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October 2009

Improving Community-Based Mental Health Services for Elders in Massachusetts

Behavioral Health Service Use and Expenditures in Massachusetts Medicare and Medicaid Members Aged 55 and Over, 2005

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EXECUTIVE SUMMARY

This report describes behavioral health service use and expenditures for Massachusetts Medicare and Medicaid (MassHealth) members aged 55 and over with behavioral health disorders (BHDs) in calendar year 2005. With an expected increase in the number of elders with BHDs, a better and more comprehensive understanding of behavioral health service delivery is essential in order to identify opportunities for systematic changes that can improve behavioral health services for elders. However, older adults have not been the main focus of previous studies on behavioral health services and expenditures. Furthermore, although existing studies have examined behavioral health services and expenditures in broad geographic areas and at the national level, few studies have taken into account variations among health insurance coverage, particularly Medicare and Medicaid which are important resources for elders and for people with disabilities.

This study used merged Medicare and MassHealth claims data for analysis. Because Medicare and MassHealth are the two primary health insurance programs for elders and for people with disabilities, the merged database provided a comprehensive picture of behavioral health services delivered and associated expenditures for these individuals. With joined information from Medicare and MassHealth, we were able to identify people's primary places of residence, i.e., in community or institutional settings, and examine their respective service use and expenditures, which were substantially different. To do this, we separated the study population into three resident groups, Community, Nursing Facility, and Hospital, based on the number of days spent in nursing facilities and hospitals. For the Community group, which was large enough to separate into age groups, we examined whether service use and expenditures varied between elders (aged 65 and over) and near-elders (aged 55 to 64).

In addition, the merged database allowed us to examine service use and expenditures for people across three primary payment source groups: Medicare Only (those with Medicare but not MassHealth), MassHealth Only (those with MassHealth but not Medicare), and Dual Eligibles (those with both Medicare and MassHealth coverage). A distinguishing feature among primary payment source groups was that those who were Dual Eligibles were more likely to have lower income, to be older, and to have disabilities than were those in the Medicare Only or MassHealth Only groups. Moreover, across all primary payment source groups, most of those in the 55 to 64 age group qualified for Medicare or Medicaid due to a disability, while most of those 65 and older qualified for Medicare due to age.

The major focus of this study is on the Community group. Most elders prefer to live and receive services in community, rather than institutional, settings and it is especially important to examine use of behavioral health services in this context. Additionally, only a small number of members in the Nursing Facility and Hospital groups used community-based services. Our significant findings for the Community group included the following:

- Although the majority of the Community group used behavioral health services, including visits, admissions and medications, a noticeable number of people aged 65 and over did not. For Dual Eligibles and the MassHealth Only groups, not receiving any behavioral health service was 12 to 16% for people aged 65 and over and 5% for those aged 55 to 64. The proportion of people without any behavioral health services was higher in the Medicare Only group (49% for people aged 65 and over and 35% for those aged 55 to 64) because Medicare did not provide prescription drug coverage in CY 2005.
- Community-based settings, followed by hospital outpatient departments, were the most common places for receiving behavioral health services. However, the most frequently used community-based settings varied by primary payment source group.
- Regardless of age, the proportion of people receiving services from mental health specialists was much higher than from general medical providers. However, when compared with people aged 55 to 64, those aged 65 and over were more likely to get their behavioral health treatment from general medical providers.
- The four leading services received in community-based settings were individual psychotherapy, drug management, evaluation and management services, and psychiatric diagnosis. For all primary payment source groups, individual psychotherapy was the most common type of service received in community-based settings.
- The percent of all health services expenditures attributed to behavioral health services varied by age and primary payment source group. It was lower in people aged 65 and over and in the Medicare Only group, ranging from 6% in the Medicare Only group aged 65 and over to 25% in the MassHealth Only group aged 55 to 64.
- For the Dual Eligibles and MassHealth Only groups, for which prescription drug data were available, medications and community-based treatment were the two leading categories for behavioral health expenditures.

In conclusion, our findings, although descriptive in nature, suggest that variations exist regarding the settings of community-based services that people used, the types of mental health specialists people visited, and the types of services people received in community-based settings. These differences contributed to the variations in expenditures that we observed. Part of these variations can be attributed to differences in age and primary payment source. Although not specified in this study, the observed variations could be also attributed to differences in types of BHDs, which varied among age and primary payment source groups.

The merged Medicare and MassHealth database is very useful for documenting health service use and expenditures for Medicare and MassHealth members. In this report, we take the first step in learning more about behavioral health service use and expenditures for older adults in Massachusetts. However, further analyses, adjusting for differences in demographics, types of BHDs, comorbidities, and primary payment sources, are needed to identify factors associated with the variations identified in this study in order to develop policy options and strategies for engaging people with BHDs into treatment, providing adequate treatment for BHDs, and encouraging the adoption of best-practice standards.

1 INTRODUCTION

This report describes behavioral health service use and expenditures for Massachusetts Medicare and Medicaid (MassHealth) members aged 55 and over with behavioral health disorders (BHDs). It is the second deliverable from a comprehensive study of ways to improve community-based mental health services for elders that is part of a collaboration between the Executive Office of Elder Affairs and the University of Massachusetts Medical School/Commonwealth Medicine. The first report, which described the 12-month diagnosed prevalence of BHDs among Massachusetts Medicare and Medicaid members aged 55 and over, showed that at least 170,000 members, or one in five, had mental illness or substance use disorders in calendar year 2005 and that these members had more chronic medical comorbidities than those without BHDs.

As the baby boom generation ages, the number of older adults with BHDs is expected to increase disproportionally (Jeste et al., 1999). The increasing number of older people with BHDs, along with their higher disease burden, poses serious challenges to the current mental health care delivery system in Massachusetts. However, little is known about behavioral health services received by older adults and the associated expenditures. It is essential to understand patterns of behavioral health service use and expenditures in order to identify opportunities for systematic changes to better serve elders with BHDs.

This study used merged Medicare and Medicaid claims data from 2005 to examine where older adults with BHDs received behavioral health services, who delivered them, what types of service were delivered, and what expenditures were associated with these services. Due to substantially different utilization patterns and expenditures, we classified the study population into three resident groups (Community, Nursing Facility, and Hospital) based on their length of stay in hospitals and nursing facilities. The Community group (those who lived primarily in community-based settings) was further classified into two groups by age category, 55 to 64 and 65 and over. A distinguishing feature of these age categories was that most of those aged 55 to 64 qualified for Medicare or Medicaid due to a disability, while most of those aged 65 and older qualified for Medicare due to old age. Due to small sample sizes, we reported the Nursing Facility group and Hospital group results in one age category, aged 55 and over.

We separated each resident group into three primary payment source groups: Dual Eligibles (members with both Medicare and Medicaid coverage), Medicare Only (members with Medicare, but not Medicaid), and MassHealth Only (members with Medicaid but not Medicare). The age distribution, disability status, and income level were different among these three primary payment source groups.

The next section of this report summarizes literature on behavioral health service use and expenditures, and is followed by a section describing the data and methods used in our analysis. The Results section presents our findings for behavioral health service use and

expenditures, including place of service, provider specialty, type of service, and Medicare and Medicaid expenditures. Results are presented for the resident groups, age categories, and primary payment source groups mentioned above. Finally, the Discussion and Conclusions section summarizes our findings.

2 BACKGROUND

The Surgeon General's report on mental health (U.S. Department of Health and Human Services, 1999) and the President's New Freedom Commission on Mental Health (U.S. Department of Health and Human Services, 2003) underscore the importance of improving the U.S. mental health service system. This system is particularly complex because behavioral health services are provided by many types of providers within multiple service sectors. For example, in the medical sector, services can be provided by general medical providers and mental health specialists. A major challenge in reforming the mental health service system is the lack of adequate information on current behavioral health service utilization and expenditures across the various service sectors and providers.

Large epidemiological studies of the prevalence of mental disorders, including the Epidemiologic Catchment Area (ECA) Study, the National Comorbidity Survey (NCS) , and the NCS-Replicated (NCS-R) study, have also examined behavioral health service use (Kessler, Chiu, Demler, & Walters, 2005; Kessler et al., 1994; Narrow, Regier, Rae, Manderscheid, & Locke, 1993; Regier et al., 1993). The ECA Study (conducted from 1980-85) examined the use of behavioral health services for adults aged 18 and over in 5 sites (Narrow et al., 2000; Narrow et al., 1993). A decade later, the NCS (conducted from1990-92) provided updated information on mental health treatment by service sectors in a nationally representative sample of adults aged 18 to 54 (Kessler et al., 1994). Another decade later, in the NCS-R (conducted from 2001-03), the study population was expanded to include individuals aged 55 and over (Kessler, Chiu et al., 2005; Wang et al., 2005). Other studies (detailed below) have also provided information on the places where behavioral health services are provided, types of service delivered, and expenditures for services. Although many studies included older adults in the study population, most studies did not report their findings by age. The following sections describe behavioral health service use within the general population and highlight findings that are specific to older adults.

2.1 Place of Service

Behavioral health services are delivered in outpatient settings (community-based settings, hospital outpatient departments, and emergency rooms) as well as in hospital inpatient settings (Clark, Samnaliev, & McGovern, 2007; McAlpine & Mechanic, 2000; Mechanic & Bilder, 2004; Narrow et al., 2000). Although most services are delivered in outpatient settings, individuals with severe mental illness or co-occurring mental and substance use disorders also have high rates of hospitalization and emergency room visits (Clark et al., 2007; McAlpine & Mechanic, 2000; Mechanic & Bilder, 2004).

According to the ECA study, 1.4 million people aged 18 and over with mental or addictive disorders were admitted to inpatient facilities and 16.8 million people used outpatient services for BHDs during a one-year period (Narrow et al., 1993). The number of people hospitalized represented 3% of those with BHDs; the number using outpatient services represented 38% of

those with BHDs. Two percent of people with BHDs were estimated to have had emergency room visits, which were counted toward the outpatient services.

Narrow and colleagues (2000) further examined data from the ECA study and concluded that a higher proportion of people with serious mental illness (SMI) used both inpatient and outpatient services as compared with people with other mental illness (OMI). For people with SMI, 17% were seen in inpatient settings and 60% in outpatient services. In contrast, for people with OMI, the percentages were 1% and 20% respectively (Narrow et al., 2000). However, the average number of outpatient visits per user was similar for these two groups (Narrow et al., 2000).

Based on the first wave of data from the Healthcare for Communities Study, a national study tracking changes in the alcohol, drug, and mental health services utilization in 60 U.S. communities, McAlpine and Mechanic (2000) found that people aged 18 and over with SMI had higher rates of hospital admission (13%), outpatient care (41.3%) and emergency room use (7.7%) than people with OMI (2.7%, 19% and 2.1%, respectively). Adding data from the second wave (2000-2001) of the study, Mechanic and Bilder (2004) found that the proportion of people with SMI who had emergency room visits increased to 13%, while the proportion remained stable for people with OMI.

For Medicaid beneficiaries aged 21 to 64 in 5 states during 1999, Clark et al. (2007) found that those with co-occurring mental illness and substance abuse disorders (SUD) were more likely to use non-community-based settings for mental health service than those with mental illness alone. In all 5 states, Medicaid beneficiaries with co-occurring SMI and SUD were more likely than those with SMI alone to use inpatient facilities, emergency rooms, and hospital outpatient departments for mental health service (Clark et al., 2007). Medicaid beneficiaries with co-occurring OMI and SUD were also more likely to use inpatient facilities than those with OMI alone in all 5 states, while increased use of emergency rooms and hospital outpatient departments was shown in 3 out the 5 states (Clark et al., 2007).

Several studies have shown that the rate of hospitalization for behavioral health disorders has changed over time and has varied by age group (Bao & Sturm, 2001; Fleming, Lien, Ma, & McGuire, 2003). Bao and Sturm (2001) examined hospitalization rates for mental and substance use disorders and the associated lengths of stay for the period 1988 to 1997. In this study, psychiatric units within community hospitals were generally included, although psychiatric hospitals and long-term non-acute care hospitals were excluded. For people aged 40 to 64, the hospitalization rate for behavioral health treatment increased 28%, from 5.8 to 7.4 discharges per 1,000 people. However, for people aged 65 and over, the rate decreased 7.7%, from 5.8 to 5.3 discharges per 1,000. Across all payers and diagnoses, the associated hospital length of stay significantly decreased. For example, length of stay decreased from 15.5 to 10.7 days for Medicare patients and from 13.1 to 8.6 days for Medicaid patients. A similar study that used hospital discharge data in Massachusetts found that hospitalization for mental and substance use disorders decreased 9.2%, from 13.4 to 12.2 discharges per 1,000 people, over the years 1994 to 1999 (Fleming et al., 2003).

2.2 Provider Specialty, Service Sector, and Service Use

People receive behavioral health treatment from many service sectors, including medical, mental health, human service, and voluntary support (Narrow et al., 1993). However, estimates of service use within these sectors have varied across studies. The ECA study found that almost 22.8 million people used outpatient services, with 44% receiving services from the general medical sector, 38% from the mental health specialty sector, 21% from the human services sector, and 29% from the voluntary support sector (Narrow et al., 1993). There were a total of 326 million outpatient visits, with the majority occurring in the voluntary support (40%) and mental health specialty sectors (38%), followed by the human services (12%) and the general medical sectors (11%) (Narrow et al., 1993).

Using the 1987 National Medical Expenditure Survey, Olfson and Pincus (1996) found that 9 million people (4.1% of the total population among all ages) received mental health services in non-hospital settings. Over one-third (35.3%) of the service users were treated by general medical providers, slightly less than one third (30.8%) were treated by psychologists, 27.0% were treated by psychiatrists, and 24.8% were treated by non-physician general medical professionals (Olfson & Pincus, 1996). These individuals made 84 million outpatient mental health visits: 10.1% to general medical providers, 33.3% to psychologists, 27.7% to psychiatrists, and 28.9% to other health professionals (Olfson & Pincus, 1996).

Use of behavioral health treatment among people aged 18 to 54 has increased over the past twenty years (Kessler, Demler et al., 2005). In the 10 years between the NCS and the NCS-R, the rate of mental health treatment significantly increased for services provided by general medical providers (2.6 times higher), psychiatrists (2.2 times higher), and other mental health specialists (1.6 times higher) (Kessler, Demler et al., 2005). For people aged 18 and over with any disorder included in the NCS-R study, 22.8% received treatment from general medical providers, 21.7% had visits to mental health specialists (including 12.3% who were treated by psychiatrists and 16.0% who were treated by non-psychiatrist mental health specialists), 8.1% used human services, and 6.8% were treated by complementary and alternative medicine providers (Wang et al., 2005). Data from the NCS-R study also showed that individuals who were treated by mental health specialists had more visits (median 7.4) than those who were treated by general medical providers (median visits 1.7); while the proportion of individuals who received at least minimally adequate treatment from mental health specialists (48.3%) was 4 times higher than from general medical providers (12.7%) (Wang et al., 2005).

Type of BHD was a major factor associated with the use of behavioral health services. Narrow and colleagues (2000) found that the proportion of individuals who received specialty mental health services and the intensity of treatment differed between people with SMI and OMI. For people with SMI, 42% received outpatient services from mental health specialists and 31% from general medical providers while, for people with OMI, only 10% received outpatient services from mental health specialists and 12% from general medical providers (Narrow et al., 2000). Nevertheless, the distribution of the number of outpatient visits between the mental health specialists and general medical providers was similar for the SMI and OMI groups; 80% of

outpatient visits were to mental health specialists and 20% were to general medical providers (Narrow et al., 2000). Also, the average number of visits to outpatient specialty providers, as well as to general medical providers, did not differ between SMI and OMI groups.

The use of general medical providers and mental health specialists also varied by age. When compared with people aged 18 to 24, the older population (those aged 25 to 44 and those aged 45 and over) with OMI had a higher likelihood of receiving mental health services from general medical providers; people aged 25 to 44 with SMI were also more likely to receive services from mental health specialists (Narrow et al., 2000).

In the first wave of the Healthcare for Communities Study, people with SMI used mental health specialty health care at a rate two times higher than those who had OMI (42.8% vs. 19.4%) (McAlpine & Mechanic, 2000). More than one-third of the study population with SMI had Medicare or Medicaid coverage. After adjusting for sociodemographics, needs, and risk factors, people with SMI covered by Medicare or Medicaid were over 6 times more likely to have specialty mental health visits than those who were uninsured (McAlpine & Mechanic, 2000).

In the second wave of the Healthcare for Communities Study, the proportion of people receiving specialty mental health services increased to 51% for people with SMI while it remained unchanged for people with OMI (Mechanic & Bilder, 2004). However, in both waves of the study, the average number of visits per user to outpatient specialty providers did not differ between SMI and OMI groups (McAlpine & Mechanic, 2000; Mechanic & Bilder, 2004). There was some evidence that access to specialty mental health services for people with SMI improved between 1997 and 2000, while the use of specialty mental health services decreased for those with OMI or no mental illness (Mechanic & Bilder, 2004).

2.3 Types of Service

As medical technology and pharmacotherapy advance and health care delivery systems change, treatment options and modalities for mental and substance use disorders change as well. Focusing on outpatient treatment for people with depression in 1987 and 1997, Olfson and colleagues (2002) found that the percent of people among all ages using antidepressant medications substantially increased from 37.3% to 74.5%, while those receiving psychotherapy significantly decreased from 71.1% to 60.2%. Also, the average number of visits for psychotherapy decreased from 12.6 to 8.7 visits per year (Olfson et al., 2002). Busch (2007) studied Medicaid members aged 18 to 64 with bipolar I disorder and found that, within one year after the first observed diagnosis, 67% of them received antimanic medication and 51% received psychotherapy, while 36% of the members received both (Busch et al., 2007).

In a study of Medicare beneficiaries with schizophrenia, Dixon and colleagues (2001) found that 25% of them did not receive any ambulatory care services for mental health treatment in 1991. Ambulatory care services included in this study were individual psychotherapy, group therapy, family therapy, and pharmacologic management with minimal psychotherapy. The most frequently used treatment modality was individual psychotherapy with an average of 5 visits per year, followed by pharmacologic management (1.5 visits per year) (Dixon et al., 2001). The

use of ambulatory care services by Medicare beneficiaries with schizophrenia varied by race and age; Caucasians were 1.5 times more likely than African Americans to have an ambulatory care visit and 1.3 times more likely to receive individual therapy; people aged 65 and older were less likely to use any ambulatory care services than younger Medicare beneficiaries (Dixon et al., 2001).

Patterns of outpatient treatment have also been shown to change after the implementation of capitated financing systems. Chou and colleagues (2005) examined the variation of outpatient mental health services received among three reimbursement systems (fee-for-service, direct capitation, and managed behavioral health organization) for Colorado Medicaid recipients aged 18 and over with severe and persistent mental illness (N=522). Before the implementation of capitated financing systems, the most commonly received outpatient mental health services were case management (73%), medication monitoring (70%), and individual therapy (63%). Compared with people in the fee-for-service system, people in the direct capitation model received less case management, medication monitoring, individual psychotherapy, and day treatment during the first year of the capitation, although the discrepancy remained only for medication monitoring for the second year of the capitation. In addition, people in the managed behavioral health organization, when compared with those in the fee-for-service system, received significantly less case management, individual therapy, and day treatment for the first year of the capitation and continued to receive fewer services in the second year, along with fewer group therapy services (Chou et al., 2005).

2.4 Expenditures

Studies have found that spending on mental health services varies between public and private sector health plans and also among Medicaid programs across states. Based on the 5% sample of Medicare beneficiaries in 1995-1998, Cowell et. al. (2004) found that 14% of the beneficiaries received behavioral health treatment, while only 4% of total Medicare payments were attributable to these services. In the Medicaid programs in the 4 states included in this study, 19 to 25% of recipients received behavioral health services, while the proportion of Medicaid payments attributable to these services was 3% in Washington and ranged from 11 to 20% for the other 3 states. In the private sector, 10% of plan members used behavioral health services, while 5% of total health care payments were for behavioral health services (Cowell et al., 2004). The authors did not include prescription drug expenditures in the analyses of Medicare and private insurance plans, but they were included in the analysis of the Medicaid programs.

Cowell et .al. (2004) also found that, for people who used behavioral health services, the proportion of their total health expenditures attributable to these services was 15% in the Medicare program, 25% in the private sector, and 10% in the Medicaid program in Washington and 39% to 45% in the other three state Medicaid programs. In all states except for Washington, the average annual expenditure per member for behavioral health treatment was higher in the Medicaid program than for either Medicare or private insurers. In Washington, the average annual Medicaid expenditure was $800 per member, while in other states the average annual Medicaid expenditures ranged from $4,300 to $6,200. In contrast, average Medicare and private insurers paid $1,800 and $1,100 per member respectively.

Harwood et. al. (2003) found that spending on behavioral health services also varied across age groups. While the proportion of all health spending attributable to mental health services was 7.5% for all age groups in 1997, it was 9.2% for people aged younger than 18, 10.6% for people aged 18 to 64, and only 3.0% for those aged 65 and over. Elders tended to have much higher general health use, which might explain why mental health spending constituted only a small proportion of all health spending.

Furthermore, variations across age groups were also observed in the distribution of behavioral health services spending for general and specialty service providers. For all ages considered together, behavioral health spending attributable to specialty service providers was about 3 times higher than for general medical providers (73.5% versus 26.5%). However, people aged younger than 18 had a higher rate of spending on specialty health services (84.9%), while elders had a lower rate of specialty spending (51.4%) (Harwood et al., 2003). The distribution of expenditures across service types also varied among age groups. For people aged younger than 18, a quarter of behavioral health spending was for services received from multiservice mental health organizations; for people aged 18 to 64, the spending was more evenly distributed across several services, including retail prescription drugs (14.2%), specialty hospitals (13.4%), special units of hospitals (16.0%), non-psychiatrist mental health specialists (13.1%), and multiservice mental health organizations (14.3%). The spending for people aged 65 and older was distributed differently than for the other two age groups. One-third of elders' mental health spending was for freestanding nursing home services (Harwood et al., 2003).

2.5 Summary

Behavioral health services were most often provided in community-based settings and hospital outpatient departments. In these settings, people received behavioral health services from both general medical providers and mental health specialists. Treatment options and modalities have changed over time because of advances in medical technology, introductions of new medications, and changes in financing systems. However, evidence suggests that patterns of service use and expenditures vary depending on variables such as type of BHD, co-occurring mental illness and substance use disorders, age, and primary payment source.

Although older adults were not the main focus of most studies on behavioral health service use and expenditures, studies have shown that older adults received less behavioral health service than others (Dixon et al., 2001), they had a smaller proportion of health care spending on behavioral health services (Harwood et al., 2003), and, when the diagnosis was not SMI, they tended to receive treatment from general medical providers rather than mental health specialists (Narrow et al., 2000). However, no study specifically focused on older adults and provided comprehensive information on their behavioral health service use and expenditures.

3 METHODS

3.1 Data Sources

The main data sources used in this analysis included Medicare data, MassHealth data, and a Medicare and MassHealth linkage file; all data were from the calendar year 2005. Unique identifiers within the first two data sources allowed linkage between denominator/eligibility data and various claims data. The contents of the main data sources are described below.

- Medicare Data (Centers for Medicare and Medicaid Services), calendar year 2005, which included:
  - The Denominator file for Medicare eligibility
  - Institutional and non-institutional claims data

- MassHealth Data (Massachusetts Executive Office of Health and Human Service Data Warehouse), calendar year 2005, which included:
  - Eligibility data
  - Medicaid Management Information System (MMIS) claims data
  - Managed Care Organizations (MCO) encounter data
  - Massachusetts Behavioral Health Partnership (MBHP) encounter data

- Medicare and MassHealth linkage file (Centers for Medicare and Medicaid Services), which included:
  - A linkage variable that allowed the data to be linked with unique identifiers in Medicare and MassHealth data for individuals who were dually eligible for Medicare and MassHealth in calendar year 2005. Individuals dually eligible for Medicare and MassHealth were identified from the linkage file.

3.2 Stud y Population

As in the previous report on the diagnosed prevalence of BHDs, individuals aged 55 years or older as of January 1, 2005 were identified from the data sources and were classified into three primary payment source groups for health insurance claims. The three primary payment source groups were:

- Dual Eligibles (N=138,379):Members enrolled in Medicare Part A or Part B for at least one day and who enrolled in MassHealth for at least one day during CY05.
- Medicare Only (N=613,193): Members enrolled in Medicare Part A or Part B for at least one day and who did not enroll in MassHealth at all during CY05
- MassHealth Only (N=62,336): Members enrolled in MassHealth for at least one day during CY05 and who did not enroll in Medicare at all during CY05

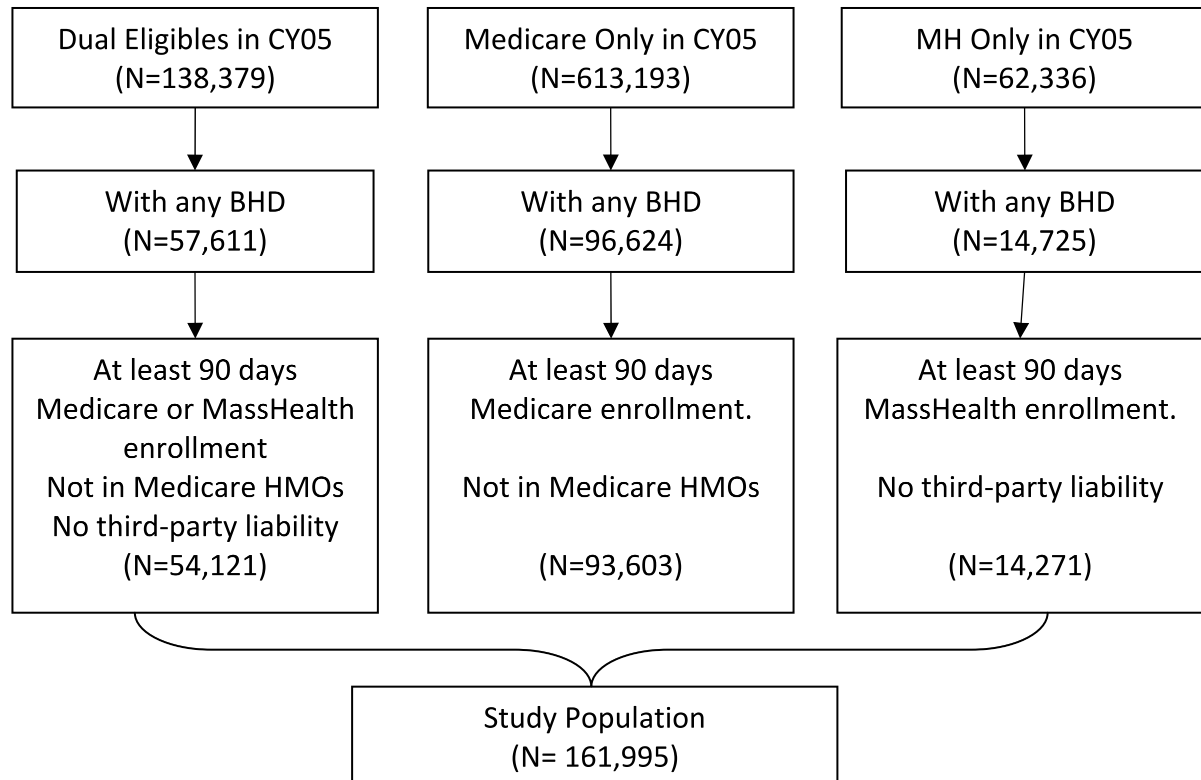
From these groups, we identified people with BHDs by having at least one claim with a specified diagnosis or procedure code for a behavioral health disorder (BHD), as either principal or other diagnosis. The 12-month diagnosed prevalence of BHDs was 42% in Dual Eligibles, 16% in the Medicare Only group, and 24% in the MassHealth Only group. The number of people with BHDs in each primary payment source group was 57,611 in Dual Eligibles, 96,624 in the Medicare Only group, and 14,725 in the MassHealth Only group.

