Behavioral Health Diagnosis, Service Utilization, and Spending Among Older Adult Medicare Beneficiaries: A Chartbook

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Copyright Information

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This report was prepared under contract #HHSP233201500039I between HHS's ASPE/BHDAP and RTI International. For additional information about this subject, contact the ASPE Project Officer, Helen Lamont, PhD, at HHS/ASPE/BHDAP, Rm. 424, H.H. Humphrey Building, 200 Independence Avenue, S.W., Washington, D.C. 20201. Her e-mail address is helen.lamont@hhs.gov

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Acronyms

BH	Behavioral Health
ED	Emergency Department
E&M	Evaluation and Management
FFS	Fee-For-Service
DME	Durable Medical Equipment
LOS	Length Of Stay
MBSF	Medicare Master Beneficiary Summary Files
MH	Mental Health
NDC	National Drug Code
PBPY	Per Beneficiary, Per Year
OOP	Out-Of-Pocket
OUD	Opioid Use Disorder
SUD	Substance Use Disorder

Executive Summary

Behavioral health (BH) conditions are common among older adults. According to the National Survey on Drug Use and Health (NSDUH), in 2019, 11.8% of adults aged 65 and older (6.3 million) reported meeting diagnostic criteria for any mental illness in the past year; 2.3% (1.2 million) reported meeting the criteria for a substance use disorder (SUD) in the past year; and 1.5% (1.7 million) reported meeting the criteria for a co-occurring SUD and any mental illness in the past year.[1]

Approaches to measuring prevalence include a survey-based approach, such as NSDUH, and an insurance claims-based approach, such as using Medicare fee-for-service (FFS) claims. Although a survey approach is better able to account for individuals without any service use, it relies on self-reporting and may under-report prevalence. It may also be limited in detailed information on treatment services used.

Alternatively, a claims-based approach should reflect the proportion of the population who has received a BH diagnosis or has any BH-related service use more accurately than a survey-based approach. In one claims-based study of the Medicare population, including adults under 65 years of age, approximately 30% of FFS beneficiaries had a mental health (MH) condition. A claims-based approach also allows for the examination of service use patterns and spending.[2]

Older adults with BH conditions often experience worse health and functional outcomes,[3] have higher rates of emergency department (ED) visits, use more medications, and have higher healthcare costs than those without a BH condition.[4] There is need for a greater understanding of the extent to which older adults experience BH conditions. Updated evidence is also needed on services being used by older adults with BH conditions and associated spending. The goal of this chartbook was to address these needs.

This chartbook used an annual cross-section analysis of the national population of FFS Medicare beneficiaries 65 years and older. We used 100% of Medicare claims and administrative data from 2017 to 2019 to estimate the annual claims-based rate of BH diagnosis or BH-related service use and to determine what services are used, how often, and at what cost to Medicare and beneficiaries through out-of-pocket (OOP) payments. We included beneficiaries in the analysis if they had any MH- or SUD-related **diagnosis**, selected psychosocial procedure, or psychotherapeutic drug fills during the year. For the purposes of this chartbook, we restricted the sample to beneficiaries who had a full 12 months of Medicare enrollment in Part A and Part B FFS, were alive all year, were 65 or older at the start of the year, and resided in one of the 50 states or the District of Columbia.

Our findings indicated that:

- The rate of BH diagnoses and BH-related service use among this population increased by year, with 34.3% of Medicare beneficiaries aged 65 and older having a BH diagnosis or BH-related service use in 2017, 35.0% in 2018, and 35.5% in 2019
- This increase was driven by diagnoses and service use related to MH conditions (33.2% to 34.3%) as opposed to SUD (3.1% to 3.6%). However, we did see increases in the rates of both MH and SUD diagnoses and related service use over time.
- Nearly all older adults we identified as having a BH diagnosis or BH-related service use had a physician evaluation and management (E&M) visit during the year. Many older adults with a BH diagnosis or BH-related service received outpatient BH treatment during the year, and a substantial majority of older adults with a MH diagnosis or MH-related service had at least one MH-related prescription drug fill.
- All-cause acute inpatient and ED use was common among beneficiaries with a BH diagnosis or BH-related service, and more likely to occur among these beneficiaries with a BH condition than those without a BH diagnosis or BH-related service.
- Medicare spending was highest for inpatient and physician services among beneficiaries with a BH diagnosis or BH-related service. OOP payments were highest for inpatient services for beneficiaries with a BH diagnosis or BH-related service.
- Across all service categories, Medicare beneficiaries with a BH diagnosis or BH-related service had greater Medicare spending and OOP payments than beneficiaries without, accounting for differences based on age and sex.

1 Introduction

Behavioral health (BH) conditions are common among older adults. According to the National Survey on Drug Use and Health (NSDUH), in 2019, 11.8% of adults aged 65 and older (6.3 million) reported meeting diagnostic criteria for any mental illness in the past year, 2.3% (1.2 million) reported meeting criteria for a substance use disorder (SUD) in the past year, and 1.5% (1.7 million) reported meeting criteria for a co- occurring SUD and any mental illness in the past year.[1] However, these self-report survey estimates may suffer from under-reporting due to stigma or privacy concerns.[5-7]

As an alternative to measuring prevalence with a survey approach, a claims-based approach may more accurately reflect the population who has received a BH-diagnosis or has any BH-related service use. In one claims-based study of the Medicare population, including adults under 65 years of age, approximately 30% of fee-for-service (FFS) beneficiaries had a mental health (MH) condition.[2] A claims-based approach also allows for the examination of service use patterns and spending.[5,8]

The claims-based approach used in this report meets the clear need for a greater understanding of the extent to which older adults receive a BH diagnosis or BH-related services. Additionally, more and updated evidence is needed on services being used and associated spending among older adult Medicare beneficiaries with a BH diagnosis or BH-related services.

The Office of the Assistant Secretary for Planning and Evaluation (ASPE) in the US Department of Health and Human Services (HHS) has prioritized better understanding the national profile of older adults with a BH diagnosis or BH-related services.

This chartbook uses 100% of Medicare FFS claims and administrative data from 2017 to 2019 to estimate the annual claims-based rate of BH diagnoses and use of BH-related services and to determine what services are used, how often, and at what cost to Medicare, as well as beneficiaries through out-of-pocket (OOP) payments. Beneficiaries were identified as having a BH diagnosis or BH-related services if they had any MH or SUD diagnosis, BH procedure, or BH National Drug Codes (NDCs) during the year.

For the purposes of this chartbook, we restricted the sample to beneficiaries who had a full 12 months of Medicare enrollment in Part A and Part B FFS, were alive all year, were 65 and older at the start of the year, and resided in one of the 50 states or the District of Columbia.

This study's primary aim was to increase understanding of BH needs and service utilization among older Medicare beneficiaries. The study addressed this gap in information through the following questions:

- What is the rate of BH diagnoses and BH-related services among Medicare FFS beneficiaries aged 65 and older?
- Among this population, what are the rates of healthcare utilization (BH and overall) for different service types, including inpatient, outpatient, hospitalizations, emergency department (ED), and pharmacy use? How many beneficiaries received any of these services?
- How does overall utilization differ for beneficiaries with and without a BH diagnosis or BH-related services?
- What are other key patterns in service and treatment utilization for individuals with a BH diagnosis or BH-related services (e.g., length of stay (LOS) for inpatient care, mean number of BH services received by beneficiaries receiving any BH services)?
- What are the associated expenditures, both overall medical and BH treatment-specific?
- How do healthcare expenditures of those with a BH diagnosis or BH-related services compare to those without?

2 Methodology

Study design. To address the research questions, RTI conducted an annual cross-sectional descriptive analysis of Medicare beneficiaries ages 65 and older with at least one BH diagnosis or BH-related service use from 2017 to 2019. To determine differences in spending and utilization between beneficiaries with a BH diagnosis or BH-related services and those without, we used a propensity score matching approach adjusting for age and sex.

This research was exempt from RTI's institutional review board.

Data sources. RTI utilized Medicare data through the Centers for Medicare & Medicaid Services Virtual Research Data Center. Multiple sources of data were used to conduct these analyses and are described below.

- **Medicare Master Beneficiary Summary Files (MBSF).** Eligibility information was captured through the Medicare MBSF. This file contains the enrollment and eligibility information of all Medicare beneficiaries ever enrolled in Medicare during the calendar year. It contains Part A and B enrollment, Medicare Advantage enrollment, whether the beneficiary is alive, reason for entitlement, and other demographic and eligibility information that were in this analysis. The Chronic Conditions segment and the Other Chronic and Potentially Disabling Conditions segment were used in one strategy to identify individuals to include in analyses.
- **Medicare FFS claims.** Medicare institutional and non-institutional claims were used to create the outcomes of interest. Institutional claims include inpatient, outpatient, and skilled nursing facility claims files. Non-institutional claims include carrier, home health, and durable medical equipment (DME) claims.

- **Medicare Part D Event and Summary File.** This file was used to create outcomes related to prescription fills. The Part D event file contains the NDC, days of supply, subsidy amount, and prescription fill date.
- **Rural-Urban Commuting Area codes.** These codes are 2010 census-based identifiers for population density, urbanization, and daily commuting. They were used to classify Medicare beneficiaries into rural categories of residence.

Sample construction. The overall sample includes Medicare beneficiaries who met the following eligibility criteria: (1) 65 years and older, (2) enrolled in both Medicare Part A and Part B, (3) alive, (4) not enrolled in Medicare Advantage plan, and (5) residing in one of the 50 states or D.C. We required the beneficiary to meet these eligibility criteria for all 12 months to ensure comparability and to capture any FFS service and payment that occurred during the year. However, we did not require that beneficiaries have 12 months of enrollment in Medicare Part D except where indicated.

Identifying BH diagnoses and BH-related service use. Beneficiaries were identified as having a BH diagnosis or BH-related service use if they had any MH or SUD diagnosis or related service use. The primary identification approach included anyone with at least one claim in either the inpatient or outpatient files during the calendar year with any ICD-10 code indicating the following disorders OR at least one Part D prescription drug claim for any psychotherapeutic OR at least one procedure code for any selected outpatient psycho-social service use:

- Alcohol use disorder
- Anxiety disorder
- Bipolar disorder
- Depressive disorders
- Drug use disorder
- Eating disorder
- Personality disorders
- Posttraumatic stress disorder (PTSD)
- Schizophrenia and related psychotic disorders
- Attention deficit/ hyperactivity disorder (ADHD)

The psychotherapeutic class of drugs included benzodiazepines, anxiolytics, sedatives, and hypnotics; antipsychotics and antimanics; antidepressants; analeptics (attention-deficit hyperactivity disorder [ADHD] medications); and some anticonvulsants. Psychotherapeutic drugs used for medication assisted treatment (MAT) included buprenorphine for OUD, acamprosate, disulfiram, naloxone, and naltrexone. These drug classes include medications that may be used for alcohol use disorder or OUD. Methadone treatment for OUD was captured using procedure codes in the outpatient files. These psychotherapeutic drug classes are listed in SAMHSA's 2019 Behavioral Health Spending and Use Accounts 2006 through 2015 report.[9]

Procedure codes for specialty outpatient BH service use included any social work or psychiatric services with the exception of psychiatric diagnostic evaluation codes, MH assessment and screening codes, family therapy codes, and unlisted psychiatric procedures, due to concerns of misspecification (see **Appendix A-2** and **Appendix A-3** for more detail).

