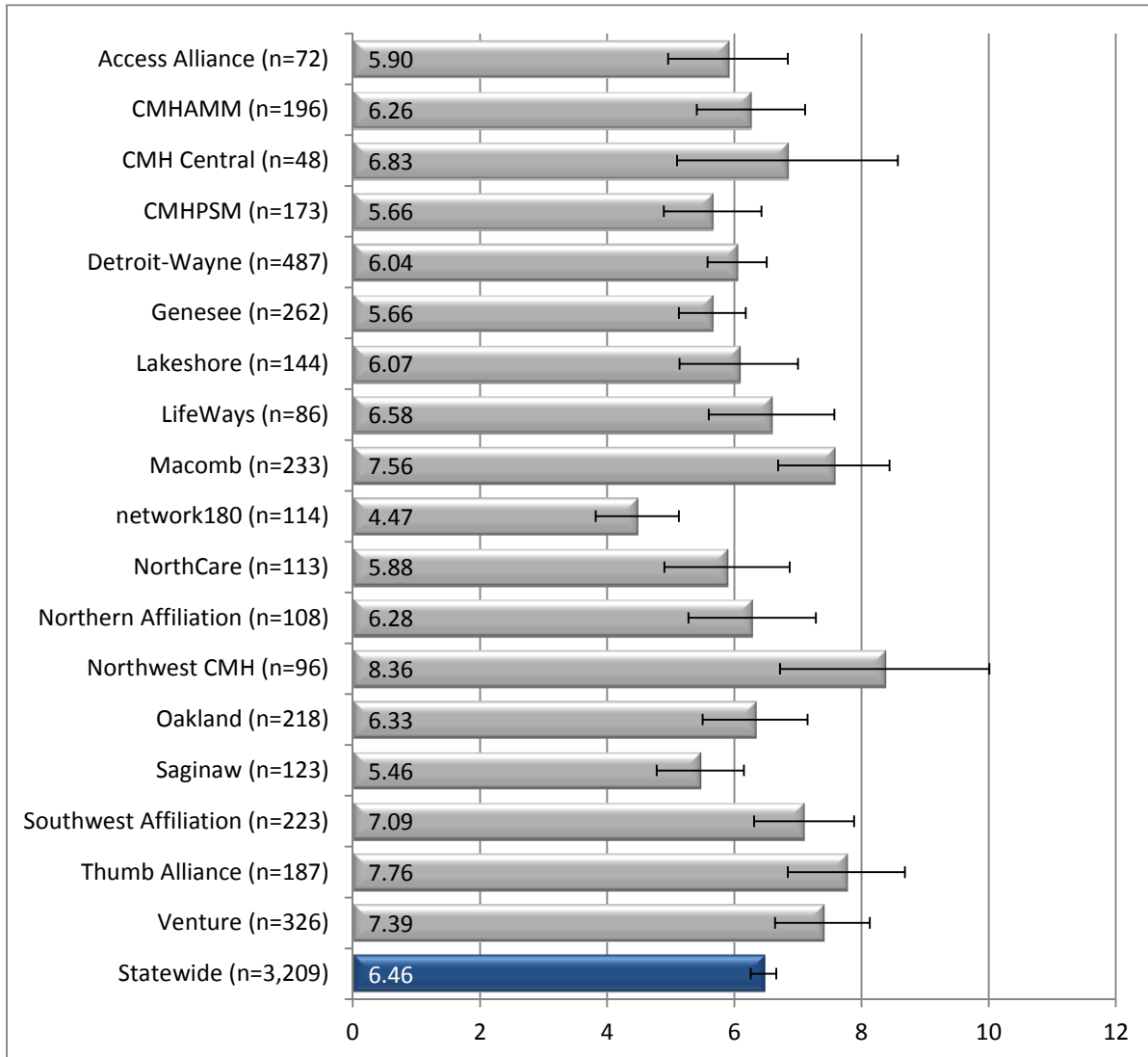
Note: Although these results were reported by the PIHPs, preventive/ambulatory services were authorized by the MHP.

Figure B-5—Average Number of Preventive/Ambulatory Visits Per User Among Consumers With Serious Mental Illness



Note: Although these results were reported by the PIHPs, preventive/ambulatory services were authorized by the MHP.

Figure B-6—Average Number of Preventive/Ambulatory Visits Per User Among Consumers With Dual Diagnoses



Note: Although these results were reported by the PIHPs, preventive/ambulatory services were authorized by the MHP.

Figure B-7—PIHP-Specific Rates for Emergency Room Service Use Among Consumers With Developmental Disability

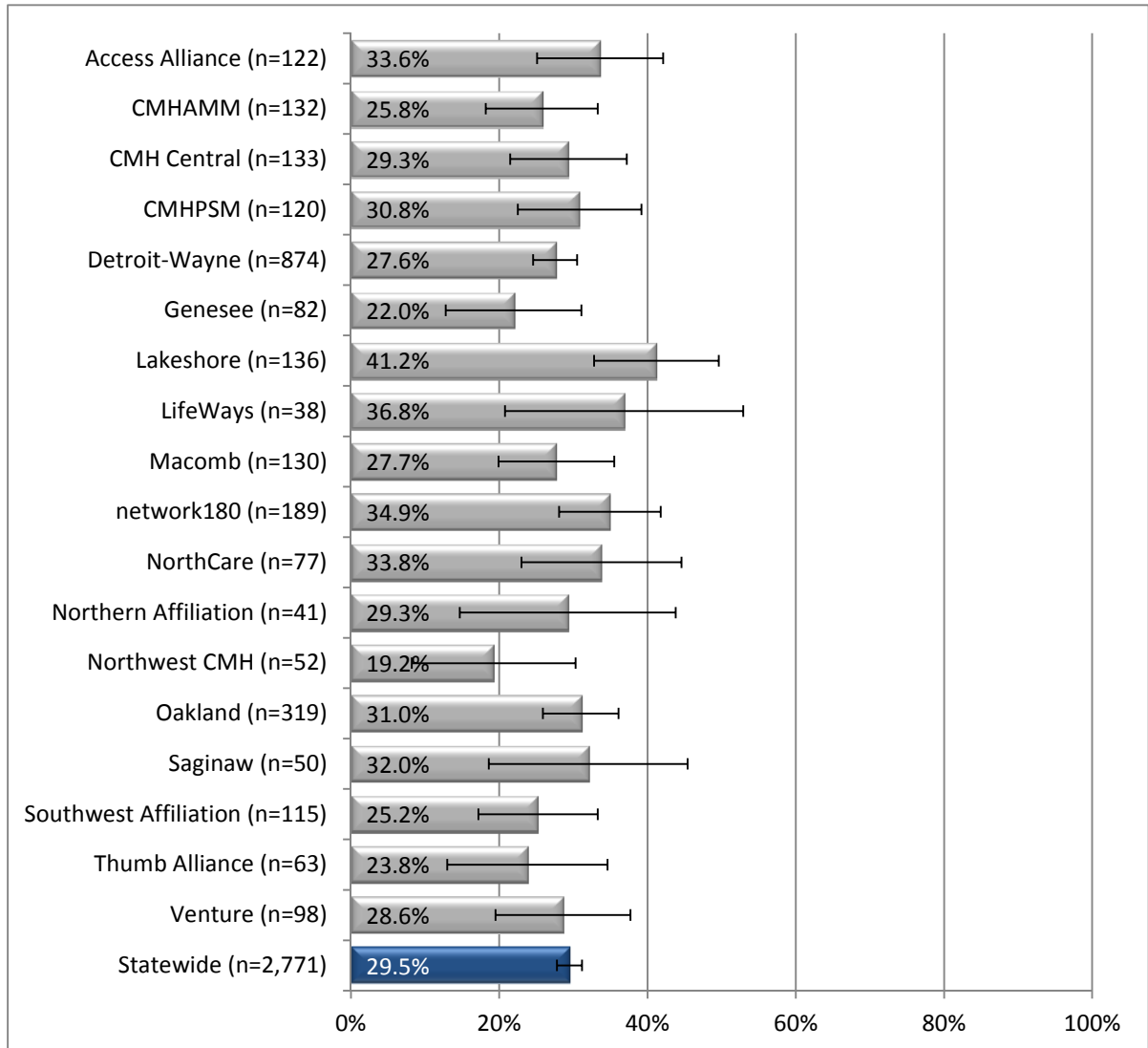


Figure B-8—PIHP-Specific Rates for Emergency Room Service Use Among Consumers With Serious Mental Illness