Furthermore, individuals were excluded if they

- Enrolled in Medicare and/or MassHealth for less than 90 days
- Enrolled in Medicare managed care
- Had other third party liability

We excluded 3,490 (6.1%) Dual Eligible members, 3,021 (3.1%) Medicare Only members, and 454 (3.1%) MassHealth Only members. The resulting groups (Dual Eligibles (N=54,121), Medicare Only (N=93,603), and MassHealth Only (N=14,271)) comprised the study population, as shown in Figure 3.1.

Figure 3-1 Population Selection



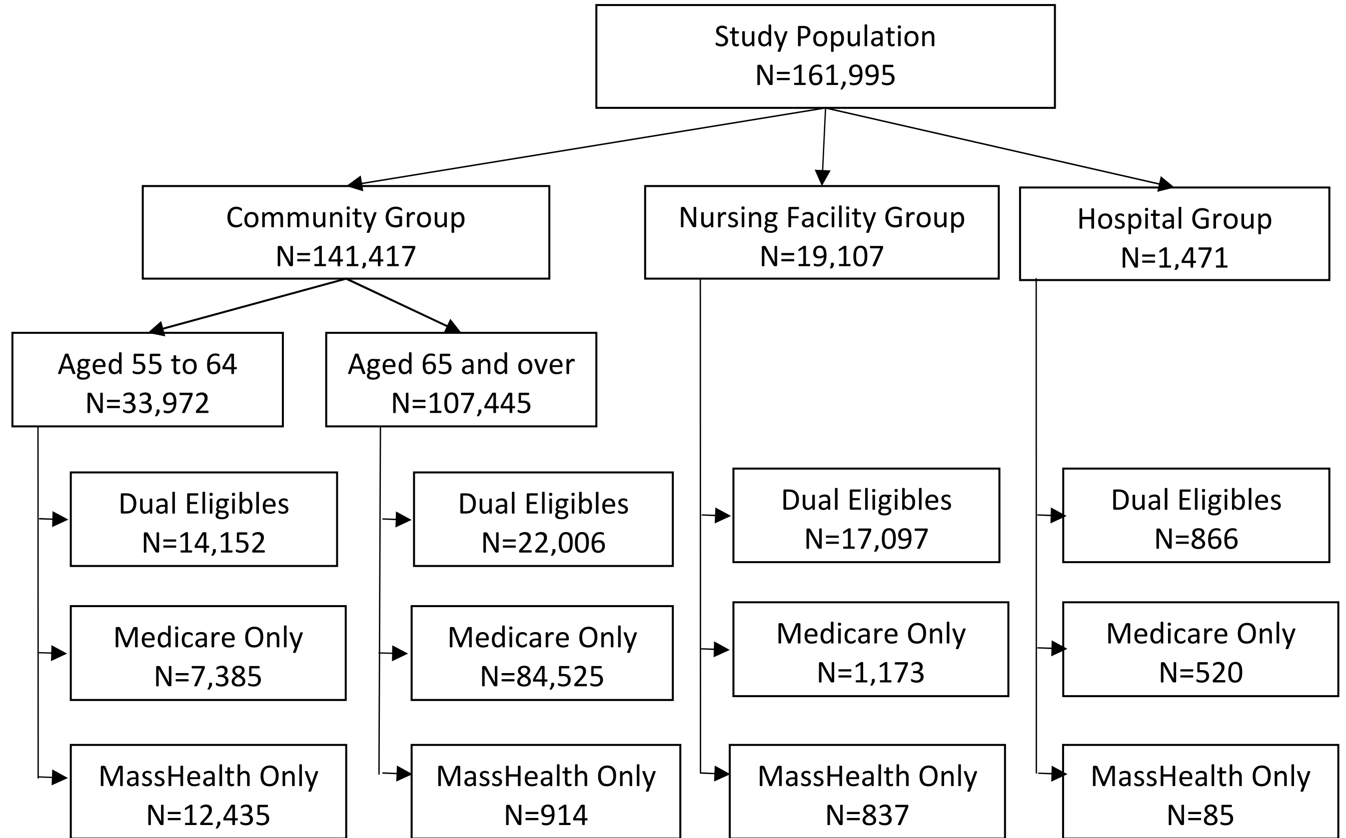
Because members who stayed in institutions (hospitals or nursing facilities) for a long period of time had fewer opportunities to receive community-based mental health services and might have had different patterns of healthcare service utilization, we further classified the study population into three resident groups based on length of stay in institutions (hospitals and nursing facilities) in CY 2005. The three resident groups were:

- Community group (N=141,417): members who lived primarily in the community. If they spent time in a hospital or nursing facility, the total number of hospital and/or nursing facility days was less than 120 during CY2005
- Nursing Facility group (N=19,107): members with a total of 120 or more hospital and/or nursing facility days during CY2005 and with more nursing facility days than hospital days
- Hospital group (N=1,471): members with a total of 120 or more hospital and/or nursing facility days during CY2005 and with more hospital days than nursing facility days

The Community group was split into two age groups (aged 55 to 64, and aged 65 and over) because the BHD prevalence and the reasons for being eligible for Medicare and/or MassHealth differed between these groups, with the younger group having a higher prevalence of SMI and SUD and a higher likelihood of being eligible for Medicare or MassHealth due to disability, rather than age. However, the other resident groups (Nursing Facility and Hospital) were not large enough to be analyzed by age group. Thus, four resident groups were used for analysis:

Community aged 55-64, Community aged 65 and over, Nursing Facility, and Hospital. These groups were separated into primary payment source groups, as shown in Figure 3.2.

Figure 3-2 Resident Groups for Analysis



3.3 Disease Identification

Behavioral health disorders were primarily classified based on the ICD-9-CM codes used in Medicare and MassHealth claims. Individuals were identified for inclusion in the study by having at least one claim with a specified diagnosis or procedure code, either as principal or other diagnosis. These disease categories were not mutually exclusive. A list of these diagnosis and procedure codes is included in Appendix A.

We grouped BHDs into three groups: severe mental illness (SMI), other mental illness (OMI), and substance use disorders (SUD). Below is a list of diseases included in each of the three groups of BHDs.

- SMI: schizophrenia/paranoid, bipolar disorder, and major depression.
- OMI: other depression, anxiety, and others.
- SUD: alcohol abuse or dependence and drug abuse or dependence.

3.4 Behavioral Health Services and Expenditures

Behavioral health services were mainly identified by using the principal diagnosis in Medicare and MassHealth claims. When the diagnosis code was not available, procedure codes (HCPCS) were used to identify these services. Although we reported the use of and expenditures for prescription drugs, they were not used to identify BHDs. A portion of our study population had BHD only in their secondary diagnosis and we did not count such claims in analyzing behavioral health services or expenditures. A list of the diagnosis and procedure codes we used is included in Appendix A.

We examined where people received their behavioral health services (place of service), who provided these services (provider specialty), what types of service were received (type of service), and what were the associated Medicare and/or MassHealth payments (expenditures). Sections 3.4.1 to 3.4.4 provide details for each of these areas being studied.

3.4.1 Place of service

Medicare and MassHealth claims data included locations where services were delivered and we reported the proportion of people who received services in these settings. Major places of service included community-based settings, hospital outpatient departments, emergency rooms, hospital inpatient settings, and residences with services delivered through a home health agency. Community-based settings included physicians' and other practitioners' offices, community health centers, community mental health centers or mental health clinics, homes, and non-residential substance abuse treatment programs or facilities. The use of behavioral health-related prescription drugs was reported based on the therapeutic classes recorded in MassHealth pharmacy claims.

3.4.2 Provider specialty

We examined provider specialty for services provided in community-based settings mentioned in Section 3.4.1, but not for physician services provided in other settings. Only Medicare physician claims were used for the analysis of provider specialty because MassHealth claims did

not provide detailed specialty information for physician or other practitioner visits. Also, Medicare claims for hospital outpatient departments were not counted because provider specialty was not available for these claims. We separated Medicare physician claims into general medical providers and mental health specialists. The mental health specialists included psychiatrists, psychologists, licensed clinical social workers, and certified clinical nurse specialists. The rest of the physician visits were classified as general medical providers.

3.4.3 Type of service

Types of service received in community-based settings were identified through the procedure codes from the ***Healthcare Common Procedure Coding System*** that were assigned to individual claims. Ten types of service were examined: evaluation and management, psychiatric diagnosis, individual psychotherapy, group psychotherapy, family psychotherapy, case consultation, drug management, alcohol/drug consultation, detoxification, and methadone treatment.

3.4.4 Expenditures

All Medicare and MassHealth expenditures were included in the analysis. All health care expenditures and expenditures for behavioral health services were calculated. Additionally, we examined how expenditures for behavioral health services were distributed across places of service.

4 RESULTS

In Sections 4.1 through 4.3, we present findings for the following resident groups: Community group aged 55 to 64, Community group aged 65 and over, and Nursing Facility group. We did not include the Hospital group because the population size was extremely small, and instead report these findings in Appendix E.

As explained in the Methods section, we present findings for the Community group by age category. However, due to the small population size, we report findings for the Nursing Facility group without further breakdown in age. For each resident group, results are shown for the three primary payment source groups, which include Dual Eligibles, Medicare Only, and MassHealth Only.

For each resident group, we start by reporting population characteristics (demographics, Medicare enrollment status, MassHealth enrollment status, the types of BHDs, and the proportion of people with multiple BHDs); second, we report behavioral health service use for place of service, provider specialty, and type of service; and third, we report Medicare and/or MassHealth expenditures for behavioral health services. Additional details for all resident groups are provided in the Appendixes.

4.1 Community Group Aged 55 to 64

The Community group aged 55 to 64 included Massachusetts Medicare and/or MassHealth members aged 55 to 64 with BHDs who stayed in hospital and/or nursing facilities for less than 120 days during CY 2005. In addition, members of this group had at least 3 months of Medicare and/or MassHealth coverage, did not enroll in Medicare managed care organizations, and did not have other private insurance identified on MassHealth eligibility records.

The following sections describe findings for the Community group aged 55 to 64. For additional information about this resident group, see Appendix B.

4.1.1 Population characteristics

Table 4-1 shows demographic characteristics, Medicare enrollment status, and MassHealth enrollment status for the Community group aged 55 to 64. In this group, the average age was around 60 years old, more than half of the members were women (ranging from 55% in the Medicare Only group to 63% in MassHealth Only group), and the majority were white (ranging from 74% in the MassHealth Only group to 93% in the Medicare Only group). Race information was not available for 14% of the MassHealth Only group.

The majority of people in the Community group aged 55 to 64 had disabilities as determined by the Social Security Administration or the Massachusetts Disability Evaluation Services. Based on the original reason for Medicare enrollment, more than 90% of the Dual Eligibles (93%) and three-quarters (77%) of the Medicare Only group had disabilities. Also, disability was recorded in MassHealth eligibility records for 96% of the Dual Eligibles and 86% of MassHealth Only group.

While the inclusion criteria limited our study population to those who had at least 3 months of Medicare and/or MassHealth coverage, 14% of the Dual Eligibles and 25% of the Medicare Only group did not have the a full year of Medicare coverage. When examining Medicare coverage month by month, many people did not have Medicare coverage during the first several months of CY 2005, which indicates that they became eligible for Medicare during mid-2005. For the Dual Eligibles and MassHealth Only groups, most members had a full year of MassHealth enrollment (90% and 87%, respectively) and the average MassHealth enrollment period was more than 350 days in CY 2005.

Table 4-1 Population Characteristics, Community Group Aged 55 to 64 (CY 2005)

CY 2005	Dual Eligibles (N=14,152)		Medicare Only (N=7,385)		MassHealth Only (N=12,435)	
Demographics						
Age						
Mean (SD[1])	59.3	(2.9)	60.5	(3.1)	58.6	(2.6)
Gender (aged 55-64)						
Male	5,672	(40.1%)	3,338	(45.2%)	4,545	(36.6%)
Women	8,480	(59.9%)	4,047	(54.8%)	7,890	(63.4%)
Race (aged 55-64)						
White	11,578	(81.8%)	6,899	(93.4%)	9,215	(74.1%)
Other	2,529	(17.9%)	463	(6.3%)	1,535	(12.3%)
Unknown	45	(0.3%)	23	(0.3%)	1,685	(13.6%)
Medicare Enrollment						
Full year enrollment					NA	
Part A	12,405	(87.7%)	5,551	(75.2%)	NA	
Part B	12,183	(86.1%)	5,158	(69.8%)	NA	
Original reason for entitlement						
Old age	798	(5.6%)	1,597	(21.6%)	NA	
Disabled	13,222	(93.4%)	5,703	(77.2%)	NA	
ESRD[2]	54	(0.4%)	32	(0.4%)	NA	
Both disabled and ESRD[2]	78	(0.6%)	53	(0.7%)	NA	
Current reason for entitlement						
Old age	1,487	(10.5%)	2,066	(28.0%)	NA	
Disabled	12,545	(88.6%)	5,240	(71.0%)	NA	
ESRD[2]	53	(0.4%)	32	(0.4%)	NA	
Both disabled and ESRD[2]	67	(0.5%)	47	(0.6%)	NA	
MassHealth Enrollment						
Full 12-month enrollment	12,681 (89.6%)		NA		10,834 (87.1%)	
Average enrollment days (SD[1])	352.2 (49.9)		NA		351.0 (45.5)	
Disabled[3]	13,571 (95.9%)		NA		10,650 (85.7%)	
Receiving DMH[4] services	1,372 (9.7%)		NA		951 (7.7%)	

[1] Standard deviation
[2] End stage renal disease
[3] Disability determined by Social Security Administration or Massachusetts Disability Evaluation Services
[4] Department of Mental Health

According to our inclusion criteria, each individual in our study population had at least one BHD. Almost half of the Community group aged 55 to 64 had SMI, three-quarters of them had OMI, and one-fifth of them had SUD. Table 4-2 shows more details regarding the types of BHDs and number of BHDs per person for each primary payment source group. The Dual Eligibles had the highest proportion of people with SMI (54%), followed by the MassHealth Only (50%) and Medicare Only (41%) groups. The proportion of people with OMI was high and ranged from 67% in the MassHealth Only group to 77% in the Medicare Only group, while the proportion with SUD ranged from 14% in the Medicare Only group to 21% in MassHealth Only group. Furthermore, half of the Community group aged 55 to 64 had multiple BHDs. The proportion of people with multiple BHDs was highest in the Dual Eligibles group (55%) and was similar for the Medicare Only (44%) and MassHealth Only (47%) groups.

Table 4-2 Types of BHDs and Number of BHDs per Person, Community Group Aged 55 to 64 (CY 2005)

CY 2005	Dual Eligibles (N=14,152)		Medicare Only (N=7,385)		MassHealth Only (N=12,435)	
Severe mental illness	**7,696**	**(54.4%)**	**3,052**	**(41.3%)**	**6,241**	**(50.2%)**
Schizophrenia/paranoid	2,269	(16.0%)	519	(7.0%)	1,349	(10.9%)
Bipolar	2,591	(18.3%)	985	(13.3%)	1,397	(11.2%)
Major depression	4,672	(33.0%)	2,062	(27.9%)	4,415	(35.5%)
Other mental illness	**10,567**	**(74.7%)**	**5,706**	**(77.3%)**	**8,285**	**(66.6%)**
Other depression	6,202	(43.8%)	3,216	(43.5%)	4,543	(36.5%)
Anxiety	4,120	(29.1%)	2,119	(28.7%)	2,793	(22.5%)
Other[1]	5,941	(42.0%)	2,795	(37.8%)	4,533	(36.5%)
Substance use disorders	**2,526**	**(17.9%)**	**999**	**(13.5%)**	**2,564**	**(20.6%)**
Alcohol abuse or dependence	1,807	(12.8%)	823	(11.1%)	1,773	(14.3%)
Drug abuse or dependence	1,104	(7.8%)	264	(3.6%)	1,136	(9.1%)
Number of diagnosed BHDs						
One	6,295	(44.5%)	4,133	(56.0%)	6,643	(53.4%)
Two	3,935	(27.8%)	1,883	(25.5%)	3,418	(27.5%)
Three	2,213	(15.6%)	842	(11.4%)	1,484	(11.9%)
Four	1,010	(7.1%)	356	(4.8%)	584	(4.7%)
Five to Eight	699	(4.9%)	171	(2.3%)	306	(2.5%)

[1]For example, unspecified psychosis, adjustment reaction with mixed emotional features, and prolonged posttraumatic stress disorder

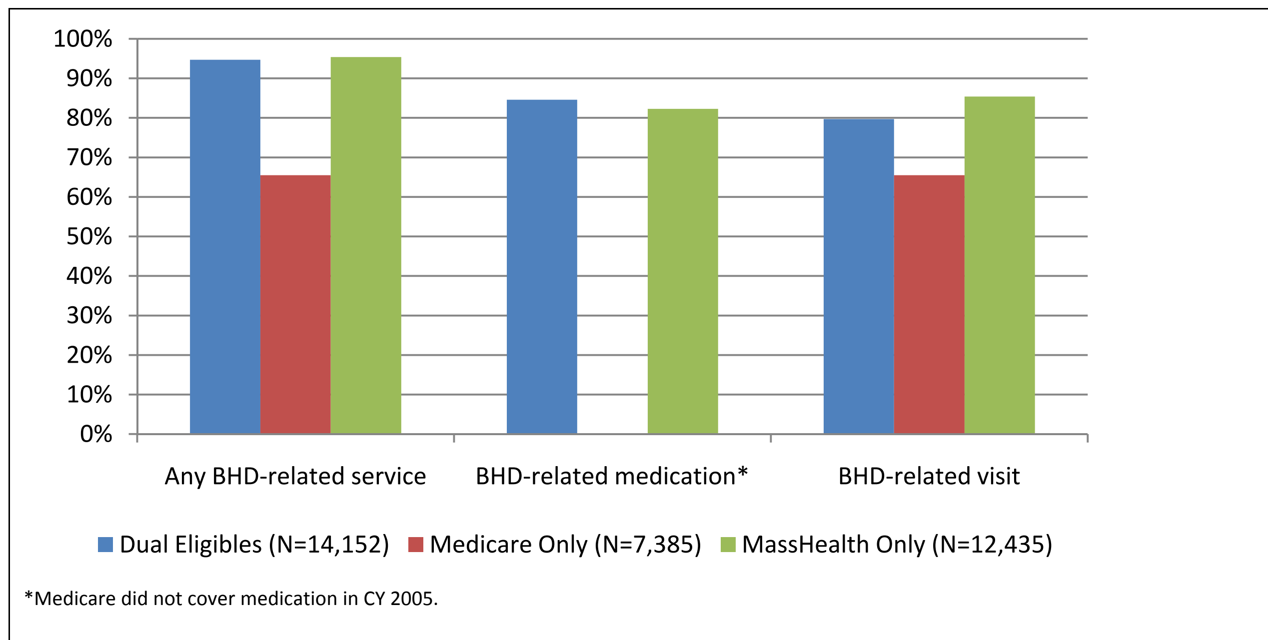
4.1.2 Place of service

After including the use of BHD-related medication covered by MassHealth, almost 95% of the Dual Eligibles and MassHealth Only groups received behavioral health related services (medications or visits) in CY 2005 (Figure 4-1). Slightly over 80% of these groups used BHD-related medications. When we considered only BHD-related visits, the proportion decreased to 80% for the Dual Eligibles and 85% for the MassHealth Only group; however, this proportion was only 66% for the Medicare Only group. BHD-related visits were Medicare and/or MassHealth claims with the principal diagnosis being a BHD recorded on a claim, while BHD-related medications were based on the therapeutic classes of prescriptions recorded on MassHealth pharmacy claims.

We used any diagnosis (principal and others) to identify people with BHDs, but used only principal diagnosis to identify BHD-related visits. This is the reason that only 66% of the Medicare Only group had BHD-related visits, while this percentage was higher for the Dual Eligibles (80%) and MassHealth Only (85%) groups.

Refer to Appendix B1 for more information about use of behavioral health-related services by members of the Community group aged 55 to 64.

Figure 4-1 Behavioral Health-Related Services, Community Group Aged 55 to 64 (CY 2005)



*Medicare did not cover medication in CY 2005.

Figure 4-2 shows the proportion of people with BHD-related visits at selected places of service. The proportion of people receiving services in these places was similar for the Dual Eligibles and MassHealth Only groups, but it was smaller in the Medicare Only group. Without adjusting for any population characteristics or diagnosed BHDs, the most frequently utilized places of service were community-based settings, followed by hospital outpatient departments.

Refer to Appendix B1 for more information about selected places of service.

Figure 4-2 Selected Place of Service, Community Group Aged 55 to 64 (CY 2005)

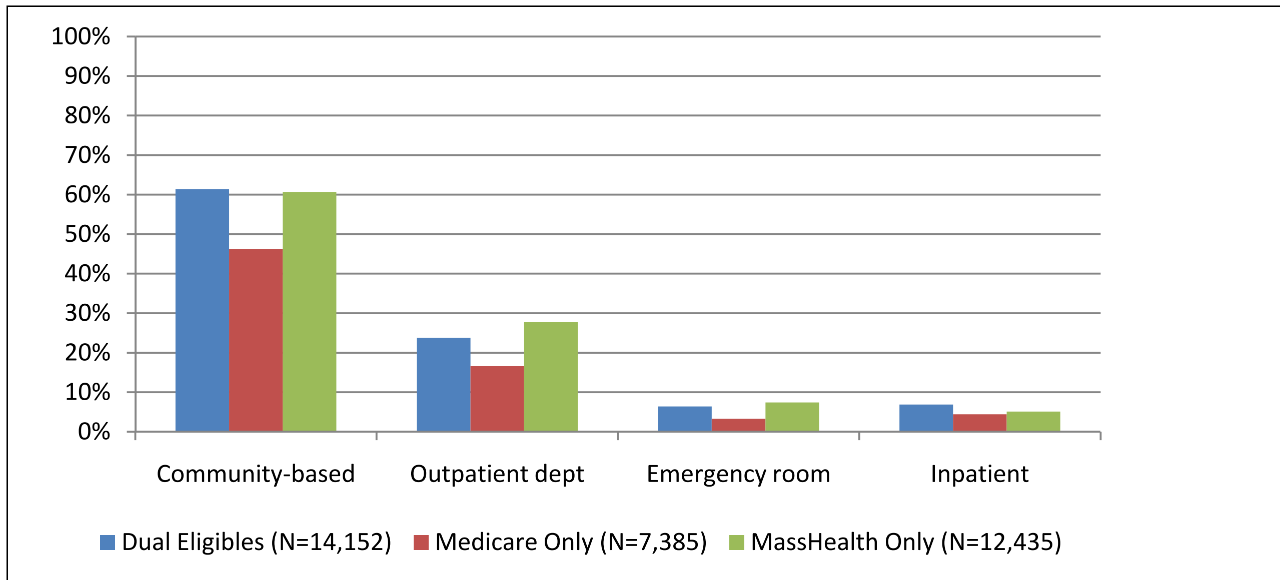
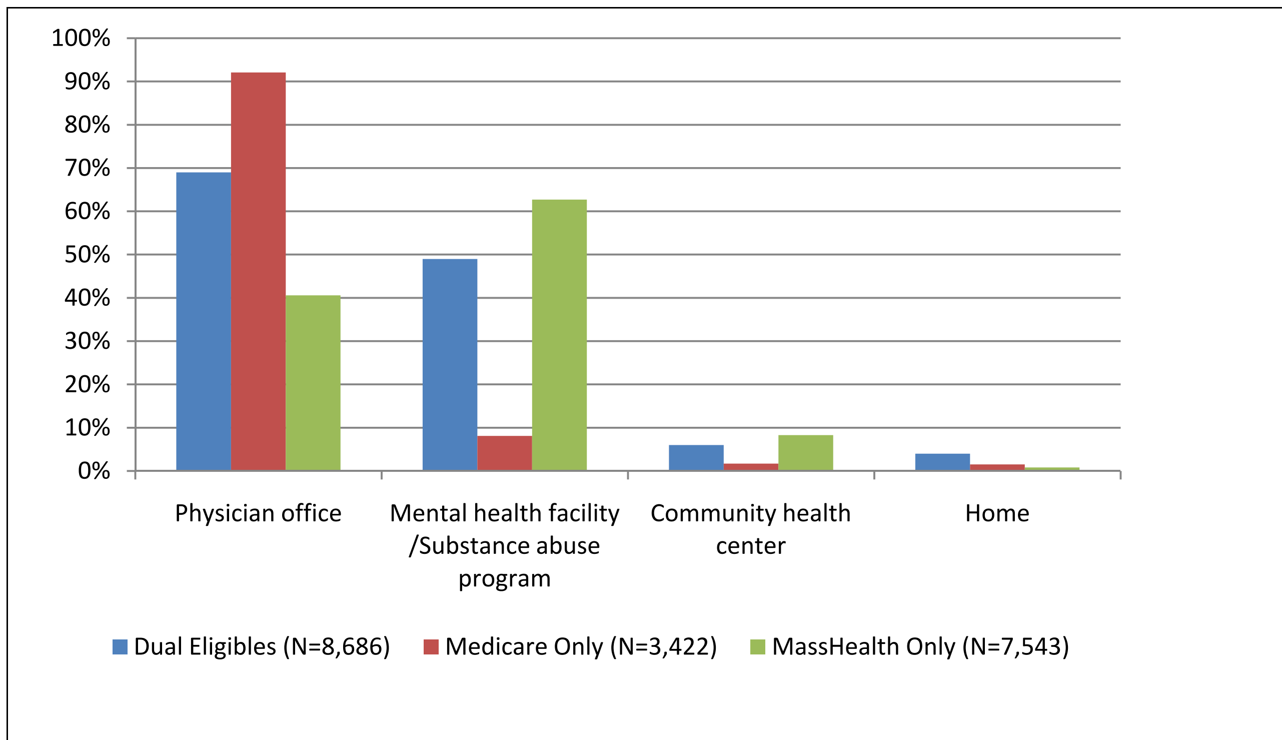


Figure 4-3 shows that the most commonly used community-based settings for behavioral health services were physician offices for the Dual Eligibles (69%) and Medicare Only (92%) groups, and mental health facility/substance use programs for the MassHealth Only group (63%). Almost half of the Dual Eligibles group also used mental health facility/substance abuse programs. Community mental health centers and mental health clinics were classified in the "Mental health facility/substance use program" category.

Refer to Appendix B2 for more information about settings for community-based behavioral health services.