This three-pronged approach for identifying a beneficiary with a BH diagnosis or BH-related service use is more inclusive than other potential methods of identification but is still consistent with approaches utilized in previous studies.[9,10] Using drug claims means that the study population also likely includes a significant number of adults without BH conditions, because a number of psychotropic medications have other indications and medical uses (e.g. SSRIs and SNRIs can be used to treat chronic pain, diazepam for muscle spasms, other benzodiazepines for periprocedural anxiety, etc.). We chose to include these individuals for two main reasons. First, a number of individuals who do have BH conditions may receive BH-related treatment without necessarily having a diagnosis on their claim, therefore relying on diagnosis alone omits certain beneficiaries who should be included. Secondly, existing research shows that a high majority of the medications included in this analysis are primarily used to treat relevant BH conditions.[11] We acknowledge that by choosing to use broader inclusion criteria through use of prescriptions and services, we will capture some individuals who use these medications for non-BH indications. Therefore, the study population should not be interpreted as being strictly limited to beneficiaries with BH conditions. **Exhibit 2-1** illustrates the percent of beneficiaries with any MH- or SUD-related diagnoses, procedures, or prescription drug use among our sample of the Medicare FFS population. It is important to note that in Exhibit 2-1, the

EXHIBIT 2-1 Number and Percent of Fee-For-Service Medicare Beneficiaries with Any Mental Health- or Substance Use Disorder-Related Diagnoses, Procedures, or Prescription Fills, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Total Medicare FFS Sample	25,546,400	25,554,668	25,650,564	100.0%	100.0%	100.0%
Diagnosis						
MH	6,253,033	6,498,045	6,563,671	24.5%	25.4%	25.6%
SUD	782,670	856,553	907,007	3.1%	3.4%	3.5%
Procedure						
MH	816,313	850,333	884,361	3.2%	3.3%	3.4%
SUD	12,877	13,254	13,474	0.1%	0.1%	0.1%
Prescription Drug*						
MH	5,982,329	6,014,891	6,085,414	23.4%	23.5%	23.7%
SUD	21,460	26,983	33,781	0.1%	0.1%	0.1%

*Percent of Medicare beneficiaries identified based on prescription drug fills was calculated using the full Medicare FFS population, not the Part D only population.

NOTE: Diagnosis, procedure, and prescription drug categories are not mutually exclusive.

categories are not mutually exclusive. Our three-pronged approach may have overidentified the population with a BH condition. **Exhibit 2-2** further illustrates the overlap we see in Exhibit 2-1, as it separates those individuals with a BH diagnosis or BH-related procedure from those identified only through Part D prescription fills.

We also identified specific MH and SUD diagnoses. We used diagnosis codes only to identify beneficiaries with depressive disorders, anxiety disorders, bipolar disorder, personality disorders, schizophrenia and other psychotic disorders, PTSD, eating disorders, and ADHD. To identify specific SUD categories, we used diagnosis codes for alcohol use disorder and drug use disorder. We also used a combination of diagnosis and procedure codes to specifically identify OUD from within the population of beneficiaries identified as having a drug use disorder diagnosis.

Outcome variables. The main outcomes of interest included all-cause and BH-specific annual Medicare spending and service utilization. Due to the nature of administrative data, we acknowledge that we cannot state that the Medicare spending is necessarily on people with BH conditions; rather we can state the amount spent on BH-related services and treatments. Specifically, spending and OOP payments per beneficiary per year (PBPY) were calculated as follows:

EXHIBIT 2-2 Number and Perfect of Fee-For-Service Medicare Beneficiaries with Any Mental Health- or Substance Use Disorder-Related Diagnoses and Procedures or with Any Mental Health- or Substance Use Disorder-Related Prescription Fills, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Total Medicare FFS Sample	25,546,400	25,554,668	25,650,564	100.0%	100.0%	100.0%
Mental Health						
Total Mental Health	8,478,599	8,620,135	8,791,157	33%	34%	34%
Diagnosis or Procedure	6,289,448	6,535,366	6,779,290	25%	26%	26%
Part D Only	2,189,151	2,084,769	2,011,867	9%	8%	8%
Substance Use						
Total Substance Use	793,454	869,626	922,862	3%	3%	4%
Diagnosis or Procedure	784,494	858,676	909,234	99%	99%	99%
Part D Only	8,960	10,950	13,628	1%	1%	1%

NOTE: When identifying the total number of beneficiaries with MH and SUD diagnoses or related service use, we included an indicator of beneficiaries identified through diagnosis or procedure code only. Those totals are reflected here. The number of people identified through Part D prescription fills only is the difference between the total number and the subgroup identified through diagnosis or procedure only.

- **Inpatient spending.** We used the inpatient file to identify acute and psychiatric inpatient admissions and summed the total claim payment amount. We defined MH and SUD specific inpatient spending as any inpatient spending with a principal diagnosis of a MH condition or SUD. We used the deductible and coinsurance payments to calculate OOP payments.
- **Outpatient spending.** We used the outpatient file and summed the total claim payment amount. We defined MH and SUD specific outpatient spending using any claim with a principal diagnosis of a MH condition or SUD. We calculated OOP payments by summing the beneficiary coinsurance and deductible amounts.*
- **Physician spending.** We defined physician spending as any Medicare spending on physician services. MH and SUD specific physician services were defined by whether there was a principal diagnosis of a MH condition or SUD. We calculated OOP payments by summing the deductible and coinsurance amounts.†
- **Part D drug spending.** We defined Part D prescription drug spending by summing the total drug cost amount. We defined MH condition and SUD specific prescription drug spending by whether the NDC corresponded with any psychotherapeutic drug class.‡ We used the patient pay amount to calculate OOP payments.
- **Total FFS spending.** We calculated total FFS spending as the sum of inpatient, outpatient, carrier, DME, home health, skilled nursing facility, and hospice service payments. We calculated MH and SUD specific totals as the sum of payments for all claims that had a MH- or SUD-related principal diagnosis.

We defined service utilization outcomes PBPY as follows (see Appendix A-1 for more detail):

- **Acute inpatient stays.** We used the inpatient file to count the number of admissions to an acute short-term hospital or critical access hospital. We defined MH- or SUD-related hospitalizations as any acute or psychiatric hospitalization with a principal diagnosis of a MH condition or SUD.
- **ED visits.** We used the outpatient file to identify the number of ED visits during the year that did not result in a hospitalization. We established that these visits did not result in a hospitalization by using the inpatient file and checking whether there was any corresponding admission date. We identified MH- and SUD-related ED visits using the principal diagnosis on the outpatient claim.
- **Physician Evaluation & Management visits (E&M§).** We calculated the number of visits with an E&M procedure code using the outpatient and carrier files. We included visits to Federally Qualified Health Centers (FQHC) and

* We added the beneficiary Part B revenue center deductible, beneficiary Part B coinsurance payment, and any blood deductible payments (e.g., payment for the first three units of blood delivered in an outpatient facility) from the outpatient files to calculate outpatient OOP payments.

† We used the carrier file and summed the line level payment amounts to calculate total physician spending. To calculate OOP spending , we combined the carrier file with the DME file to comprehensively capture OOP payments for Part B covered services. The DME files include Part B covered prescription drugs that are not self-administered and are delivered in a clinic or outpatient facility (e.g., some cancer drugs, injectable ESRD and osteoporosis drugs). We calculated OOP spending using the line-level deductible and coinsurance amount in each of the files.

‡ Prescription drug spending was calculated using the Part D Event (PDE) file.

§ Services provided by a physician or qualified medical provider that involve evaluating and managing new or established patients.

rural health centers (RHC). We identified MH- or SUD-related E&M visits as any claim with a principal diagnosis of MH condition or SUD.

- **Outpatient BH visits.** We calculated the number of outpatient MH- or SUD-related services using the principal diagnosis code for any visit to an outpatient facility or provider using the carrier and outpatient files.

Demographic variables. We also identified demographic characteristics such as age category (65 to 74; 75 to 84; 85 and older), sex (female or male), and race and ethnicity categories including White, Black, Asian, Hispanic, Native American, and Other. We defined dual Medicare and Medicaid eligibility as having at least 1 month of full-dual eligibility for Medicare and Medicaid during the year. We defined rurality categorically using Rural Urban Commuting Area codes.[12] We used beneficiary residential zip codes to group beneficiaries into urban, large rural, small rural, and isolated rural settings.

Statistical approach. We examined BH diagnosis and BH-related service use, both discrete and co-occurring, by year and, separately, by demographic characteristics. We present unadjusted mean trends in service utilization, Medicare spending, and types and intensity of utilization and spending among those with MH and, separately, SUD diagnoses or related service use. We present this information graphically and through tables with percentages, frequencies, means, and confidence intervals. We did not conduct statistical tests between years and groups because the large size of the sample would likely result in statistically significant differences for any observable differences in the means or percentages.

To compare the service utilization and spending experiences of those with and without a BH diagnosis or BH-related service use, we implemented propensity score methods to match the characteristics of the Medicare population with a BH diagnosis or BH-related service use with a comparison sample.[13] In order to account for observable differences between the BH and non-BH sample, we matched the BH population 1:1 with a non-BH sample based on age and sex. This approach produced standardized differences of less than 0.1 on age and sex between the BH and non-BH sample, the acceptable threshold for comparability between samples.[14]