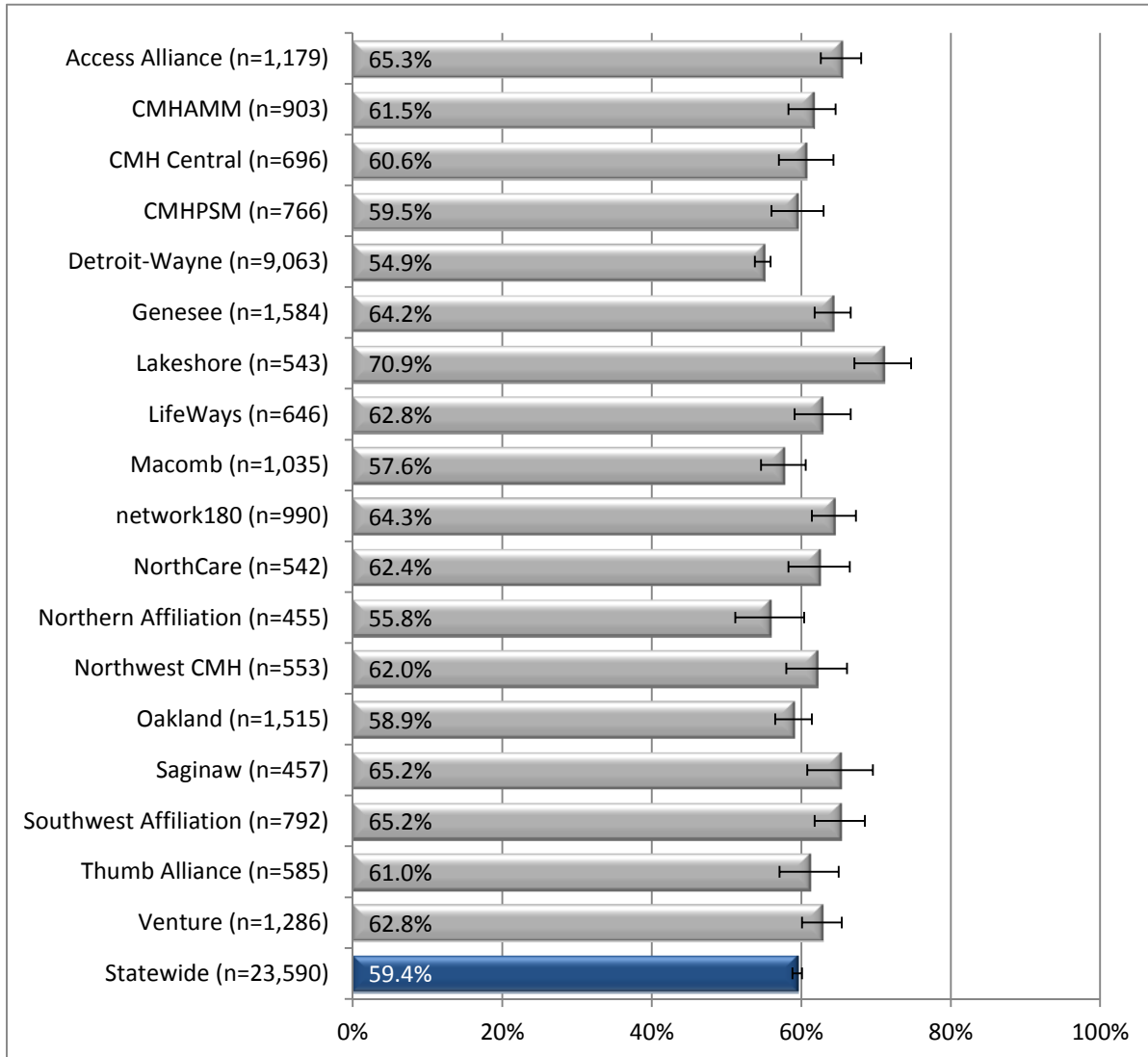
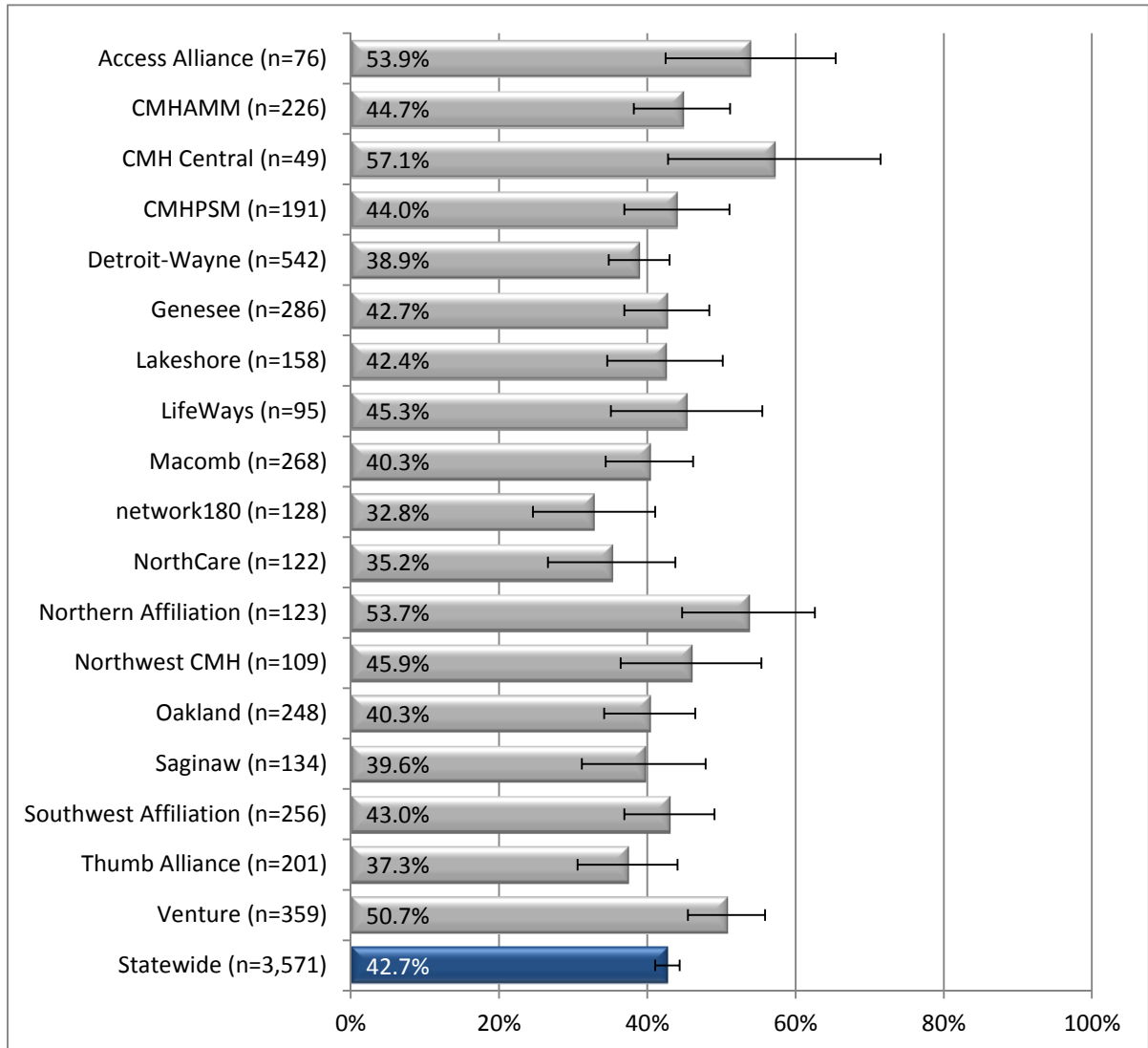


Figure B-9—PIHP-Specific Rates for Emergency Room Service Use Among Consumers With Dual Diagnoses



Since more than two PIHPs had fewer than 30 consumers with DD who visited emergency rooms, no graph was generated. Table B-1 shows the number of emergency room (ER) users and the average number of ER visits per user.

Table B-1—Average Number of Emergency Room Visits Per User Among Consumers With Developmental Disability		
PIHP	Number of Emergency Room Users	Average Number of ER Visits Per User
Access Alliance	41	2.15
CMHAMM	34	2.32
CMH Central	39	2.21
CMHPSM	37	2.11
Detroit-Wayne	241	2.08
Genesee		
Lakeshore	56	2.66
LifeWays		
Macomb	36	2.58
network180	66	3.21
NorthCare		
Northern Affiliation		
Northwest CMH		
Oakland	99	2.05
Saginaw		
Southwest Affiliation		
Thumb Alliance		
Venture		
Total¹	817	2.27

Note: No values are reported for PIHPs that had fewer than 30 consumers who visited ERs. Instead, the corresponding cells are shaded in gray.

¹ The totals reflect data from all PIHPs, including those with fewer than 30 consumers who visited ERs.

Figure B-10—Average Number of Emergency Room Visits Per User Among Consumers With Serious Mental Illness

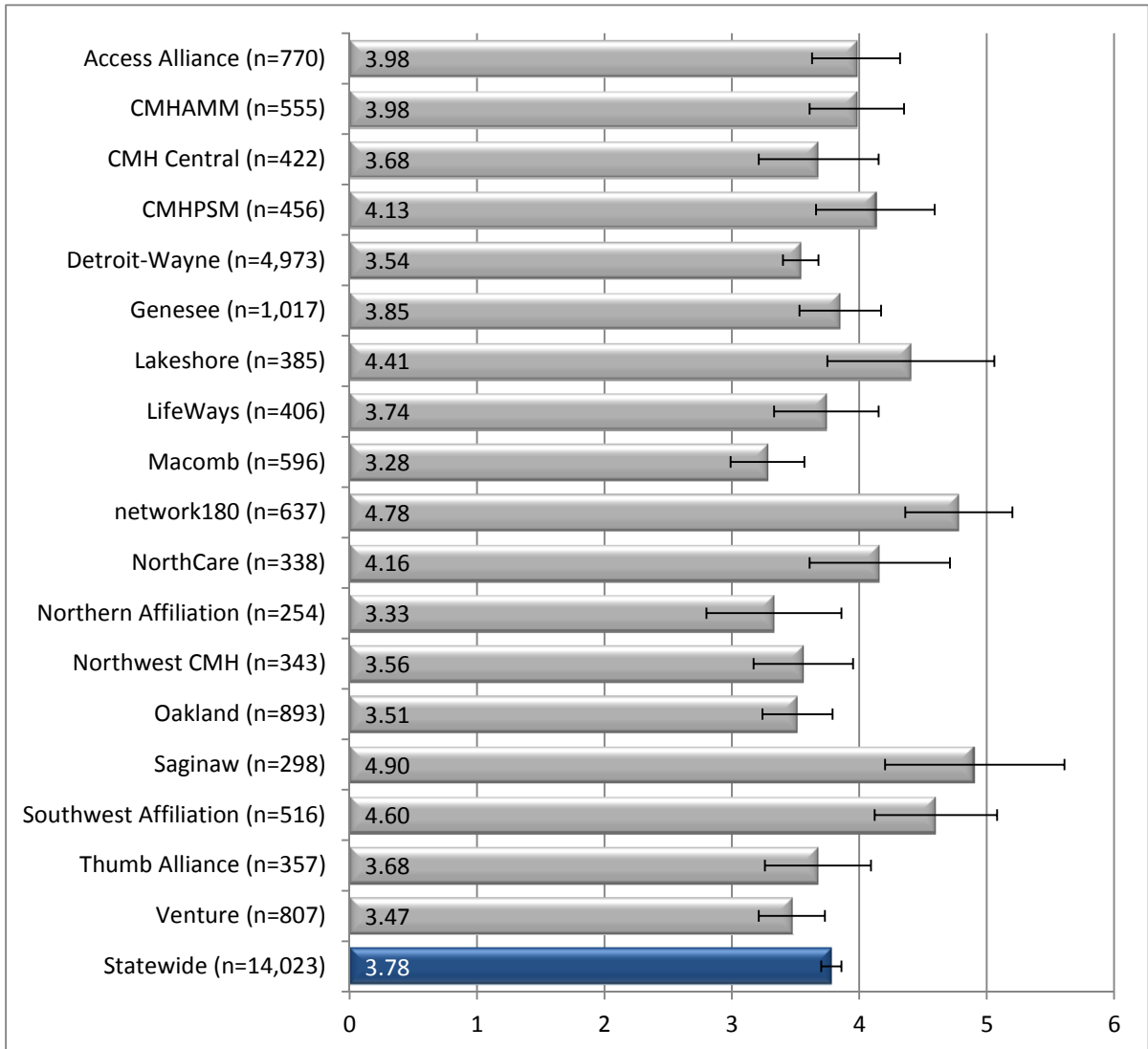
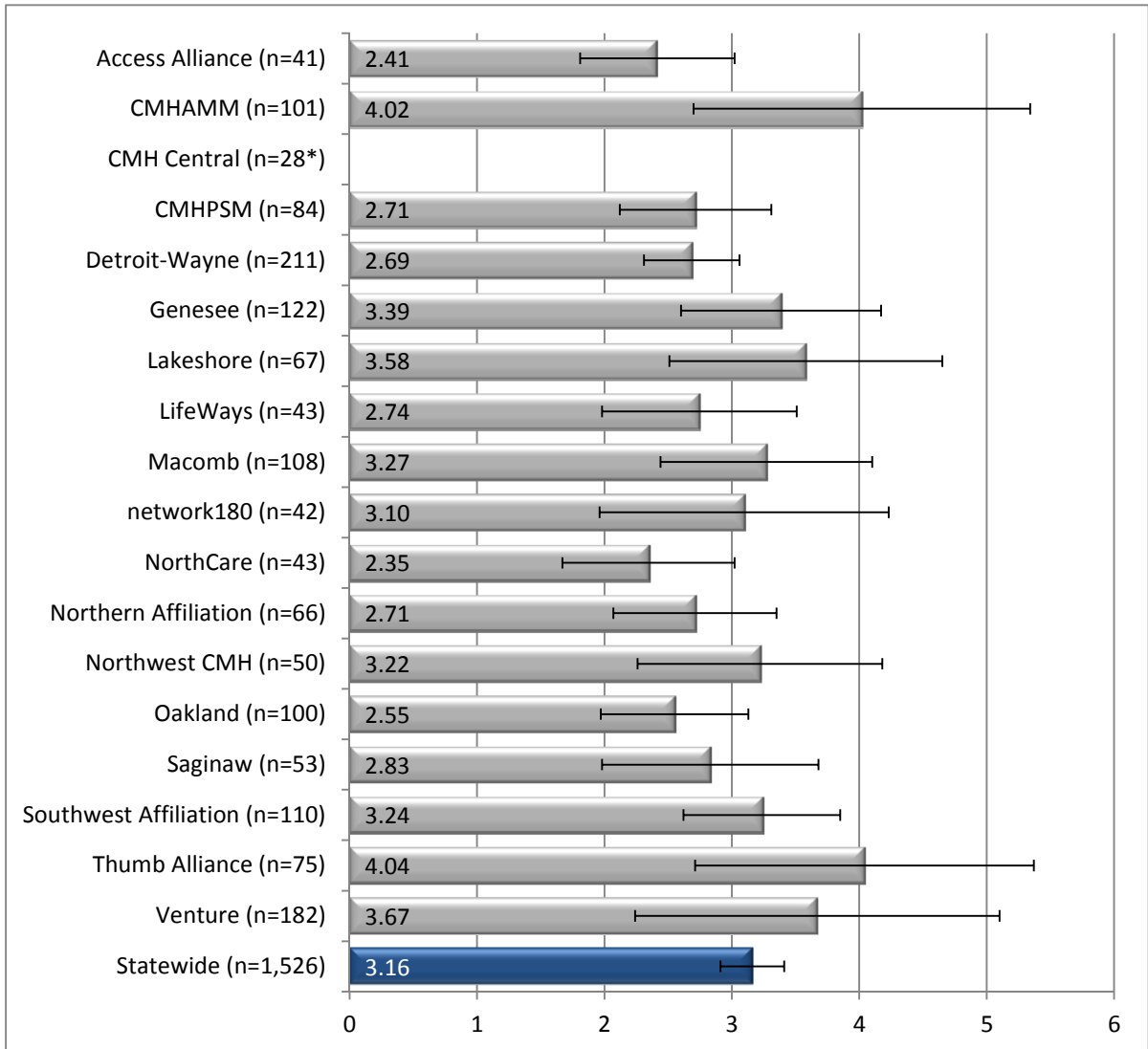


Figure B-11—Average Number of Emergency Room Visits Per User Among Consumers With Dual Diagnoses



One PIHP (CMH Central) had fewer than 30 consumers who visited an emergency room. No rate was reported for this PIHP.