Figure 4-3 Selected Settings of Community-Based Behavioral Health Services, Community Group Aged 55 to 64 (CY 2005)



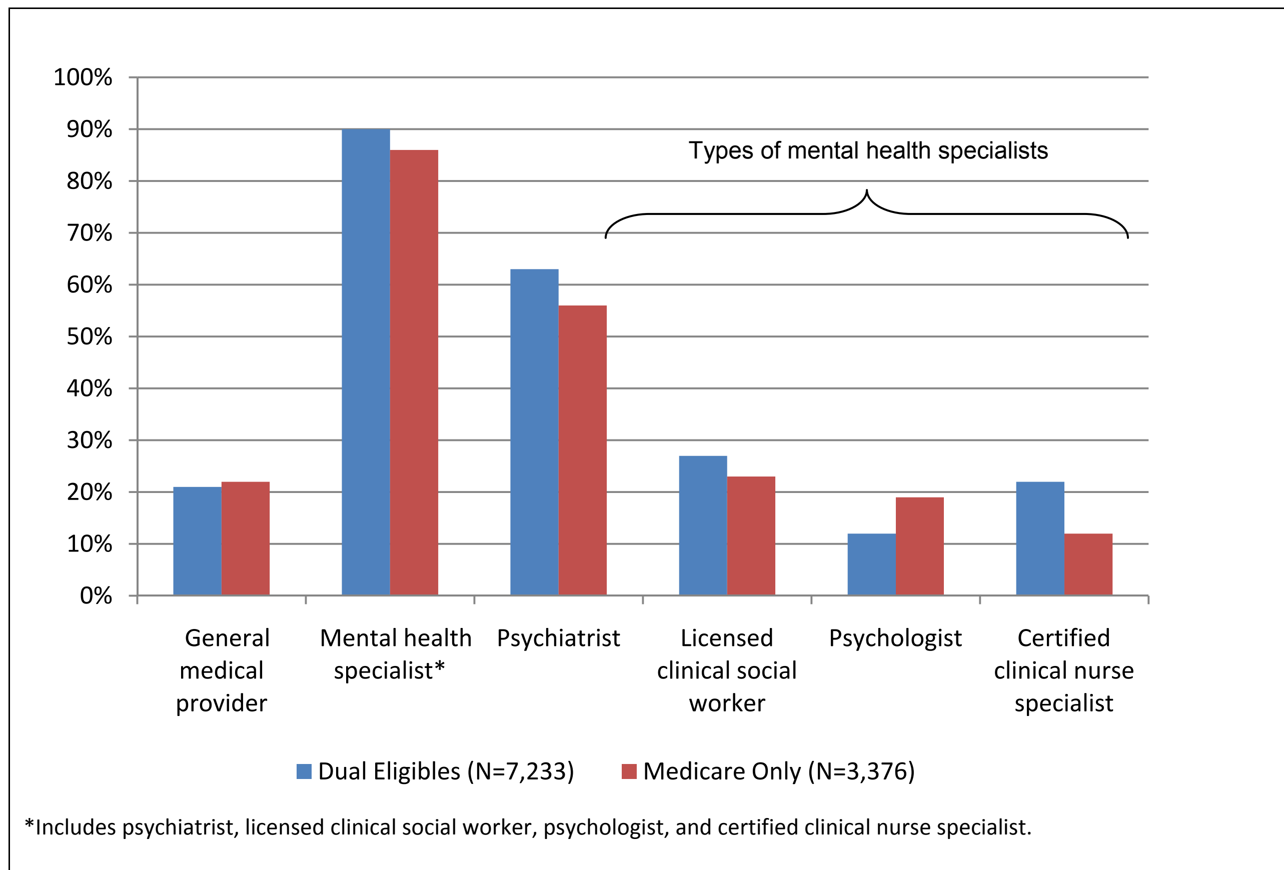
4.1.3 Provider specialty

Because MassHealth claims did not provide detailed physician specialty information, we used only Medicare physician claims to examine provider specialty for visits that occurred in community-based settings. For people having Medicare physician claims for behavioral health services in community-based settings, a substantially higher proportion of the Dual Eligibles and Medicare Only groups received services from mental health specialists (90% and 86%, respectively) than from general medical providers (21% and 22%, respectively).

The type of mental health specialist used varied between the Dual Eligibles and Medicare Only groups. In the Dual Eligibles group, a much higher proportion of members received services from psychiatrists and certified clinical nurse specialists than in the Medicare Only group, while a higher proportion of the Medicare Only group received services from psychologists (Figure 4-4).

Refer to Appendix B3 for more information about provider specialty.

Figure 4-4 Provider Specialty in Medicare Physician Claims for Community–Based Behavioral Health Services, Community Group Aged 55 to 64 (CY 2005)



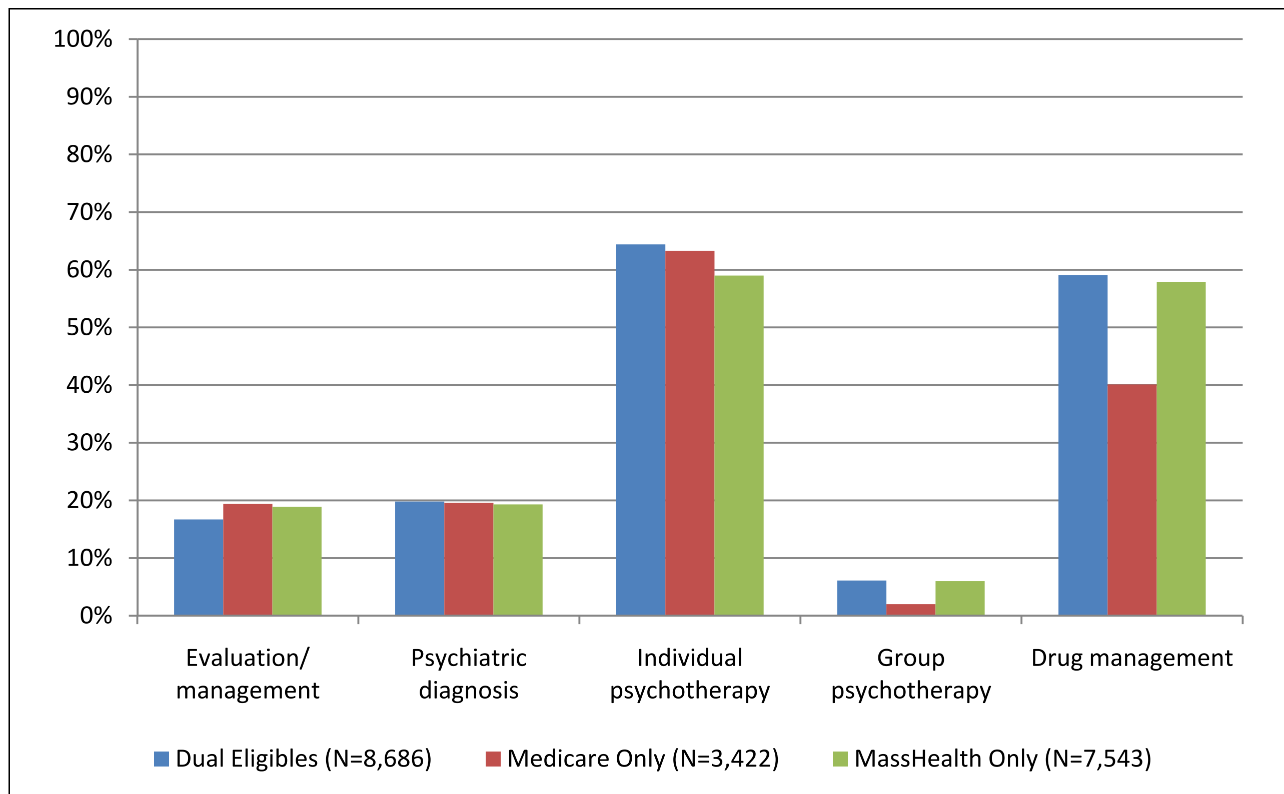
*Includes psychiatrist, licensed clinical social worker, psychologist, and certified clinical nurse specialist.

4.1.4 Type of service

The type of service received in community-based settings did not differ too much across primary payment source groups (Figure 4-5), except for a notable difference with regard to drug management. The behavioral health service with the highest proportion of users was individual psychotherapy (59 to 64%), followed by drug management (40 to 59%), psychiatric diagnosis (20%), and evaluation and management services (17 to 19%). Although drug management had the second highest proportion of users across primary payment source groups, the proportion was much lower in the Medicare Only (40%) group than in the Dual Eligibles (59%) and MassHealth Only (58%) groups.

Refer to Appendix B4 for more information about types of behavioral health services.

Figure 4-5 Selected Types of Behavioral Health Service, Community Group Aged 55 to 64 (CY 2005)



4.1.5 Medicare and/or MassHealth expenditures

The percentage of all health services expenditures attributable to behavioral health services varied by primary payment source group (Table 4-3). The Dual Eligibles and MassHealth Only groups had a similar percentage (21% and 25%, respectively) of their health services expenditures attributable to behavioral health services, while the percentage was only 15% for the Medicare Only group. The average annual expenditure for behavioral health services was the highest in the Dual Eligibles group ($5,900) which was 1.5 and 2.5 times higher than in the MassHealth Only ($3,800) and Medicare Only ($2,400) groups, respectively.

Refer to Appendix B5 for more information about behavioral health care expenditures.

Table 4-3 Percentage of All Health Services Expenditures Attributable to Behavioral Health Services, Community Group Aged 55-64 (CY 2005)

CY 2005	Expenditures in $1,000s					
	Dual Eligibles (N=13,406)		Medicare Only (N=4,837)		MassHealth Only (N=11,861)	
Behavioral health services						
Total expenditures (% of all health services expenditures)	79,049	(21.1%)	11,523	(15.0%)	45,506	(25.3%)
Average expenditures (SD*)	5.9	(12)	2.4	(6)	3.8	(8)
All health services						
Total expenditures	374,315	(100%)	76,629	(100%)	180,080	(100%)
Average expenditures (SD*)	27.9	(39)	15.8	(32)	15.2	(21)

* Standard deviation

For the Dual Eligibles group, Medicare was responsible for slightly over one-third of behavioral health expenditures (35.8%) and close to half of all health services expenditures (45.6%) (Table 4-4). Expenditures for medication accounted for half of behavioral health services expenditures (51.9%) covered by MassHealth (Appendix B6).

Refer to Appendix B6 for more information about behavioral health care expenditures for the Dual Eligibles group.

Table 4-4 Distribution of Behavioral Health Services Expenditures between Medicare and MassHealth for the Dual Eligibles Members, Community Group Aged 55-64 (CY 2005)

CY 2005	**Expenditures in $1,000s**					
(N=13,406)	**Medicare**		**MassHealth**		**Total**	
Behavioral health services						
Total expenditures (% of all behavioral health services expenditures)	28,317	(35.8%)	50,733	(64.2%)	79,049	(100%)
Average expenditures (SD*)	2.1 (8)		3.8 (8)		5.9 (12)	
All health services						
Total expenditures (% of all health care expenditures)	170,840	(45.6%)	203,475	(54.4%)	374,315	(100%)
Average expenditures (SD*)	12.7 (30)		15.2 (26)		27.9 (39)	

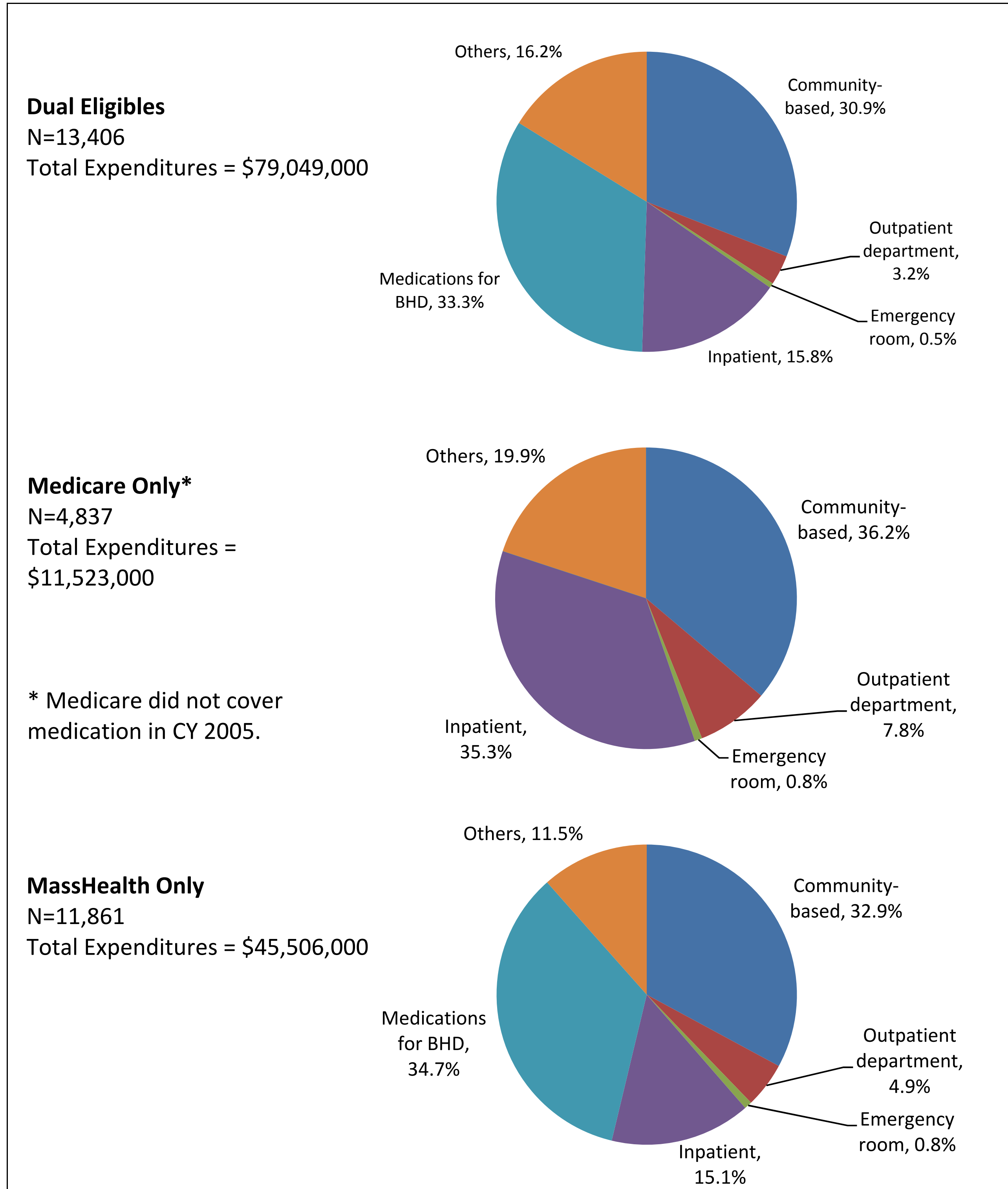
* Standard deviation

Figure 4-6 shows how behavioral health services expenditures were distributed within each primary payment source group. For the Dual Eligibles and MassHealth Only groups, one-third of behavioral health expenditures went to medications for BHDs and community-based settings, respectively, and an additional 15% went to hospital inpatient care. Hospital outpatient department expenditures accounted for 3% for Dual Eligibles and 5% for the MassHealth Only group.

In the Medicare Only group, one-third of behavioral health expenditures went to community-based settings and hospital inpatient care, respectively, and an additional 8% went to hospital outpatient departments. Medicare did not provide prescription coverage for Medicare beneficiaries in CY 2005.

Refer to Appendix B7 for more information about behavioral health services expenditures for different types of services.

Figure 4-6 Behavioral Health Services Expenditures by Type of Service, Community Group Aged 55 to 64 (CY2005)



4.2 Community Group Aged 65 and Over

The Community group aged 65 and over included Massachusetts Medicare and/or MassHealth members aged 65 and over with any BHDs who stayed in hospital and/or nursing facilities for less than 120 days during CY 2005. In addition, members had at least 3 months of Medicare and/or MassHealth coverage, did not enroll in Medicare managed care organizations, and did not have other private insurance identified on MassHealth eligibility records.

The following sections describe findings for the Community group aged 65 and over. For additional information about this resident group, see Appendix C.

4.2.1 Population characteristics

Table 4-5 shows demographic characteristics, Medicare enrollment status, and MassHealth enrollment status for the Community group aged 65 and over. Noticeably, the population size of the MassHealth Only group (N=914) was substantially smaller than Dual Eligibles (N=22,006) and the Medicare Only group (N=84,525). Slightly more than half of the Dual Eligibles and almost three-quarters of the MassHealth Only group were aged 65 to 74, while only 40% in the Medicare Only group were within that age range. Another 42% of the Medicare Only group were aged 75 to 84. Most of the Community group aged 65 and over were women (ranging from 66% in the Medicare Only group to 73% in the Dual Eligibles). The majority of the Dual Eligibles and the Medicare Only groups were white (80% and 97%, respectively), but the MassHealth Only group had a smaller proportion of white individuals (56%). Race information was not available for 22% of the MassHealth Only group.

The majority of people in the Community group aged 65 and over were eligible for Medicare due to old age, with 76% of the Dual Eligibles and 93% of the Medicare Only group being eligible for this reason. Disability was recorded in MassHealth eligibility records for 36% of the Dual Eligibles and 19% of the MassHealth Only group.

More than 90% of the Dual Eligibles and Medicare Only groups had a full year of Medicare coverage. For Dual Eligibles and MassHealth Only groups, slightly over 80% had a full year of MassHealth enrollment and the average MassHealth enrollment period was 328 and 338 days, respectively.

Table 4-5 Population Characteristics, Community Group Aged 65 and Over (CY 2005)

CY 2005	Dual Eligibles (N=22,006)		Medicare Only (N=84,525)		MassHealth Only (N=914)	
Demographics						
Age						
65-74	11,777	(53.5%)	33,145	(39.2%)	665	(72.8%)
75-84	7,067	(32.1%)	35,278	(41.7%)	211	(23.1%)
>=85	3,162	(14.4%)	16,102	(19.0%)	38	(4.2%)
Gender (aged 55-64)						
Male	5,958	(27.1%)	28,926	(34.2%)	304	(33.3%)
Women	16,048	(72.9%)	55,599	(65.8%)	610	(66.7%)
Race (aged 55-64)						
White	17,693	(80.4%)	82,351	(97.4%)	507	(55.5%)
Other	4,240	(19.3%)	2,080	(2.5%)	209	(22.9%)
Unknown	73	(0.3%)	94	(0.1%)	198	(21.7%)
Medicare Enrollment						
Full year enrollment					NA	
Part A	19,757	(89.8%)	79,036	(93.5%)	NA	
Part B	19,948	(90.6%)	77,768	(92.0%)	NA	
Original reason for entitlement						
Old age	16,620	(75.5%)	78,483	(92.9%)	NA	
Disabled	5,351	(24.3%)	5,994	(7.1%)	NA	
ESRD[1]	20	(<0.1%)	30	(<0.1%)	NA	
Both disabled and ESRD[1]	15	(<0.1%)	18	(<0.1%)	NA	
Current reason for entitlement						
Old age	21,799	(99.1%)	84,423	(99.9%)	NA	
Disabled	168	(0.8%)	36	(<0.1%)	NA	
ESRD[1]	38	(0.2%)	66	(<0.1%)	NA	
Both disabled and ESRD[1]	1	(<0.1%)	0	(0%)	NA	
MassHealth Enrollment						
Full 12-month enrollment	18,019 (81.9%)		NA		753 (82.4%)	
Average enrollment days (SD[2])	328.4 (88.1)		NA		338.8 (64.6)	
Disabled[3]	7,832 (35.6%)		NA		169 (18.5%)	
Receiving DMH[4] services	507 (2.3%)		NA		19 (2.1%)	

[1] End stage renal disease
[2] Standard deviation
[3] Disability determined by Social Security Administration or Massachusetts Disability Evaluation Services
[4] Department of Mental Health

According to our inclusion criteria, each individual in our study population had at least one BHD. One quarter of the Community group aged 65 and over had SMI, 87% had OMI, and 8% had SUD. Details regarding the types of BHDs and the number of BHDs per person for each primary payment source are shown in Table 4-6.

The Dual Eligibles and MassHealth Only groups had a similar proportion of people with SMI (32%), but the proportion was only 23% in the Medicare Only group. The proportion of people with OMI was high in all groups, ranging from 77% in the MassHealth Only group to 88% in the Medicare Only group. The prevalence of SUD was much lower, ranging from 6% in the MassHealth Only group to 10% in the Dual Eligibles. Furthermore, almost 40% of the Community group aged 65 and over had multiple BHDs. The proportion of people with multiple BHDs was the highest for the Dual Eligibles (44%), followed by the Medicare Only (36%) and MassHealth Only groups (31%).

Table 4-6 Types of BHDs and Number of BHDs per Person, Community Group Aged 65 and Over (CY 2005)

CY 2005	Dual Eligibles (N=22,006)		Medicare Only (N=84,525)		MassHealth Only (N=914)	
Severe mental illness	**7,209**	**(32.8%)**	**19,151**	**(22.7%)**	**296**	**(32.4%)**
Schizophrenia/paranoid	1,931	(8.8%)	2,001	(2.4%)	54	(5.9%)
Bipolar	1,852	(8.4%)	4,779	(5.7%)	33	(3.6%)
Major depression	4,675	(21.2%)	14,643	(17.3%)	225	(24.6%)
Other mental illness	**18,574**	**(84.4%)**	**74,546**	**(88.2%)**	**704**	**(77.0%)**
Other depression	10,592	(48.1%)	38,800	(45.9%)	359	(39.3%)
Anxiety	7,452	(33.9%)	29,156	(34.5%)	182	(19.9%)
Other[1]	8,767	(39.8%)	33,522	(39.7%)	362	(39.6%)
Substance use disorders	**2,140**	**(9.7%)**	**6,874**	**(8.1%)**	**57**	**(6.2%)**
Alcohol abuse or dependence	1,655	(7.5%)	5,165	(6.1%)	41	(4.5%)
Drug abuse or dependence	631	(2.9%)	1,962	(2.3%)	16	(1.8%)
Number of BHDs						
One	12,351	(56.3%)	54,141	(64.1%)	633	(69.3%)
Two	5,729	(26.0%)	19,518	(23.1%)	219	(24.0%)
Three	2,504	(11.4%)	7,590	(9.0%)	49	(5.4%)
Four	998	(4.5%)	2,485	(2.9%)	13[2]	(1.4%)
Five or more	424	(1.9%)	791	(0.9%)	NA[3]	

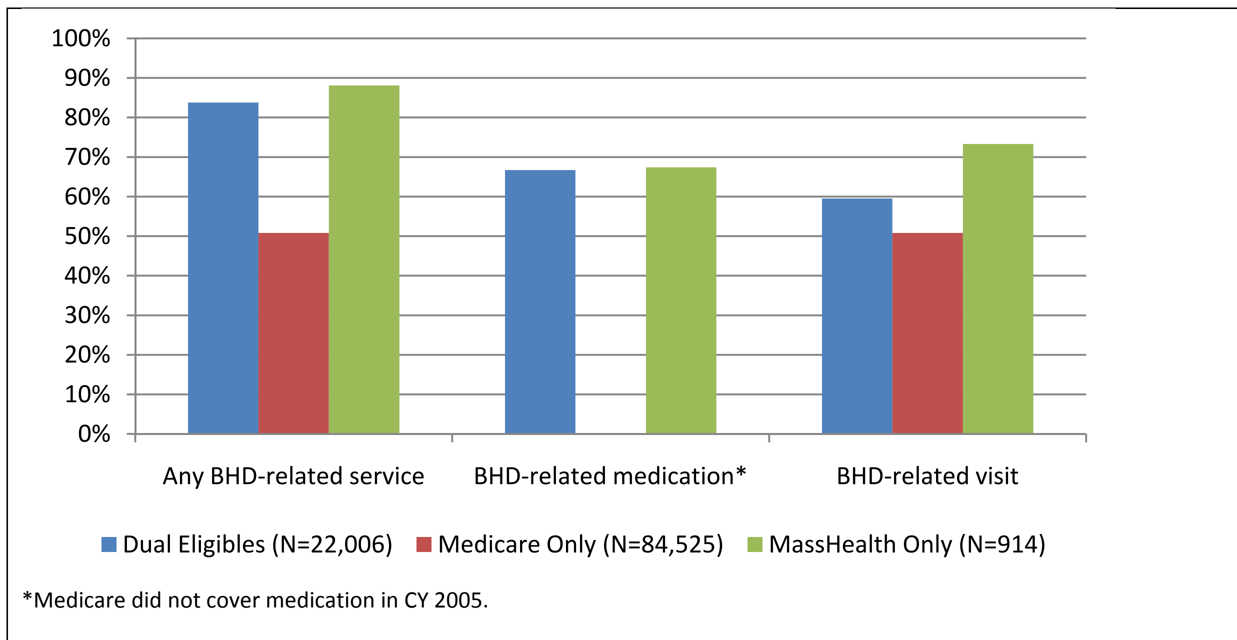
[1]For example, unspecified psychosis, adjustment reaction with mixed emotional features, and prolonged posttraumatic stress disorder
[2]Four or more BHDs.
[2]The cell size for 5 or more BHDs was less than 11.

4.2.2 Place of service

After including the use of BHD-related medications covered by MassHealth, more than 80% of the Dual Eligbles and MassHealth Only groups received behavioral health related services (medications or visits) in CY 2005 (Figure 4-7). Close to 70% of the Dual Eligibles and MassHealth Only groups used BHD-related medications. The proportion of people who received BHD-related visits was 60% for the Dual Eligibles and 73% for the MassHealth Only group; however, it was only 51% for the Medicare Only group.

Refer to Appendix C1 for more information about places of service.

Figure 4-7 Behavioral Health-Related Services, Community Group Aged 65 and Over (CY 2005)



*Medicare did not cover medication in CY 2005.

Figure 4-8 shows the proportion of people who received BHD-related visits at selected places of service: community-based settings, hospital outpatient departments, emergency rooms, and hospital inpatient settings. The proportion of people receiving services in these places was similar for Dual Eligibles and the Medicare Only group, but a higher proportion of the MassHealth Only group used community-based settings and hospital outpatient departments. Without adjusting for any population characteristics or diagnosed BHDs, the most frequently utilized places were community-based settings, followed by hospital outpatient departments.

Refer to Appendix C1 for more information about places of service.

Figure 4-8 Selected Place of Service, Community Group Aged 65 and Over (CY 2005)

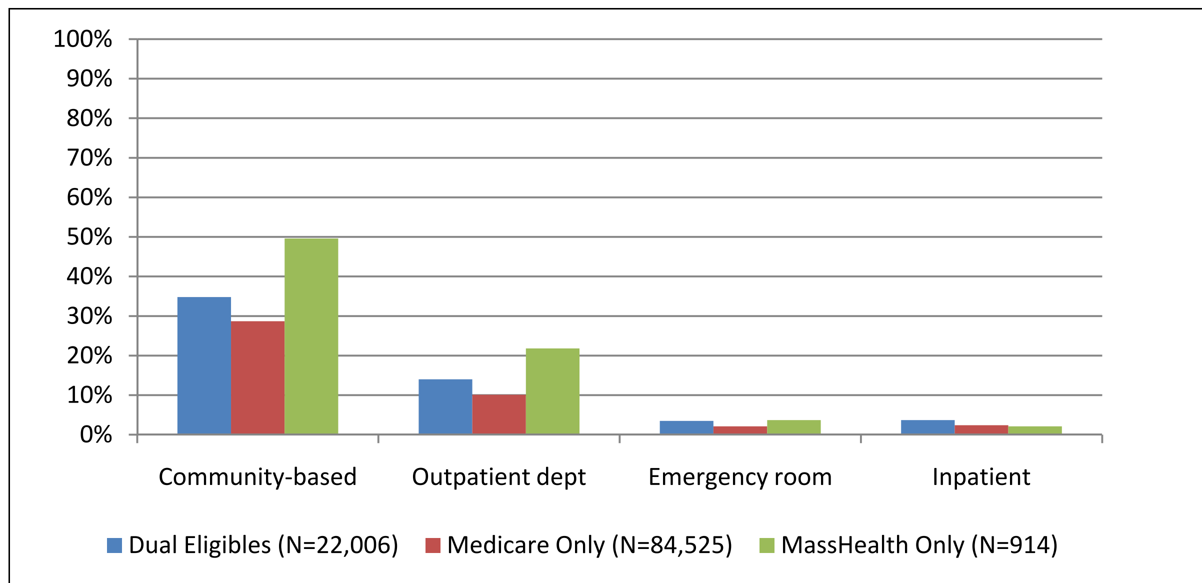
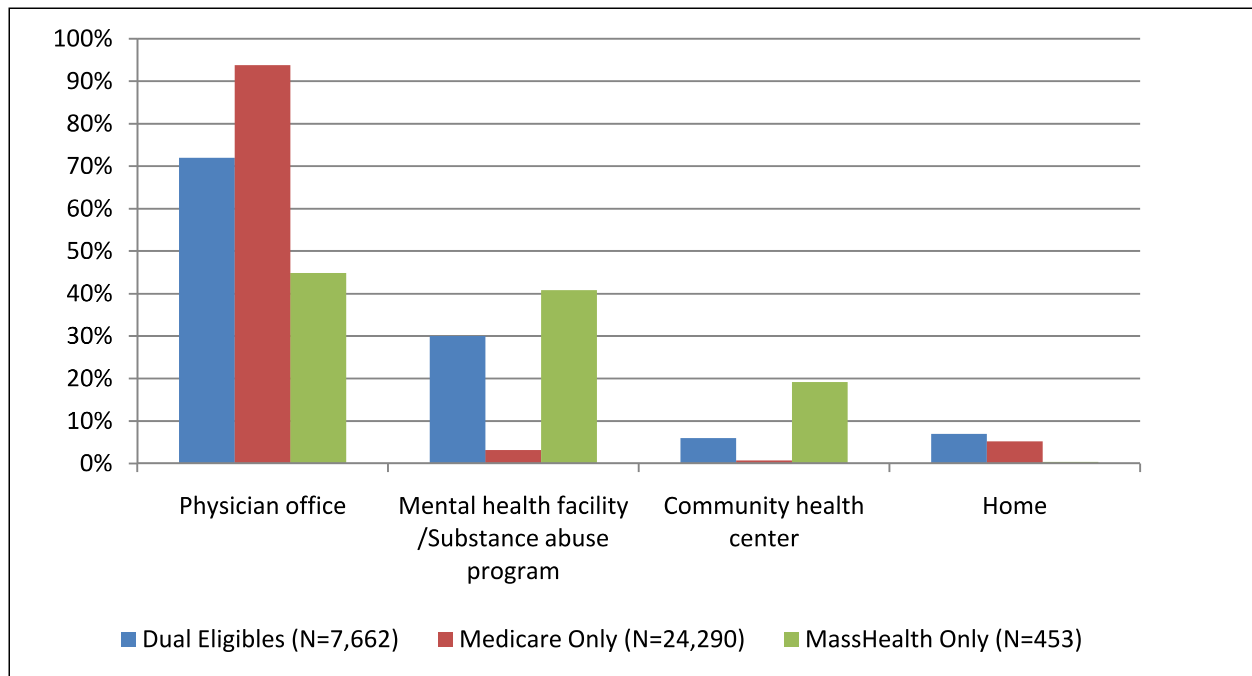


Figure 4-9 shows that the most commonly used community-based settings for behavioral health services were physicians' offices across primary payment source groups. However, rates ranged from 45% in the MassHealth Only group to 94% in the Medicare Only group. For Dual Eligibles and the MassHealth Only group, "Mental health facilities/substance use program" was the second most commonly used setting (30% and 41%, respectively). A noticeable proportion of the MassHealth Only group also used community health centers for behavioral health services.