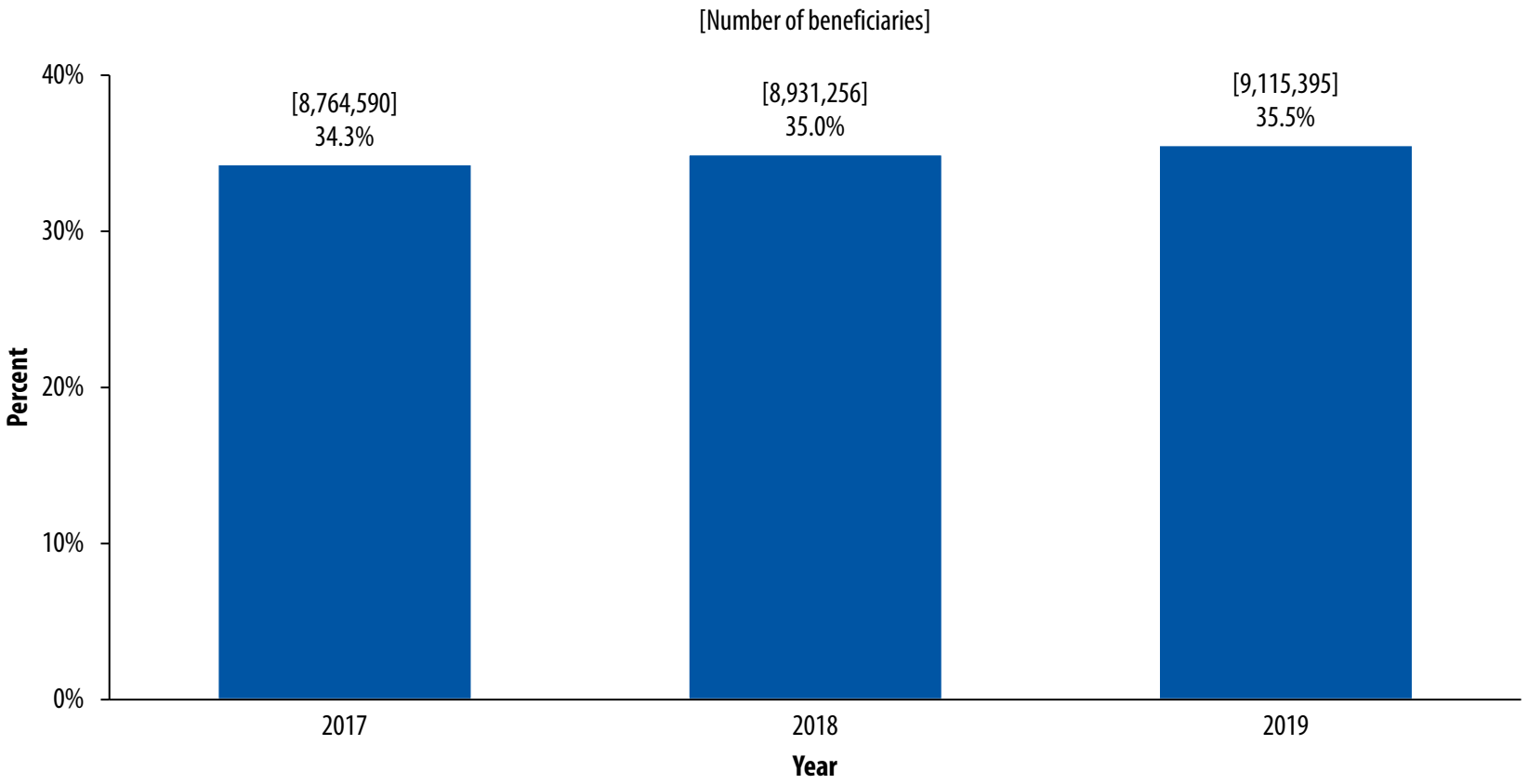
3 Rates of Behavioral Health Diagnosis and Related Service Use

This section presents claims-based rates of BH diagnoses and BH-related service use among Medicare FFS beneficiaries aged 65 and older from 2017 through 2019.

- The rate of BH diagnoses and BH-related service use among this population increased by year, with 34.3% of Medicare beneficiaries aged 65 and older having a BH diagnosis or BH-related service use in 2017, 35.0% in 2018, and 35.5% in 2019 (**Exhibit 3-1**).
- Among beneficiaries 85 years and older, 38.4% to 39.1% a BH diagnosis or BH-related service use , compared to 33.0% to 34.4% among beneficiaries ages 65 to 74 (**Exhibit 3-2**).
- Beneficiaries who were female, non-Hispanic White, and dual-eligible were most likely to have a BH diagnosis or BH-related service use (**Exhibit 3-2**).
- Rates of BH diagnoses and BH-related service use were driven by diagnoses and service use related to MH conditions (33.2% to 34.3%) (**Exhibit 3-3**). Beneficiaries who were female and White were most likely to have a MH diagnosis or MH-related service use (**Exhibit 3-4**). There were only moderate increases in the rates of SUD diagnoses and SUD-related service use over time (3.1% to 3.6%) (**Exhibit 3-6**); Male and American Indian/Alaska Native beneficiaries were most likely to have an SUD diagnosis or SUD-related service use (**Exhibit 3-7**).
- Depressive disorders and anxiety disorders were the most common condition-specific MH conditions for which beneficiaries received a diagnosis or MH-related service and increased in prevalence in the 2017 to 2019 period (**Exhibit 3-5**).
- Medicare beneficiaries aged 65 and older with a diagnosis of or use of service related to a drug use disorder (excludes AUD) increased each year from 2.0% in 2017 to 2.4% in 2019 (**Exhibit 3-8**).

- Rates of diagnosis of or service use related to a co-occurring MH condition and SUD increased over time (2.0% to 2.3%) and was relatively high considering SUD prevalence levels (**Exhibit 3-9**). Co-occurring disorders were more prevalent among beneficiaries ages 65–74 than older beneficiaries (**Exhibit 3-10**).

EXHIBIT 3-1 Rates of Behavioral Health Diagnosis and Behavioral Health-Related Service Use Among Medicare Beneficiaries 65 Years and Older, 2017–2019



NOTE: Beneficiaries were defined as having a BH diagnosis or BH-related service use if they had any MH- or SUD-related diagnosis, procedure, or NDCs during the year. Beneficiaries with any BH diagnosis or BH-related service use were matched 1:1 among those without based on age and sex. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

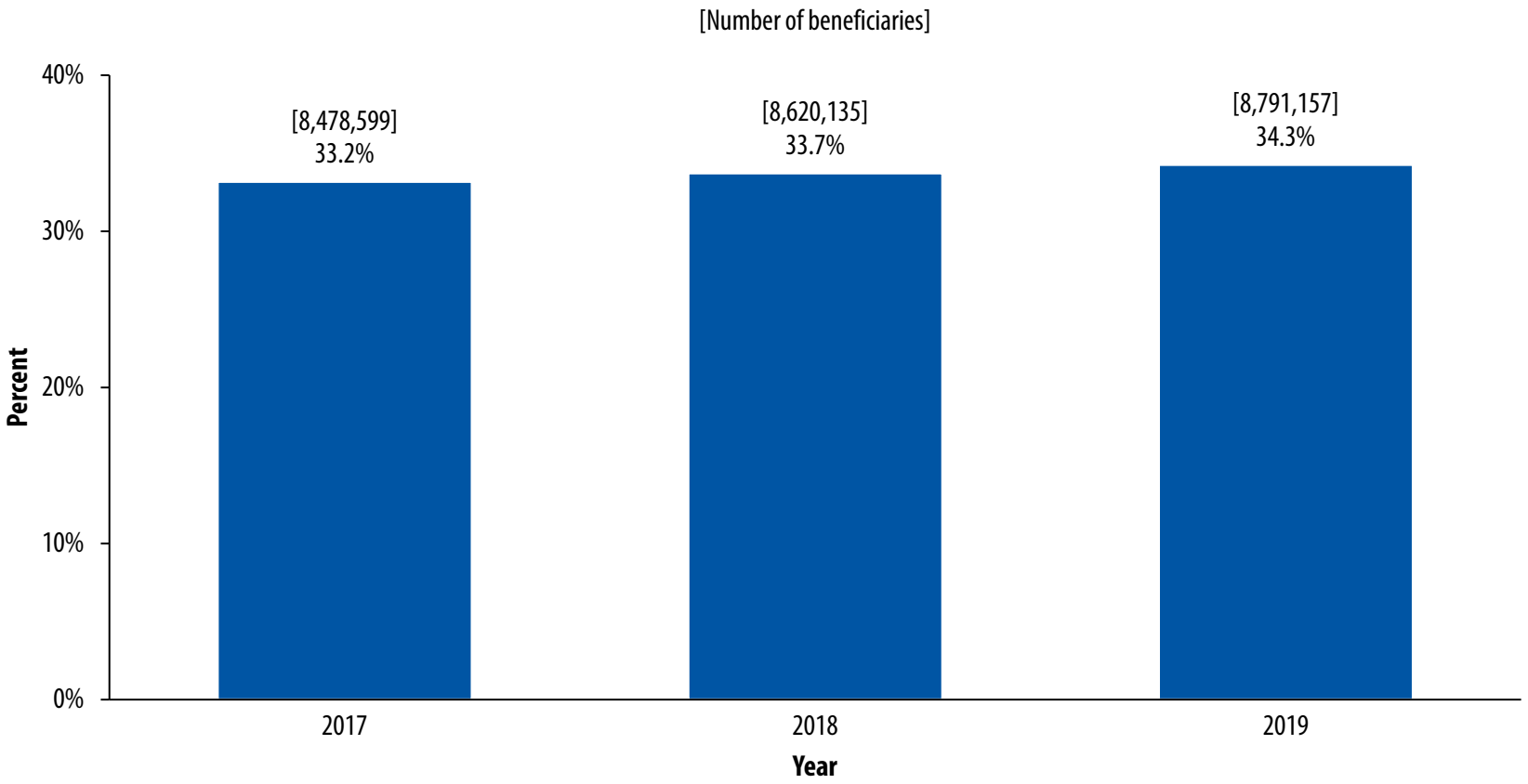
EXHIBIT 3-2 Rates of Behavioral Health Diagnosis and Behavioral Health-Related Service Use Among Medicare Beneficiaries 65 Years and Older, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	4,428,061	4,545,960	4,669,242	33.0%	33.8%	34.4%
75–84	2,872,068	2,960,655	3,035,042	34.5%	35.2%	35.9%
85+	1,464,461	1,424,641	1,411,111	38.4%	38.7%	39.1%
Sex						
Female	5,915,295	5,996,442	6,093,350	41.1%	41.8%	42.4%
Male	2,849,295	2,934,814	3,022,045	25.5%	26.2%	26.8%
Race/ethnicity						
Non-Hispanic White	7,503,412	7,646,615	7,806,473	35.7%	36.4%	37.1%
Black/African American	510,822	505,921	503,351	27.8%	28.2%	28.5%
Hispanic	403,669	402,663	403,835	31.4%	31.6%	31.7%
Asian/Pacific Islander	151,566	158,071	163,182	21.9%	22.3%	22.6%
American Indian/Alaska Native	37,569	38,916	39,844	31.5%	32.1%	33.1%
Other	50,731	52,541	54,546	25.1%	25.4%	25.9%
Unknown	106,821	126,529	144,164	27.4%	28.4%	29.1%
Dual Status						
Non-Dual Eligible	7,424,665	7,626,726	7,841,146	32.0%	32.8%	33.5%
Dual Eligible	1,339,925	1,304,530	1,274,249	56.3%	56.3%	56.6%
Rurality						
Urban	6,832,952	6,975,261	7,129,162	34.4%	35.1%	35.7%
Large rural city/town	1,005,459	1,017,559	1,033,312	34.8%	35.3%	35.8%
Small rural town	544,002	551,174	557,687	34.3%	34.9%	35.3%
Isolated town	381,352	386,553	394,628	32.0%	32.4%	32.9%

NOTE: Beneficiaries were defined as having a BH diagnosis or BH-related service use if they had any MH- or SUD-related diagnosis, procedure, or NDCs during the year. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