Figure B-12—PIHP-Specific Rates for Inpatient Admission for Physical Health Care Among Consumers With Developmental Disability

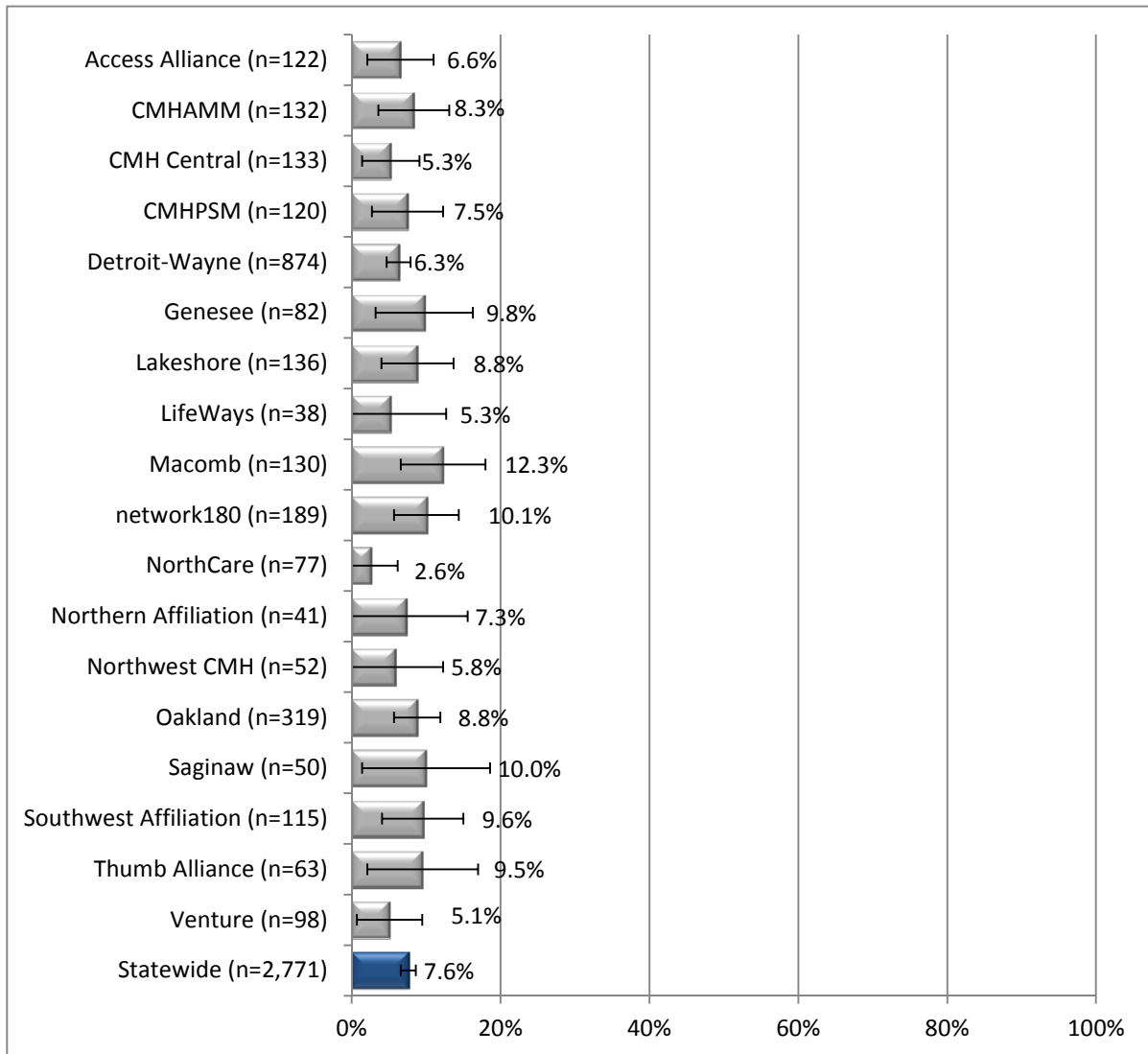


Figure B-13—PIHP-Specific Rates for Inpatient Admission for Physical Health Care Among Consumers With Serious Mental Illness

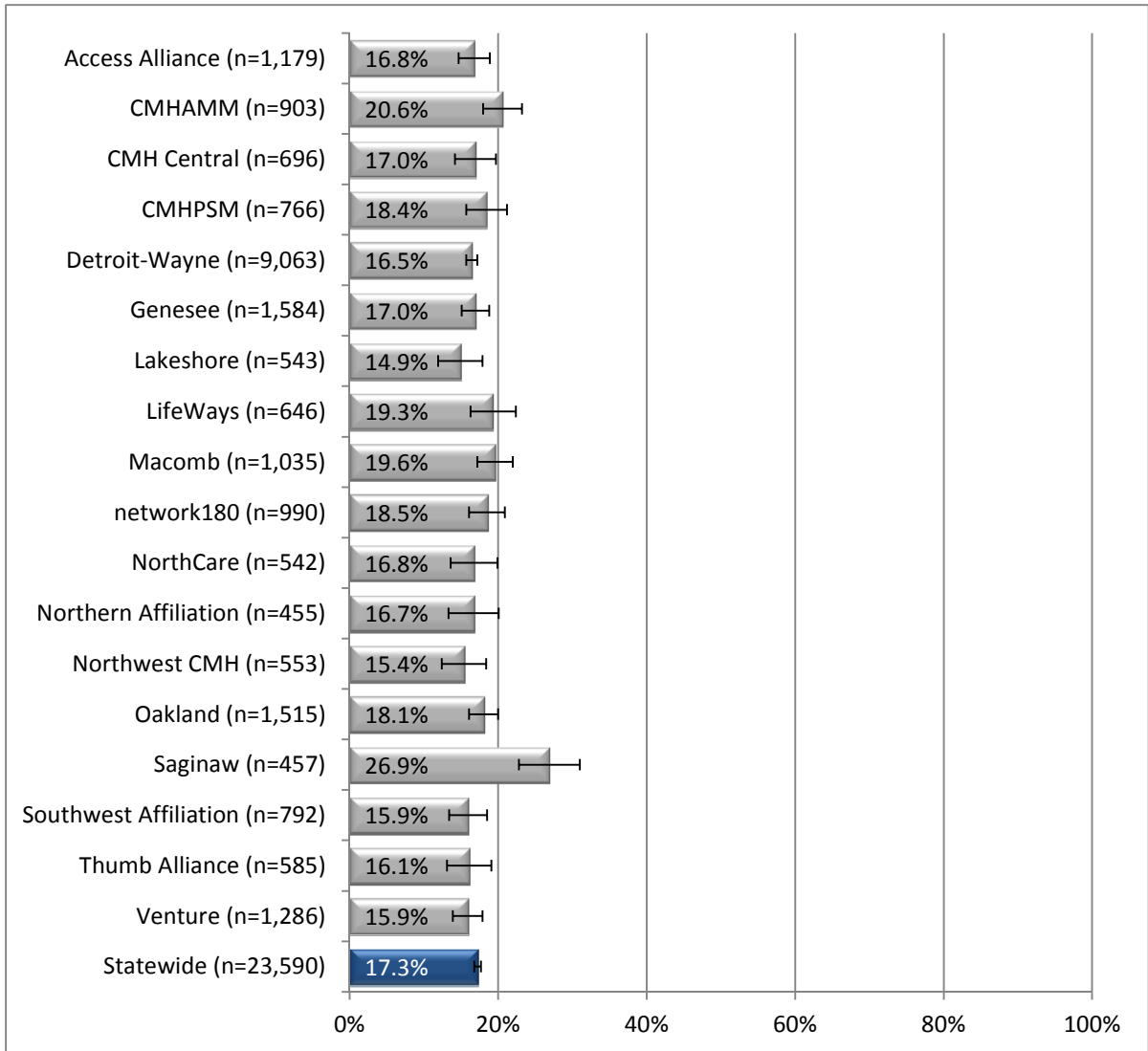
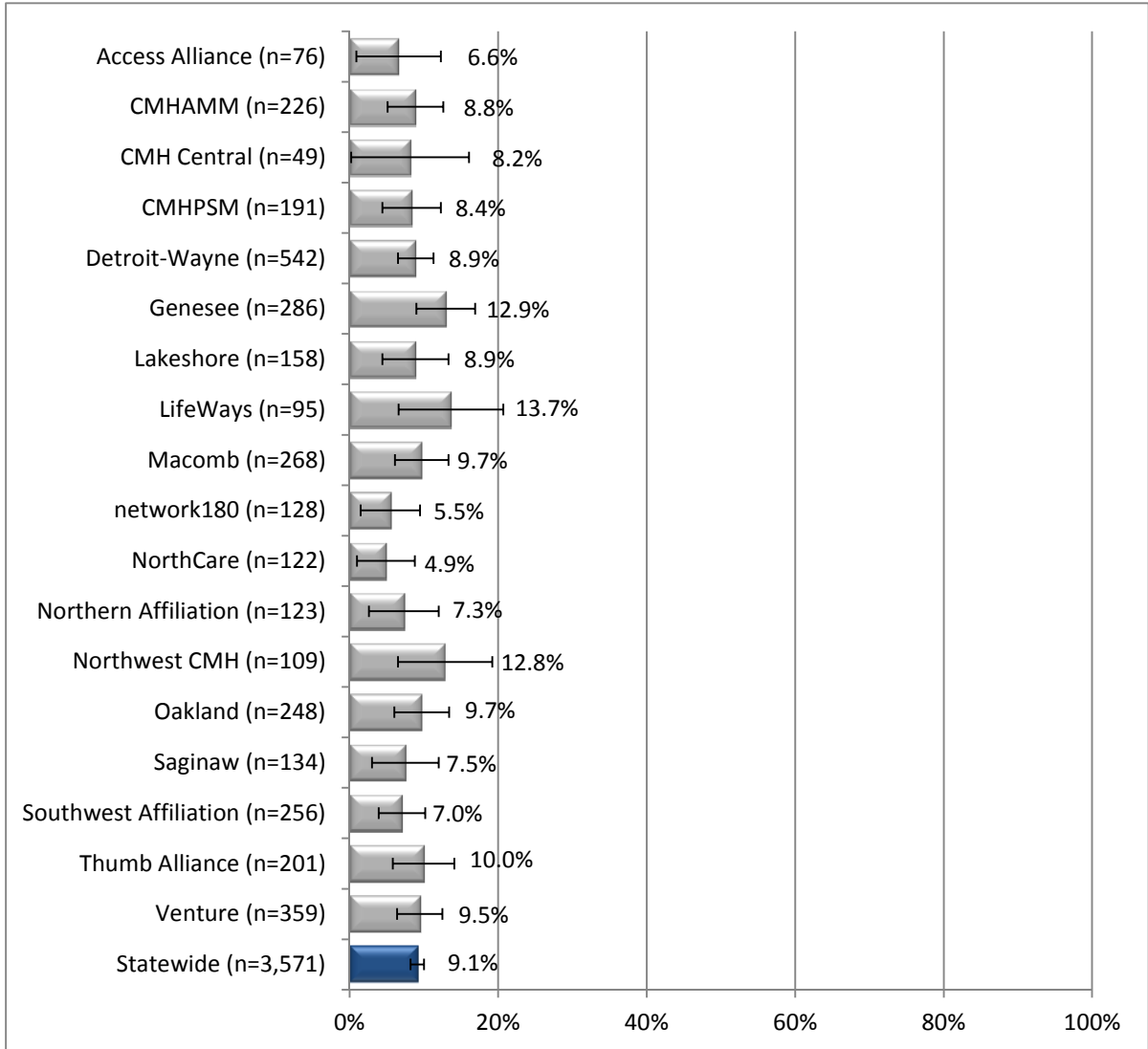