Refer to Appendix C2 for more information about settings of community-based behavioral health services.

Figure 4-9 Selected Settings of Community-Based Behavioral Health Services, Community Group Aged 65 and Over (CY 2005)



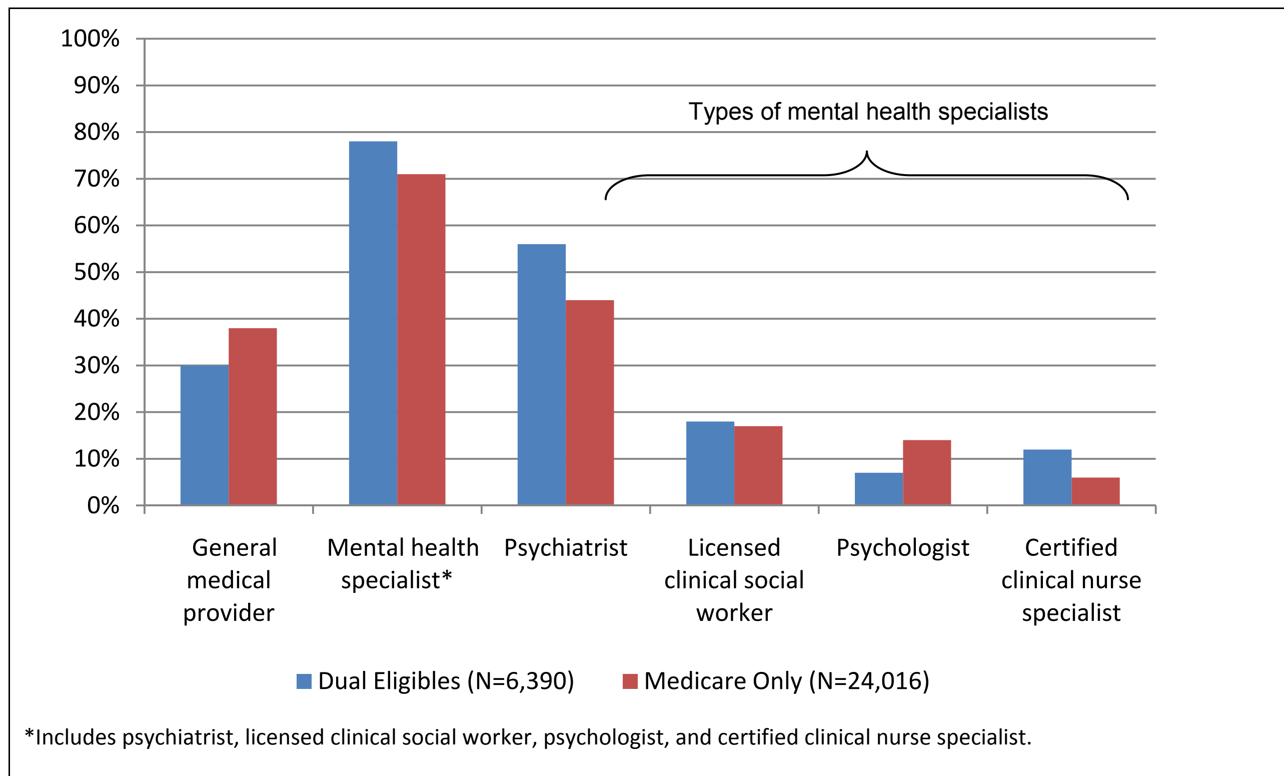
4.2.3 Provider specialty

Because MassHealth claims did not provide detailed physician specialty information, we used Medicare physician claims only to examine provider specialty for visits that occurred in community-based settings. For people having Medicare physician claims for behavioral health services in community-based settings, a substantially higher proportion of Dual Eligibles and the Medicare Only group received services from mental health specialists (78% and 71%, respectively) than from general medical providers (30% and 38%, respectively).

The type of mental health specialist used varied between Dual Eligibles and the Medicare Only group. Dual Eligibles received a higher proportion of services from psychiatrists and certified clinical nurse specialists than did the Medicare Only group, while a higher proportion of the Medicare Only group received services from psychologists (Figure 4-10).

Refer to Appendix C3 for more information about provider specialty.

Figure 4-10 Provider Specialty in Medicare Physician Claims for Community–based Behavioral Health Services, Community Group Aged 65 and Over (CY 2005)



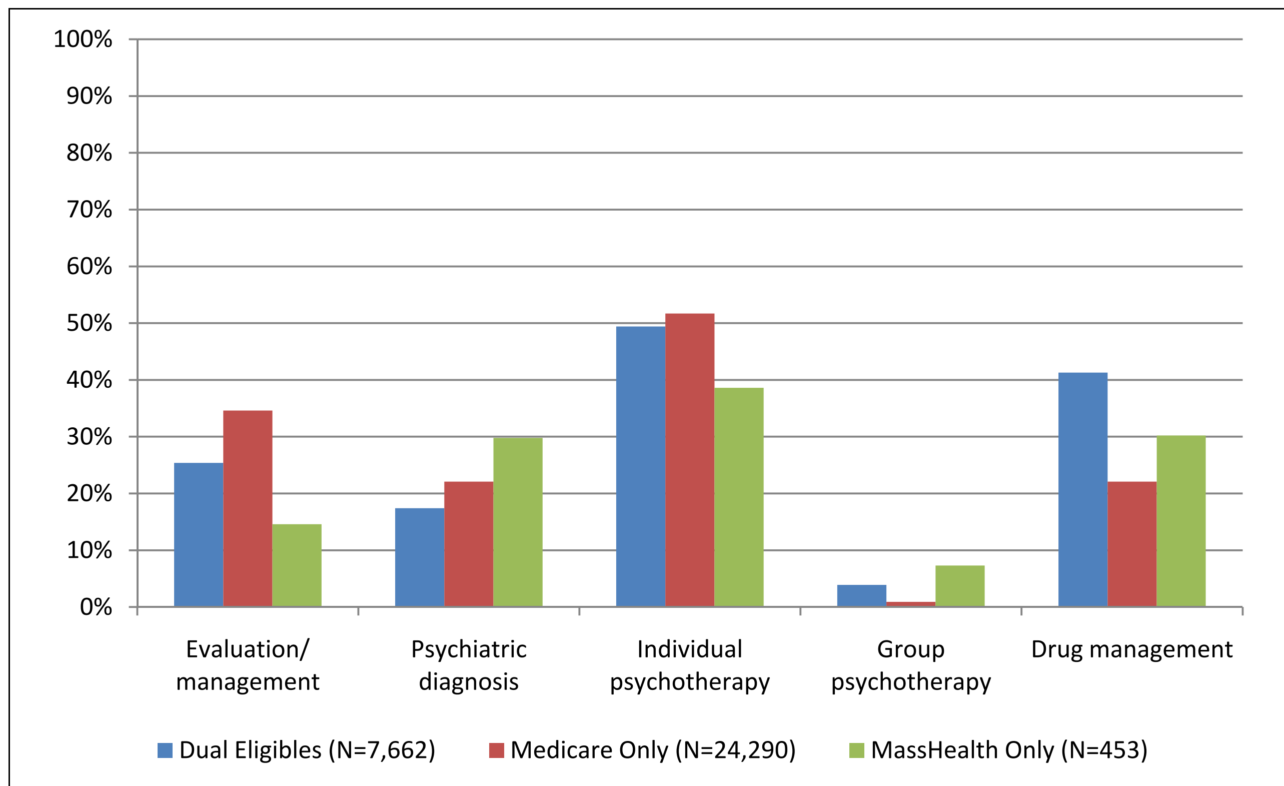
*Includes psychiatrist, licensed clinical social worker, psychologist, and certified clinical nurse specialist.

4.2.4 Type of service

The type of service received in community-based settings by the Community group aged 65 and over varied across primary payment source groups (Figure 4-11). Individual psychotherapy was the most common service received and the proportion of users was similar between Dual Eligibles (50%) and the Medicare Only group (52%), but much less in the MassHealth Only group (39%). For Dual Eligibles, the service with the second highest proportion of users was drug management (41%), followed by evaluation and management services (25%) and psychiatric diagnosis (17%). About one-third of the Medicare Only group received evaluation and management services, followed by a similar proportion (22%) of drug management and psychiatric diagnosis. As in the Dual Eligibles, drug management was the service with the second highest proportion of users in the MassHealth Only group (30%); however, 30% of the MassHealth Only group also received psychiatric diagnosis and 15% received evaluation and management services.

Refer to Appendix C4 for more information about types of behavioral health services.

Figure 4-11 Selected Types of Behavioral Health Service, Community Group Aged 65 and Over (CY 2005)



4.2.5 Medicare and/or MassHealth expenditures

The percentage of all health services expenditures attributable to behavioral health services varied by primary payment source group. (Table 4-7) In the Dual Eligibles and the MassHealth Only groups, around 10% of their health services expenditures were attributable to behavioral health services while the percentage was only 6% for the Medicare Only group. The average expenditure on behavioral health services was the highest for Dual Eligibles ($2,600) which was 1.7 and 2 times higher than for the Medicare Only ($1,500) and MassHealth Only ($1,300) groups, respectively.

Refer to Appendix C5 for more information about behavioral health expenditures.

Table 4-7 Percentage of All Health Services Expenditures Attributable to Behavioral Health Services, Community Group Aged 65 and Over (CY 2005)

CY 2005	Expenditures in $1,000s					
	Dual Eligibles (N=18,442)		Medicare Only (N=42,961)		MassHealth Only (N=805)	
Behavioral health services						
Total expenditures (% of all health services expenditures)	47,515	(9.4%)	65,248	(6.0%)	1,035	(10.2%)
Average expenditures (SD*)	2.6	(7)	1.5	(5)	1.3	(3)
All health services						
Total expenditures	504,735	(100%)	1,089,522	(100%)	10,160	(100%)
Average expenditures (SD*)	27.4	(36)	25.4	(38)	12.6	(17)

* Standard deviation

For the Dual Eligibles group, Medicare was responsible for slightly less than half of behavioral health expenditures (47.4%) and more than half of all health services expenditures (57.9%) (Table 4-8). Expenditures for medication accounted for more than half of behavioral health services expenditures (60.7%) covered by MassHealth (Appendix C6).

Refer to Appendix C6 for more information about behavioral health expenditures for the Dual Eligibles group.

Table 4-8 Distribution of Behavioral Health Services Expenditures between Medicare and MassHealth for the Dual Eligibles Members, Community Group Aged 65 and Over (CY 2005)

CY 2005	Expenditures in $1,000s					
(N=18,442)	Medicare		MassHealth		Total	
Behavioral health services						
Total expenditures (% of all behavioral health services expenditures)	22,536	(47.4%)	24,979	(52.5%)	47,515	(100%)
Average expenditures (SD*)	1.2	(6)	1.4	(4)	2.6	(7)
All health services						
Total expenditures (% of all health services expenditures)	292,360	(57.9%)	212,375	(42.1%)	504,735	(100%)
Average expenditures (SD*)	15.9	(33)	11.5	(23)	27.4	(36)

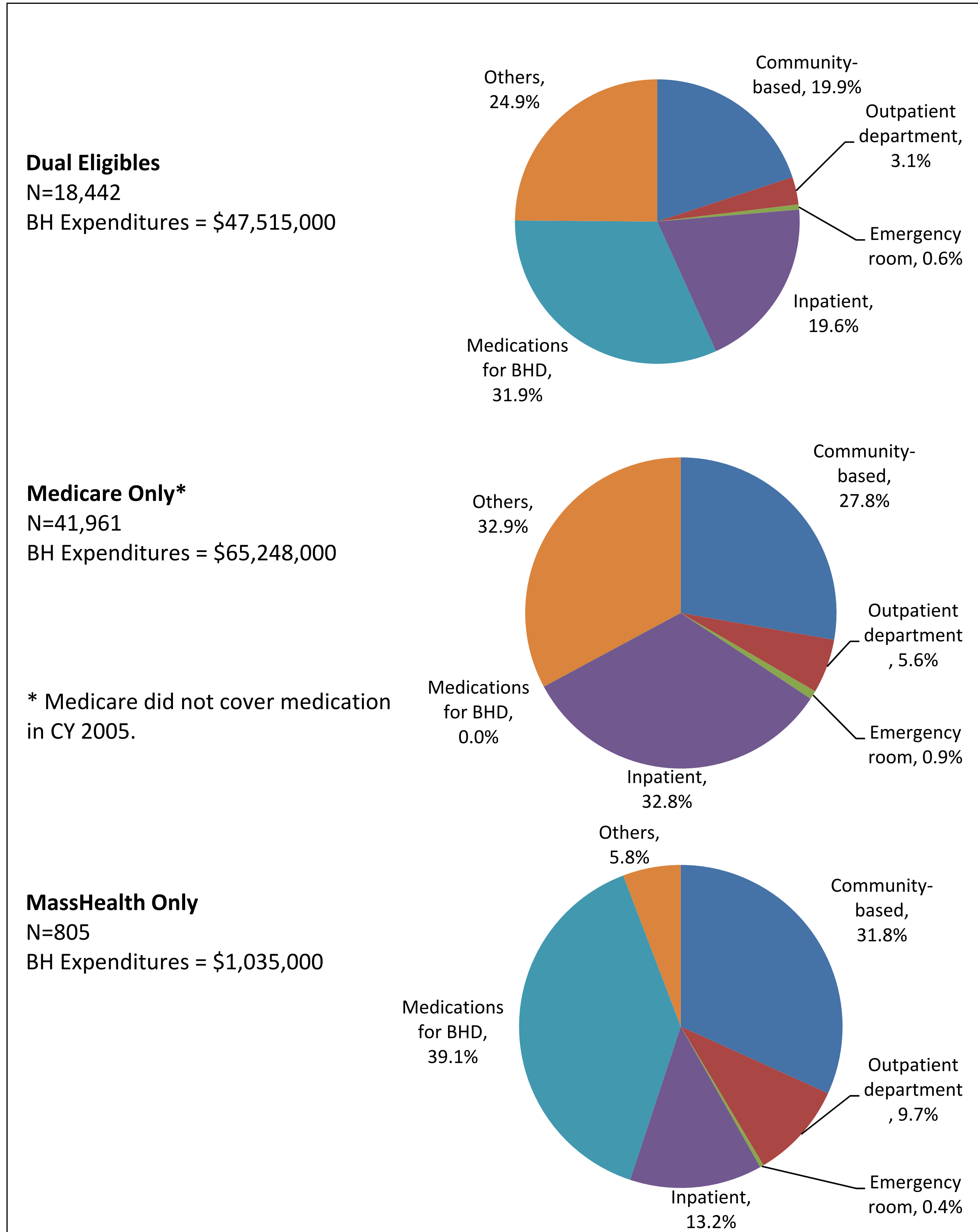
* Standard deviation

Figure 4-12 shows how behavioral health services expenditures were distributed within each primary payment source group. In the Dual Eligibles and MassHealth Only groups, around one-third of behavioral health expenditures were for BHD-related Medications (32% and 39%, respectively). In the Dual Eligibles, services in community-based settings and in hospital inpatient settings each accounted for 20% of behavioral health expenditures; and only 3% of expenditures were for hospital outpatient departments. For the MassHealth Only group, one-third of behavioral health expenditures were for services in community-based settings, 13% were for hospital inpatient settings, and 10% were for hospital outpatient departments.

In the Medicare Only group, services in community-based settings and hospital inpatient settings each accounted for approximately one-third of behavioral health expenditures (28% and 33% respectively), and an additional 6% of expenditures were for hospital outpatient departments. Medicare did not provide prescription coverage in CY 2005.

Refer to Appendix C7 for more information about how behavioral health care expenditures were distributed.

Figure 4-12 Behavioral Health Services Expenditures by Type of Service, Community Group Aged 65 and Over



4.3 Nursing Facility Group

The Nursing Facility group included Massachusetts Medicare and MassHealth members aged 55 and over with BHDs who stayed in hospitals and/or nursing facilities for 120 days or longer during CY 2005 and whose number of nursing facility days were greater than their hospital days. Members had at least 3 months of Medicare and/or MassHealth coverage, did not enroll in Medicare managed care organizations, and did not have other private insurance identified on MassHealth eligibility records. The Nursing Facility group was not subdivided into age groups because only a small number of people used services in community-based settings.

The following sections describe findings for the Nursing Facility Group. For additional information about this resident group, see Appendix D.

4.3.1 Population characteristics

Table 4-9 shows demographic characteristics, Medicare enrollment status, and MassHealth enrollment status for the Nursing Facility group. More than 85% of the Dual Eligibles and Medicare Only groups were 75 years old or older, while 63% of the MassHealth Only group were aged 55 to 64. Most of the Nursing Facility group were women (ranging from 60% in the Medicare Only group to 73% in the Dual Eligibles). The majority of the Dual Eligibles and Medicare Only groups were white (93% and 97%, respectively) and the MassHealth Only group had a much smaller proportion of white members (75%). Race information was not available for 16% of the MassHealth Only group.

The majority of the Nursing Facility group were originally eligible for Medicare due to old age, although the proportion was higher in the Medicare Only group (92%) than in the Dual Eligibles (78%). While 21% of the Dual Eligibles originally qualified for Medicare due to disability, MassHealth eligibility records showed that only 14% of the Dual Eligibles had disabilities. A much higher proportion of MassHealth Only beneficiaries (67%) had disabilities recorded on MassHealth eligibility records.

More than 80% of the Dual Eligibles and Medicare Only groups had a full year of Medicare coverage. Slightly less than three-quarters of the Dual Eligibles group had a full year of MassHealth enrollment with an average enrollment period of 324 days; 86% of the MassHealth Only group had a full year of Medicare coverage, with an average enrollment of 349 days.

Table 4-9 Population Characteristics, Nursing Facility Group (CY 2005)

CY 2005	Dual Eligibles (N=17,097)		Medicare Only (N=1,173)		MassHealth Only (N=837)	
Demographics						
Age						
55 to 64	1,194	(7.0%)	17	(1.5%)	525	(62.7%)
65-74	2,663	(15.6%)	144	(12.3%)	114	(13.6%)
75-84	6,107	(35.7%)	572	(48.8%)	107	(12.8%)
>=85	7,133	(41.7%)	440	(37.5%)	91	(10.9%)
Gender (aged 55-64)						
Male	4,564	(26.7%)	469	(40.0%)	318	(38.0%)
Women	12,533	(73.3%)	704	(60.0%)	519	(62.0%)
Race (aged 55-64)						
White	15,849	(92.7%)	1139	(97.1%)	626	(74.8%)
Other	1,192	(7.0%)	NA[5]		75	(9.0%)
Unknown	56	(0.3%)	NA[5]		136	(16.3%)
Medicare Enrollment						
Full year enrollment						
Part A	14,820	(86.7%)	983	(83.8%)	NA	
Part B	14,749	(86.3%)	961	(81.9%)	NA	
Original reason for entitlement						
Old age	13,402	(78.4%)	1080	(92.1%)	NA	
Disabled	3,656	(21.4%)	93	(7.9%)	NA	
ESRD[1]	17	(0.1%)	0	(0%)	NA	
Both disabled and ESRD[1]	22	(0.1%)	0	(0%)	NA	
Current reason for entitlement						
Old age	16,034	(93.8%)	1157	(98.6%)	NA	
Disabled	1,022	(6.0%)	16	(1.4%)	NA	
ESRD[1]	23	(0.1%)	0	(0%)	NA	
Both disabled and ESRD[1]	18	(0.1%)	0	(0%)	NA	
MassHealth Enrollment						
Full 12-month enrollment	12,110	(70.8%)	NA		717	(85.7%)
Average enrollment days (SD[2])	324.4	(77.7)	NA		349.1	(47.1)
Disabled[3]	2,335	(13.7%)	NA		559	(66.8%)
Receiving DMH[4] services	188	(1.1%)	NA		54	(6.5%)

[1] End stage renal disease
[2] Standard deviation
[3] Disability determined by Social Security Administration or Massachusetts Disability Evaluation Services
[4] Department of Mental Health
[5] The cell size was less than 11.

According to our inclusion criteria, each individual in our study population had at least one BHD. For the Nursing Facility group, almost half of the members had SMI, 88% of them had OMI, and 8% of them had SUD. Details regarding the types of BHDs and the number of BHDs per person are shown in Table 4-10. A comparison of types of BHDs and number of BHDs per person across resident groups is shown in Appendix F.

The Dual Eligibles and Medicare Only groups had a similar proportion of people with SMI (46 and 44%, respectively) but the proportion was much higher (65%) among the MassHealth Only group. Almost all Medicare Only beneficiaries (96%) had OMI and this proportion was 86% in the Dual Eligibles group and 60% in the MassHealth Only group. While only 7% of Dual Eligibles had SUD, the rate doubled to 14% in the Medicare Only and MassHealth Only groups. Furthermore, almost 60% of the Nursing Facility group had multiple BHDs and the proportion was the highest in the Medicare Only group (69%), followed by 58% in the Dual Eligibles and 43% in the MassHealth Only group.

Table 4-10 Types of BHDs and Number of BHDs per Person, Nursing Facility Group (CY 2005)

CY 2005	Dual Eligibles (N=17,097)		Medicare Only (N=1,173)		MassHealth Only (N=837)	
Severe mental illness	**7,848**	**(45.9%)**	**519**	**(44.3%)**	**541**	**(64.6%)**
Schizophrenia/paranoid	2,888	(16.9%)	98	(8.4%)	267	(31.9%)
Bipolar	2,219	(13.0%)	116	(9.9%)	127	(15.2%)
Major depression	4,642	(27.2%)	432	(36.8%)	248	(29.6%)
Other mental illness	**15,136**	**(88.5%)**	**1128**	**(96.2%)**	**503**	**(60.1%)**
Other depression	10,290	(60.2%)	769	(65.6%)	300	(35.8%)
Anxiety	4,078	(23.9%)	358	(30.5%)	91	(10.9%)
Other[1]	8,940	(52.3%)	804	(68.5%)	260	(31.1%)
Substance use disorders	**1,229**	**(7.2%)**	**161**	**(13.7%)**	**119**	**(14.2%)**
Alcohol abuse or dependence	977	(5.7%)	94	(8.0%)	105	(12.5%)
Drug abuse or dependence	338	(2.0%)	82	(7.0%)	28	(3.4%)
Number of BHDs						
One	7,166	(41.9%)	367	(31.3%)	474	(56.6%)
Two	5,233	(30.6%)	341	(29.1%)	211	(25.2%)
Three	2,830	(16.6%)	241	(20.1%)	101	(12.1%)
Four	1,283	(7.5%)	156	(13.3%)	34	(4.1%)
Five or more	585	(3.4%)	68	(5.8%)	17	(2.0%)

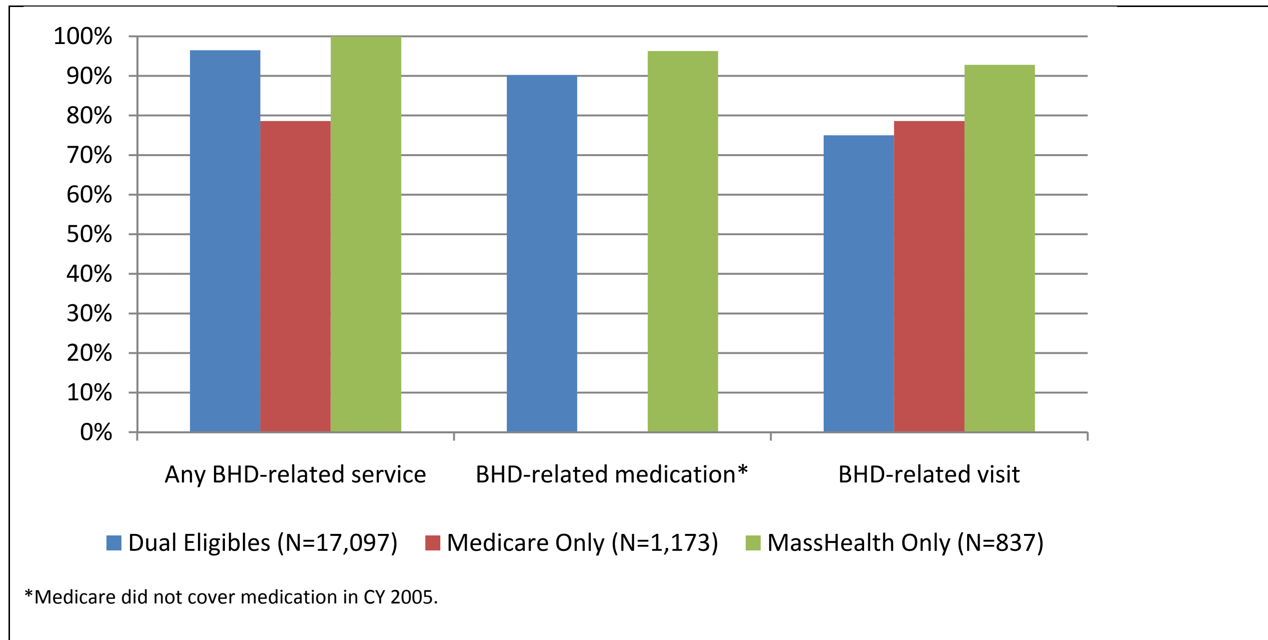
[1]For example, unspecified psychosis, adjustment reaction with mixed emotional features, and prolonged posttraumatic stress disorder

4.3.2 Place of service

After including the use of BHD-related medication covered by MassHealth, almost all of the Dual Eligibles and MassHealth Only groups received behavioral health related services (medications or visits) in CY 2005 (Figure 4-13). When we considered only BHD-related visits, the proportion decreased to 75% for the Dual Eligibles and 79% for the Medicare Only group, but remained high (93%) for the MassHealth Only group. Almost all Dual Eligibles and MassHealth Only members used BHD-related medications.