EXHIBIT 3-3 Number and Percent of Medicare Beneficiaries 65 Years and Older with a Mental Health Diagnosis or Mental Health-Related Service Use, 2017–2019



NOTE: Beneficiaries were included if they had any MH related diagnosis, procedure, or NDCs during the year. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

EXHIBIT 3-4 Medicare Beneficiaries 65 Years and Older with a Mental Health Diagnosis or Mental Health-Related Service Use, by Demographic Characteristic, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	4,254,160	4,357,336	4,472,103	31.7%	32.4%	32.9%
75–84	2,786,731	2,866,502	2,936,974	33.4%	34.1%	34.7%
85+	1,437,708	1,396,297	1,382,080	37.7%	37.9%	38.3%
Sex						
Female	5,806,675	5,878,165	5,971,013	40.3%	40.9%	41.6%
Male	2,671,924	2,741,970	2,820,144	24.0%	24.5%	25.0%
Race/ethnicity						
Non-Hispanic White	7,280,803	7,403,391	7,553,589	34.6%	35.3%	35.9%
Black/African American	476,866	470,601	467,156	25.9%	26.2%	26.5%
Hispanic	388,333	386,321	386,463	30.2%	30.3%	30.3%
Asian/Pacific Islander	146,108	151,657	156,242	21.1%	21.4%	21.6%
American Indian/Alaska Native	34,874	35,936	36,707	29.2%	29.7%	30.5%
Other	48,824	50,530	52,406	24.2%	24.4%	24.8%
Unknown	102,791	121,699	138,594	26.4%	27.3%	28.0%
Dual Status						
Non-Dual Eligible	7,174,476	7,353,797	7,557,222	31.0%	31.6%	32.3%
Dual Eligible	1,304,123	1,266,338	1,233,935	54.8%	54.7%	54.8%
Rurality						
Urban	6,610,977	6,733,821	6,877,500	33.3%	33.8%	34.4%
Large rural city/town	972,117	981,669	996,020	33.7%	34.1%	34.6%
Small rural town	526,461	531,790	537,276	33.2%	33.7%	34.0%
Isolated town	368,251	372,171	379,775	30.9%	31.2%	31.6%

NOTE: Beneficiaries were included if they had any MH related diagnosis, procedure, or NDCs during the year. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

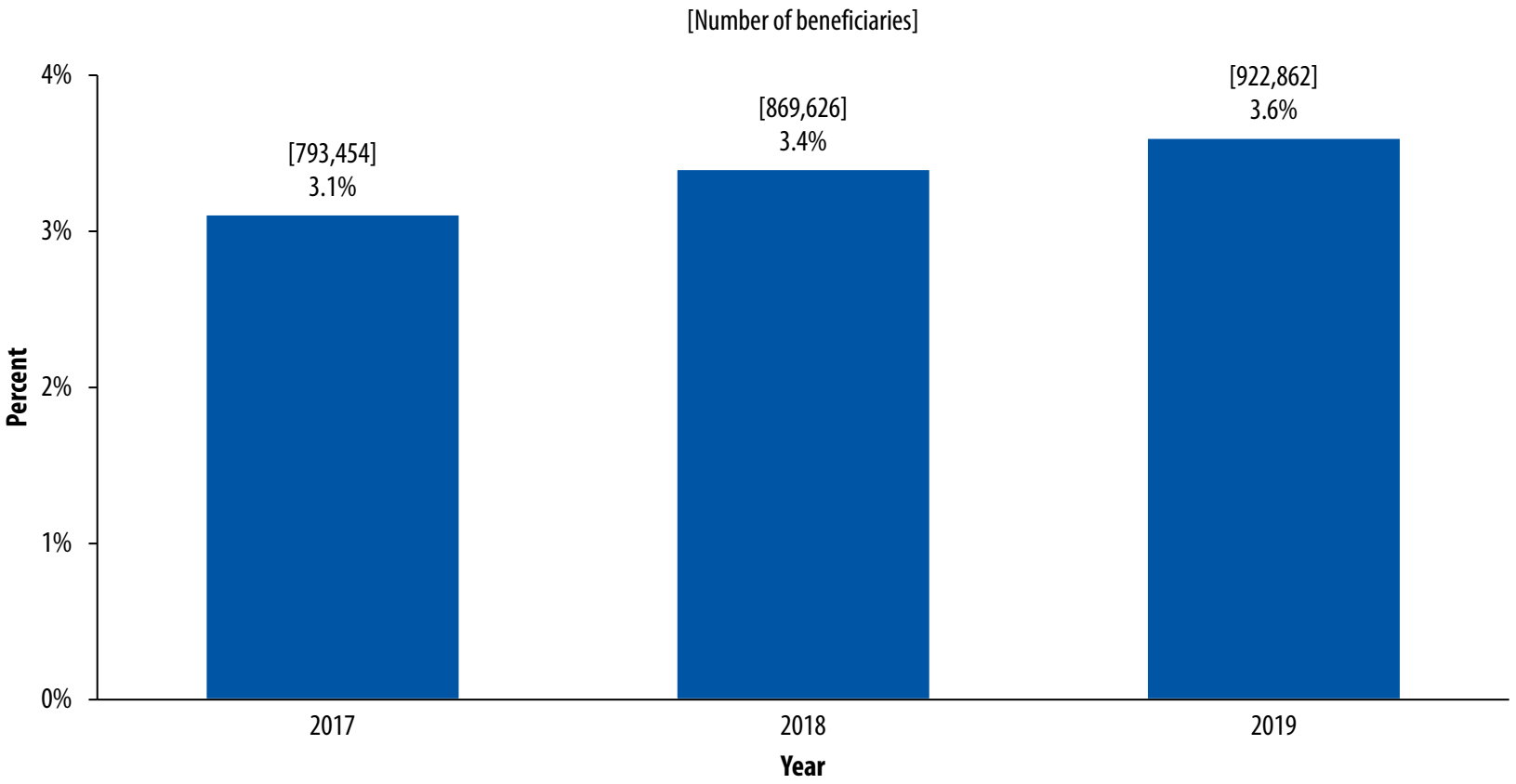
EXHIBIT 3-5 Medicare Beneficiaries 65 and Older with a Mental Health Diagnosis, by Condition, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Disorder						
ADHD	62,202	70,355	79,102	0.2%	0.3%	0.3%
Anxiety Disorders	3,802,906	4,006,671	4,192,954	14.9%	15.7%	16.3%
Bipolar	416,824	442,112	467,499	1.6%	1.7%	1.8%
Depressive Disorders	3,815,049	3,988,050	4,195,101	14.9%	15.6%	16.4%
Eating Disorders	323,145	319,704	321,152	1.3%	1.3%	1.3%
Personality Disorders	303,301	307,346	303,514	1.2%	1.2%	1.2%
PTSD	118,128	133,551	150,903	0.5%	0.5%	0.6%
Schizophrenia and Other Psychotic Disorders	406,027	392,297	382,475	1.6%	1.5%	1.5%

NOTE: Beneficiaries were defined as having a specific MH condition if they had any MH related diagnosis only. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

EXHIBIT 3-6 Number and Percent of Medicare Beneficiaries 65 Years and Older with a Substance Use Disorder Diagnosis or Substance Use Disorder-Related Service Use, 2017–2019



NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

EXHIBIT 3-7 Medicare Beneficiaries 65 Years and Older with a Substance Use Disorder Diagnosis or Substance Use Disorder-Related Service Use , by Demographic Characteristic, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	492,115	537,585	569,146	3.7%	4.0%	4.2%
75–84	229,833	255,787	273,036	2.8%	3.0%	3.2%
85+	71,506	76,254	80,680	1.9%	2.1%	2.2%
Sex						
Female	404,698	444,500	471,501	2.8%	3.1%	3.3%
Male	388,756	425,126	451,361	3.5%	3.8%	4.0%
Race/ethnicity						
Non-Hispanic White	648,746	712,878	756,431	3.1%	3.4%	3.6%
Black/African American	73,652	76,786	79,549	4.0%	4.3%	4.5%
Hispanic	38,926	42,604	45,732	3.0%	3.3%	3.6%
Asian/Pacific Islander	11,552	13,494	14,553	1.7%	1.9%	2.0%
American Indian/Alaska Native	6,217	7,034	7,302	5.2%	5.8%	6.1%
Other	4,611	4,959	5,385	2.3%	2.4%	2.6%
Unknown	9,750	11,871	13,910	2.5%	2.7%	2.8%
Dual Status						
Non-Dual Eligible	647,368	714,536	760,507	2.8%	3.1%	3.3%
Dual Eligible	146,086	155,090	162,355	6.1%	6.7%	7.2%
Rurality						
Urban	620,997	682,585	727,158	3.1%	3.4%	3.6%
Large rural city/town	91,466	98,534	103,222	3.2%	3.4%	3.6%
Small rural town	47,449	51,803	54,302	3.0%	3.3%	3.4%
Isolated town	33,479	36,647	38,125	2.8%	3.1%	3.2%

NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

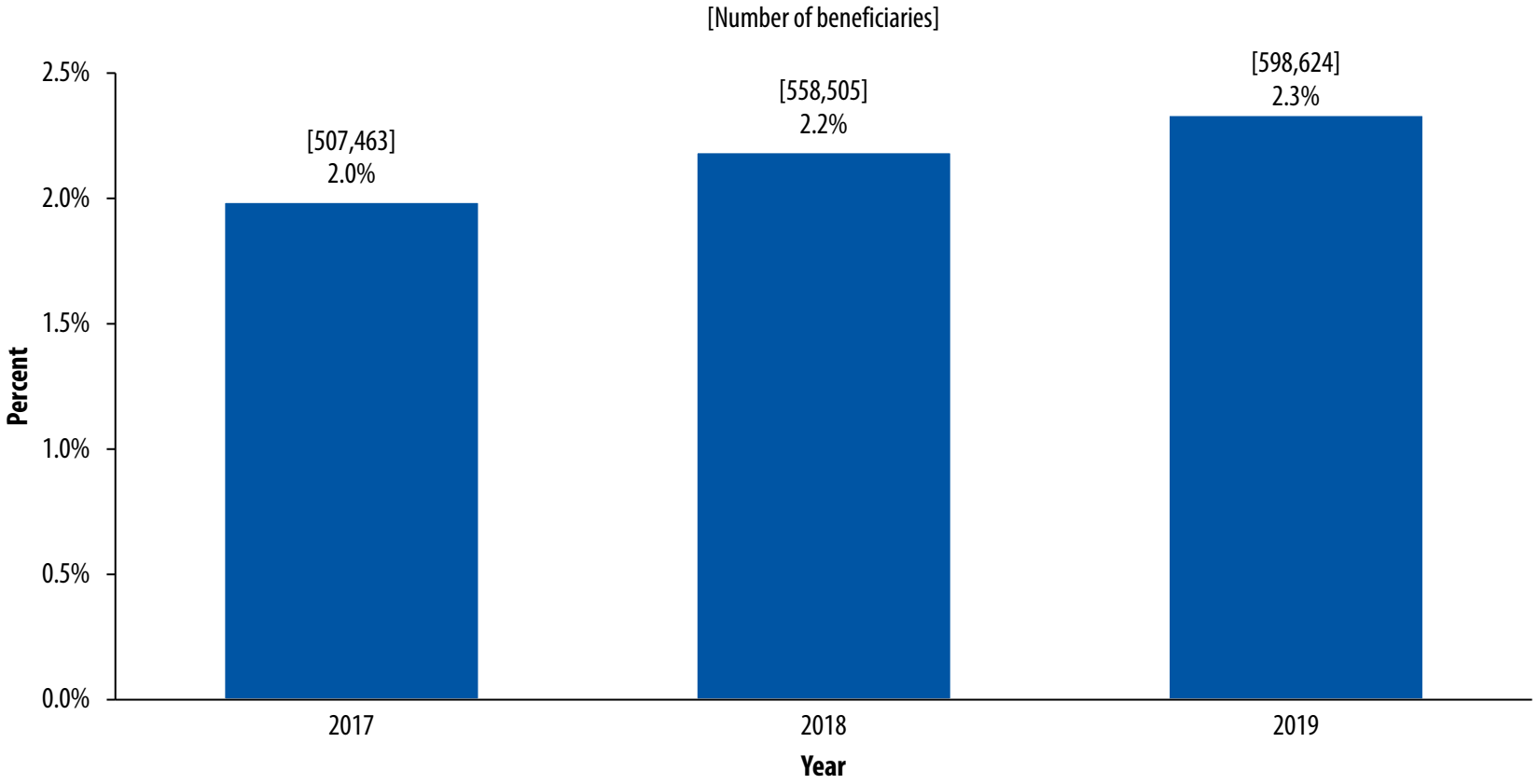
EXHIBIT 3-8 Medicare Beneficiaries 65 Years and Older with a Substance Use Disorder Diagnosis or Substance Use Disorder-Related Service Use, by Condition, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Disorder						
Alcohol Use Disorder	248,639	267,585	277,275	1.0%	1.0%	1.1%
Drug Use Disorder	509,284	578,789	627,498	2.0%	2.3%	2.4%
Opioid Use Disorder	302,455	323,246	336,932	1.2%	1.3%	1.3%

NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. Prevalence estimates for drug use disorders included beneficiaries with OUD. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

EXHIBIT 3-9 Number and Percent of Medicare Beneficiaries 65 Years and Older with a Co-Occurring Mental Health and Substance Use Disorder Diagnosis or Co-Occurring Mental Health and Substance Use Disorder-Related Service Use, 2017–2019



NOTE: Beneficiaries were included if they had both MH- and SUD-related diagnosis, procedure, or NDCs during the year. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

EXHIBIT 3-10 Medicare Beneficiaries 65 Years and Older with a Co-Occurring Mental Health and Substance Use Disorder Diagnosis or Co-Occurring Mental Health and Substance Use Disorder-Related Service Use, by Demographic Characteristic, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	318,214	348,961	372,007	2.4%	2.6%	2.7%
75–84	144,496	161,634	174,968	1.7%	1.9%	2.1%
85+	44,753	47,910	51,649	1.2%	1.3%	1.4%
Sex						
Female	296,078	326,223	349,164	2.1%	2.3%	2.4%
Male	211,385	232,282	249,460	1.9%	2.1%	2.2%
Race/ethnicity						
Non-Hispanic White	426,137	469,654	503,547	2.0%	2.2%	2.4%
Black/African American	39,696	41,466	43,354	2.2%	2.3%	2.5%
Hispanic	23,590	26,262	28,360	1.8%	2.1%	2.2%
Asian/Pacific Islander	6,094	7,080	7,613	0.9%	1.0%	1.1%
American Indian/Alaska Native	3,522	4,054	4,165	3.0%	3.3%	3.5%
Other	2,704	2,948	3,245	1.3%	1.4%	1.5%
Unknown	5,720	7,041	8,340	1.5%	1.6%	1.7%
Dual Status						
Non-Dual Eligible	397,179	441,607	476,583	1.7%	1.9%	2.0%
Dual Eligible	110,284	116,898	122,041	4.6%	5.0%	5.4%
Rurality						
Urban	399,022	441,145	475,496	2.0%	2.2%	2.4%
Large rural city/town	58,124	62,644	65,930	2.0%	2.2%	2.3%
Small rural town	29,908	32,419	33,891	1.9%	2.1%	2.1%
Isolated town	20,378	22,265	23,272	1.7%	1.9%	1.9%

NOTE: Beneficiaries were included if they had both MH- and SUD-related diagnosis, procedure, or NDCs during the year. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare FFS claims and the Medicare Summary Beneficiary Files.

4 Health Care Service Utilization

This section presents health care utilization for Medicare FFS beneficiaries aged 65 and older with a BH diagnosis or BH-related service use from 2017 through 2019. We present MH- and SUD-specific service utilization broken out by demographic characteristics. We also compare service utilization rates and percentages among older adults of similar age and sex with and without any BH diagnosis or BH-related service use. Selected highlights are below.

- Nearly all older adults we identified as having a MH or SUD diagnosis or using MH- or SUD-related service had a physician E&M visit during the year (**Exhibit 4-1**).
- Many older adults who had a MH diagnosis or used MH-related services accessed MH-related outpatient services (27.4% to 28.2%), including MH-related E&M visits (20.1% to 20.9%). A majority of older adults with a MH diagnosis or MH-related service use received MH related prescription drugs (70.6% to 69.2%) (**Exhibit 4-2**). By contrast, only 2.7% to 3.7% of older adults with a SUD diagnosis or SUD-related service use had a SUD-related prescription drug fill (**Exhibit 4-11**). It is worth noting that SUD-related prescription drugs primarily treat AUD and OUD.
- Although very few older adults who had a MH diagnosis or used MH-related services had a MH-related hospitalization (**Exhibit 4-2**), the average length of stay (LOS) during these hospitalizations was approximately 15.5 days (**Exhibit 4-9**). This is in contrast to an average LOS of 7.5 days for SUD- related hospitalizations (**Exhibit 4-18**).
- A substantial proportion of older adults with a MH or SUD diagnosis or who used MH- or SUD-related services had any acute hospitalization or any ED visit from 2017 to 2019 (**Exhibit 4-1** and **Exhibit 4-10**). However, less than 1% of beneficiaries with a MH diagnosis or use of MH-related services had a MH-related inpatient stay or ED visit, 2.5% to 3.0% of older adults with a SUD diagnosis or use of SUD-related services

had a SUD-related hospitalization, and 3.0% to 3.5% had a SUD-related ED visit (**Exhibit 4-2** and **Exhibit 4-11**)

- Among beneficiaries with a BH diagnosis or any BH-related service use who had any MH- or SUD-related physician E&M visit, the average number of MH- and SUD-related physician E&M visits was approximately 3 and 2.5 visits per year, respectively (**Exhibit 4-8** and **Exhibit 4-17**).
- Older adults with a BH diagnosis or any BH-related service use were more likely to have a physician E&M visit, an acute hospitalization, an ED visit, and any prescription drug fill than older adults without (**Exhibit 4-19**). Among beneficiaries with 12 months of Part D enrollment, virtually all older adults with a BH diagnosis or any BH-related service use had a prescription drug fill during the year (**Exhibit 4-20**).

4.1 Health Care Service Utilization among Beneficiaries with a Mental Health Diagnosis or any Mental Health-Related Service Use

EXHIBIT 4-1 Number and Percent of Beneficiaries with a Mental Health Diagnosis or any Mental Health-Related Service Use Who Had Any Service Utilization, by Service Type, 2017–2019

Service Category	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Any Physician E&M Visits	8,354,218	8,492,557	8,662,367	98.5%	98.5%	98.5%
Any Acute Inpatient Stay	2,133,470	2,094,434	2,086,405	25.2%	24.3%	23.7%
Any Outpatient ED Visits	2,914,518	2,923,864	2,964,730	34.4%	33.9%	33.7%
Any Prescription Drug Fills	6,911,330	7,012,911	7,154,595	81.5%	81.4%	81.4%

NOTE: Beneficiaries were included if they had any MH related diagnosis, procedure, or NDCs during the year. Physician E&M services are defined as having any E&M code or visit to FQHC or RHC. Acute inpatient admissions include any admission to a short-term acute hospital. Outpatient ED visits are any ED visit that does not end in a hospitalization. Prescription drug fills includes include any Part D event with a service date during the year. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. Any service utilization includes both BH and non-BH service utilization.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-2 Number and Percent of Beneficiaries with a Mental Health Diagnosis or any Mental Health-Related Service Use Who Had Any Mental Health-Related Service Utilization, by Service Type, 2017–2019

Service Type	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
MH-Related Outpatient Services	2,326,867	2,399,759	2,478,667	27.4%	27.8%	28.2%
MH-Related Physician E&M Visits	1,706,233	1,766,438	1,837,616	20.1%	20.5%	20.9%
MH-Related Inpatient Stays	60,537	58,358	56,967	0.7%	0.7%	0.6%
MH-Related ED Visits	67,320	66,116	63,560	0.8%	0.8%	0.7%
MH-Related Prescription Drug Fills	5,982,330	6,014,872	6,085,415	70.6%	69.8%	69.2%

NOTE: Beneficiaries were included if they had any MH related diagnosis, procedure, or NDCs during the year. MH-related outpatient services are defined as any non-ED claim in the outpatient or carrier files with a principal diagnosis of a MH condition. MH-related physician E&M services are defined as having any E&M code or visit to FQHC or RHC with a principal diagnosis of any MH condition. MH-related inpatient services include any admission to a short-term or psychiatric hospital with a principal diagnosis of a MH condition. MH-related outpatient ED visits are any ED visit that does not end in a hospitalization with a principal diagnosis of a MH condition. MH-related prescription drug use was defined based on having any MH-related psychotherapeutic Part D drug event. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-3 Number and Percent of Beneficiaries with a Mental Health Condition Who Had Any Mental Health-Related Physician Evaluation & Management Visits, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	885,886	920,400	961,994	20.8%	21.1%	21.5%
75–84	531,039	556,503	581,491	19.1%	19.4%	19.8%
85+	289,267	289,508	294,120	20.1%	20.7%	21.3%
Sex						
Female	1,212,143	1,251,049	1,299,054	20.9%	21.3%	21.8%
Male	494,065	515,326	538,535	18.5%	18.8%	19.1%
Race/ethnicity						
Non-Hispanic White	1,459,655	1,510,662	1,571,902	20.0%	20.4%	20.8%
Black/African American	100,266	102,605	105,484	21.0%	21.8%	22.6%
Hispanic	82,031	82,796	84,786	21.1%	21.4%	21.9%
Asian/Pacific Islander	26,691	28,205	29,066	18.3%	18.6%	18.6%
American Indian/Alaska Native	7,479	7,904	8,273	21.4%	22.0%	22.5%
Other	10,047	10,292	10,904	20.6%	20.4%	20.8%
Unknown	20,020	23,894	27,180	19.5%	19.6%	19.6%
Dual Status						
Non-Dual Eligible	1,297,217	1,348,686	1,413,654	18.1%	18.3%	18.7%
Dual Eligible	408,947	417,689	423,980	31.4%	33.0%	34.4%
Rurality						
Urban	1,348,970	1,397,403	1,455,760	20.4%	20.8%	21.2%
Large rural city/town	186,578	192,103	199,931	19.2%	19.6%	20.1%
Small rural town	100,807	104,725	107,380	19.1%	19.7%	20.0%
Isolated town	69,703	72,060	74,413	18.9%	19.4%	19.6%