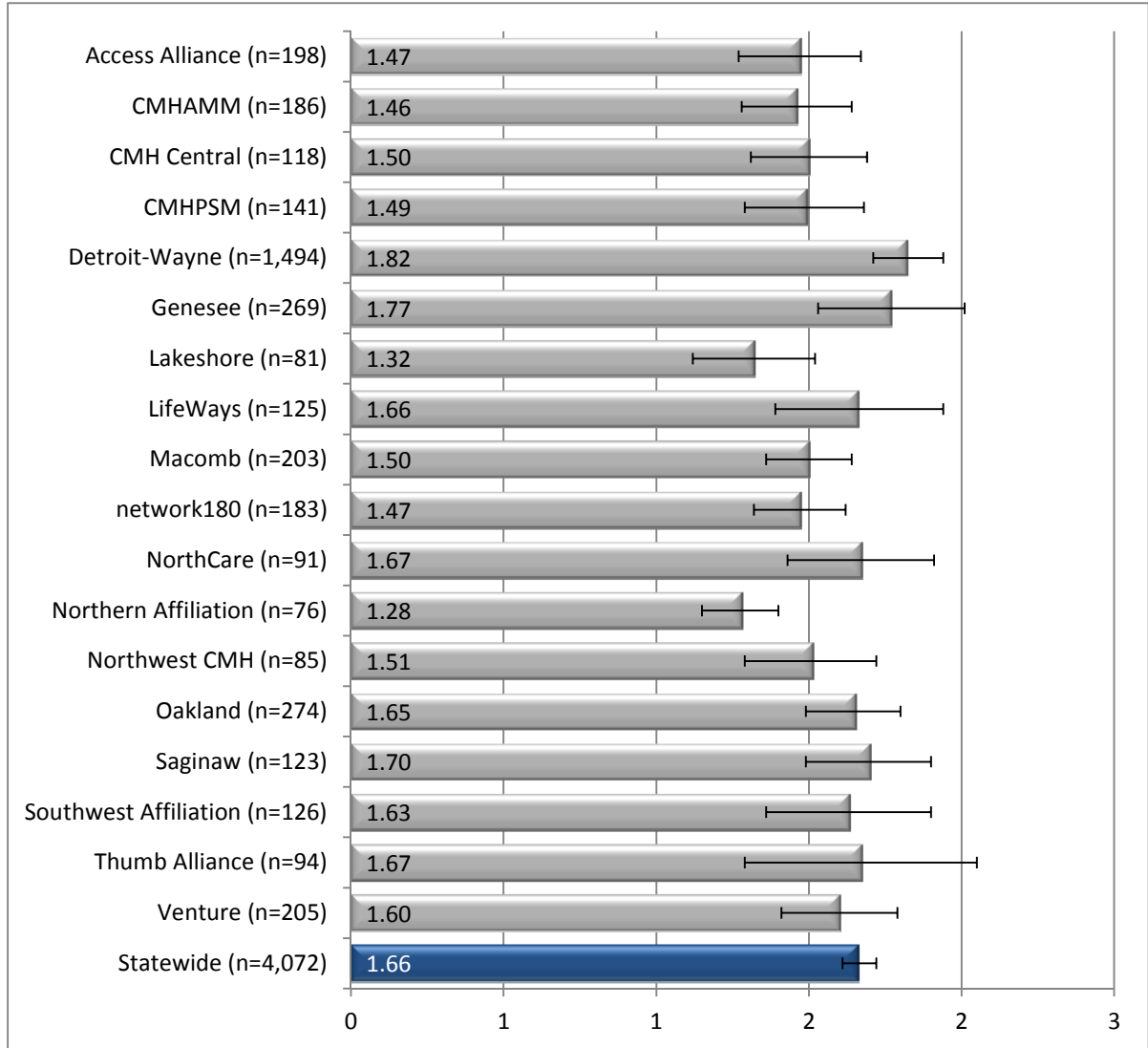
Figure B-14—PIHP-Specific Rates for Inpatient Admission for Physical Health Care Among Consumers With Dual Diagnoses



Since all but one PIHP had fewer than 30 consumers with DD who had an inpatient admission, no graph was generated. Table B-2 below shows the number of consumers using inpatient services and the average number of inpatient admissions per user.

Table B-2—Average Number of Inpatient Admissions for Physical Health Care Per User Among Consumers With Developmental Disability		
PIHP	Number of Consumers Using Inpatient Services	Average Number of Inpatient Admissions Per User
Access Alliance		
CMHAMM		
CMH Central		
CMHPSM		
Detroit-Wayne	55	1.49
Genesee		
Lakeshore		
LifeWays		
Macomb		
network180		
NorthCare		
Northern Affiliation		
Northwest CMH		
Oakland		
Saginaw		
Southwest Affiliation		
Thumb Alliance		
Venture		
Total¹	210	1.64
Note: No values are reported for PIHPs that had fewer than 30 consumers with an inpatient admission. Instead, the corresponding cells are shaded in gray. ¹ The totals reflect data from all PIHPs, including those with fewer than 30 consumers with an inpatient admission.		

Figure B-15—Average Number of Inpatient Admissions for Physical Health Care Per User Among Consumers With Serious Mental Illness



Since all but three PIHPs had fewer than 30 consumers with dual diagnoses who had an inpatient admission, no graph was generated. Table B-3 below shows the number of consumers using inpatient services and the average number of inpatient admissions per user.

Table B-3—Average Number of Inpatient Admissions for Physical Health Care Per User Among Consumers With Dual Diagnoses		
PIHP	Number of Consumers Using Inpatient Services	Average Number of Inpatient Admissions Per User
Access Alliance		
CMHAMM		
CMH Central		
CMHPSM		
Detroit-Wayne	48	1.40
Genesee	37	1.46
Lakeshore		
LifeWays		
Macomb		
network180		
NorthCare		
Northern Affiliation		
Northwest CMH		
Oakland		
Saginaw		
Southwest Affiliation		
Thumb Alliance		
Venture	34	1.50
Total¹	325	1.46

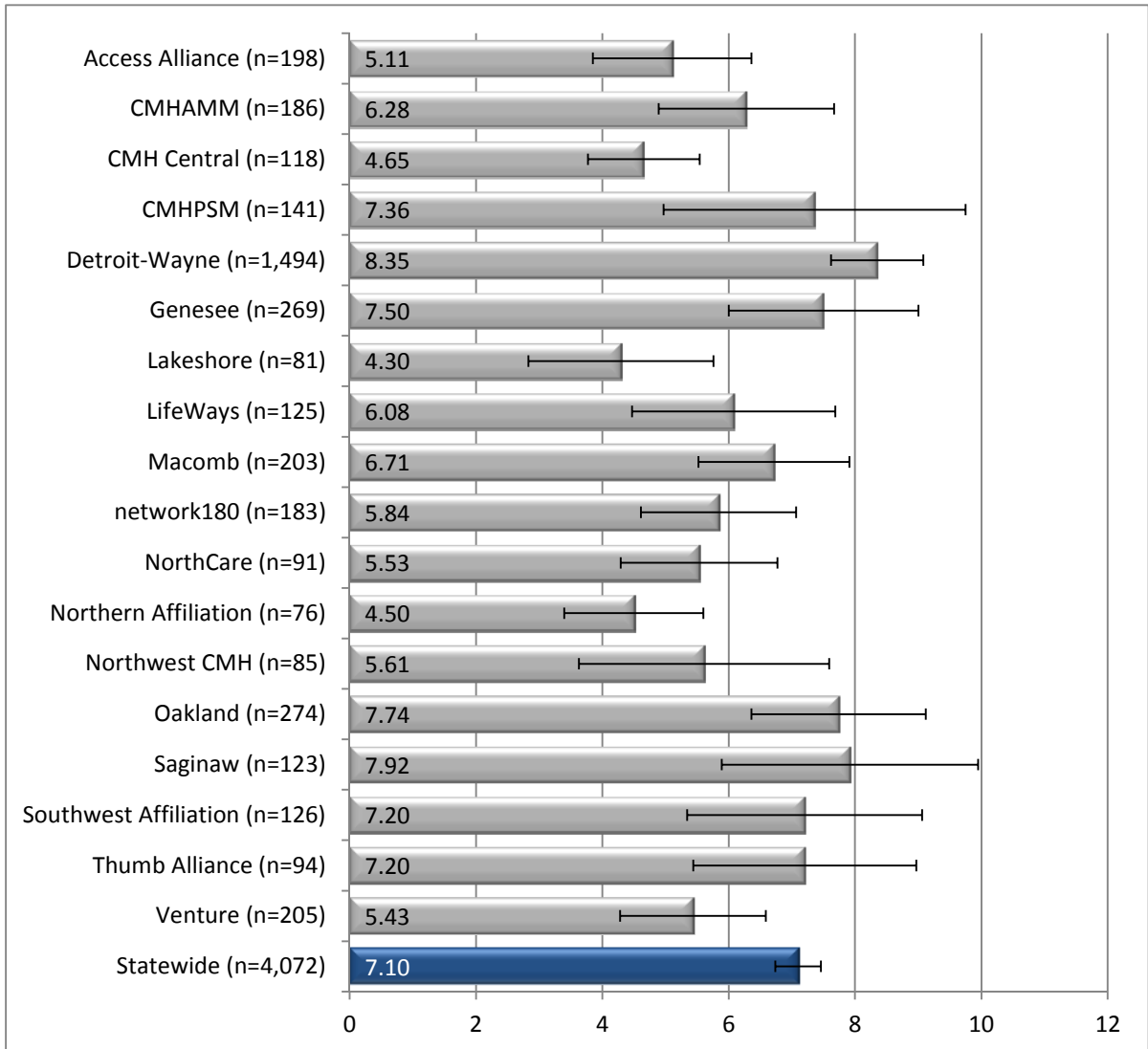
Note: No values are reported for PIHPs that had fewer than 30 consumers with an inpatient admission. Instead, the corresponding cells are shaded in gray.

¹ The totals reflect data from all PIHPs, including those with fewer than 30 consumers with an inpatient admission.