Refer to Appendix D1 for more information about types of behavioral health-related services.

Figure 4-13 Behavioral Health-Related Services, Nursing Facility Group (CY 2005)



*Medicare did not cover medication in CY 2005.

Figure 4-14 shows the proportion of people who received BHD-related visits at selected places of service. While almost three-quarters of the MassHealth Only group used community-based settings for behavioral health services, the percentage was only 20% in the Dual Eligibles and 11% in the Medicare Only group. The proportion of users of hospital outpatient departments was 13% in the MassHealth Only group and around 8% in the Dual Eligibles and Medicare Only groups.

Refer to Appendix D1 for more information about settings for behavioral health services.

Figure 4-14 Selected Place of Service, Nursing Facility Group (CY 2005)

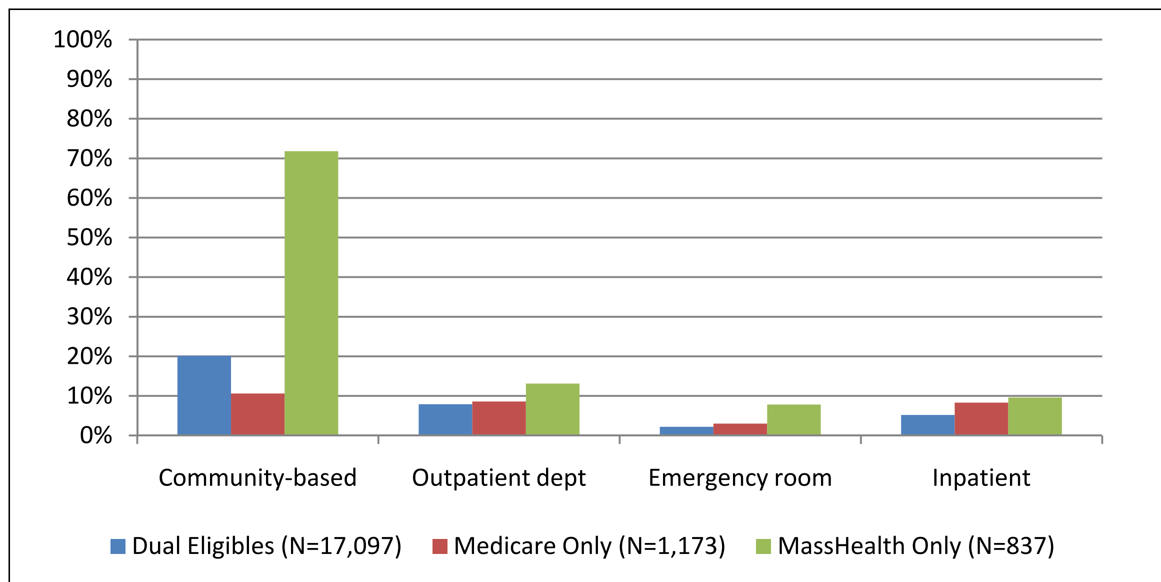
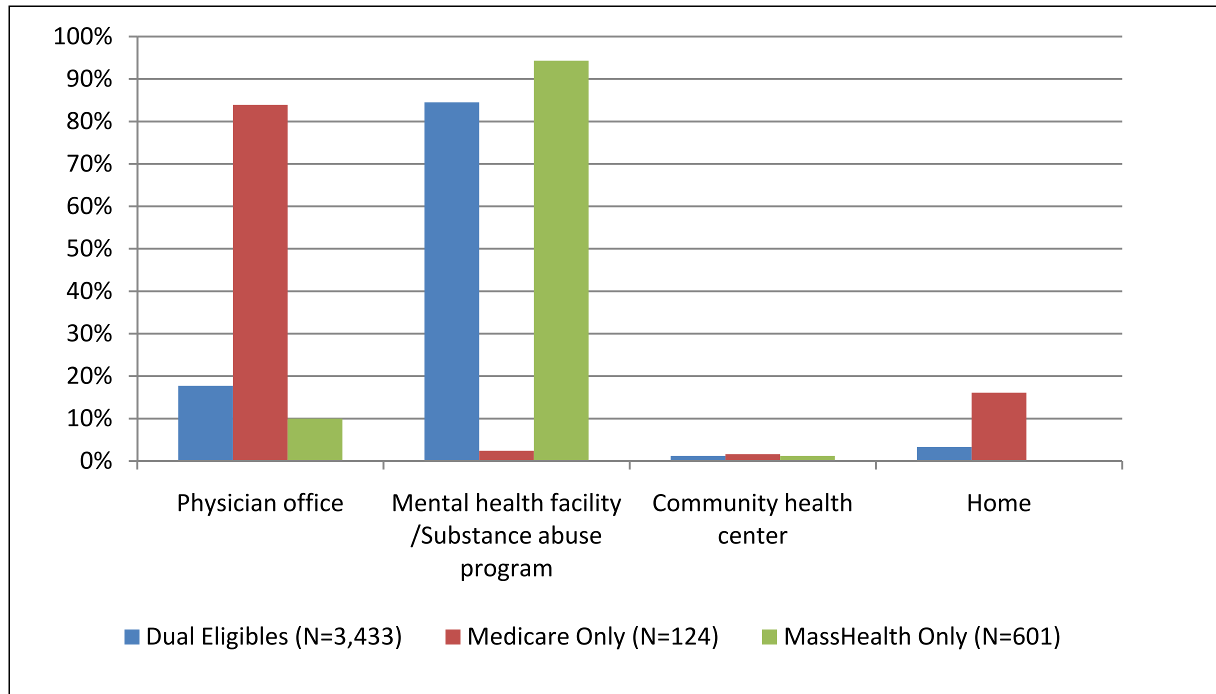


Figure 4-15 shows that, across primary payment source groups, the dominant community-based settings for behavioral health services were physicians' offices for the Medicare Only group (84%) and mental health facility/substance use programs for the Dual Eligibles (85%) and MassHealth Only (94%) groups. We did not include physician visits that occurred in nursing facilities in any of the settings shown below.

Refer to Appendix D2 for more information about settings for behavioral health services.

Figure 4-15 Selected Settings of Community-Based Behavioral Health Services, Nursing Facility Group (CY 2005)

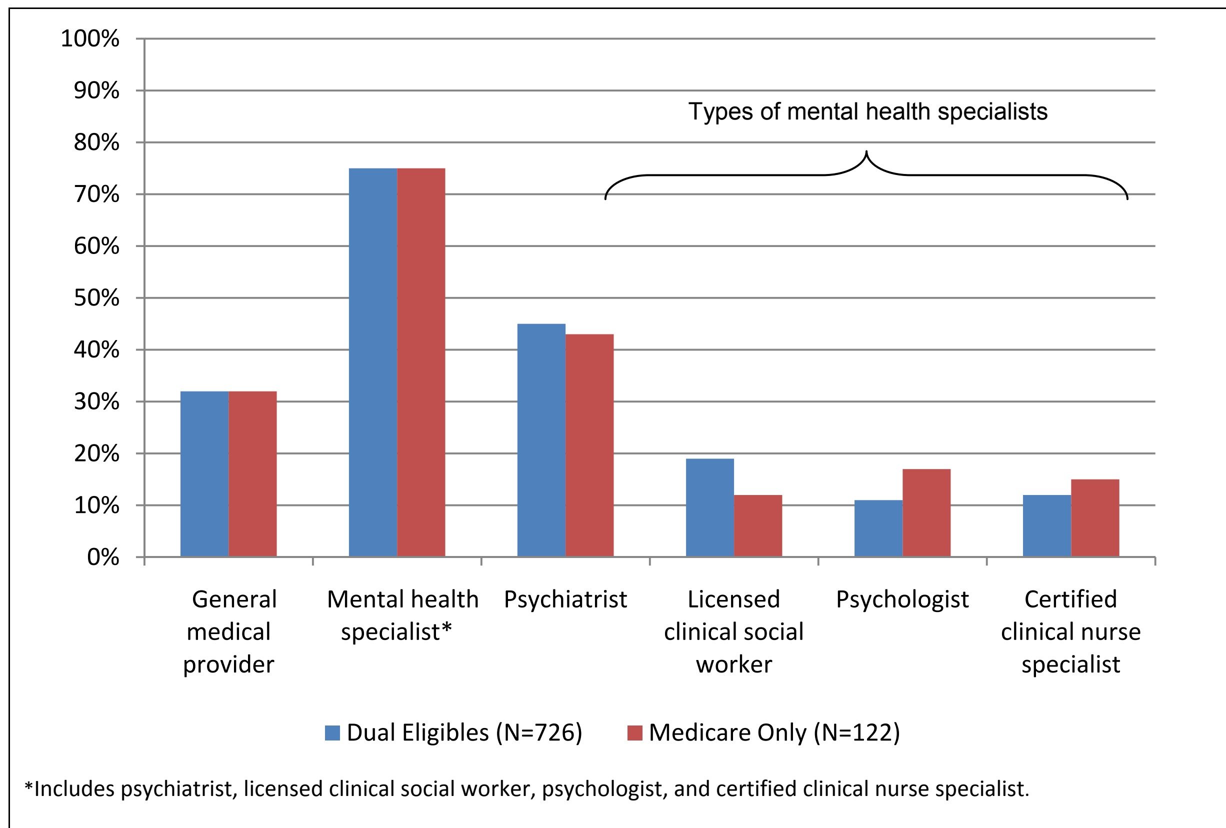


4.3.3 Provider specialty

Because MassHealth claims did not provide detailed physician specialty information, we used only Medicare physician claims to examine provider specialty for visits that occurred in community-based settings. Although the proportion of people who received behavioral services at physicians' offices and mental health facilities varied substantially between Dual Eligibles and the Medicare Only group, their use of general medical providers and mental health specialists was similar. That is, one-third of them had visited general medical providers and three-quarters of them had visited mental health specialists for behavioral health services. However, a higher proportion of Dual Eligibles received services from licensed clinical social workers, while a higher proportion of the Medicare Only group received services from psychologists (Figure 4-16).

Refer to Appendix D3 for more information about provider specialty.

Figure 4-16 Provider Specialty in Medicare Physician Claims for Community–based Behavioral Health Services, Nursing Facility Group (CY 2005)



*Includes psychiatrist, licensed clinical social worker, psychologist, and certified clinical nurse specialist.

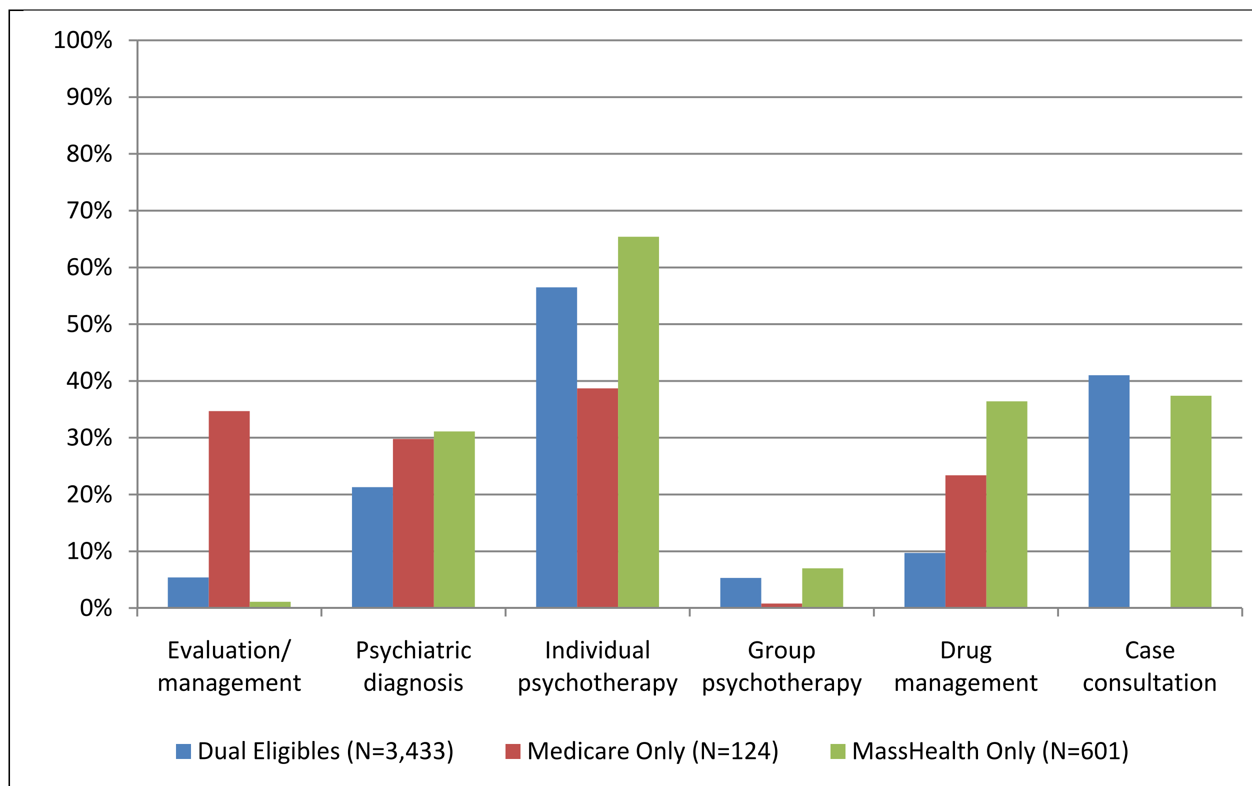
4.3.4 Type of service

Type of service received in community-based settings varied substantially across primary payment source groups. (Figure 4-17) Individual psychotherapy was the most common service received, with the proportion of users ranging from 39% in the Medicare Only group to 57% in the Dual Eligibles and 65% in the MassHealth Only group. Case consultation was the second most common service for the Dual Eligibles (41%) and MassHealth Only (37%) groups, but none of the Medicare Only beneficiaries received this service. In contrast, slightly over one-third of the Medicare Only beneficiaries received evaluation and management services, but only a small percent of the Dual Eligibles and MassHealth Only groups received such service.

Another common service received by people in the Nursing Facility group was psychiatric diagnosis. Slightly less than one-third of the Medicare Only and the MassHealth Only groups and 21% of the Dual Eligibles received psychiatric diagnosis. Drug management was also commonly received by the Medicare Only (23%) and the MassHealth Only (36%) groups, but only 10% of the Dual Eligibles group received this service.

Refer to Appendix D4 for more information about types of behavioral health services.

Figure 4-17 Selected Types of Behavioral Health Service, Nursing Facility Group (CY 2005)



4.3.5 Medicare and/or MassHealth expenditures

The percentage of all health services expenditures attributable to behavioral health services varied by primary payment source group, ranging from only 2.8% in the Medicare Only group to 8.7% in the MassHealth Only group. (Table 4-11) The average annual expenditure on behavioral health services was highest for the MassHealth Only group ($5,800), which was 1.5 times higher than the average expenditure for the Dual Eligibles and Medicare Only groups ($3,800).

Refer to Appendix D5 for more information about expenditures for behavioral health services.

Table 4-11 Percentage of All Health Services Expenditures Attributable to Behavioral Health Services

CY 2005	Expenditures in $1,000s					
	Dual Eligibles (N=16,499)		Medicare Only (N=922)		MassHealth Only (N=837)	
Behavioral health services						
Total expenditures(% of all health services expenditures)	62,524	(5.3%)	3,487	(2.8%)	4,886	(8.7%)
Average expenditures (SD*)	3.8	(9)	3.8	(10)	5.8	(11)
All health services						
Total expenditures	1,174,182	(100%)	126,410	(100%)	55,871	(100%)
Average expenditures (SD*)	71.2	(42)	137.1	(43)	66.8	(28)

* standard deviation

For the Dual Eligibles group, Medicare was responsible for slightly less than half of behavioral health expenditures (53.8%) and slightly over one-third of all health services expenditures (36.0%) (Table 4-12). Expenditures for medication accounted for the majority of behavioral health services expenditures (83.6%) covered by MassHealth (Appendix D6). Although nursing facility expenditures accounted for 83.5% of all MassHealth health services expenditures, behavioral health services expenditures for MassHealth nursing facility was zero because diagnostic information was unavailable for us to identify BHD-related nursing facility stays covered by MassHealth.

Refer to Appendix D6 for more information about behavioral health services expenditures for Dual Eligibles.

Table 4-12 Distribution of Behavioral Health Services Expenditures between Medicare and MassHealth for the Dual Eligibles Members, Nursing Facility Group Aged 55-64 (CY 2005)

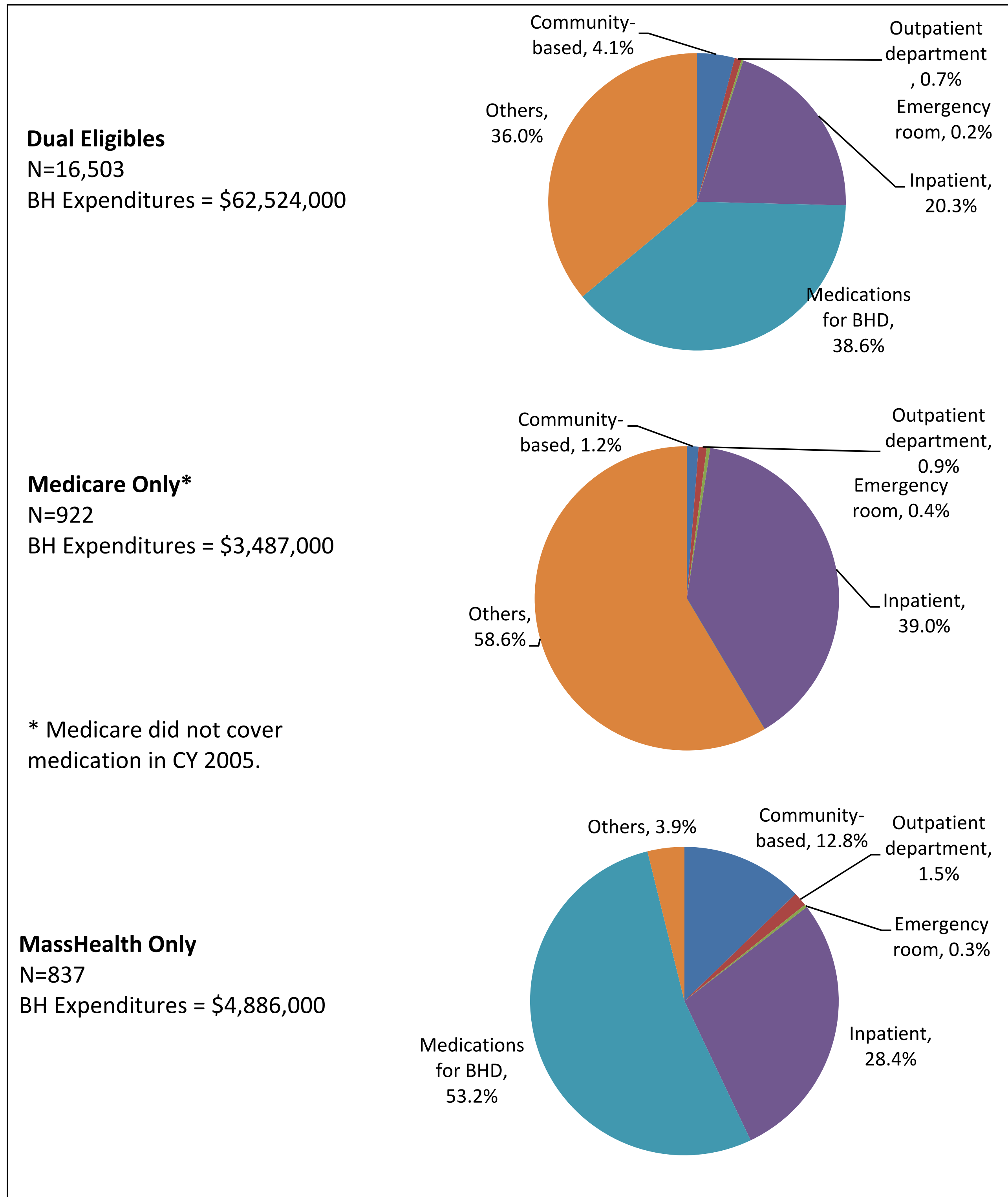
CY 2005	Expenditure in $1,000s					
(N=16,499)	Medicare		MassHealth		Total	
Behavioral health services						
Total expenditures (% of all behavioral health services expenditures)	33,664	(53.8%)	28,860	(46.2%)	62,524	(5.3%)
Average expenditures (SD*)	2.0	(9)	1.7	(3)	3.8	(9)
All health services						
Total expenditures (% of all health services expenditures)	422,500	(36.0%)	751,690	(64.0%)	1,174,182	(100%)
Average expenditures (SD*)	25.6	(45)	45.6	(19)	71.2	(42)

* Standard deviation

Figure 4-18 shows how behavioral health services expenditures were distributed within each primary payment source group. Slightly over half of behavioral health expenditures for MassHealth Only beneficiaries were attributable to BHD-related medications, while the proportion was almost 40% for the Dual Eligibles. A noticeable proportion of expenditures went to hospital inpatient care, ranging from 20% in the Dual Eligibles group to 40% in the Medicare Only group. A large proportion of expenditures were classified in the Others category which included payments for non-office based physician services, home health agencies, and nursing facilities.

Refer to Appendix D7 for more information about how behavioral health services are distributed.

Figure 4-18 Behavioral Health Services Expenditures by Type of Service, Nursing Facility Group (CY2005)



5 DISCUSSION AND CONCLUSIONS

We summarize findings from this study in the following order: (1) use of behavioral health services, (2) place of service and setting of community-based services, (3) provider specialty for services in community-based settings, (4) type of service received in community-based settings, and (5) behavioral health expenditures. Because the number of Nursing Facility and Hospital members who used community-based settings for behavioral health services was very small, the following summary focuses on the Community group, unless noted otherwise.

5.1 Use of Behavioral Health Services

Although the majority of the Community group used behavioral health services (i.e., visits, admissions and/or medications), a noticeable number of members did not. Across primary payment source groups, not receiving any behavioral health service was much more common for people aged 65 and over than for those aged 55 to 64. One reason for this difference was that more of the older members had BHDs recorded as "other diagnosis" (i.e., not the principal diagnosis) on health insurance claims and most of these other diagnoses were for OMI. Also, the diagnosed prevalence of SMI was higher in the younger group, and individuals with SMI were more likely to receive ongoing or active treatments than those with OMI.

Furthermore, some Dual Eligibles and MassHealth Only members relied only on medications for behavioral health treatments. This was more pronounced in those aged 65 and older (15 to 25%) than in people aged 55 to 64 (10 to 15%), as well as more pronounced in Dual Eligibles than in MassHealth Only members. Also, among Dual Eligible and MassHealth Only members, 17 to 21% of those aged 65 and older and 10 to 13% of people aged 55 to 64 had behavioral health visits or admissions, but did not use behavioral health related medications covered by MassHealth. The extent to which the Medicare Only group relied solely on medications or visits for treatment was unknown since we did not have prescription drug data for this population.

Whether no treatment, a single mode of treatment, or dual modes of treatment are adequate depends on the type of diagnosis and the prognosis of the disease. As medical technology advances, an increasing number of people rely on pharmacotherapy for behavioral health treatments (Olfson et al., 2002). Further investigation is warranted on whether treatments received were consistent with recommended care and with quality of care standards.

5.2 Place of Service and Setting of Community-Based Services

Community-based settings, followed by hospital outpatient departments, were the most common places for receiving behavioral health services. However, the most frequently used community-based settings varied by primary payment source group. While a physician's (practitioner's) office was the dominant community-based setting used by the Medicare Only group, both physicians' (practitioners') offices and community mental health center/mental health clinics played major roles in providing behavioral health services for the Dual Eligibles and MassHealth Only groups. Physicians' (practitioners') offices include both general medical

providers and mental health specialists, while providers in community mental health centers/mental health clinics are mainly mental health specialists.

When compared with people aged 65 and over, those aged 55 to 64 had higher rates of service use across settings, including community-based settings, hospital outpatient departments, hospital inpatient settings, and emergency rooms. One reason for this difference was that the diagnosed prevalence of SMI was higher in the younger group than in the older group, and people with SMI were more likely to use behavioral health services in various settings (McAlpine & Mechanic, 2000; Mechanic & Bilder, 2004).

5.3 Provider Specialty for Services in Community-Based Settings

Based on Medicare physician (practitioner) claims for behavioral health services in community-based settings, the proportion of people receiving services from mental health specialists was much higher than from general medical providers. This was true for people aged 55 to 64 as well as for those aged 65 and over. The higher rate of usage of mental health specialists that we observed is in contrast to findings from previous studies (Kessler, Chiu et al., 2005; Kessler et al., 1994; McAlpine & Mechanic, 2000; Mechanic & Bilder, 2004; Regier et al., 1993). This discrepancy was likely due to the fact that our study population was composed of individuals who were identified from claims for BHD-related services, rather than from a sample drawn from the general population with and without a BHD. Furthermore, we had a much higher rate of people with SMI because the Dual Eligibles group and people aged 55 to 64 had a higher rate of disability, and the claims data-based BHD identification process yielded higher rates of SMI among individuals with BHDs. Consequently, it is not surprising that we found a much higher rate of mental health specialist service than in other studies.

However, when compared with people aged 55 to 64, those aged 65 and over were found to be more likely to visit general medical providers for BHDs and less likely to visit mental health specialists, which is consistent with findings from other studies (McAlpine & Mechanic, 2000; Narrow et al., 2000). The possible reasons for this usage pattern include the lower diagnosed prevalence of SMI among elders and their preference for receiving mental health treatment in primary care settings.

Notably, Dual Eligibles used different types of mental health specialists than those used by the Medicare Only group. A higher proportion of Dual Eligibles visited psychiatrists and certified clinical nurse specialists than did members of Medicare Only group, while a higher proportion of Medicare Only members visited psychologists. This difference existed regardless of age. Dual Eligibles had a higher rate of SMI than the Medicare Only group, which might explain this difference. SMI is more complicated to manage and treatment is more likely to include medications, thus requiring more medical attention (McAlpine & Mechanic, 2000; Narrow et al., 2000). However, the average number of visits per user for each type of mental health specialist was similar.

5.4 Type of Service Received in Community-Based Settings

The four leading services received in community-based settings were individual psychotherapy, drug management, evaluation and management services, and psychiatric diagnosis. Individual psychotherapy was the most common type of service received in community-based settings; however, some variations existed for the rest of the leading services received. Drug management was the second most common service, except for in the Medicare Only members aged 65 and over, where evaluation and management services was the second most common service received.

Across primary payment source groups, a similar proportion of individuals aged 55 to 64 received evaluation and management services and psychiatric diagnosis. However, for people aged 65 and over, a higher proportion of Dual Eligibles and Medicare Only members received evaluation and management services than psychiatric diagnosis; in the MassHealth Only group, more members received psychiatric diagnosis. While most evaluation and management services were provided in primary care settings, psychiatric diagnosis was provided by mental health specialists, particularly psychiatrists. Our findings indicate that people aged 65 and over were less likely to visit mental health specialists than the younger group, which is consistent with our findings regarding provider specialty for services in community-based settings, described above.

5.5 Expenditures

The percent of all health services expenditures attributed to behavioral health services varied by age and primary payment source group. For people aged 55 to 64, 15 to 25% of health care expenditures were attributable to behavioral health services, which was around 2.5 times higher than for people aged 65 and over (6 to 10%). In terms of primary payment source groups, the MassHealth Only group and Dual Eligibles had a similar proportion of all health expenditures attributed to behavioral health services, and this proportion was higher than in the Medicare Only group.