NOTE: Beneficiaries were defined as having a MH condition if they had any MH-related diagnosis, procedure, or NDCs during the year. MH related physician E&M was defined as any service E&M visits with a principal diagnosis of a MH condition. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-4 Number and Percent of Beneficiaries with a Mental Health Condition Who Had Any Mental Health-Related Outpatient Visits, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	1,195,376	1,241,318	1,289,486	28.1%	28.5%	28.8%
75–84	726,083	758,218	786,463	26.1%	26.5%	26.8%
85+	405,405	400,221	402,780	28.2%	28.7%	29.1%
Sex						
Female	1,630,050	1,677,393	1,730,638	28.1%	28.5%	29.0%
Male	696,784	722,399	748,071	26.1%	26.3%	26.5%
Race/ethnicity						
Non-Hispanic White	1,983,072	2,044,965	2,113,796	27.2%	27.6%	28.0%
Black/African American	143,961	146,178	147,911	30.2%	31.1%	31.7%
Hispanic	111,059	111,871	113,454	28.6%	29.0%	29.4%
Asian/Pacific Islander	36,502	38,164	39,417	25.0%	25.2%	25.2%
American Indian/Alaska Native	9,562	10,121	10,521	27.4%	28.2%	28.7%
Other	13,832	14,319	14,971	28.3%	28.3%	28.6%
Unknown	28,846	34,134	38,646	28.1%	28.0%	27.9%
Dual Status						
Non-Dual Eligible	1,794,265	1,864,335	1,942,130	25.0%	25.4%	25.7%
Dual Eligible	532,604	535,395	536,540	40.8%	42.3%	43.5%
Rurality						
Urban	1,869,254	1,927,826	1,993,100	28.3%	28.6%	29.0%
Large rural city/town	241,241	248,038	256,047	24.8%	25.3%	25.7%
Small rural town	127,993	132,612	135,480	24.3%	24.9%	25.2%
Isolated town	88,192	91,119	93,934	23.9%	24.5%	24.7%

NOTE: Beneficiaries were defined as having a MH condition if they had any MH-related diagnosis, procedure, or NDCs during the year. MH related utilization was defined as having any service with a principal diagnosis of any MH condition. MH related prescription drug use was defined based on NDCs. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-5 Number and Percent of Beneficiaries with a Mental Health Diagnosis or any Mental Health-Related Service Use Who Had Any Mental Health-Related Inpatient Stays, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	35,352	34,554	34,077	0.8%	0.8%	0.8%
75–84	18,337	17,629	17,181	0.7%	0.6%	0.6%
85+	6,858	6,186	5,694	0.5%	0.4%	0.4%
Sex						
Female	38,266	36,562	35,348	0.7%	0.6%	0.6%
Male	22,230	21,854	21,631	0.8%	0.8%	0.8%
Race/ethnicity						
Non-Hispanic White	49,145	47,382	46,077	0.7%	0.6%	0.6%
Black/African American	6,342	6,024	5,844	1.3%	1.3%	1.3%
Hispanic	3,056	2,882	2,852	0.8%	0.7%	0.7%
Asian/Pacific Islander	871	898	905	0.6%	0.6%	0.6%
American Indian/Alaska Native	259	276	276	0.7%	0.8%	0.8%
Other	314	340	337	0.6%	0.7%	0.6%
Unknown	538	582	656	0.5%	0.5%	0.5%
Dual Status						
Non-Dual Eligible	39,316	38,240	37,408	0.5%	0.5%	0.5%
Dual Eligible	21,166	20,147	19,546	1.6%	1.6%	1.6%
Rurality						
Urban	48,062	46,396	45,529	0.7%	0.7%	0.7%
Large rural city/town	6,727	6,508	6,195	0.7%	0.7%	0.6%
Small rural town	3,738	3,531	3,379	0.7%	0.7%	0.6%
Isolated town	1,959	1,976	1,899	0.5%	0.5%	0.5%

NOTE: Beneficiaries were included if they had any MH-related diagnosis, procedure, or NDCs during the year. MH-related outpatient services are defined as any non-ED claim in the outpatient or carrier files with a principal diagnosis of a MH condition. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-6 Number and Percentage of Beneficiaries with a Mental Health Diagnosis or any Mental Health-Related Service Use Who Had Any Mental Health-Related Emergency Department Visits, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	34,586	33,987	32,602	0.8%	0.8%	0.7%
75–84	22,155	22,015	21,117	0.8%	0.8%	0.7%
85+	10,582	10,053	9,854	0.7%	0.7%	0.7%
Sex						
Female	46,337	45,203	43,350	0.8%	0.8%	0.7%
Male	21,028	20,894	20,220	0.8%	0.8%	0.7%
Race/ethnicity						
Non-Hispanic White	54,752	53,675	51,515	0.8%	0.7%	0.7%
Black/African American	5,899	5,690	5,447	1.2%	1.2%	1.2%
Hispanic	4,582	4,423	4,247	1.2%	1.1%	1.1%
Asian/Pacific Islander	847	914	903	0.6%	0.6%	0.6%
American Indian/Alaska Native	402	422	412	1.2%	1.2%	1.1%
Other	368	411	416	0.8%	0.8%	0.8%
Unknown	516	517	601	0.5%	0.4%	0.4%
Dual Status						
Non-Dual Eligible	50,652	50,153	48,140	0.7%	0.7%	0.6%
Dual Eligible	16,680	15,956	15,424	1.3%	1.3%	1.3%
Rurality						
Urban	49,648	48,753	47,111	0.8%	0.7%	0.7%
Large rural city/town	8,905	8,776	8,297	0.9%	0.9%	0.8%
Small rural town	5,507	5,291	4,991	1.0%	1.0%	0.9%
Isolated town	3,303	3,230	3,175	0.9%	0.9%	0.8%

NOTE: Beneficiaries were included if they had any MH-related diagnosis, procedure, or NDCs during the year. MH-related outpatient ED visits are any ED visit that does not end in a hospitalization with a principal diagnosis of a MH condition. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-7 Number and Percent of Beneficiaries with a Mental Health Diagnosis or any Mental Health-Related Service Use Who Had Any Mental Health-Related Prescription Drug Fills, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	3,059,081	3,099,417	3,156,231	71.9%	71.1%	70.6%
75–84	1,957,623	1,993,079	2,027,217	70.2%	69.5%	69.0%
85+	965,608	922,366	901,959	67.2%	66.1%	65.3%
Sex						
Female	4,183,129	4,184,901	4,212,609	72.0%	71.2%	70.6%
Male	1,799,193	1,829,991	1,872,773	67.3%	66.7%	66.4%
Race/ethnicity						
Non-Hispanic White	5,168,642	5,205,694	5,276,711	71.0%	70.3%	69.9%
Black/African American	307,312	294,003	284,180	64.4%	62.5%	60.8%
Hispanic	277,810	270,278	265,145	71.5%	70.0%	68.6%
Asian/Pacific Islander	100,290	102,011	103,384	68.6%	67.3%	66.2%
American Indian/Alaska Native	20,936	21,250	21,730	60.0%	59.1%	59.2%
Other	31,899	32,436	33,230	65.3%	64.2%	63.4%
Unknown	75,446	89,235	101,034	73.4%	73.3%	72.9%
Dual Status						
Non-Dual Eligible	4,746,262	4,830,615	4,950,913	67.7%	67.1%	66.8%
Dual Eligible	1,236,094	1,184,304	1,134,478	84.3%	83.3%	82.5%
Rurality						
Urban	4,611,487	4,647,683	4,706,273	69.8%	69.0%	68.4%
Large rural city/town	709,120	707,371	712,603	72.9%	72.1%	71.5%
Small rural town	389,992	388,584	390,777	74.1%	73.1%	72.7%
Isolated town	271,191	270,803	275,409	73.6%	72.8%	72.5%

NOTE: Beneficiaries were included if they had any MH-related diagnosis, procedure, or NDCs during the year. MH-related prescription drug use was defined based on having any MH-related psychotherapeutic Part D drug event. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

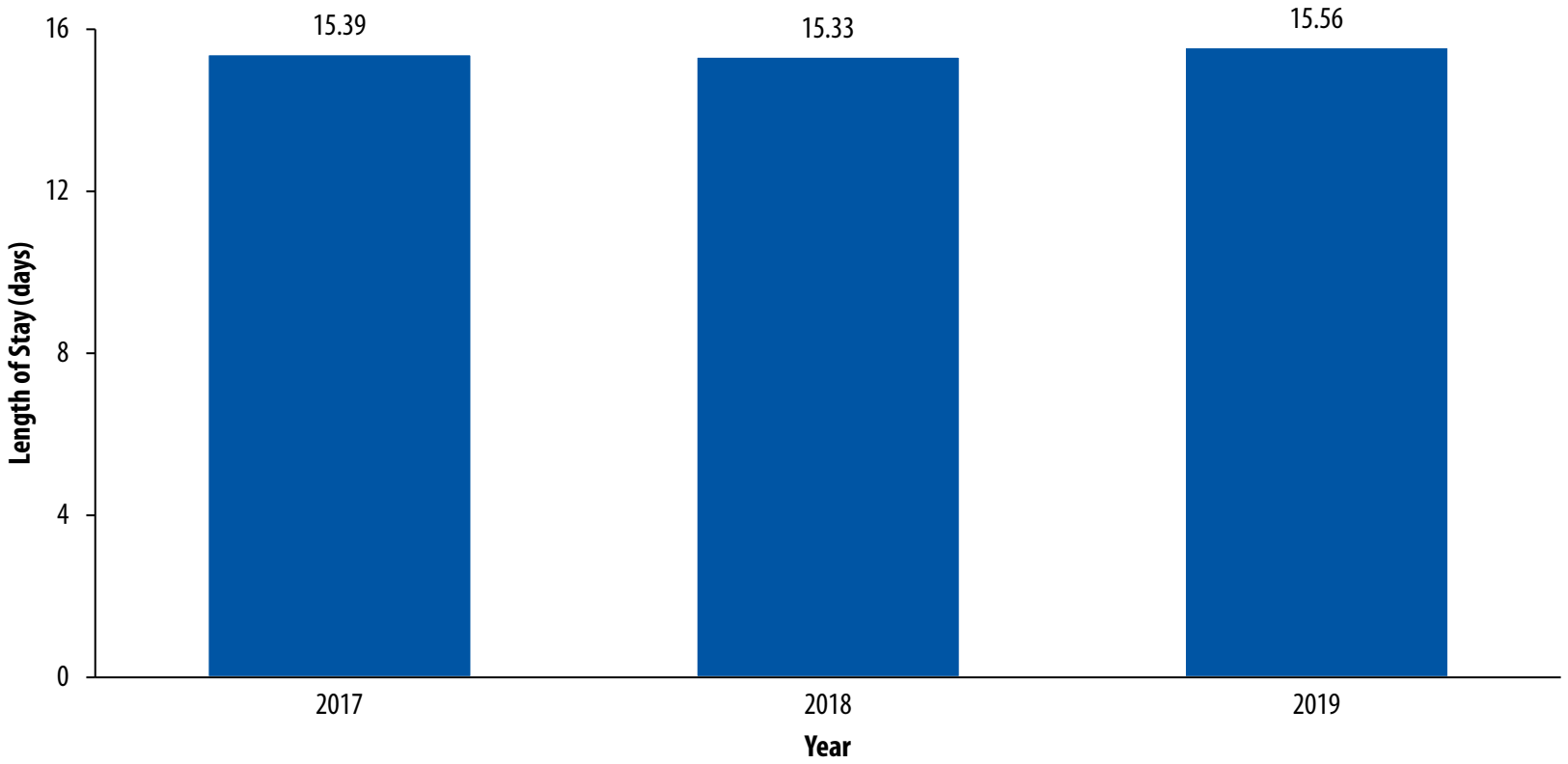
EXHIBIT 4-8 Average Annual Service Utilization Among Beneficiaries with a Mental Health Diagnosis or any Mental Health-Related Service Use Who Had Any Utilization by Service Type, 2017–2019