Since all but one PIHP had fewer than 30 consumers with DD who had an inpatient admission, no graph was generated. Table B-4 below shows the number of consumers using inpatient services and the average number of inpatient days per user.

Table B-4—Average Number of Inpatient Days Per User Among Consumers With Developmental Disability		
PIHP	Number of Consumers Using Inpatient Services	Average Number of Inpatient Days Per User
Access Alliance		
CMHAMM		
CMH Central		
CMHPSM		
Detroit-Wayne	55	7.05
Genesee		
Lakeshore		
LifeWays		
Macomb		
network180		
NorthCare		
Northern Affiliation		
Northwest CMH		
Oakland		
Saginaw		
Southwest Affiliation		
Thumb Alliance		
Venture		
Total¹	210	9.62
Note: No values are reported for PIHPs that had fewer than 30 consumers with an inpatient admission. Instead, the corresponding cells are shaded in gray. ¹ The totals reflect data from all PIHPs, including those with fewer than 30 consumers with an inpatient admission.		

Figure B-16—Average Number of Inpatient Days Per User Among Consumers With Serious Mental Illness



Since all but three PIHPs had fewer than 30 consumers with dual diagnoses who had inpatient admissions, no graph was generated. Table B-5 shows the number of consumers using inpatient services and the average number of inpatient days per user.

Table B-5—Average Number of Inpatient Days Per User Among Consumers With Dual Diagnoses		
PIHP	Number of Consumers Using Inpatient Services	Average Number of Inpatient Days Per User
Access Alliance		
CMHAMM		
CMH Central		
CMHPSM		
Detroit-Wayne	48	7.63
Genesee	37	8.92
Lakeshore		
LifeWays		
Macomb		
network180		
NorthCare		
Northern Affiliation		
Northwest CMH		
Oakland		
Saginaw		
Southwest Affiliation		
Thumb Alliance		
Venture	34	6.32
Total¹	325	7.03

Note: No values are reported for PIHPs that had fewer than 30 consumers with an inpatient admission. Instead, the corresponding cells are shaded in gray.

¹ The totals reflect data from all PIHPs, including those with fewer than 30 consumers with an inpatient admission.

Since eight PIHPs had fewer than 30 consumers with DD who used inpatient/ER services, no graph was generated. Table B-6 shows the number of consumers using inpatient or ER services and the percentage who were identified as frequent users.

Table B-6—Percentage of Inpatient/ER Users Among Consumers With Developmental Disability Who Were Identified as Frequent Users

PIHP	Denominator Inpatient or ER Users	Rate
Access Alliance	42	23.8%
CMHAMM	37	18.9%
CMH Central	39	12.8%
CMHPSM	38	21.1%
Detroit-Wayne	253	20.6%
Genesee		
Lakeshore	57	22.8%
LifeWays		
Macomb	38	31.6%
network180	67	25.4%
NorthCare		
Northern Affiliation		
Northwest CMH		
Oakland	102	15.7%
Saginaw		
Southwest Affiliation	33	21.2%
Thumb Alliance		
Venture		
Total¹	849	19.6%

Note: No values are reported for PIHPs that had fewer than 30 consumers using inpatient or ER services. Instead, the corresponding cells are shaded in gray.

¹ The totals reflect data from all PIHPs, including those with fewer than 30 consumers using inpatient or ER services.

Figure B-17—Percentage of Inpatient/ER Users Among Consumers With Serious Mental Illness Who Were Identified as Frequent Users

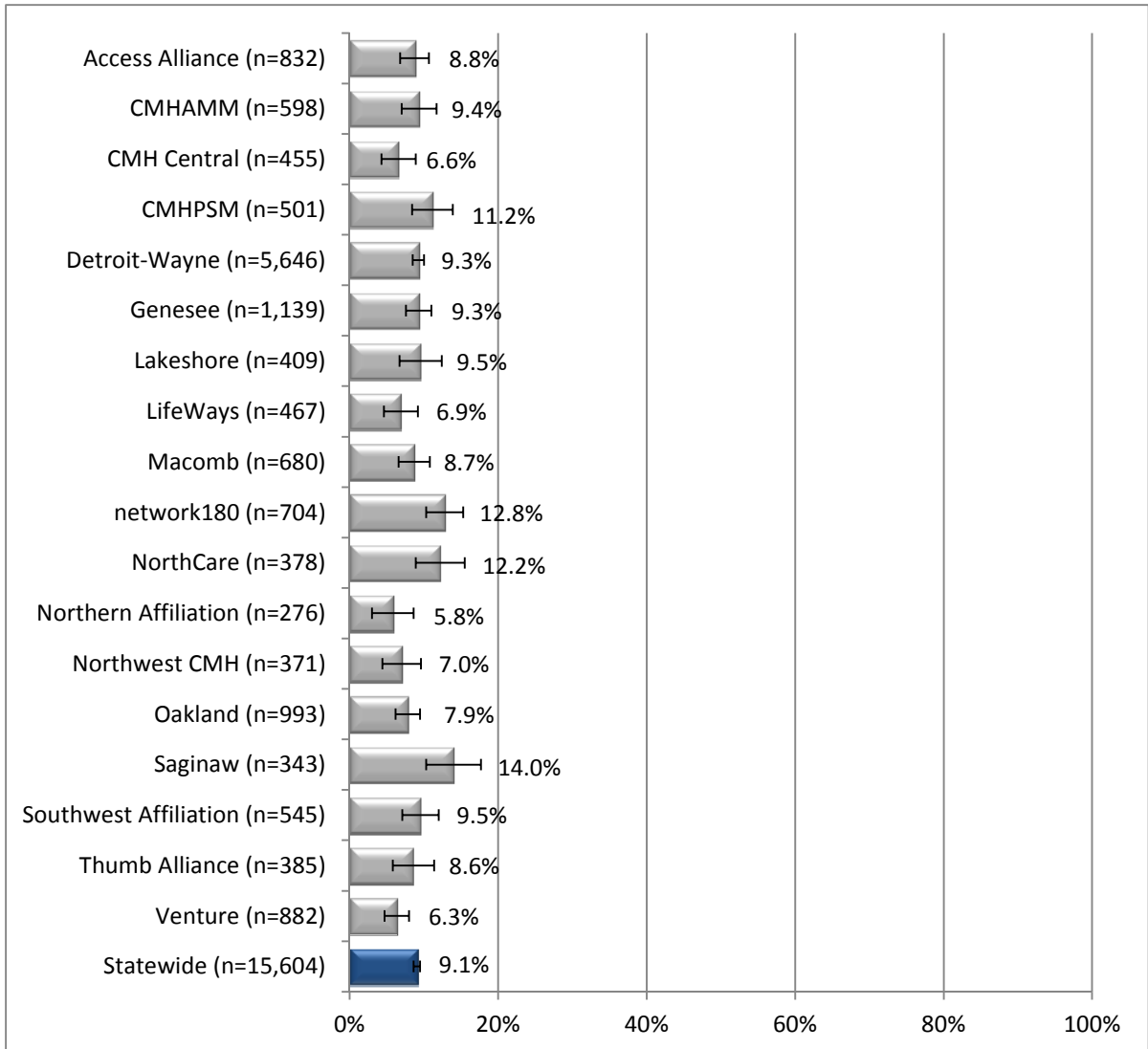
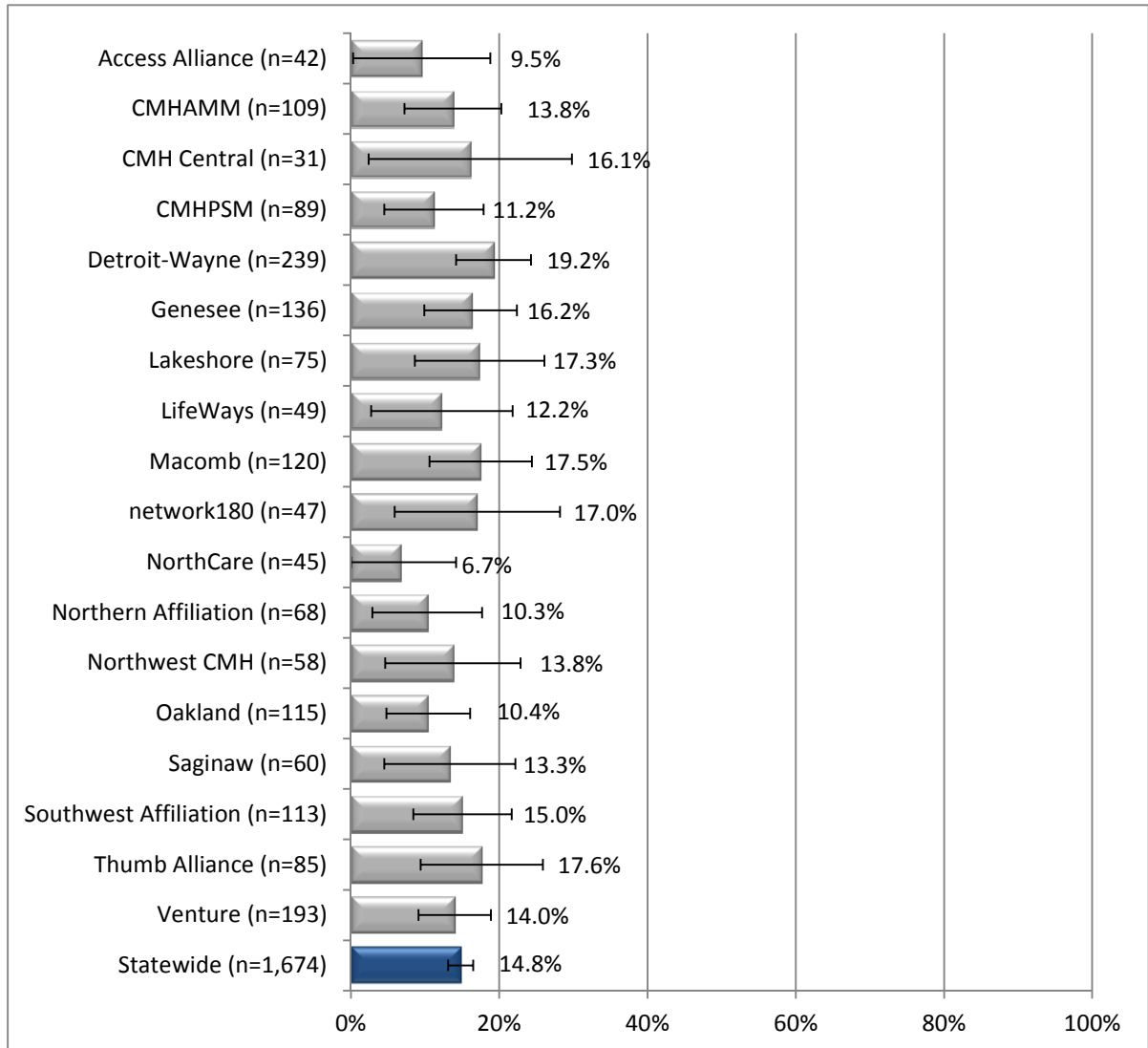


Figure B-18—Percentage of Inpatient/ER Users Among Consumers With Dual Diagnoses Who Were Identified as Frequent Users