For Dual Eligibles and the MassHealth Only group, for which prescription drug data were available, medications and community-based settings were the two leading categories for behavioral health expenditures. Notably, for Dual Eligibles and Medicare Only members aged 65 and over, the proportion of behavioral health expenditures in community-based settings was less than for their younger counterparts and the expenditures were higher in the “Others” category. Examples of behavioral health services included in the “Others” category include services provided through home health agencies, in skilled nursing facilities, and by physicians in non-community-based settings.

5.6 Limitations

The strength of this study is its use of merged Medicare and MassHealth claims data to examine behavioral health services use and expenditures. The merged database covers the entire population of Medicare and MassHealth members in Massachusetts, provides a full picture of

Dual Eligibles, and allows comparisons across primary payment source groups. Nevertheless, several limitations are worth noting and warrant special attention in interpreting our findings.

First, health insurance claims were completed by providers for purposes of receiving reimbursement. Diagnoses and services recorded on claims could be incomplete because not all information has to be submitted for reimbursement. However, previous research has shown that reasonable accuracy can be achieved by using health insurance claims to identify persons with SMI (Lurie, Popkin, Dysken, Moscovice, & Finch, 1992).

Second, our findings describe services used, but they do not reflect services needed by a person. The severity of illness within a given diagnosis is generally not available in claims data. For BHDs with available guidelines of care or evidence-based best practice standards, further analysis would provide insight into the level of appropriate care received, the potential cost-efficiency, and the expected clinical outcomes.

Third, it is possible that some patients received services that they paid for themselves or that were paid by non-Medicare/non-MassHealth insurers. The potential incompleteness would be more pronounced among the Medicare Only group since we excluded people with other insurance recorded on MassHealth eligibility records for Dual Eligibles and MassHealth Only members. Also, we did not have information on medication use among the Medicare Only group because Medicare did not provide prescription drug coverage in 2005. Additionally, the merged Medicare and MassHealth database did not have information on services provided by other state agencies, such as Department of Mental Health and Department of Public Health.

5.7 Conclusions

Despite the limitations mentioned above, our findings suggest that the merged Medicare and MassHealth database is very useful for documenting health service use and expenditures for Medicare and MassHealth members. Although descriptive in nature, our findings provide a basic understanding and a reasonably comprehensive picture across diverse resident groups (i.e., Community, Nursing Facility, and Hospital), public health insurance coverage groups (i.e., Dual Eligibles, Medicare Only, and MassHealth Only), and different age categories (i.e., 55 to 64 and 65 and over).

Our findings suggest that variations exist regarding the settings of community-based services that people used, the types of mental health specialists people visited, and the types of services people received in community-based settings. These differences contributed to the variation in expenditures that we observed. Part of these variations can be attributed to differences in specific demographic and clinical characteristics, such as age, types of BHDs and comorbid conditions, as well as people's preferred setting for behavioral health care, which would require further investigation. Better understanding of the reasons for these variations will help to identify targeted places to implement appropriate strategies to engage older adults with BHDs for treatments and improve behavioral health services.

Furthermore, primary care physicians play a major role in behavioral health services for elders. Compared with the younger group, a higher proportion of elders received behavioral health services from general medical providers. Additionally, a large proportion of people aged 65 and over had BHDs recorded as “other diagnosis”, i.e., not the principal diagnosis, on health insurance claims. These “other diagnoses” could be less severe disorders diagnosed in regular physician office visits. As the usual source of care for elders, primary care physicians can initiate treatments for patients, refer patients to mental health specialists, or provide education for patients and formal/informal caregivers. These efforts can be enhanced by collaborating with mental health specialists. Bartels and colleagues (2004) found that older adults were more likely to accept collaborative care in primary care settings than in mental health and substance abuse clinics. Additionally, several ongoing studies aim to identify methods of effective collaboration among providers and integrating systems of care to improve behavioral health services for older adults in primary care settings. The best approach for collaboration and integration may vary according to the particular subpopulation served and the settings in which services are delivered.

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APPENDIXES

Appendix A Behavioral Health Disorders

Group	Broad classification	Includes:	ICD9-CM-Codes
Severe Mental Illness	Bipolar disorder	Bipolar disorder	2960, 2961, 2964-2969
	Major depression	Major depression	2963, 2962
	Schizophrenia/Paranoid disorders	Schizophrenia	295
		Paranoid States	297
Other Mental Illness	Other depression	Other depression	2980, 3004, 3090, 3091, 311
	Anxiety	Anxiety	3000
	Other mental illness not mentioned above		2981-2989, 3001-3003, 3005-3009, 301, 302, 306- 308, 3092-3099, 312-316
Substance Use Disorders	Alcohol related		291, 303, 3050, 5353, 5710-5713
	Drug-related		292, 304, 3052-3059, 6483

Additional ICD-9-CM surgical codes, CPT codes for identifying substance use disorders

Diagnosis	ICD-9-CM Surgical procedure codes	CPT/HCPCs codes
Substance Use Disorders – Alcohol Related	'9446', '9453', '9461', '9462','9463', '9467','9468','9469'	'H0005', 'H0006', 'H0007', 'H0008', 'H0009', 'H0010', 'H0011','H0012','H0013','H0014','H0015' ,'H0016','H0017','H0020','H0021','H0021', 'H0022', 'H0023', 'H0030', 'H0047','H2034','H2035','H2036', , 'T1006', 'T1007', 'T1008', 'T1009', 'T1010', 'T1011', 'T1012', ,'X2216','X2217','X2218','X2219', 'X2223', 'X2224','X2225', 'X2226', 'X2227', 'X2228', 'X2229', ,'X5605', 'X5607','ZZ116', 'ZZ126', 'ZZ136', 'ZZ146','ZZ156', 'ZZ945'
Substance Use Disorders – Drug Related	'9445', '9454', '9464', '9465', '9466', '9467', '9468', '9469'	'S9475', 'X2197', 'X2198', 'X2199', 'X2200', 'X2202', 'X2203', 'X2205', 'X2214','X2215', 'X2222', 'X5604', 'X5606','ZZ116', 'ZZ126', 'ZZ944',

Note: Drug and alcohol related disorder share some HCPCS codes.

Appendix B Community Group Aged 55 to 64

B1. Place of service by primary payment source group, community group aged 55 to 64 (CY 2005)

CY 2005	Dual Eligibles (N=14,152)	Medicare Only (N=7,385)	MassHealth Only (N=12,435)
Behavioral health services[1]			
Yes	13,406 (94.7%)	4,837 (65.5%)	11,861 (95.4%)
No	746 (5.3%)	2,548 (34.5%)	574 (4.6%)
Type of service			
BHD-related medication[2]	11,973 (84.6%)	NA	10,238 (82.3%)
BHD-related visit[2]	11,276 (79.7%)	4,837 (65.5%)	10,625 (85.4%)
Selected places of service[3]	10,601 (74.9%)	4,393 (59.5%)	9,668 (77.7%)
Community-based	8,686 (61.4%)	3,422 (46.3%)	7,543 (60.7%)
Outpatient dept	3,365 (23.8%)	1,224 (16.6%)	3,444 (27.7%)
Emergency room	906 (6.4%)	241 (3.3%)	923 (7.4%)
Inpatient	982 (6.9%)	326 (4.4%)	635 (5.1%)
Home health agency	360 (2.5%)	33 (0.4%)	282 (2.3%)
Other places only[4]	675 (4.8%)	444 (6.0%)	957 (7.7%)

[1] Members with and without behavioral health service claims, based on the principal diagnosis in health service claims and therapeutic classification in pharmaceutical claims.
[2] BHD-related medication and BHD-related visits were not mutually exclusive.
[3] Selected places of service were not mutually exclusive.
[4] Members who received services only in places other than the selected places of service (community-based, outpatient department, emergency room, inpatient, or home-health agency.)

B2. Settings of community-based behavioral health services by primary payment source group, community group aged 55 to 64 (CY 2005)

CY 2005	Dual Eligibles (N=8,686)	Medicare Only (N=3,422)	MassHealth Only (N=7,543)
Physician office	6,014 (69.2%)	3,153 (92.1%)	3,065 (40.6%)
Home	325 (3.7%)	51 (1.5%)	59 (0.8%)
Mental health facility /Substance abuse program	4,288 (49.4%)	276 (8.1%)	4,727 (62.7%)
Community health center	500 (5.8%)	57 (1.7%)	628 (8.3%)
Other	562[1] (6.5%)	17 (0.5%)	368[2] (4.9%)

[1] Examples of Other among Dual Eligibles group included state agency (N=522) and adult day health (N=39).
[2] Examples of Other among MassHealth Only group included state agency (N=320), adult day health (N=16), and psychiatric outpatient hospital (N=27).

B3. Provider specialty in Medicare physician claims for community-based behavioral health services by primary payment source group, community group aged 55 to 64 (CY2005)

	Dual Eligibles (N=7,223)	Medicare Only (N=3,376)
Number of users (%)		
General medical provider	1,538 (21%)	731 (22%)
Mental health specialist	6,524 (90%)	2,895 (86%)
Psychiatrist	4,517 (63%)	1,898 (56%)
Licensed clinical social worker	1,925 (27%)	781 (23%)
Psychologist	866 (12%)	645 (19%)
Certified clinical nurse specialist	1,565 (22%)	396 (12%)

B4. Types of behavioral health services by primary payment source group, community group aged 55 to 64 (CY2005)

	Dual Eligibles (N=8,686)	Medicare Only (N=3,422)	MassHealth Only (N=7,543)
Number of users (%)			
Evaluation/management	1,450 (16.7%)	665 (19.4%)	1,422 (18.9%)
Psychiatric diagnosis	1,722 (19.8%)	672 (19.6%)	1,456 (19.3%)
Individual psychotherapy	5,594 (64.4%)	2,166 (63.3%)	4,450 (59.0%)
Group psychotherapy	526 (6.1%)	69 (2.0%)	453 (6.0%)
Family psychotherapy	279 (3.2%)	147 (4.3%)	282 (3.7%)
Case consultation	335 (3.9%)	NA*	224 (3.0%)
Drug management	5,131 (59.1%)	1,372 (40.1%)	4,365 (57.9%)
Alcohol/drug consultation (family and group)	25 (0.3%)	0 (0%)	NA*
Detoxification (alcohol/drug)	62 (0.7%)	0 (0%)	NA*
Methadone	191 (2.2%)	0 (0%)	272 (3.6%)

* The cell size was less than 11.

B5. Health care expenditures by claim type and primary payment source group, community group aged 55 to 64 (CY2005)

	Expenditure in $1,000s		
	Dual Eligibles (N=13,406)	Medicare Only (N=4,837)	MassHealth Only (N=11,861)
Behavioral health services (%)[1]			
Inpatient	12,498 (19.0%)	4,069 (14.8%)	6,890 (19.7%)
Outpatient	4,023 (17.8%)	898 (11.4%)	11,339 (37.1%)
Physician	12,878 (18.9%)	6,332 (19.4%)	472 (3.0%)
SNF/nursing home[2]	306 (2.4%)	58 (2.8%)	N/A
Home Health agencies	2,840 (27.8%)	165 (5.9%)	2,257 (42.3%)
Hospice	9.3 (0.8%)	0 (0%)	0 (0.0%)
Durable Medical Equipment	3.5 (<0.1%)	1 (<0.1%)	2 (0.1%)
Medicare crossover	2,773 (19.3%)	NA	18 (15.4%)
Medications	26,342 (43.1%)	NA	15,793 (38.1%)
Transportation	N/A	NA	NA
State agency services[3]	11,853 (17.0%)	NA	6,728 (44.5%)
MH clinic/SA program	4,455 (99.0%)	NA	475 (98.5%)
Other	1,064 (3.4%)	NA	1,534 (5.7%)
Total expenditures	79,049 (21.1%)	11,523 (15.0%)	45,506 (25.3%)
Average expenditures (SD*)	5.8 (11.8)	2.3 (7.5)	3.8 (8.2)
All health services			
Inpatient	65,881	27,415	34,953
Outpatient	22,562	7,873	30,529
Physician	68,099	32,560	15,681
SNF/nursing home[2]	12,863	2,106	3,634
Home Health agencies	10,210	2,819	5,330
Hospice	1,127	183	1,039
Durable Medical Equipment	10,746	3,673	1,391
Medicare crossover	14,337	NA	117
Medications	61,056	NA	41,435
Transportation	2,212	NA	3,362
State agency services[4]	69,684	NA	15,122
MH clinic/SA program	4,498	NA	482
Other	31,074	NA	27,009
Total expenditures	374,315	76,629	180,080
Average expenditures (SD*)	27.9 (38.8)	15.8 (31.8)	15.1 (20.8)

* standard deviation

[1] Claims for behavioral health-related services, shown as payment in $1,000's and as a percentage of all health services claims for the associated type of services.

[2] Included Rest Home in MassHealth data.

[3] Most claims were for behavioral health – long-term residential.

[4] Examples of claims were habilitation, behavioral health – long-term residential, targeted case management, and non-emergency transportation.

B6. Distribution of All and Behavioral Health Services Expenditures between Medicare and MassHealth for the Dual Eligibles Members, Community Group Aged 55-64 (CY 2005)

N=13,406	Expenditure in $1,000s				
	Medicare		MassHealth		Total
Behavioral health services (%)[1]					
Inpatient	11,368	(91.0%)	1,130	(9.0%)	12,498
Outpatient	3,303	(95.9%)	720	(4.1%)	3,443
Physician	12,843	(99.7%)	38	(0.3%)	12,878
SNF/nursing home[2]	306	(100.0%)	N/A		306
Home Health agencies	485	(17.1%)	2,355	(82.9%)	2,840
Hospice	9.3	(100.0%)	0	(0.0%)	9.3
Durable Medical Equipment	1.5	(42.9%)	2	(57.1%)	3.5
Medicare crossover	N/A		2,773	(100.0%)	2,773
Medications	N/A		26,342	(100.0%)	26,342
Transportation	N/A		N/A		N/A
State agency services[3]	N/A		11,853	(100.0%)	11,853
MH clinic/SA program	N/A		4,455	(100.0%)	4,455
Other	N/A		1,064	(100.0%)	1,064
Total expenditures	28,317	(35.8%)	50,733	(64.2%)	79,049
Average expenditures (SD*)	3 (8)		4 (8)		6 (12)
All health services					
Inpatient	62,859	(95.4%)	3,022	(4.6%)	65,881
Outpatient	20,160	(89.4%)	2,402	(10.6%)	22,562
Physician	66,634	(97.8%)	1,465	(2.2%)	68,099
SNF/nursing home[2]	4,803	(37.3%)	8,060	(62.7%)	12,863
Home Health agencies	5,845	(57.2%)	4,365	(42.8%)	10,210
Hospice	717	(63.6%)	410	(36.4%)	1,127
Durable Medical Equipment	9,820	(91.4%)	926	(8.6%)	10,746
Medicare crossover	N/A		14,337	(100.0%)	14,337
Medications	N/A		61,056	(100.0%)	61,056
Transportation	N/A		2,212	(100.0%)	2,212
State agency services[4]	N/A		69,684	(100.0%)	69,684
MH clinic/SA program	N/A		4,498	(100.0%)	4,498
Other	N/A		31,074	(100.0%)	31,074
Total expenditures	170,840	(45.6%)	203,475	(54.4%)	374,315
Average expenditures (SD*)	16 (30)		16 (26)		28 (39)

* Standard deviation

[1] Claims for behavioral health-related services, shown as payment in $1,000's and as the proportion of expenditures attributable to Medicare and MassHealth, respectively.

[2] Included Rest Home in MassHealth data

[3] Most claims were for behavioral health – long-term residential.

[4] Examples of claims were habilitation, behavioral health – long-term residential, targeted case management, and non-emergency transportation.

B7. Behavioral health expenditures by place of service and primary payment source group, community group aged 55 to 64 (CY2005)

	Expenditures in $1,000s					
	Dual Eligibles (N=13,406)[1]		Medicare Only (N=4,837)[1]		MassHealth Only (N=11,861)[1]	
Community-based	24,446	30.9%	4,168	36.2%	14,967	32.9%
Outpatient department	2,553	3.2%	896	7.8%	2,225	4.9%
Emergency room	413	0.5%	93	0.8%	378	0.8%
Inpatient	12,498	15.8%	4,069	35.3%	6,890	15.1%
Medications for BHD related treatment	26,342	33.3%	NA	0.0%	15,793	34.7%
Others	12,797	16.2%	2,297	19.9%	5,253	11.5%
Total	79,049	100.0%	11,523	100.0%	45,506	100.0%

[1] Refer to Appendix B1 for the number of users.

Appendix C Community Group Aged 65 and Over

C1. Place of service by primary payment source group, community group aged 65 and over (CY2005)

CY 2005	Dual Eligibles (N=22,006)	Medicare Only (N=84,525)	MassHealth Only (N=914)
Behavioral health services[1]			
Yes	18,442 (83.8%)	42,961 (50.8%)	805 (88.1%)
No	3,564 (16.2%)	41,564 (49.2%)	109 (11.9%)
Type of service			
BHD-related medication[2]	14,677 (66.7%)	NA	616 (67.4%)
BHD-related visit[2]	13,092 (59.5%)	42,961 (50.8%)	670 (73.3%)
Selected places of service[3]	10,322 (46.9%)	31,948 (37.8%)	638 (69.8%)
Community-based	7,662 (34.8%)	24,290 (28.7%)	453 (49.6%)
Outpatient dept	3,080 (14.0%)	8,527 (10.1%)	199 (21.8%)
Emergency room	771 (3.5%)	1,755 (2.1%)	34 (3.7%)
Inpatient	813 (3.7%)	1,987 (2.4%)	19 (2.1%)
Home health agency	493 (2.2%)	617 (0.7%)	17 (1.9%)
Other places only[4]	2,770 (12.6%)	11,013 (13.0%)	32 (3.5%)

[1] Members with and without behavioral health service claims, based on the principal diagnosis in health service claims and therapeutic classification in pharmaceutical claims.
[2] BHD-related medication and BHD-related visits were not mutually exclusive.
[3] Selected places of service were not mutually exclusive.
[4] Members who received services only in places other than the selected places of service (community-based, outpatient department, emergency room, inpatient, or home-health agency.)

C2. Settings of community-based behavioral health services by primary payment source group, community group aged 65 and over (CY2005)

CY 2005	Dual Eligibles (N=7,662)	Medicare Only (N=24,290)	MassHealth Only (N=453)
Physician office	5,533 (72%)	22,790 (93.8%)	203 (44.8%)
Home	549 (7%)	1,260 (5.2%)	NA*
Mental health facility /Substance abuse program	2,269 (30%)	777 (3.2%)	185 (40.8%)
Community health center	447 (6%)	176 (0.7%)	87 (19.2%)
Other	251[1] (3%)	89 (0.4%)	NA*

* The cell size was less than 10.

[1] Examples of Others for the Dual Eligible group included state agency services (N=147), adult day health (N=80), and adult foster care (N=13).

C3. Provider specialty in Medicare physician claims for community-based behavioral health services by primary payment source group, community group aged 65 and over (CY2005)

	Dual Eligibles (N=6,390)	Medicare Only (N=24,016)
Number of users (%)		
General medical provider	1,890 (30%)	9,050 (38%)
Mental health specialist	5,007 (78%)	16,933 (71%)
Psychiatrist	3,583 (56%)	10,599 (44%)
Licensed clinical social worker	1,152 (18%)	4,132 (17%)
Psychologist	458 (7%)	3,410 (14%)
Certified clinical nurse specialist	774 (12%)	1,532 (6%)

C4. Types of behavioral health services by primary payment source group, community group aged 65 and over (CY2005)

	Dual Eligibles (N=7,662)	Medicare Only (N=24,290)	MassHealth Only (N=453)
Number of users (%)			
Evaluation/management	1,943 (25.4%)	8,406 (34.6%)	66 (14.6%)
Psychiatric diagnosis	1,335 (17.4%)	5,372 (22.1%)	135 (29.8%)
Individual psychotherapy	3,783 (49.4%)	12,567 (51.7%)	175 (38.6%)
Group psychotherapy	298 (3.9%)	226 (0.9%)	33 (7.3%)
Family psychotherapy	227 (3.0%)	1,073 (4.4%)	13 (2.9%)
Case consultation	240 (3.1%)	22 (0.1%)	15 (3.3%)
Drug management	3,166 (41.3%)	5,365 (22.1%)	137 (30.2%)
Alcohol/drug consultation (family and group)	NA*	0 (0%)	0 (0%)
Detoxification (alcohol/drug)	30 (0.4%)	0 (0%)	0 (0%)
Methadone	30 (0.4%)	0 (0%)	0 (0%)

* The cell size was less than 10.

C5. Health care expenditures by claim type and primary payment source group, community group aged 65 and over (CY2005)

	Expenditure in $1,000s		
	Dual Eligibles (N=18,442)	Medicare Only (N=42,961)	MassHealth Only (N=805)
Behavioral health services (%)[1]			
Inpatient	9,302 (8.6%)	21,425 (5.2%)	137 (7.5%)
Outpatient	2,234 (10.4%)	5,146 (6.9%)	84 (6.5%)
Physician	8,964 (9.1%)	33,698 (8.4%)	70 (7.9%)
SNF/nursing home[2]	1,154 (2.4%)	2,945 (2.7%)	N/A
Home Health agencies	2,902 (11.5%)	1,759 (2.9%)	31 (6.5%)
Hospice	116 (0.7%)	267 (2.4%)	0 (0.0%)
Durable Medical Equipment	38 (0.3%)	8 (<0.1%)	0.4 (0.6%)
Medicare crossover	1,439 (7.7%)	NA	10 (6.5%)
Medications	15,155 (28.3%)	NA	405 (24.5%)
Transportation	N/A	NA	N/A
State agency services[3]	3,399 (8.3%)	NA	97 (10.1%)
MH clinic/SA program	1,719 (96.4%)	NA	122 (96.1%)
Other	1,091 (1.8%)	NA	80 (4.1%)
Total expenditures	47,515 (9.4%)	65,248 (6.0%)	1,035 (10.2%)
Average expenditures (SD*)	2.5 (7.0)	1.5 (5.2)	1.2 (3.4)
All health services			
Inpatient	107,726	408,600	1,819
Outpatient	21,458	74,895	1,285
Physician	98,777	401,910	882
SNF/nursing home[2]	47,623	107,840	478
Home Health agencies	25,258	61,177	478
Hospice	15,971	11,201	168
Durable Medical Equipment	12,022	23,893	65
Medicare crossover	18,606	NA	154
Medications	53,637	NA	1,650
Transportation	2,009	NA	143
State agency services[4]	40,873	NA	960
MH clinic/SA program	1,783	NA	127
Other	58,996	NA	1,951
Total expenditures	504,735	1,089,522	10,160
Average expenditures (SD*)	27.4 (35.8)	25.4 (38.0)	12.6 (17.0)

* standard deviation
[1] Claims for behavioral health-related services, shown as payment in $1,000's and as a percentage of all health services claims for the associated type of services.
[2] Included Rest Home in MassHealth data
[3] Most claims were for behavioral health – long-term residential.
[4] Examples of claims were habilitation, behavioral health – long-term residential, targeted case management, and non-emergency transportation.

C6. Distribution of All and Behavioral Health Services Expenditures between Medicare and MassHealth for the Dual Eligibles Members, Community Group Aged 65 and Over (CY 2005)

N=18,442	Expenditure in $1,000s				
	Medicare		MassHealth		Total
Behavioral health services (%)[1]					
Inpatient	9,095	(97.8%)	207	(2.2%)	9,302
Outpatient	2,159	(96.6%)	75	(3.4%)	2,234
Physician	8,932	(99.6%)	32	(0.4%)	8,964
SNF/nursing home[2]	1,154	(100.0%)	N/A		1,154
Home Health agencies	1,095	(37.7%)	1,807	(62.3%)	2,902
Hospice	65	(56.0%)	51	(44.0%)	116
Durable Medical Equipment	35	(92.1%)	3	(7.9%)	38
Medicare crossover	N/A		1,439	(100.0%)	1,439
Medications	N/A		15,155	(100.0%)	15,155
Transportation	N/A		N/A		N/A
State agency services[3]	N/A		3,399	(100.0%)	3,399
MH clinic/SA program	N/A		1,719	(100.0%)	1,719
Other	N/A		1,091	(100.0%)	1,091
Total expenditures	22,536	(47.4%)	24,979	(52.6%)	47,515
Average expenditures (SD*)	2 (6)		2 (4)		3 (7)
All health services					
Inpatient	106,670	(99.0%)	1,056	(1.0%)	107,726
Outpatient	20,895	(97.4%)	563	(2.6%)	21,458
Physician	98,370	(99.6%)	407	(0.4%)	98,777
SNF/nursing home[2]	28,156	(59.1%)	19,467	(40.9%)	47,623
Home Health agencies	20,586	(81.5%)	4,672	(18.5%)	25,258
Hospice	7,440	(46.6%)	8,531	(53.4%)	15,971
Durable Medical Equipment	10,247	(85.2%)	1,775	(14.8%)	12,022
Medicare crossover	N/A		18,606	(100.0%)	18,606
Medications	N/A		53,637	(100.0%)	53,637
Transportation	N/A		2,009	(100.0%)	2,009
State agency services[4]	N/A		40,873	(100.0%)	40,873
MH clinic/SA program	N/A		1,783	(100.0%)	1,783
Other	N/A		58,996	(100.0%)	58,996
Total expenditures	292,360	(57.9%)	212,375	(42.1%)	504,735
Average expenditures (SD*)	23 (33)		13 (23)		27 (36)

* Standard deviation

[1] Claims for selected types of mental health-related services, shown as payment in $1,000's and as the proportion of expenditures attributable to Medicare and MassHealth, respectively.

[2] Included Rest Home in MassHealth data.

[3] Most claims were for behavioral health – long-term residential.

[4] Examples of claims were habilitation, behavioral health – long-term residential, targeted case management, and non-emergency transportation.

C7. Behavioral health expenditures by place of service and primary payment source group, community group aged 65 and over (CY2005)

	Expenditure in $1,000s					
	Dual Eligibles (N=18,442)[1]		Medicare Only (N=42,961)[1]		MassHealth Only (N=805)[1]	
Community-based	9,475	19.9%	18,117	27.8%	329	31.8%
Outpatient department	1,487	3.1%	3,680	5.6%	100	9.7%
Emergency room	276	0.6%	583	0.9%	4	0.4%
Inpatient	9,302	19.6%	21,425	32.8%	137	13.2%
Medications for BHD related treatment	15,155	31.9%	NA	0.0%	405	39.1%
Others	11,820	24.9%	21,443	32.9%	60	5.8%
Total	47,515	100.0%	65,248	100.0%	1,035	100.0%

[1] Refer to Appendix C1 for the number of users.

Appendix D Nursing Facility Group Aged 55 and Over

D1. Place of service by primary payment source group, nursing facility group (CY2005)

CY 2005	Dual Eligibles (N=17,097)	Medicare Only (N=1,173)	MassHealth Only (N=837)
Behavioral health services[1]			
Yes	16,503 (96.5%)	922 (78.6%)	837 (100%)
No	594 (3.5%)	251 (21.4%)	0 (0%)
Type of service			
BHD-related medication[2]	15,434 (90.2%)	NA	806 (96.3%)
BHD-related visit[2]	12,826 (67.4%)	922 (78.6%)	777 (92.8%)
Selected places of service[3]	4,914 (28.7%)	266 (22.7%)	661 (79.0%)
Community-based	3,433 (20.1%)	124 (10.6%)	601 (71.8%)
Outpatient dept	1,345 (7.9%)	101 (8.6%)	110 (13.1%)
Emergency room	379 (2.2%)	35 (3.0%)	65 (7.8%)
Inpatient	890 (5.2%)	97 (8.3%)	80 (9.6%)
Home health agency	112 (0.7%)	15 (1.3%)	NA*
Other places only[4]	7,912 (46.3%)	656 (55.9%)	116 (13.9%)

* The cell size was less than 10.

[1] Members with and without behavioral health service claims, based on the principal diagnosis in health service claims and therapeutic classification in pharmaceutical claims.

[2] BHD-related medication and BHD-related visits were not mutually exclusive.

[3] Selected places of service were not mutually exclusive.

[4] Members who received services only in places other than the selected places of service (community-based, outpatient department, emergency room, inpatient, or home-health agency.)

D2. Settings of community-based behavioral health services by primary payment source group, nursing facility group (CY2005)

CY 2005	Dual Eligibles N=3,433	Medicare Only N=124	MassHealth Only N=601
Physician office	609 (17.7%)	104 (83.9%)	60 (10.0%)
Home	113 (3.3%)	20 (16.1%)	0 (0%)
Mental health facility /Substance abuse program	2,900 (84.5%)	NA*	567 (94.3%)
Community health center	41 (1.2%)	NA*	NA*
Other[1]	34 (1.0%)	NA*	NA*

* The cell size was less than 11.

[1] Examples of Others included state agency services and adult day health.

D3. Provider specialty in Medicare physician claims for community-based behavioral health services by primary payment source group, nursing facility group (CY2005)

	Dual Eligibles (N=726)	Medicare Only (N=122)
Number of users (%)		
General medical provider	233 (32%)	39 (32%)
Mental health specialist	544 (75%)	91 (75%)
Psychiatrist	324 (45%)	53 (43%)
Licensed clinical social worker	139 (19%)	15 (12%)
Psychologist	80 (11%)	21 (17%)
Certified clinical nurse specialist	85 (12%)	18 (15%)

D4. Types of behavioral health services by primary payment source group, nursing facility group (CY2005)

	Dual Eligibles (N=3,433)	Medicare Only (N=124)	MassHealth Only (N=601)
Number of users (%)			
Evaluation/management	186 (5.4%)	43 (34.7%)	NA*
Psychiatric diagnosis	732 (21.3%)	37 (29.8%)	187 (31.1%)
Individual psychotherapy	1,941 (56.5%)	48 (38.7%)	393 (65.4%)
Group psychotherapy	183 (5.3%)	NA*	42 (7.0%)
Family psychotherapy	24 (0.7%)	NA*	NA*
Case consultation	1,407 (41.0%)	0 (0%)	225 (37.4%)
Drug management	332 (9.7%)	29 (23.4%)	219 (36.4%)
Alcohol/drug consultation (family and group)	0 (0%)	0 (0%)	NA*
Detoxification (alcohol/drug)	NA*	0 (0%)	NA*
Methadone	NA*	0 (0%)	NA*

* The cell size was less than 11.

D5. Health care expenditures by claim type and primary payment source group, nursing facility group (CY2005)

	Expenditure in $1,000s		
	Dual Eligibles (N=16,503)	Medicare Only (N=922)	MassHealth Only (N=837)
Behavioral health services (%)[1]			
Inpatient	12,717 (9.5%)	1,359 (2.8%)	1,386 (21.9%)
Outpatient	1,178 (4.3%)	56 (1.7%)	106 (11.9%)
Physician	12,635 (9.2%)	1,248 (4.1%)	136 (9.0%)
SNF/nursing home[2]	7,354 (1.0%)	786 (2.2%)	NA
Home Health agencies	328 (4.9%)	39 (0.7%)	7 (4.1%)
Hospice	235 (1.6%)	0 (0%)	4 (0.7%)
Durable Medical Equipment	122.7 (1.1%)	0.1 (<0.1%)	0 (0%)
Medicare crossover	1,733 (5.0%)	NA	26 (7.1%)
Medications	24,139 (40.3%)	NA	2,599 (47.4%)
Transportation	NA	NA	NA
State agency services[3]	191 (14.0%)	NA	74 (45.4%)
MH clinic/SA program	1,925 (78.0%)	NA	509 (90.6%)
Other	77 (0.9%)	NA	39 (3.1%)
Total expenditures	62,524 (5.3%)	3,487 (2.8%)	4,886 (8.7%)
Average expenditures (SD*)	3.7 (9.0)	3.7 (10.3)	5.8 (10.6)
All health services			
Inpatient	134,104	48,992	6,325
Outpatient	27,603	3,381	889
Physician	136,913	30,421	1,503
SNF/nursing home[2]	732,140	35,718	37,178
Home Health agencies	6,749	5,251	171
Hospice	14,359	806	589
Durable Medical Equipment	10,961	1,838	172
Medicare crossover	34,674	NA	367
Medications	59,942	NA	5,479
Transportation	3,888	NA	1,197
State agency services[4]	1,365	NA	163
MH clinic/SA program	2,467	NA	562
Other	9.032	NA	1,278
Total expenditures	1,174,182	100,570	55,871
Average expenditures (SD*)	71.1 (41.7)	109.1 (44.0)	66.7 (27.9)

* Standard deviation

[1] Claims for behavioral health-related services, shown as payment in $1,000's and as a percentage of all health services claims for the associated type of services.

[2] Included Rest Home in MassHealth data

[3] Most claims were for behavioral health – long-term residential.

[4] Examples of claims were habilitation, behavioral health – long-term residential, targeted case management, and non-emergency transportation.

D6. Distribution of All and Behavioral Health Services Expenditures between Medicare and MassHealth for the Dual Eligibles Members, Nursing Facility Group (CY 2005)

N=16,503	Expenditure in $1,000s				
	Medicare		MassHealth		Total
Behavioral health services (%)[1]					
Inpatient	12,165	(95.7%)	552	(4.3%)	12,717
Outpatient	1,142	(96.9%)	36	(3.1%)	1,178
Physician	12,609	(99.8%)	26	(0.2%)	12,635
SNF/nursing home[2]	7,354	(100.0%)	N/A		7,354
Home Health agencies	212	(64.6%)	116	(35.4%)	328
Hospice	171	(72.8%)	64	(27.2%)	235
Durable Medical Equipment	122	(99.4%)	0.7	(0.6%)	122.7
Medicare crossover	N/A		1,733	(100.0%)	1,733
Medications	N/A		24,139	(100.0%)	24,139
Transportation	N/A		N/A		N/A
State agency services[3]	N/A		191	(100.0%)	191
MH clinic/SA program	N/A		1,925	(100.0%)	1,925
Other	N/A		77	(100.0%)	77
Total expenditures	33,664	(53.8%)	28,860	(46.2%)	62,524
Average expenditures (SD*)	3 (9)		2 (3)		4 (9)
All health services					
Inpatient	131,920	(98.4%)	2,184	(1.6%)	134,104
Outpatient	27,404	(99.3%)	199	(0.7%)	27,603
Physician	136,610	(99.8%)	303	(0.2%)	136,913
SNF/nursing home[2]	104,490	(14.3%)	627,650	(85.7%)	732,140
Home Health agencies	6,322	(93.7%)	427	(6.3%)	6,749
Hospice	6,424	(44.7%)	7,935	(55.3%)	14,359
Durable Medical Equipment	9,334	(85.2%)	1,627	(14.8%)	10,961
Medicare crossover	N/A		34,674	(100.0%)	34,674
Medications	N/A		59,942	(100.0%)	59,942
Transportation	N/A		3,888	(100.0%)	3,888
State agency services[4]	N/A		1,365	(100.0%)	1,365
MH clinic/SA program	N/A		2,467	(100.0%)	2,467
Other	N/A		9,032	(100.0%)	9.032
Total expenditures	422,500	(36.0%)	751,690	(64.0%)	1,174,182
Average expenditures (SD*)	34 (45)		47 (19)		71 (42)

* Standard deviation
[1] Claims for selected types of mental health-related services, shown as payment in $1,000's and as the proportion of expenditures attributable to Medicare and MassHealth, respectively.
[2] Included Rest Home in MassHealth data
[3] Most claims were for behavioral health – long-term residential.
[4] Examples of claims were habilitation, behavioral health – long-term residential, targeted case management, and non-emergency transportation.

D7. Behavioral health expenditures by place of service and primary payment source group, nursing facility group (CY2005)

	Expenditure in $1,000s					
	Dual Eligibles (N=16,503)[1]		Medicare Only (N=922)[1]		MassHealth Only (N=837)[1]	
Community-based	2,557	4.1%	43	1.2%	625	12.8%
Outpatient department	465	0.7%	30	0.9%	72	1.5%
Emergency room	134	0.2%	13	0.4%	15	0.3%
Inpatient	12,717	20.3%	1,359	39.0%	1,386	28.4%
Medications for BHD related treatment	24,139	38.6%	0	0.0%	2,599	53.2%
Others	22,512	36.0%	2,042	58.6%	189	3.9%
Total	62,524	100.0%	3,487	100.0%	4,886	100.0%

[1] Refer to Appendix C1 for the number of users.

Appendix E Hospital Group Aged 55 and Over

E1. Place of service by primary payment source group, hospital group (CY2005)

CY 2005	Dual Eligibles (N=866)	Medicare Only (N=520)	MassHealth Only (N=85)
Behavioral health services[1]			
Yes	685 (79.1%)	440 (84.6%)	71 (83.5%)
No	181 (20.9%)	80 (15.4%)	14 (16.5%)
Type of service			
BHD-related medication[2]	236 (27.3%)	NA	42 (49.4%)
BHD-related visit[2]	648 (74.8%)	440 (84.6%)	66 (77.6%)
Selected places of service[3]	258 (29.8%)	119 (22.9%)	65 (76.5%)
Community-based	121 (14.0%)	63 (12.1%)	29 (34.1%)
Outpatient dept	85 (9.8%)	44 (8.5%)	30 (35.3%)
Emergency room	57 (6.6%)	19 (3.7%)	14 (16.5%)
Inpatient	186 (21.5%)	53 (10.2%)	48 (56.5%)
Home health agency	20 (2.3%)	17 (3.3%)	NA*
Other places only[4]	390 (45.0%)	321 (61.7%)	NA*

* The cell size was less than 10.

[1] Members with and without behavioral health service claims, based on the principal diagnosis in health service claims and therapeutic classification in pharmaceutical claims.

[2] BHD-related medication and BHD-related visits were not mutually exclusive.

[3] Selected places of service were not mutually exclusive.

[4] Members who received services only in places other than the selected places of service (community-based, outpatient department, emergency room, inpatient, or home-health agency.)

E2. Settings of community-based behavioral health services by primary payment source group, hospital group (CY2005)

CY 2005	Dual Eligibles (N=121)	Medicare Only (N=63)	MassHealth Only (N=29)
Physician office	73 (60.3%)	58 (92.1%)	NA*
Home	NA*	11 (17.5%)	0 (0%)
Mental health facility /Substance abuse program	72 (59.5%)	NA*	25 (86.2%)
Community health center	NA*	NA*	NA*
Other[1]	17 (14.0%)	0 (0%)	NA*

* The cell size was less than 11.

[1] Examples of Others included state agency services and adult day health.

E3. Provider specialty in Medicare physician claims for community-based behavioral health services by primary payment source group, hospital group (CY2005)

	Dual Eligibles (N=86)	Medicare Only (N=63)
Number of users (%)		
General medical provider	21 (24%)	18 (29%)
Mental health specialist	75 (87%)	49 (78%)
Psychiatrist	54 (63%)	27 (43%)
Licensed clinical social worker	21 (24%)	13 (21%)
Psychologist	13 (15%)	20 (32%)
Certified clinical nurse specialist	13 (15%)	NA*

* The cell size was less than 11.

E4. Types of behavioral health services by primary payment source group, hospital group (CY2005)

	Dual Eligibles (N=121)	Medicare Only (N=63)	MassHealth Only (N=29)
Number of users (%)			
Evaluation/management	19 (15.7%)	17 (27.0%)	NA*
Psychiatric diagnosis	44 (36.4%)	28 (44.4%)	NA*
Individual psychotherapy	50 (41.3%)	31 (49.2%)	11 (37.9%)
Group psychotherapy	NA*	NA*	0 (0%)
Family psychotherapy	NA*	NA*	0 (0%)
Case consultation	21 (17.4%)	0 (0%)	NA*
Drug management	50 (41.3%)	15 (23.8%)	12 (41.4%)
Alcohol/drug consultation (family and group)	NA*	0 (0%)	0 (0%)
Detoxification (alcohol/drug)	NA*	0 (0%)	0 (0%)
Methadone	0 (0%)	0 (0%)	NA*

* The cell size was less than 10.

E5. Health care expenditures by claim type and primary payment source group, hospital group (CY2005)

	Expenditure in $1,000		
	Dual Eligibles (N=685)	Medicare Only (N=440)	MassHealth Only (N=71)
Behavioral health services (%)[1]			
Inpatient	15,386 (27.5%)	1,666 (3.2%)	5,946 (61.4%)
Outpatient	297 (15.1%)	72 (4.0%)	95 (43.8%)
Physician	2,751 (15.2%)	1,373 (5.9%)	20 (6.1%)
SNF/nursing home[2]	168 (3.9%)	175 (2.7%)	N/A
Home Health agencies	78 (6.9%)	36 (1.6%)	14 (17.9%)
Hospice	9 (5.8%)	0 (0%)	0 (0.0%)
Durable Medical Equipment	0 (0.0%)	0 (0%)	0 (0.0%)
Medicare crossover	157 (4.1%)	NA	0.9 (90.0%)
Medications	263 (34.0%)	NA	93 (37.2%)
Transportation	N/A	NA	NA
State agency services[3]	144 (57.8%)	NA	71 (68.3%)
MH clinic/SA program	62 (93.9%)	NA	9 (90.0%)
Other	22 (3.2%)	NA	42 (11.5%)
Total expenditures	19,335 (21.9%)	3,321 (3.8%)	6,291 (54.4%)
Average expenditures (SD*)	28.2 (55.7)	7.7 (22.9)	88.6 (94.8)
All health services			
Inpatient	55,956	52,490	9,679
Outpatient	1,970	1,780	217
Physician	18,121	23,403	330
SNF/nursing home[2]	4,301	6,551	308
Home Health agencies	1,132	2,222	78
Hospice	156	111	23
Durable Medical Equipment	926	1,435	26
Medicare crossover	3,800	NA	1
Medications	774	NA	250
Transportation	74	NA	166
State agency services[4]	249	NA	104
MH clinic/SA program	66	NA	10
Other	681	NA	364
Total expenditures	88,206	87,992	11,556
Average expenditures (SD*)	128.7 (138.2)	200.0 (98.2)	162.7 (66.0)

* standard deviation

[1] Claims for behavioral health-related services, shown as payment in $1,000's and as a percentage of all health services claims for the associated type of services.

[2] Included Rest Home in MassHealth data

[3] Most claims were for behavioral health – long-term residential.

[4] Examples of claims were habilitation, behavioral health – long-term residential, targeted case management, and non-emergency transportation.

E6. Distribution of All and Behavioral Health Services Expenditures between Medicare and MassHealth for the Dual Eligibles Members, Hospital Group (CY 2005)

N=685	Expenditure in $1,000s				
	Medicare		MassHealth		Total
Behavioral health services (%)[1]					
Inpatient	2,896	(18.8%)	12,490	(81.2%)	15,386
Outpatient	289	(97.3%)	8	(2.7%)	297
Physician	2,745	(99.8%)	6	(0.2%)	2,751
SNF/nursing home[2]	168	(100.0%)	N/A		168
Home Health agencies	26	(33.3%)	52	(66.7%)	78
Hospice	9	(100.0%)	0	(0.0%)	9
Durable Medical Equipment	0		0		0
Medicare crossover	N/A		157	(100.0%)	157
Medications	N/A		263	(100.0%)	263
Transportation	N/A		N/A		N/A
State agency services[3]	N/A		144	(100.0%)	144
MH clinic/SA program	N/A		62	(100.0%)	62
Other	N/A		22	(100.0%)	22
Total expenditures	6,133	(31.7%)	13,202	(68.3%)	19,335
Average expenditures (SD*)	10 (24)		34 (59)		28 (56)
All health services					
Inpatient	35,900	(64.2%)	20,056	(35.8%)	55,956
Outpatient	1,952	(99.1%)	18	(0.9%)	1,970
Physician	18,058	(99.7%)	63	(0.3%)	18,121
SNF/nursing home[2]	3,522	(81.9%)	779	(18.1%)	4,301
Home Health agencies	985	(87.0%)	147	(13.0%)	1,132
Hospice	118	(75.6%)	38	(24.4%)	156
Durable Medical Equipment	891	(96.2%)	35	(3.8%)	926
Medicare crossover	N/A		3,800	(100.0%)	3,800
Medications	N/A		774	(100.0%)	774
Transportation	N/A		74	(100.0%)	74
State agency services[4]	N/A		249	(100.0%)	249
MH clinic/SA program	N/A		66	(100.0%)	66
Other	N/A		681	(100.0%)	681
Total expenditures	61,427	(69.6%)	26,780	(30.4%)	88,206
Average expenditures (SD*)	96 (126)		68 (64)		129 (138)

* Standard deviation

[1] Claims for behavioral health-related services, shown as payment in $1,000's and as the proportion of expenditures attributable to Medicare and MassHealth, respectively.

[2] Included Rest Home in MassHealth data

[3] Most claims were for behavioral health – long-term residential

[4] Examples of claims were habilitation, behavioral health – long-term residential, targeted case management, and non-emergency transportation.

E7. Behavioral health expenditures by place of service and primary payment source group, hospital group (CY2005)

	Expenditure in $1,000s					
	Dual Eligibles (N=685)[1]		Medicare Only (N=440)[1]		MassHealth Only (N=71)[1]	
Community-based	268	1.4%	56	1.7%	110	1.7%
Outpatient department	105	0.5%	37	1.1%	28	0.4%
Emergency room	45	0.2%	10	0.3%	6	0.1%
Inpatient	15,386	79.6%	1,666	50.2%	5,946	94.5%
Medications for BHD related treatment	263	1.4%	0	0.0%	93	1.5%
Others	3,268	16.9%	1,552	46.7%	108	1.7%
Total	19,335	100.0%	3,321	100.0%	6,291	100.0%

[1] Refer to Appendix C1 for the number of users.

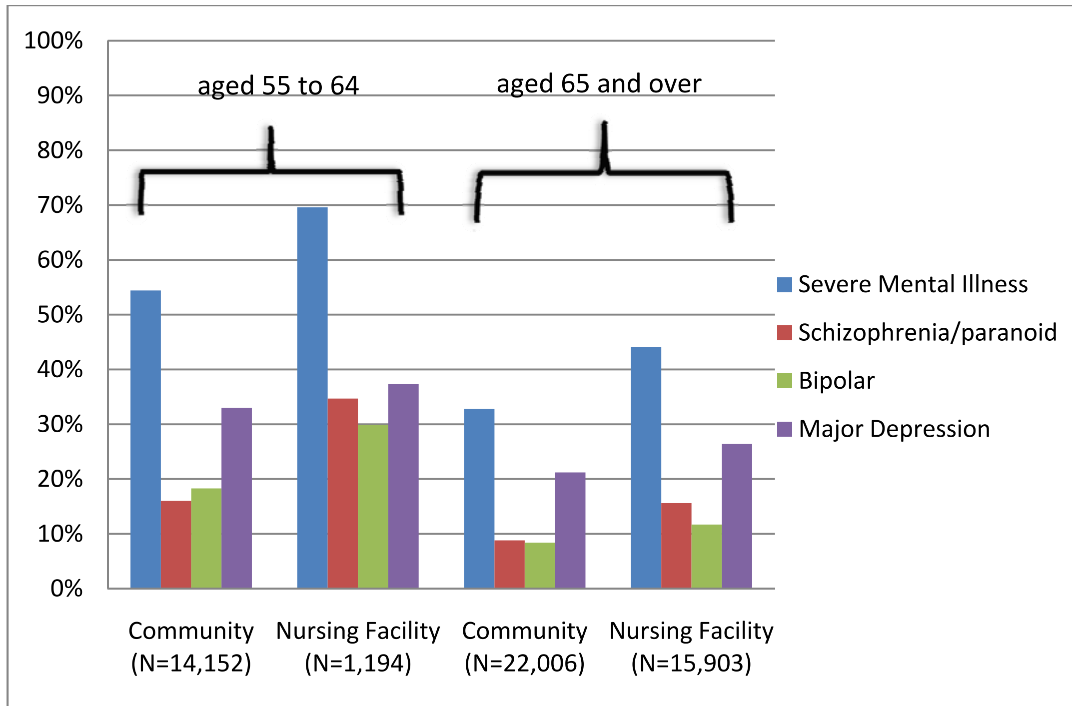
Appendix F Types of BHDs and Number of BHDs per Person

F1. Types of BHDs and number of BHDs per person by age group among Dual Eligible members in the Community and Nursing Facility groups (CY 2005)

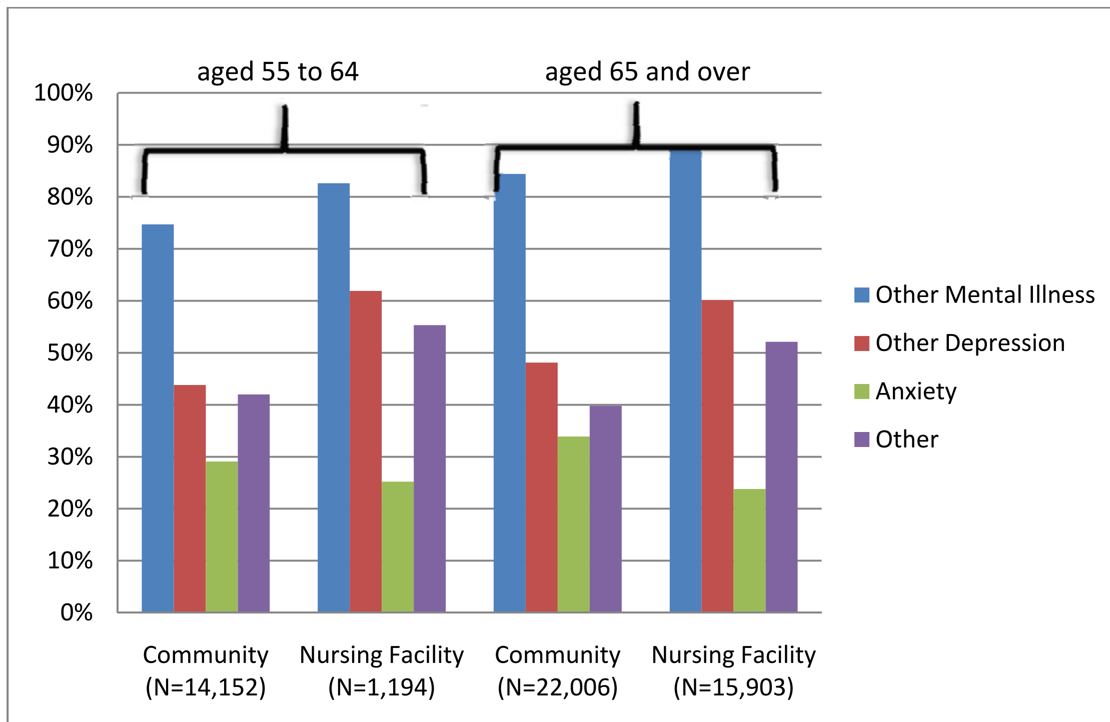
CY 2005	Aged 55-64		Aged 65 and Older	
	Community (N=14,152)	Nursing Facility (N=1,194)	Community (N=22,006)	Nursing Facility (N=15,903)
Severe mental illness	**7,696 (53.4%)**	**831 (69.6%)**	**7,209 (32.8%)**	**7,017 (44.1%)**
Schizophrenia/paranoid	2,269 (16.0%)	414 (34.7%)	1,931 (8.8%)	2,474 (15.6%)
Bipolar	2,591 (18.3%)	357 (29.9%)	1,852 (8.4%)	1,862 (11.7%)
Major depression	4,672 (33.0%)	445 (37.3%)	4,675 (21.2%)	4197 (26.4%)
Other mental illness	**10,567 (74.7%)**	**986 (82.6%)**	**18,574 (84.4%)**	**14,150 (89.0%)**
Other depression	6,202 (43.8%)	739 (61.9%)	10,592 (48.1%)	9,551 (60.1%)
Anxiety	4,120 (29.1%)	301 (25.2%)	7,452 (33.9%)	3,777 (23.8%)
Other[1]	5,941 (42.0%)	660 (55.3%)	8,767 (39.8%)	8,280 (52.1%)
Substance use disorders	**2,526 (17.9%)**	**220 (18.4%)**	**2,140 (9.7%)**	**1,009 (6.3%)**
Alcohol abuse or dependence	1,807 (12.8%)	190 (15.9%)	1,655 (7.5%)	787 (5.0%)
Drug abuse or dependence	1,104 (7.8%)	62 (5.2%)	631 (2.9%)	276 (1.7%)
Number of BHDs				
One	6,295 (44.5%)	316 (26.5%)	12,351 (56.3%)	6,850 (43.1%)
Two	3,935 (27.8%)	327 (27.4%)	5,729 (26.0%)	4,906 (30.9%)
Three	2,213 (15.6%)	227 (19.0%)	2,504 (11.4%)	2,603 (16.4%)
Four	1,010 (7.1%)	179 (15.0%)	998 (4.5%)	1,104 (6.9%)
Five or more	699 (4.9%)	145 (12.1%)	424 (1.9%)	440 (2.8%)

[1]For example, unspecified psychosis, adjustment reaction with mixed emotional features, and prolonged posttraumatic stress disorder.