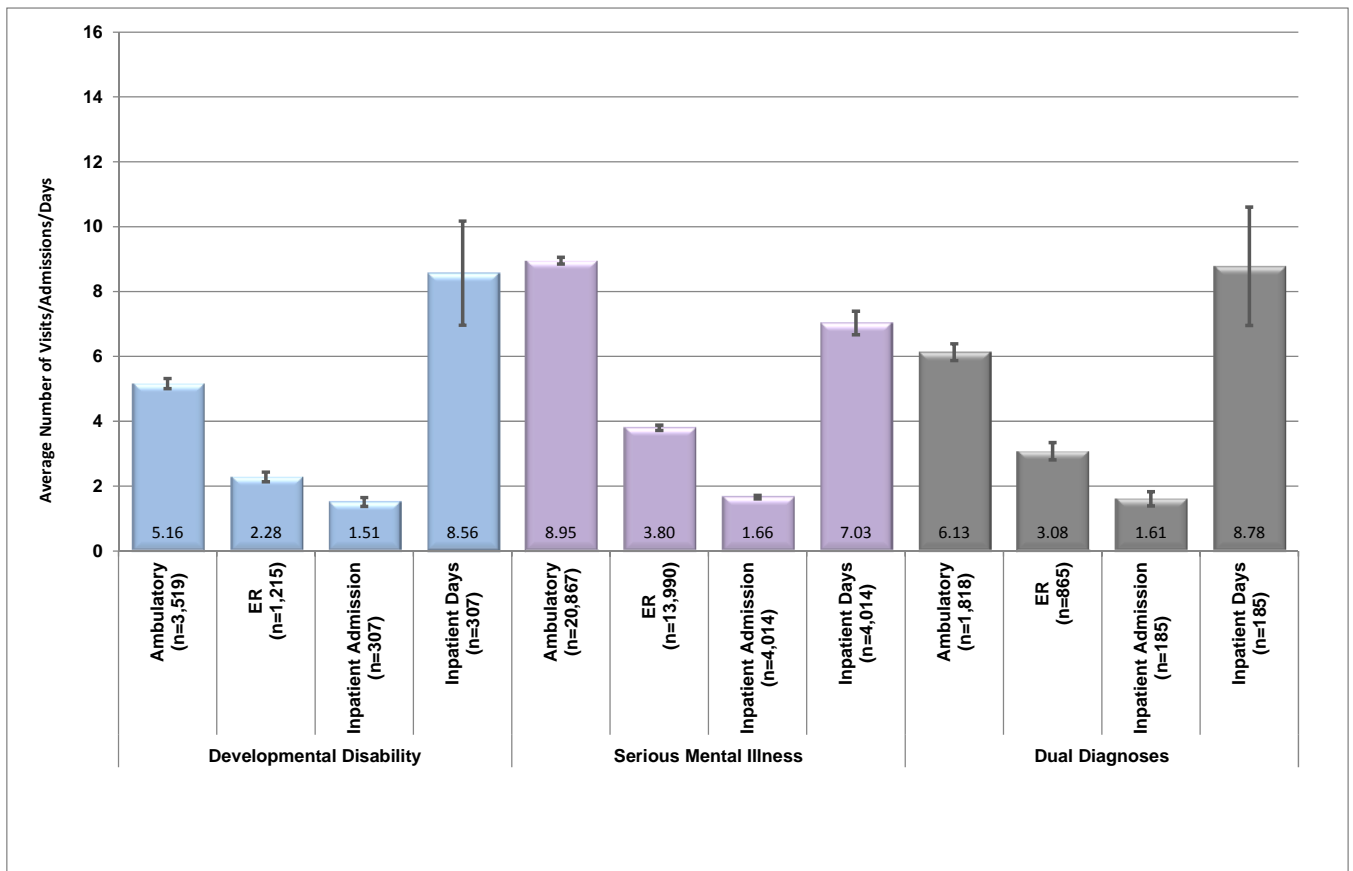


Appendix C. Service Utilization Patterns for Consumers Identified in the Quality Improvement File

The following tables and figures display service utilization patterns for consumers identified as having a diagnosis of developmental disability, serious mental illness, or dual diagnoses using the Quality Improvement (QI) file.

Disability Group	Number of PIHP Consumers	Percent
Developmental Disability	4,072	13.8%
Serious Mental Illness	23,456	79.4%
Dual Diagnoses	2,014	6.8%
Total	29,542	100%

Figure C-1—Statewide Utilization Statistics for Selected Service Types by Disability Type



**Table C-2—Top Diagnoses Based on Preventive/Ambulatory
Visits by Disability Type**

Developmental Disability	Serious Mental Illness	Dual Diagnoses
V70: General medical examination (8.45%)	724: Other and unspecified disorders of back (8.15%)	V70: General medical examination (6.8%)
780: General symptoms (5.84%)	401: Essential hypertension (5.98%)	250: Diabetes mellitus (4.6%)
345: Epilepsy and recurrent seizures (4.67%)	250: Diabetes mellitus (5.24%)	780: General symptoms (3.98%)
401: Essential hypertension (3.87%)	719: Other and unspecified disorders of joint (2.95%)	345: Epilepsy and recurrent seizures (3.19%)
250: Diabetes mellitus (3.86%)	V70: General medical examination (2.69%)	401: Essential hypertension (3.12%)
343: Infantile cerebral palsy (2.58%)	780: General symptoms (2.33%)	719: Other and unspecified disorders of joint (2.19%)
465: Acute upper respiratory infections of multiple or unspecified sites (1.79%)	786: Symptoms involving respiratory system and other chest symptoms (2.21%)	786: Symptoms involving respiratory system and other chest symptoms (1.89%)
477: Allergic rhinitis (1.64%)	729: Other disorders of soft tissues (2.04%)	724: Other and unspecified disorders of back (1.86%)

Table C-3—Top Diagnoses Based on Emergency Room Visits by Disability Type		
Developmental Disability	Serious Mental Illness	Dual Diagnoses
345: Epilepsy and recurrent seizures (7.22%)	786: Symptoms involving respiratory system and other chest symptoms (6.66%)	786: Symptoms involving respiratory system and other chest symptoms (6.27%)
780: General symptoms (5.99%)	789: Other symptoms involving abdomen and pelvis (5.80%)	789: Other symptoms involving abdomen and pelvis (5.63%)
789: Other symptoms involving abdomen and pelvis (3.75%)	724: Other and unspecified disorders of back (4.05%)	780: General symptoms (5.00%)
786: Symptoms involving respiratory system and other chest symptoms (3.57%)	780: General symptoms (3.23%)	345: Epilepsy and recurrent seizures (3.76%)
599: Other disorders of urethra and urinary tract (2.60%)	784: Symptoms involving head and neck (2.85%)	682: Other cellulitis and abscess (2.29%)
873: Other open wound of head (2.56%)	338: Pain, not elsewhere classified (2.59%)	466: Acute bronchitis and bronchiolitis (2.10%)
787: Symptoms involving digestive system (2.17%)	682: Other cellulitis and abscess (2.12%)	959: Injury, other and unspecified (1.99%)
682: Other cellulitis and abscess (2.02%)	346: Migraine (2.10%)	845: Sprains and strains of ankle and foot (1.88%)
493: Asthma (1.73%)	493: Asthma (2.04%)	599: Other disorders of urethra and urinary tract (1.84%)

Table C-4—Top 10 Diagnoses Based on Inpatient Admission for Physical Health Care by Disability Type		
Developmental Disability	Serious Mental Illness	Dual Diagnoses
345: Epilepsy and recurrent seizures (9.51%)	296: Episodic mood disorders (18.8%)	296: Episodic mood disorders (14.93%)
295: Schizophrenic disorders (6.87%)	295: Schizophrenic disorders (14.09%)	295: Schizophrenic disorders (12.37%)
038: Septicemia (5.46%)	493: Asthma (2.47%)	345: Epilepsy and recurrent seizures (5.54%)
486: Pneumonia, organism unspecified (4.75%)	250: Diabetes mellitus (2.43%)	486: Pneumonia, organism unspecified (3.20%)
560: Intestinal obstruction without mention of hernia (4.23%)	491: Chronic bronchitis (2.25%)	560: Intestinal obstruction without mention of hernia (2.77%)
296: Episodic mood disorders (3.87%)	969: Poisoning by psychotropic agents (2.18%)	038: Septicemia (2.77%)
507: Pneumonitis due to solids and liquids (3.52%)	682: Other cellulitis and abscess (1.97%)	282: Hereditary hemolytic anemias (2.56%)
298: Other nonorganic psychoses (2.99%)	298: Other nonorganic psychoses (1.96%)	996: Complications peculiar to certain specified procedures (2.56%)
317: Mild mental retardation (2.64%)	786: Symptoms involving respiratory system and other chest symptoms (1.65%)	298: Other nonorganic psychoses (2.35%)
996: Complications peculiar to certain specified procedures (2.11%)	345: Epilepsy and recurrent seizures (1.62%)	507: Pneumonitis due to solids and liquids (2.13%)

Figure C-2—Frequency Distribution of PIHP Consumers by Number of Inpatient Admissions/ER Visits, by Disability Type

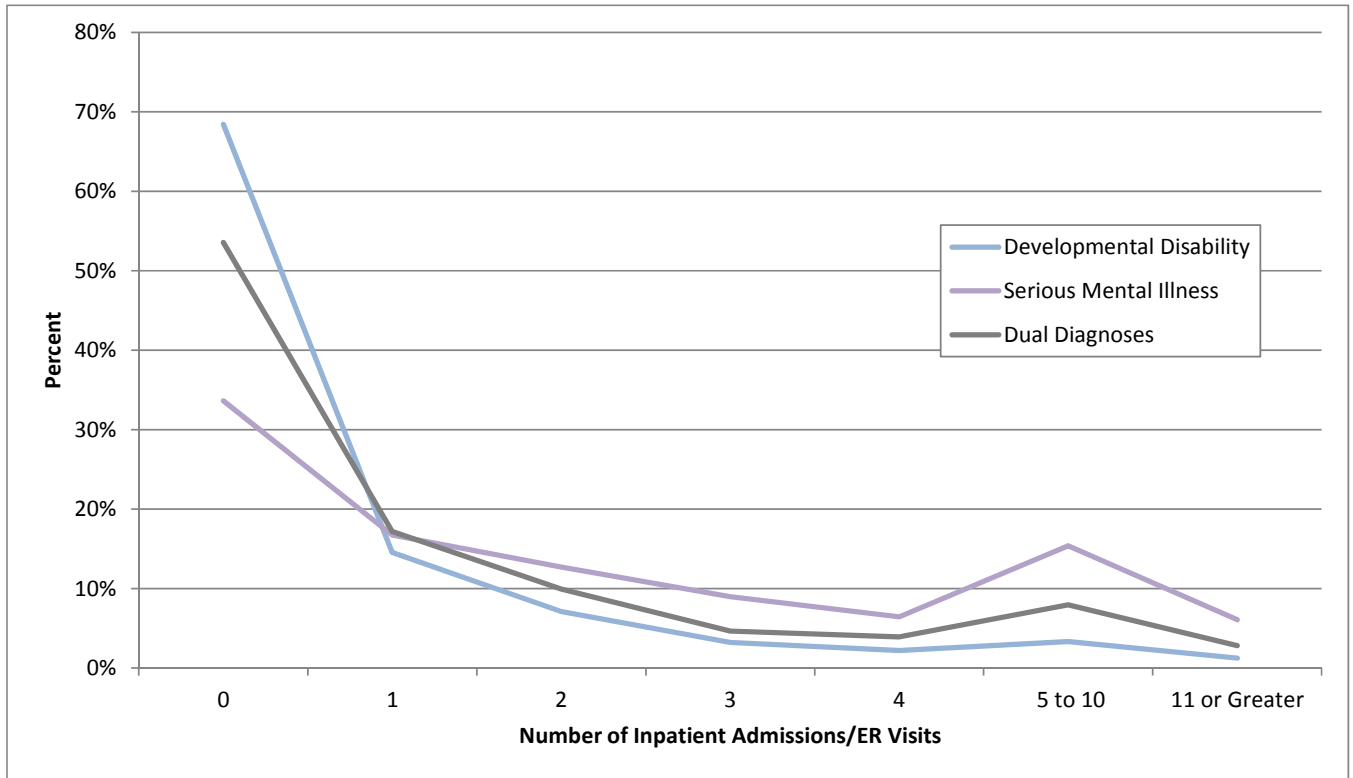


Figure C-3—Comparison of Average Preventive/Ambulatory Visits Per User Between Frequent and Non-Frequent Inpatient/ER Users, Statewide Results by Disability Type