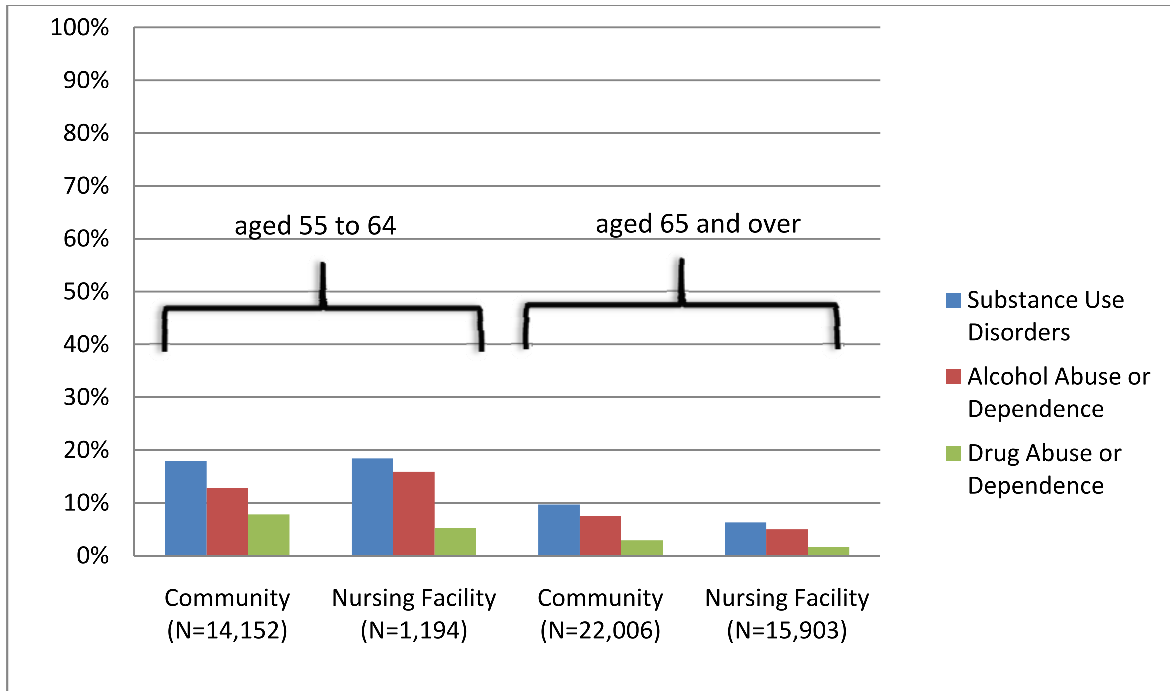
F2. Types of SMI by age group and resident group, Dual Eligible members (CY 2005)



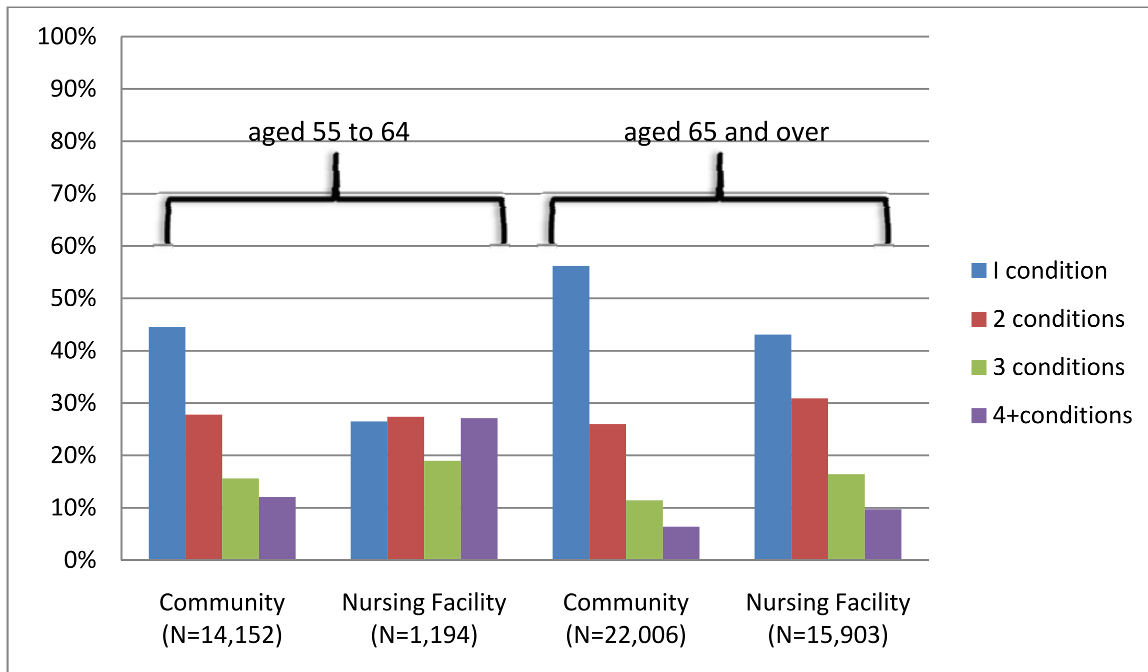
F3. Types of OMI by age group and resident group, Dual Eligible members (CY 2005)



F4. Types of SUD by age group and resident group, Dual Eligible members (CY 2005)



F5. Number of BHDs per person by age group and resident group, Dual Eligible members (CY 2005)

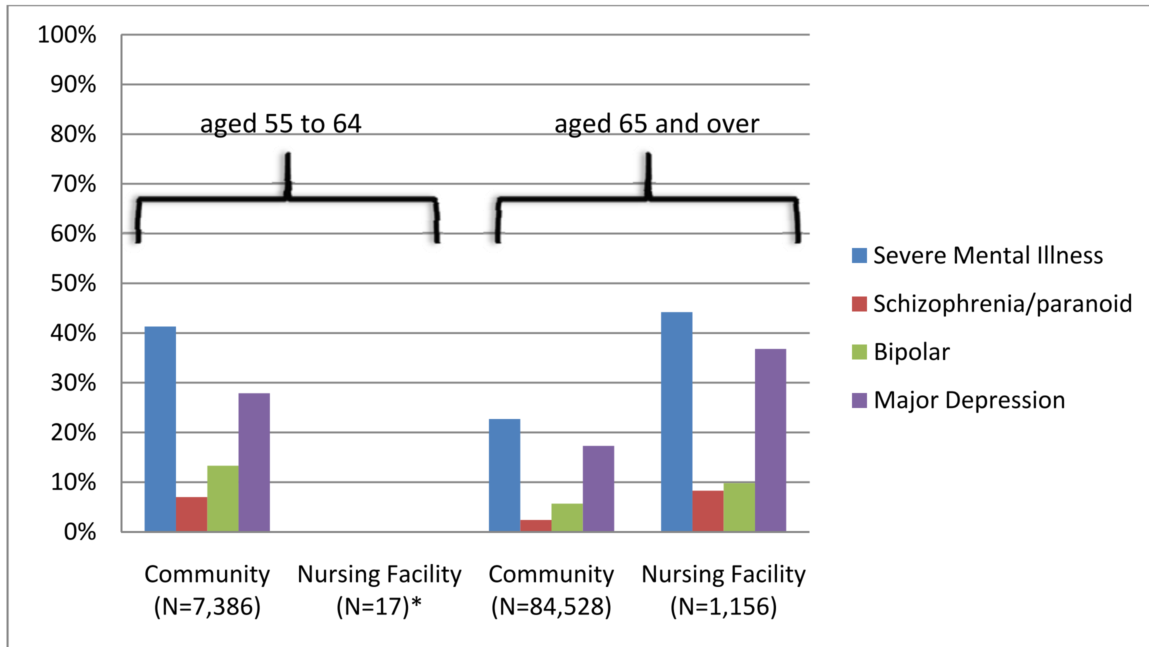


F6. Types of BHDs and number of BHDs per person by age group among Medicare Only members in the Community and Nursing Facility groups (CY 2005)

CY 2005	Aged 55-64		Aged 65 and Older	
	Community (N=7,385)	Nursing Facility (N=17)	Community (N=84,525)	Nursing Facility (N=1,156)
Severe mental illness	**3,053 (41.3%)**	**NA[2]**	**19,151 (22.7%)**	**511 (44.2%)**
Schizophrenia/paranoid	519 (7.0%)	NA[2]	2,001 (2.4%)	96 (8.3%)
Bipolar	985 (13.3%)	NA[2]	4,779 (5.7%)	113 (9.8%)
Major depression	2,062 (27.9%)	NA[2]	14,643 (17.3%)	425 (36.8%)
Other mental illness	**5,706 (77.3%)**	**NA[2]**	**74,546 (88.2%)**	**1,113 (96.3%)**
Other depression	3,216 (43.5%)	NA[2]	38,800 (45.9%)	754 (65.2%)
Anxiety	2,119 (28.7%)	NA[2]	29,156 (34.5%)	353 (30.5%)
Other[1]	2,795 (37.8%)	NA[2]	33,522 (39.7%)	795 (68.8%)
Substance use disorders	**999 (13.5%)**	**NA[2]**	**6,874 (8.1%)**	**159 (13.8%)**
Alcohol abuse or dependence	824 (11.1%)	NA[2]	5,165 (6.1%)	92 (8.0%)
Drug abuse or dependence	264 (3.6%)	NA[2]	1,962 (2.3%)	82 (7.1%)
Number of BHDs		**NA[2]**		
One	4,133 (56.0%)	NA[2]	54,141 (64.1%)	364 (31.5%)
Two	1,883 (25.5%)	NA[2]	19,518 (23.1%)	334 (28.9%)
Three	842 (11.4%)	NA[2]	7,590 (9.0%)	238 (20.6%)
Four	356 (4.8%)	NA[2]	2,485 (2.9%)	153 (13.2%)
Five or more	171 (2.3%)	NA[2]	791 (0.9%)	67 (5.8%)

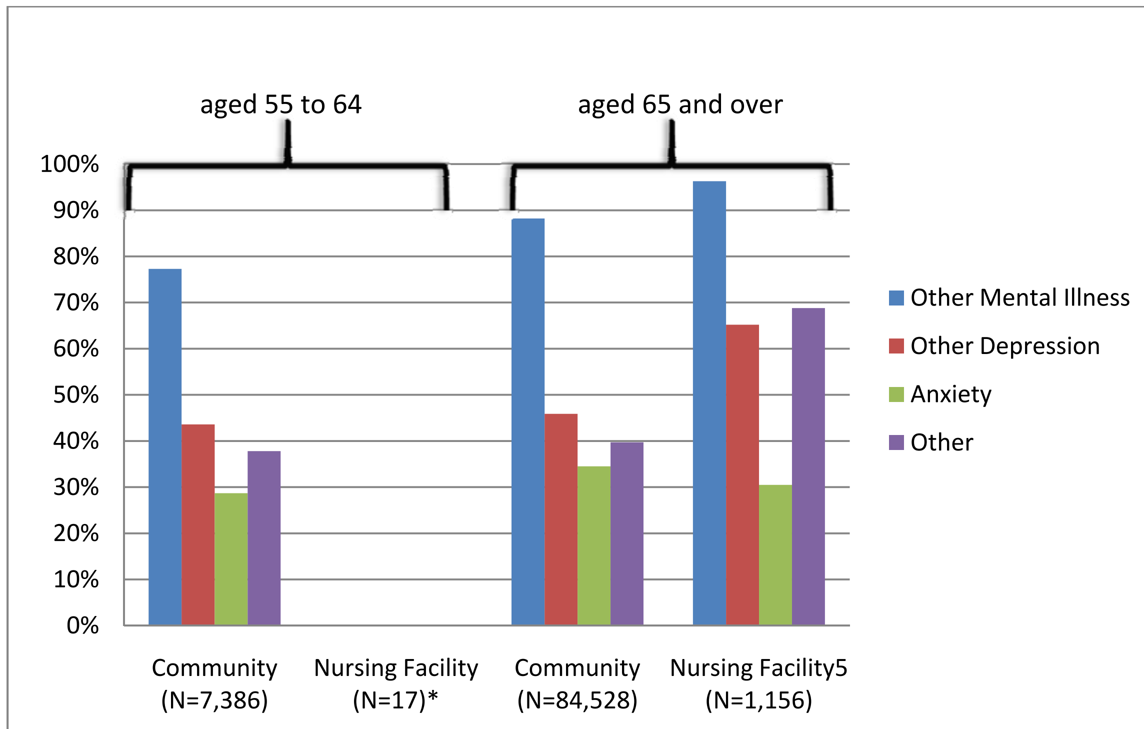
[1]For example, unspecified psychosis, adjustment reaction with mixed emotional features, and prolonged posttraumatic stress disorder.
[2]The cell size was less than 11.

F7. Types of SMI by age group and resident group, Medicare Only members (CY 2005)



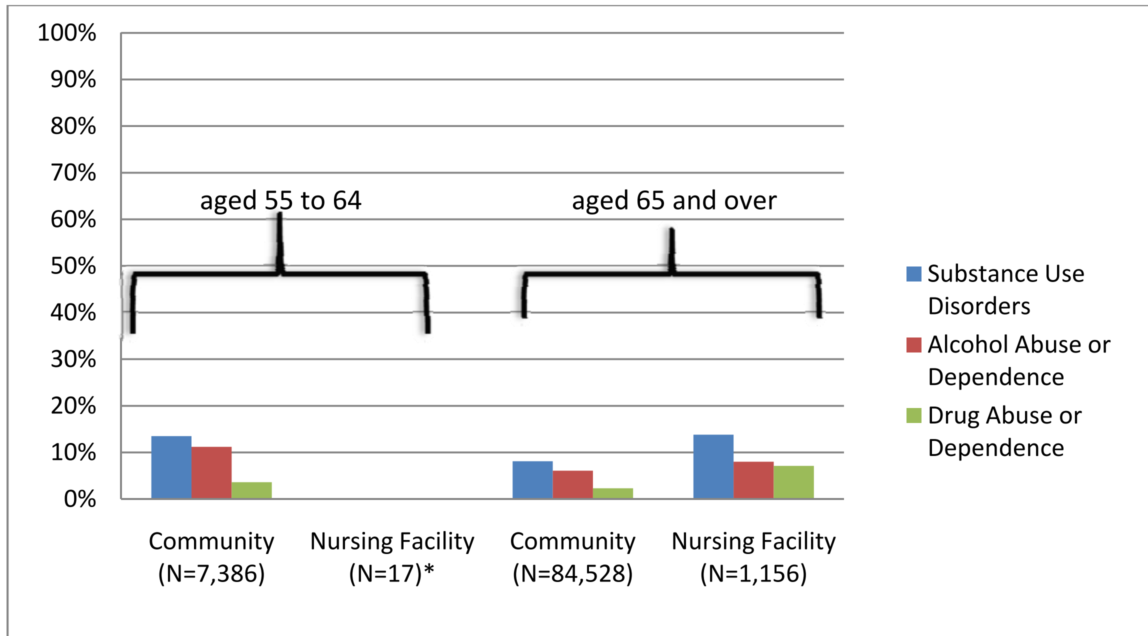
* Data were not shown because the sample size was small.

F8. Types of OMI by age group and resident group, Medicare Only members (CY 2005)



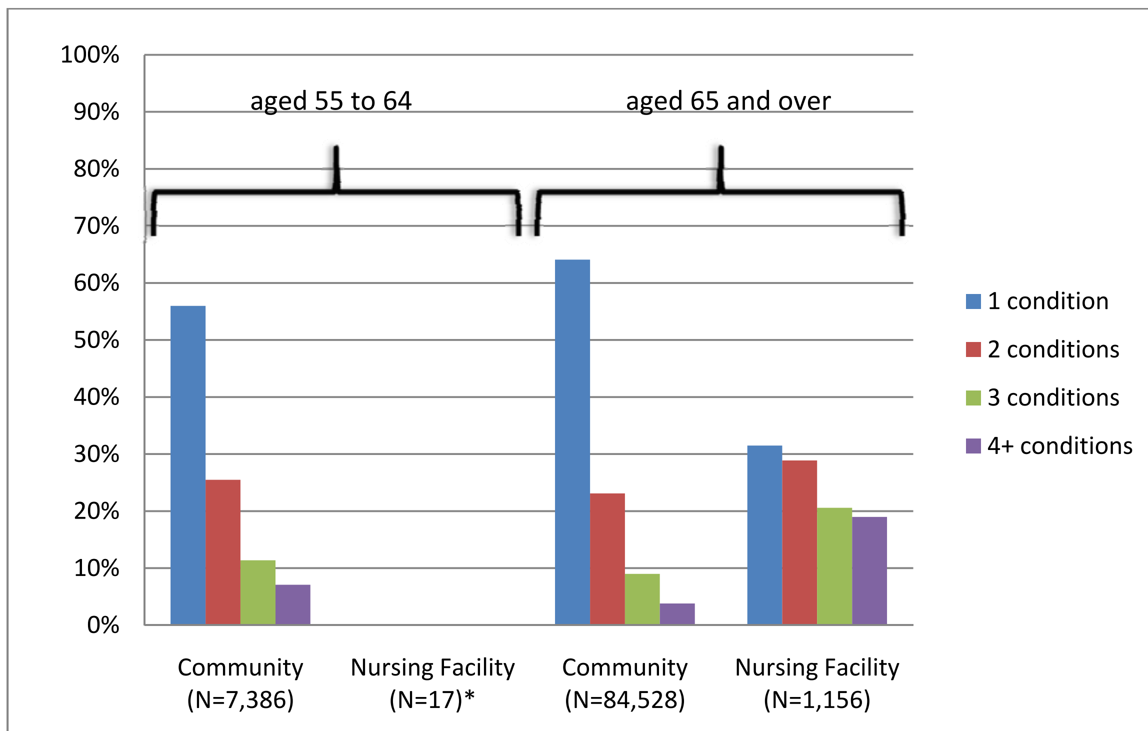
* Data were not shown because the sample size was small.

F9. Types of SUD by age group and resident group, Medicare Only members (CY 2005)



* Data were not shown because the sample size was small.

F10. Number of BHDs per person by age group and resident group, Medicare Only members (CY 2005)



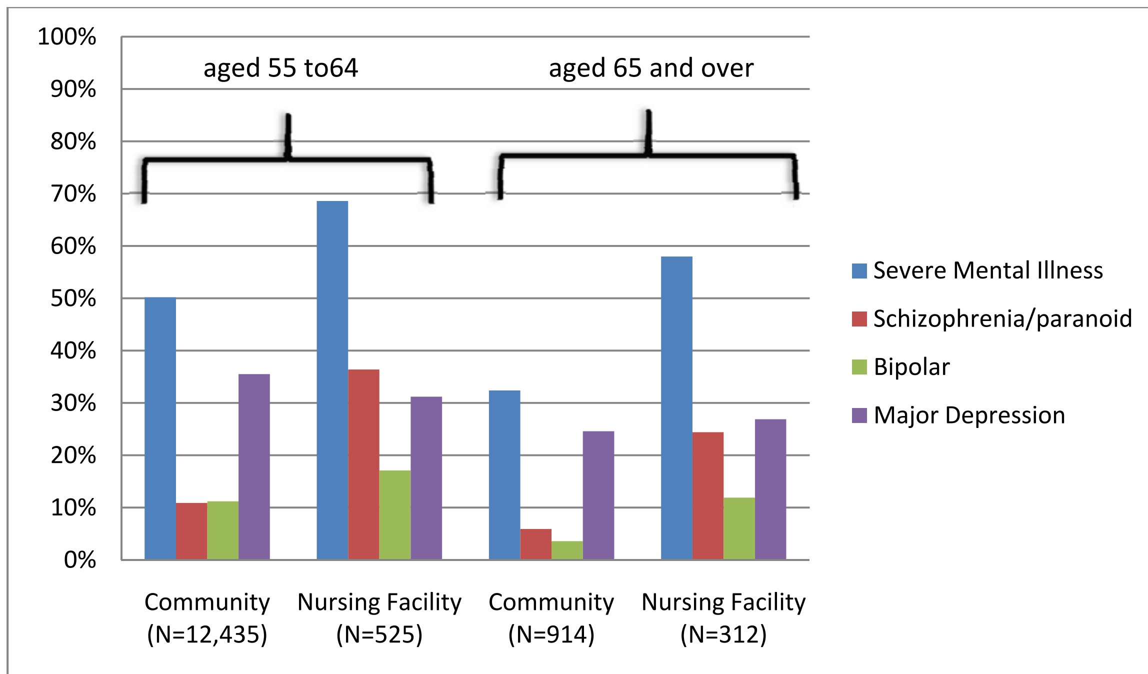
* Data were not shown because the sample size was small.

F11. Types of BHDs and number of BHDs per person by age group among MassHealth Only members in the Community and Nursing Facility groups (CY 2005)

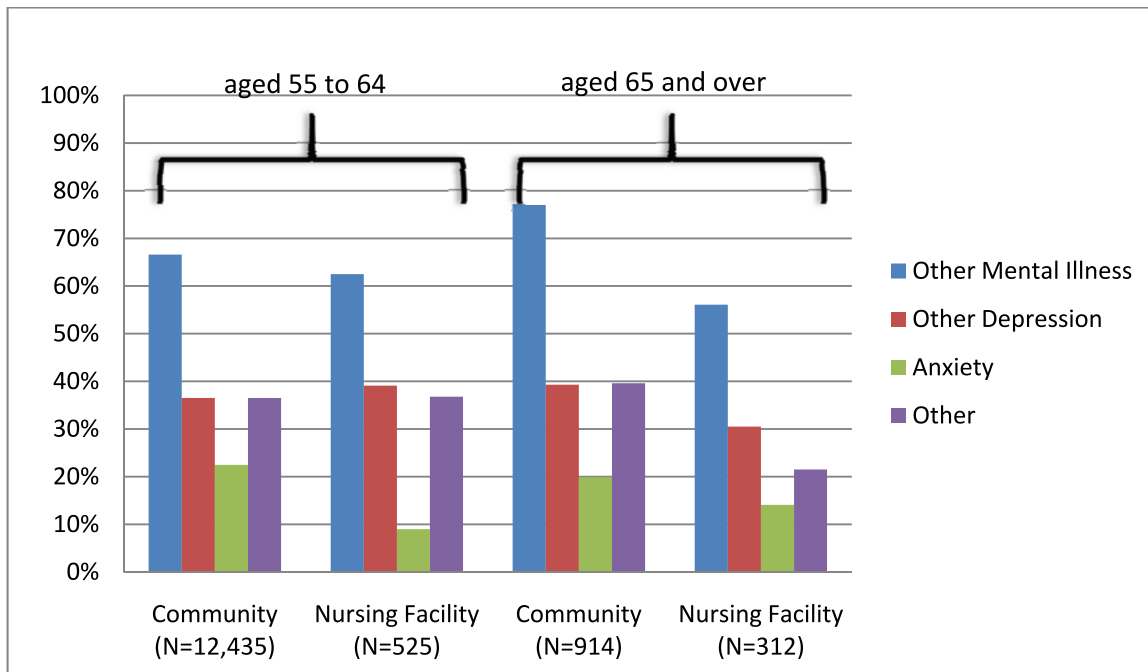
CY 2005	Aged 55-64		Aged 65 and Older	
	Community (N=12,435)	Nursing Facility (N=525)	Community (N=914)	Nursing Facility (N=312)
Severe mental illness	**6,241 (50.2%)**	**360 (68.6%)**	**296 (32.4%)**	**181 (58.0%)**
Schizophrenia/paranoid	1,349 (10.9%)	191 (36.4%)	54 (5.9%)	76 (24.4%)
Bipolar	1,397 (11.2%)	90 (17.1%)	33 (3.6%)	37 (11.9%)
Major depression	4,415 (35.5%)	164 (31.2%)	225 (24.6%)	84 (26.9%)
Other mental illness	**8,285 (66.6%)**	**328 (62.5%)**	**704 (77.0%)**	**175 (56.1%)**
Other depression	4,543 (36.5%)	205 (39.1%)	359 (39.3%)	95 (30.5%)
Anxiety	2,793 (22.5%)	47 (9.0%)	182 (19.9%)	44 (14.1%)
Other[1]	4,533 (36.5%)	193 (36.8%)	362 (39.6%)	67 (21.5%)
Substance use disorders	**2,564 (20.6%)**	**109 (20.8%)**	**57 (6.2%)**	NA[2]
Alcohol abuse or dependence	1,773 (14.3%)	96 (18.3%)	41 (4.5%)	NA[2]
Drug abuse or dependence	1,136 (9.1%)	27 (5.1%)	16 (1.8%)	NA[2]
Number of BHDs				
One	6,643 (53.4%)	238 (45.3%)	633 (69.3%)	236 (75.6%)
Two	3,418 (27.5%)	154 (29.3%)	219 (24.0%)	57 (18.3%)
Three	1,484 (11.9%)	85 (16.2%)	49 (5.4%)	16 (5.1%)
Four	584 (4.7%)	34 (6.5%)	11 (1.2%)	NA[2]
Five or more	306 (2.5%)	14 (2.7%)	NA[2]	NA[2]

[1]For example, unspecified psychosis, adjustment reaction with mixed emotional features, and prolonged posttraumatic stress disorder.
[2]The cell size was less than 11.

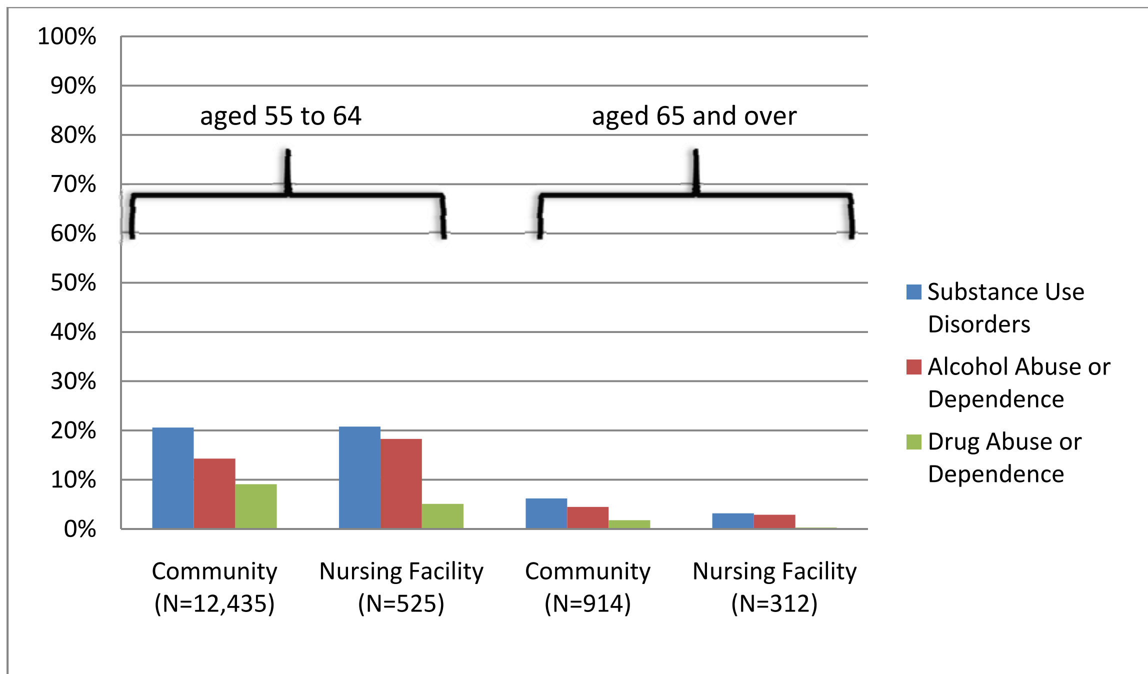
F12. Types of SMI by age group and resident group, MassHealth Only members (CY 2005)



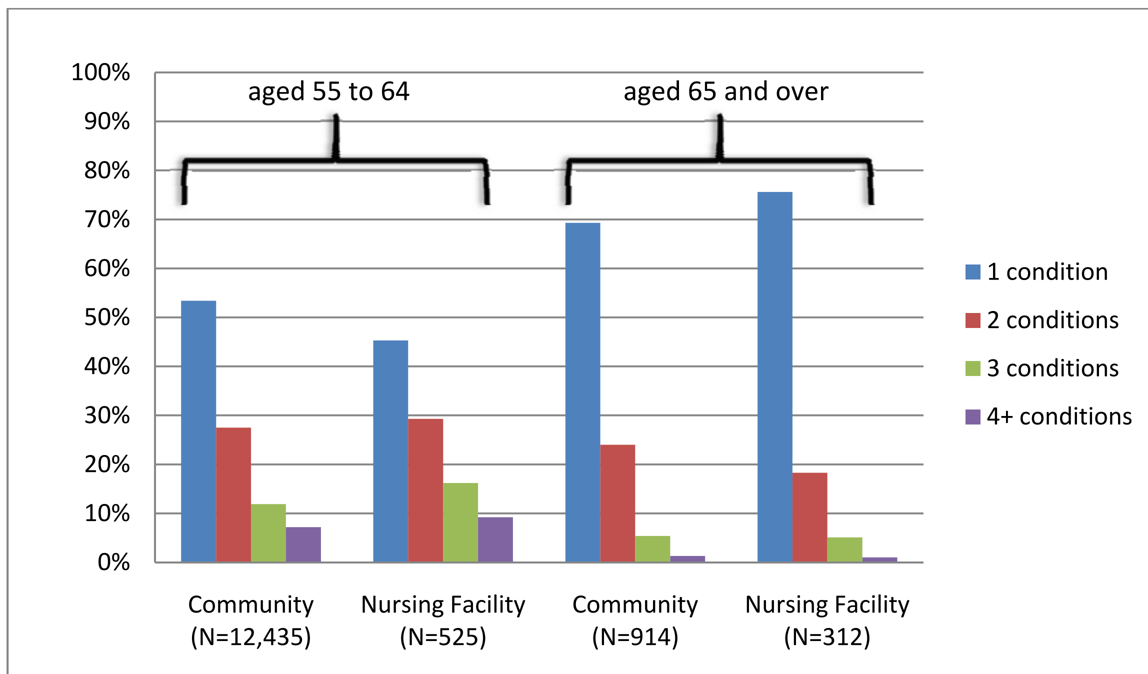
F13. Types of OMI by age group and resident group, MassHealth Only members (CY 2005)



F14. Types of SUD by age group and resident group, MassHealth Only members (CY 2005)



F15. Number of BHDs per person by age group and resident group, MassHealth members (CY 2005)



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