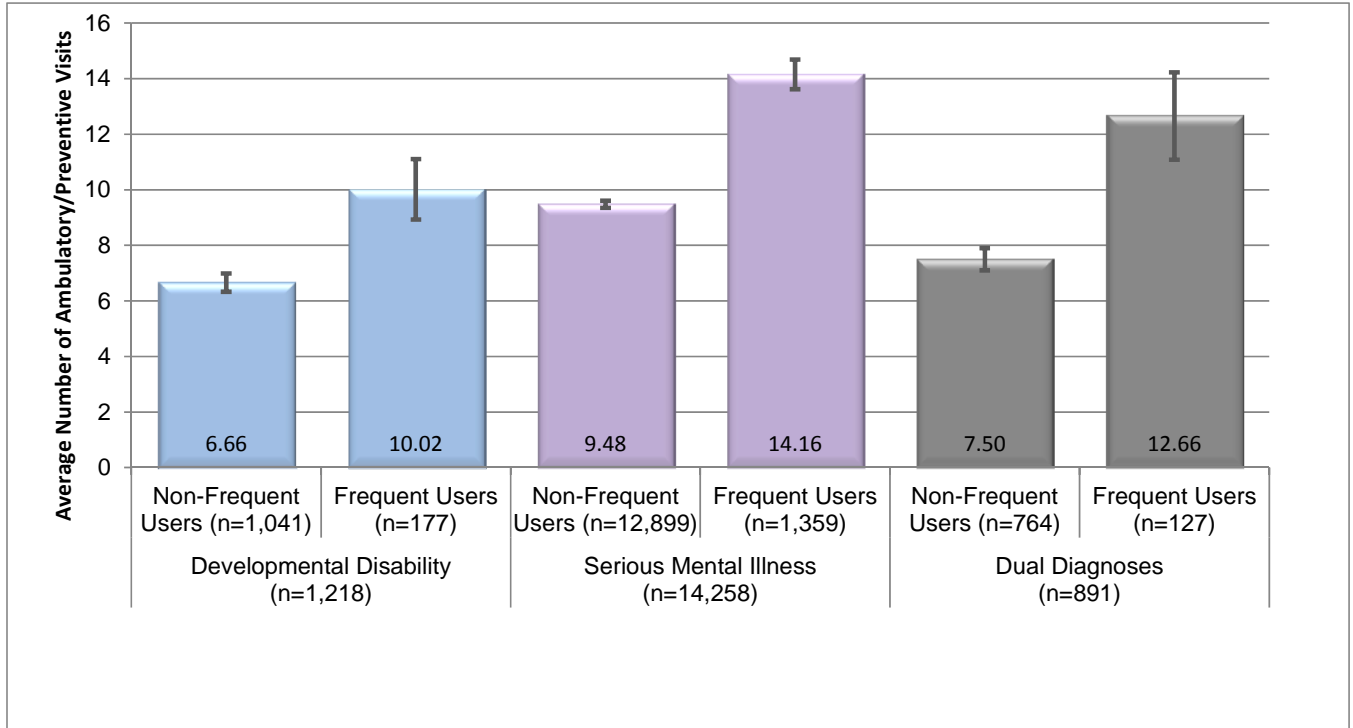


Figure C-4—Frequency Distribution of PIHP Consumers by Number of Chronic Conditions, by Disability Type

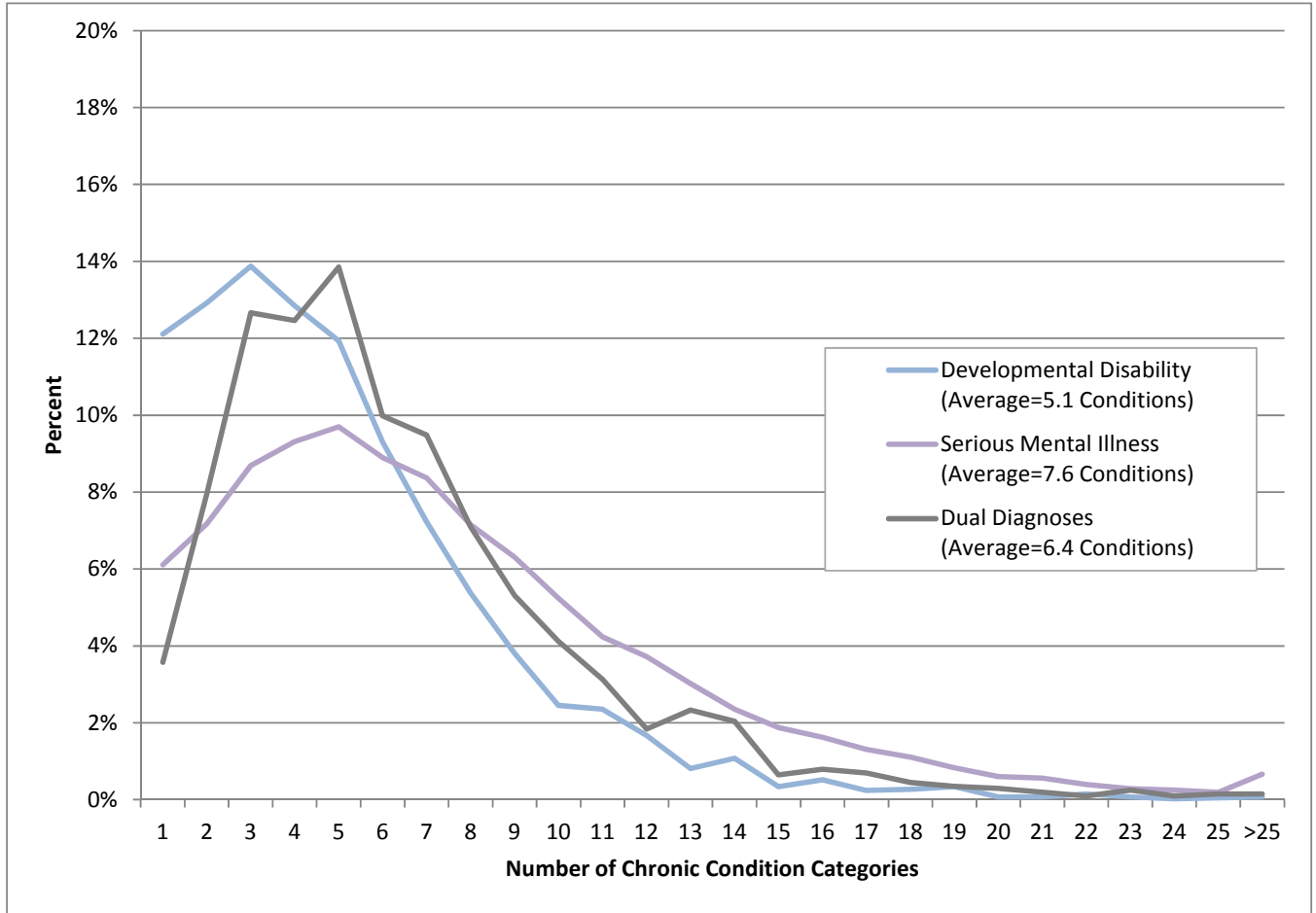


Figure C-5—Comparison of Proportion of PIHP Consumers With Developmental Disability Using Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions

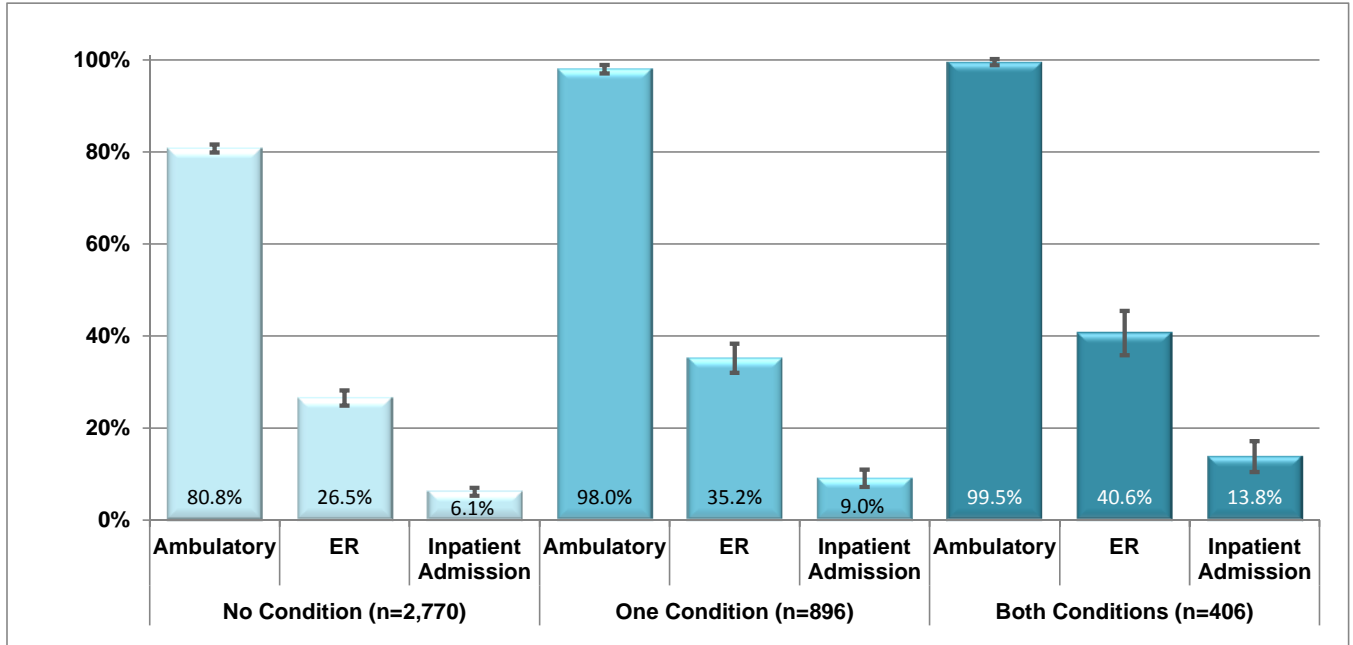


Figure C-6—Service Use Statistics by PIHP Consumers With Developmental Disability Who Used Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions

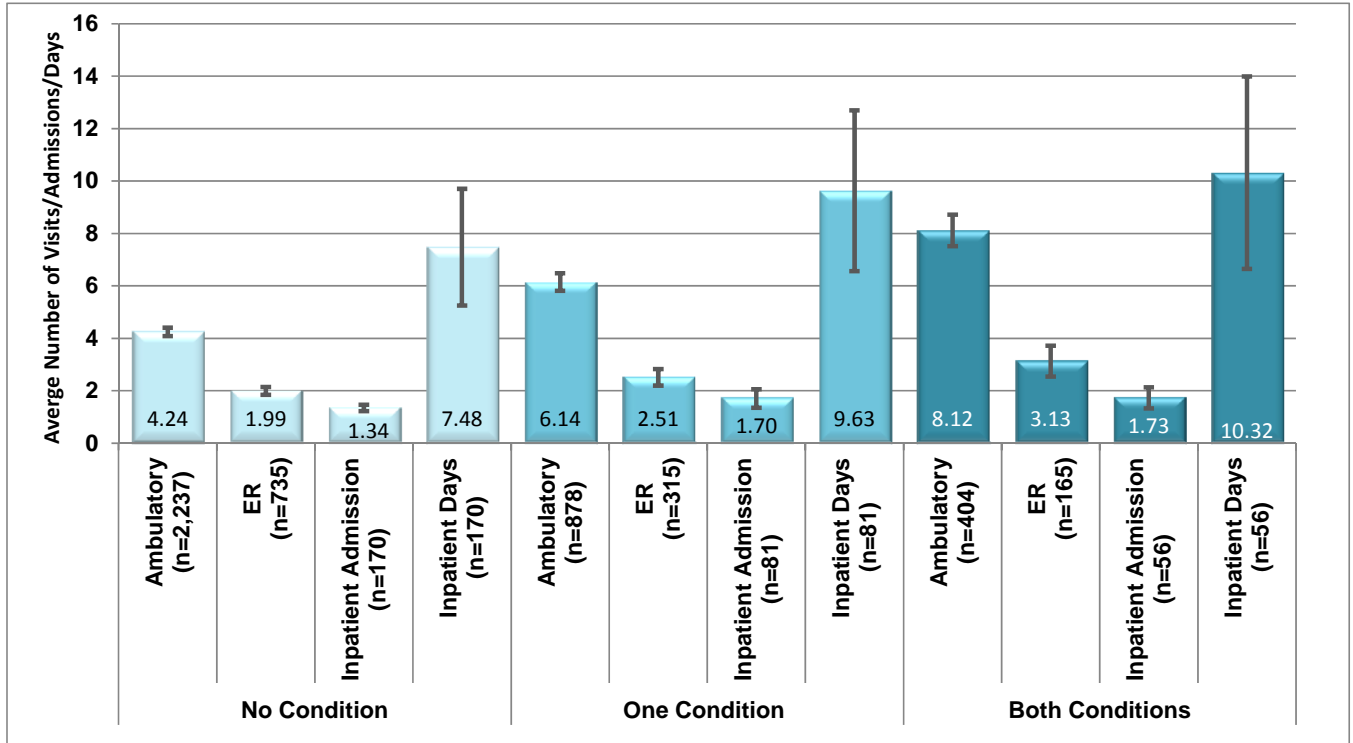


Figure C-7—Comparison of Proportion of PIHP Consumers With Serious Mental Illness Using Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions

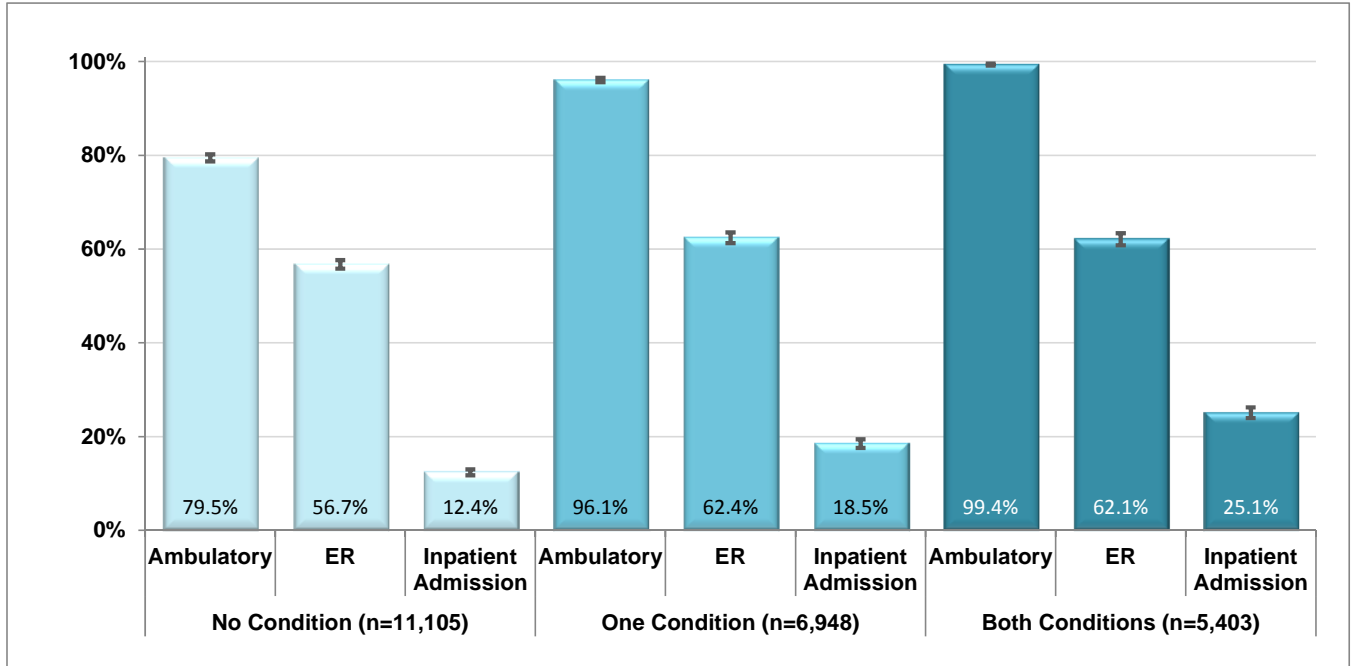


Figure C-8—Service Use Statistics by PIHP Consumers With Serious Mental Illness Who Used Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions

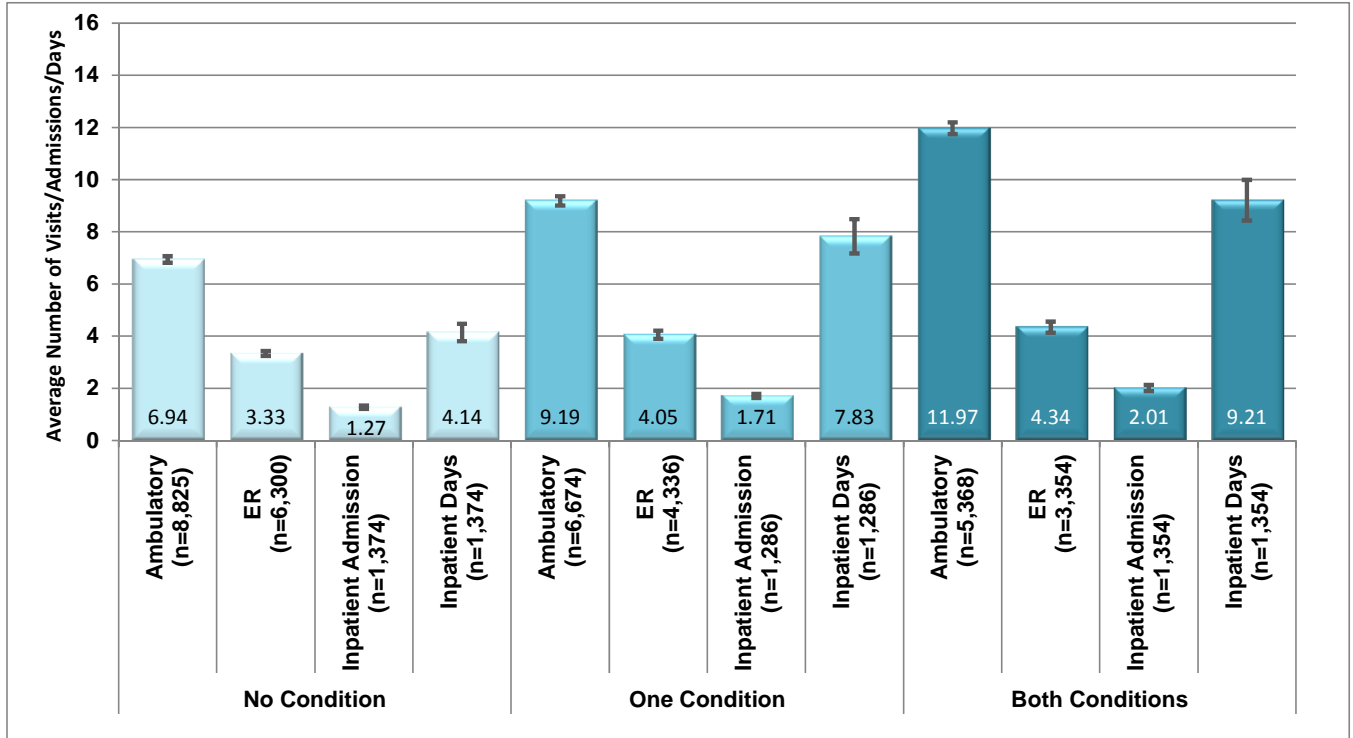


Figure C-9—Comparison of Proportion of PIHP Consumers With Dual Diagnoses Using Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions

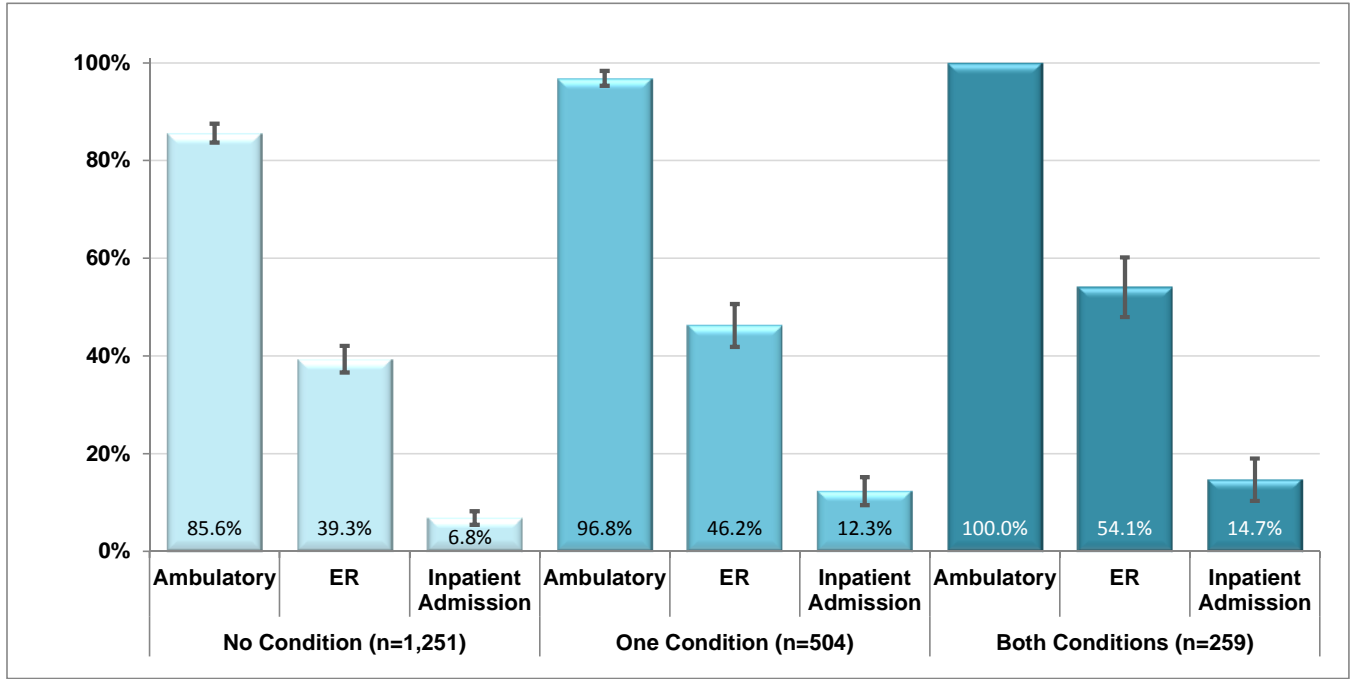


Figure C-10—Service Use Statistics by PIHP Consumers With Dual Diagnoses Who Used Preventive/Ambulatory, ER, or Inpatient Services, by Number of Identified Chronic Conditions