Service Type	All-cause						MH-related					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Acute Inpatient Stays	1.62	1.14	1.62	1.14	1.62	1.15	1.27	0.71	1.27	0.72	1.28	0.74
ED Visits	1.83	1.82	1.82	1.79	1.82	1.78	1.20	0.96	1.20	0.92	1.21	1.00
Physician E&M Visits	12.93	9.64	12.98	9.79	13.10	9.97	2.94	3.33	2.98	3.38	3.06	3.52

NOTE: Beneficiaries were included if they had any MH related diagnosis, procedure, or NDCs during the year. Physician E&M services are defined as having any E&M code or visit to FQHC or RHC. Inpatient services include any admission to a short-term acute or psychiatric hospital. Outpatient ED visits are any ED visit that does not end in a hospitalization. MH related utilization was defined as having any service with a principal diagnosis of any MH condition. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-9 Average Length of Mental Health-Related Inpatient Stay, 2017–2019



NOTE: Beneficiaries were included if they had any MH related diagnosis, procedure, or NDCs during the year. Length of MH-related inpatient stay includes number of days in acute or psychiatric hospital. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

4.2 Health Care Service Utilization among Individuals with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use

EXHIBIT 4-10 Number and Percent of Beneficiaries with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use Who Had Any Service Utilization, by Service Type, 2017–2019

Service Category	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Physician E&M Visits	771,372	846,042	898,886	97.2%	97.3%	97.4%
Acute Inpatient Stays	344,653	357,703	368,342	43.4%	41.1%	39.9%
ED Visits	369,250	390,279	406,622	46.5%	44.9%	44.1%
Prescription Drug Fills	586,926	646,054	690,522	74.0%	74.3%	74.8%

NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. Physician E&M services are defined as having any E&M code or visit to FQHC or RHC. Acute inpatient admissions include any admission to a short-term acute or psychiatric hospital. Outpatient ED visits are any ED visit that does not end in a hospitalization. Prescription drug fills includes include any Part D event with a service date during the year. SUD-related utilization was defined as having any service with a principal diagnosis of any SUD. SUD-related prescription drug use was defined based on NDCs. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. Any service utilization includes both BH and non-BH service utilization.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-11 Number and Percent of Beneficiaries with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use Who Had Any Substance Use-Related Service Utilization, by Service Type, 2017–2019

Service Type	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Any Substance Use-Related Outpatient Services	193,547	204,153	207,561	24.4%	23.5%	22.5%
Substance Use-Related Physician E&M Visits	68,332	77,588	84,617	8.6%	8.9%	9.2%
Substance Use-Related Inpatient Stays	23,502	23,297	22,970	3.0%	2.7%	2.5%
Substance Use-Related ED Visits	27,382	27,358	27,326	3.5%	3.1%	3.0%
Substance-Use Related Prescription Drug Fills	21,463	26,984	33,777	2.7%	3.1%	3.7%

NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. Physician E&M services are defined as having any E&M code or visit to FQHC or RHC. Acute inpatient admissions include any admission to a short-term acute or psychiatric hospital. Outpatient ED visits are any ED visit that does not end in a hospitalization. Prescription drug fills includes include any Part D event with a service date during the year. SUD-related utilization was defined as having any service with a principal diagnosis of any SUD. SUD-related prescription drug use was defined based on NDCs. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. Any service utilization includes both BH and non-BH service utilization.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-12 Number and Percent of Beneficiaries with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use Who Had Any Substance Use-Related Physician Evaluation & Management Visits, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	46,096	52,146	57,347	9.4%	9.7%	10.1%
75–84	17,824	20,453	21,955	7.8%	8.0%	8.0%
85+	4,411	4,985	5,320	6.2%	6.5%	6.6%
Sex						
Female	30,045	34,831	38,022	7.4%	7.8%	8.1%
Male	38,289	42,755	46,599	9.8%	10.1%	10.3%
Race/ethnicity						
Non-Hispanic White	55,325	63,289	69,183	8.5%	8.9%	9.1%
Black/African American	5,661	6,268	6,689	7.7%	8.2%	8.4%
Hispanic	3,951	4,246	4,483	10.2%	10.0%	9.8%
Asian/Pacific Islander	1,151	1,175	1,222	10.0%	8.7%	8.4%
American Indian/Alaska Native	777	910	1,071	12.5%	12.9%	14.7%
Other	381	442	482	8.3%	8.9%	9.0%
Unknown	1,087	1,256	1,488	11.1%	10.6%	10.7%
Dual Status						
Non-Dual Eligible	53,460	60,993	66,468	8.3%	8.5%	8.7%
Dual Eligible	14,872	16,590	18,155	10.2%	10.7%	11.2%
Rurality						
Urban	54,157	61,358	66,819	8.7%	9.0%	9.2%
Large rural city/town	7,392	8,341	9,215	8.1%	8.5%	8.9%
Small rural town	3,831	4,489	4,913	8.1%	8.7%	9.0%
Isolated town	2,949	3,395	3,671	8.8%	9.3%	9.6%

NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. SUD-related physician E&M services are defined as having any E&M code or visit to FQHC or RHC with a principal diagnosis of any SUD. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-13 Number and Percent of Beneficiaries with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use Who Had Any Substance Use-Related Outpatient Visits, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	128,624	135,402	138,166	26.1%	25.2%	24.3%
75–84	51,370	54,910	55,448	22.4%	21.5%	20.3%
85+	13,555	13,839	13,945	19.0%	18.1%	17.3%
Sex						
Female	93,514	98,328	99,199	23.1%	22.1%	21.0%
Male	100,035	105,822	108,363	25.7%	24.9%	24.0%
Race/ethnicity						
Non-Hispanic White	155,524	164,767	168,109	24.0%	23.1%	22.2%
Black/African American	19,473	19,889	19,441	26.4%	25.9%	24.4%
Hispanic	10,757	10,975	10,903	27.6%	25.8%	23.8%
Asian/Pacific Islander	2,397	2,445	2,546	20.8%	18.1%	17.5%
American Indian/Alaska Native	1,715	1,912	2,037	27.6%	27.2%	27.9%
Other	1,077	1,162	1,178	23.4%	23.4%	21.9%
Unknown	2,601	3,002	3,343	26.7%	25.3%	24.0%
Dual Status						
Non-Dual Eligible	151,762	161,099	164,057	23.4%	22.5%	21.6%
Dual Eligible	41,786	43,053	43,500	28.6%	27.8%	26.8%
Rurality						
Urban	153,846	161,868	166,010	24.8%	23.7%	22.8%
Large rural city/town	21,760	22,830	22,468	23.8%	23.2%	21.8%
Small rural town	10,640	11,536	11,323	22.4%	22.3%	20.9%
Isolated town	7,288	7,907	138,166	21.8%	21.6%	20.3%

NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. SUD-related outpatient services are defined as any non-ED claim in the outpatient or carrier files with a principal diagnosis of a MH condition. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-14 Number and Percent of Beneficiaries with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use Who Had Any Substance Use-Related Inpatient Stays, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	17,067	16,998	16,795	3.5%	3.2%	3.0%
75–84	5,328	5,228	5,174	2.3%	2.0%	1.9%
85+	1,110	1,072	1,000	1.6%	1.4%	1.2%
Sex						
Female	9,761	9,277	9,020	2.4%	2.1%	1.9%
Male	13,743	14,025	13,952	3.5%	3.3%	3.1%
Race/ethnicity						
Non-Hispanic White	18,989	18,898	18,616	2.9%	2.7%	2.5%
Black/African American	2,425	2,362	2,245	3.3%	3.1%	2.8%
Hispanic	1,171	1,133	1,184	3.0%	2.7%	2.6%
Asian/Pacific Islander	190	204	177	1.6%	1.5%	1.2%
American Indian/Alaska Native	251	243	214	4.0%	3.5%	2.9%
Other	120	119	112	2.6%	2.4%	2.1%
Unknown	360	342	422	3.7%	2.9%	3.0%
Dual Status						
Non-Dual Eligible	18,049	17,892	17,765	2.8%	2.5%	2.3%
Dual Eligible	5,455	5,410	5,208	3.7%	3.5%	3.2%
Rurality						
Urban	19,319	19,140	19,022	3.1%	2.8%	2.6%
Large rural city/town	2,329	2,280	2,181	2.5%	2.3%	2.1%
Small rural town	1,107	1,114	1,017	2.3%	2.2%	1.9%
Isolated town	744	764	752	2.2%	2.1%	2.0%

NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. SUD-related outpatient services are defined as any non-ED claim in the outpatient or carrier files with a principal ICD code of a MH condition. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-15 Number and Percent of Beneficiaries with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use Who Had Any Substance Use-Related Emergency Department Visits, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	19,074	19,084	19,243	3.9%	3.6%	3.4%
75–84	6,509	6,653	6,577	2.8%	2.6%	2.4%
85+	1,801	1,619	1,504	2.5%	2.1%	1.9%
Sex						
Female	11,319	11,299	11,104	2.8%	2.5%	2.4%
Male	16,063	16,057	16,217	4.1%	3.8%	3.6%
Race/ethnicity						
Non-Hispanic White	20,942	21,123	21,036	3.2%	3.0%	2.8%
Black/African American	3,605	3,367	3,322	4.9%	4.4%	4.2%
Hispanic	1,696	1,672	1,711	4.4%	3.9%	3.7%
Asian/Pacific Islander	257	255	273	2.2%	1.9%	1.9%
American Indian/Alaska Native	378	406	418	6.1%	5.8%	5.7%
Other	143	141	142	3.1%	2.8%	2.6%
Unknown	361	393	422	3.7%	3.3%	3.0%
Dual Status						
Non-Dual Eligible	20,198	20,171	20,268	3.1%	2.8%	2.7%
Dual Eligible	7,183	7,185	7,056	4.9%	4.6%	4.3%
Rurality						
Urban	21,722	21,699	21,800	3.5%	3.2%	3.0%
Large rural city/town	3,022	3,036	2,984	3.3%	3.1%	2.9%
Small rural town	1,607	1,607	1,557	3.4%	3.1%	2.9%
Isolated town	1,027	1,018	976	3.1%	2.8%	2.6%

NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. SUD-related prescription drug use was defined based on having any SUD-related psychotherapeutic Part D drug event. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-16 Number and Percent of Beneficiaries with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use Who Had Any Substance Use-Related Prescription Drug Fills, by Demographic Characteristics, 2017–2019

Characteristic	Frequency			Percentage		
	2017	2018	2019	2017	2018	2019
Age						
65–74	17,450	21,831	27,182	3.5%	4.1%	4.8%
75–84	3,597	4,653	5,963	1.6%	1.8%	2.2%
85+	416	498	637	0.6%	0.7%	0.8%
Sex						
Female	10,109	12,997	16,441	2.5%	2.9%	3.5%
Male	11,352	13,982	17,341	2.9%	3.3%	3.8%
Race/ethnicity						
Non-Hispanic White	18,489	23,233	28,956	2.9%	3.3%	3.8%
Black/African American	1,341	1,646	2,119	1.8%	2.1%	2.7%
Hispanic	663	835	1,102	1.7%	2.0%	2.4%
Asian/Pacific Islander	169	200	267	1.5%	1.5%	1.8%
American Indian/Alaska Native	126	175	269	2.0%	2.5%	3.7%
Other	138	168	183	3.0%	3.4%	3.4%
Unknown	534	724	885	5.5%	6.1%	6.4%
Dual Status						
Non-Dual Eligible	17,498	21,908	27,006	2.7%	3.1%	3.6%
Dual Eligible	3,963	5,075	6,775	2.7%	3.3%	4.2%
Rurality						
Urban	17,903	22,218	27,479	2.9%	3.3%	3.8%
Large rural city/town	1,906	2,620	3,454	2.1%	2.7%	3.3%
Small rural town	954	1,177	1,569	2.0%	2.3%	2.9%
Isolated town	694	965	1,281	2.1%	2.6%	3.4%

NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. SUD-related prescription drug use was defined based on having any SUD-related psychotherapeutic Part D drug event. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

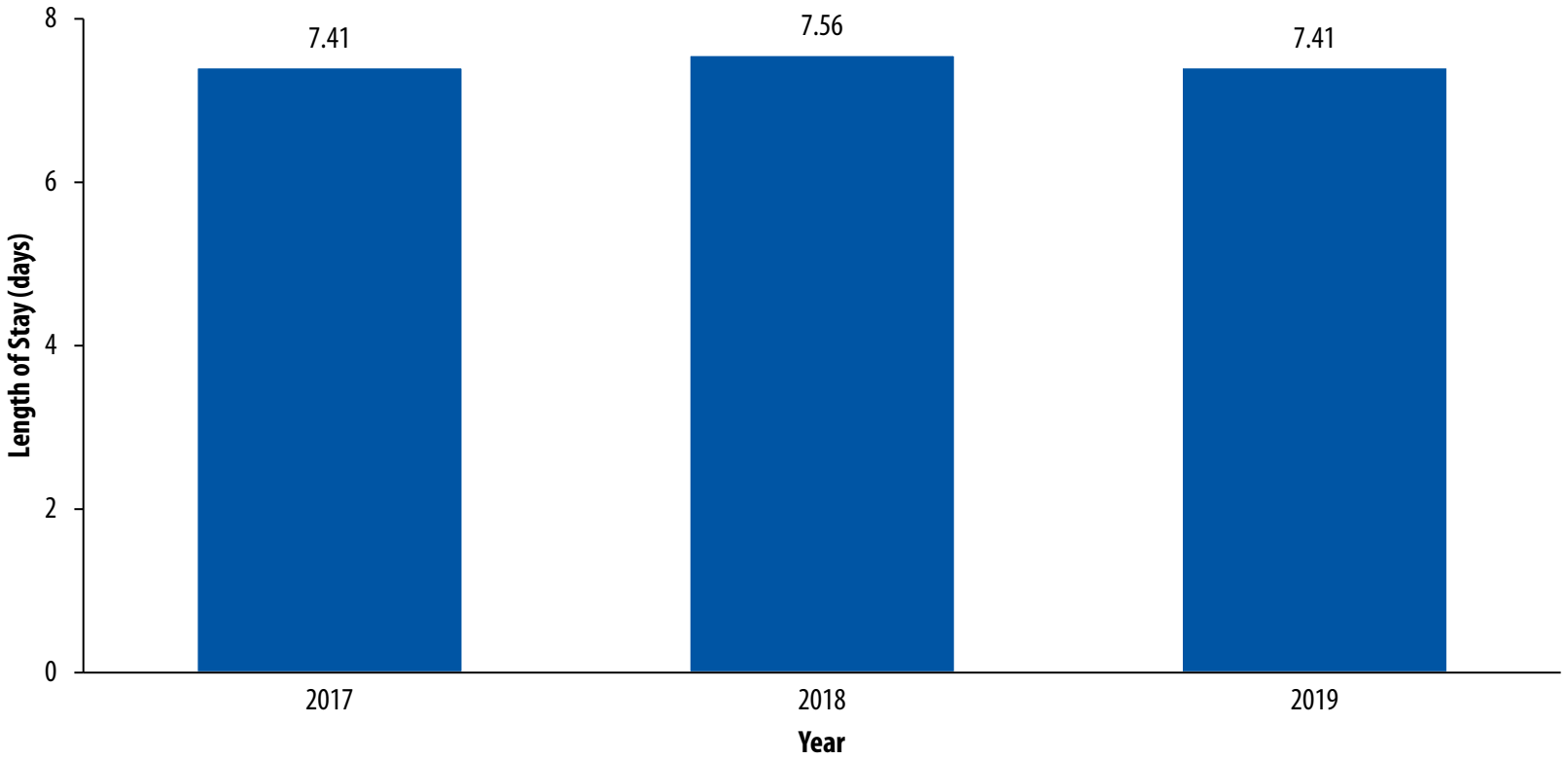
EXHIBIT 4-17 Average Annual Service Utilization Among Beneficiaries with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use Who Had Any Service Utilization, by Service Type, 2017–2019

Service Type	All-cause						SUD-related					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Acute Inpatient Stays	1.85	1.41	1.83	1.40	1.83	1.41	1.21	0.71	1.23	0.78	1.24	0.78
Outpatient ED Visits	2.28	2.97	2.23	2.92	2.21	2.83	1.35	2.16	1.37	2.05	1.39	2.15
Physician E&M Visits	15.16	10.85	15.13	10.99	15.29	11.23	2.10	2.75	2.23	3.03	2.36	3.47

NOTE: Beneficiaries were defined as having a SUD if they had any SUD-related diagnosis, procedure, or NDCs during the year. SUD-related utilization was defined as having any service with a principal diagnosis of any SUD. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-18 Average Length of Substance Use Disorder-Related Inpatient Stay, 2017–2019



NOTE: Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. Length of SUD-related inpatient stay includes number of days in acute or psychiatric hospital. SUD-related utilization was defined as having any service with a principal diagnosis of any SUD. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

4.3 Comparison of Health Care Service Utilization Between Those With and Without a Behavioral Health Diagnosis or any Behavioral Health-Related Service Use

EXHIBIT 4-19 Comparison of All-Cause Any Service Utilization by Medicare Beneficiaries With and Without a Behavioral Health Diagnosis or any Behavioral Health-Related Service Use, 2017–2019

Service Type	BH Disorder											
	No BH						Any BH					
	2017		2018		2019		2017		2018		2019	
	N	%	N	%	N	%	N	%	N	%	N	%
Any Physician E&M Visits	7,824,149	89.3	7,959,535	89.1	8,140,868	89.3	8,626,022	98.4	8,788,713	98.4	8,971,463	98.4
Any Acute Inpatient Stays	892,235	10.2	876,871	9.8	876,354	9.6	2,231,377	25.5	2,194,588	24.6	2,188,151	24.0
Any Outpatient ED Visits	1,605,410	18.3	1,616,021	18.1	1,655,173	18.2	3,021,329	34.5	3,035,287	34.0	3,079,180	33.8
Any Prescription Drug Fills	5,114,576	58.4	5,262,832	58.9	5,459,848	59.9	7,088,012	80.9	7,207,256	80.7	7,360,317	80.7

NOTE: Total BH N = 8,764,590 in 2017, 8,931,256 in 2018, and 9,115,395 in 2019. Beneficiaries were defined as having a BH-diagnosis or BH-related service use if they had any MH- or SUD-related diagnosis, procedure, or NDCs during the year. These beneficiaries were matched 1:1 based on age and sex with beneficiaries without any BH diagnosis or BH-related service use. Beneficiaries needed a full 12 months of eligibility (Parts A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. Any service utilization includes both BH and non-BH service utilization. The sample was not required to have a full 12 months of Part D enrollment, thus differences in prescription drug use between the BH and non-BH samples may reflect underlying differences in Part D enrollment.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-20 Comparison of Any Prescription Drug Fill Among Medicare Beneficiaries With 12 Months of Part D Enrollment, With and Without a Behavioral Health Diagnosis or Behavioral Health-Related Service Use, 2017–2019

Prescription Drug Use	No BH						Any BH					
	2017		2018		2019		2017		2018		2019	
	N	%	N	%	N	%	N	%	N	%	N	%
Only Part D enrolled	5,038,061	92.9	5,194,157	92.9	5,391,980	93.0	6,957,243	99.4	7,086,173	99.4	7,241,192	99.4

NOTE: Beneficiaries with a BH diagnosis or BH-related service were matched 1:1 based on age and sex with beneficiaries without any BH diagnosis or BH-related service use. We restricted the matched sample to beneficiaries with 12 months of Part D enrollment during the year. Total non-BH N = 5,422,109 in 2017, 5,588,721 in 2018, and 5,796,831 in 2019. Total BH N = 6,999,168 in 2017; 7,128,373 in 2018; and 7,285,634 in 2019.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

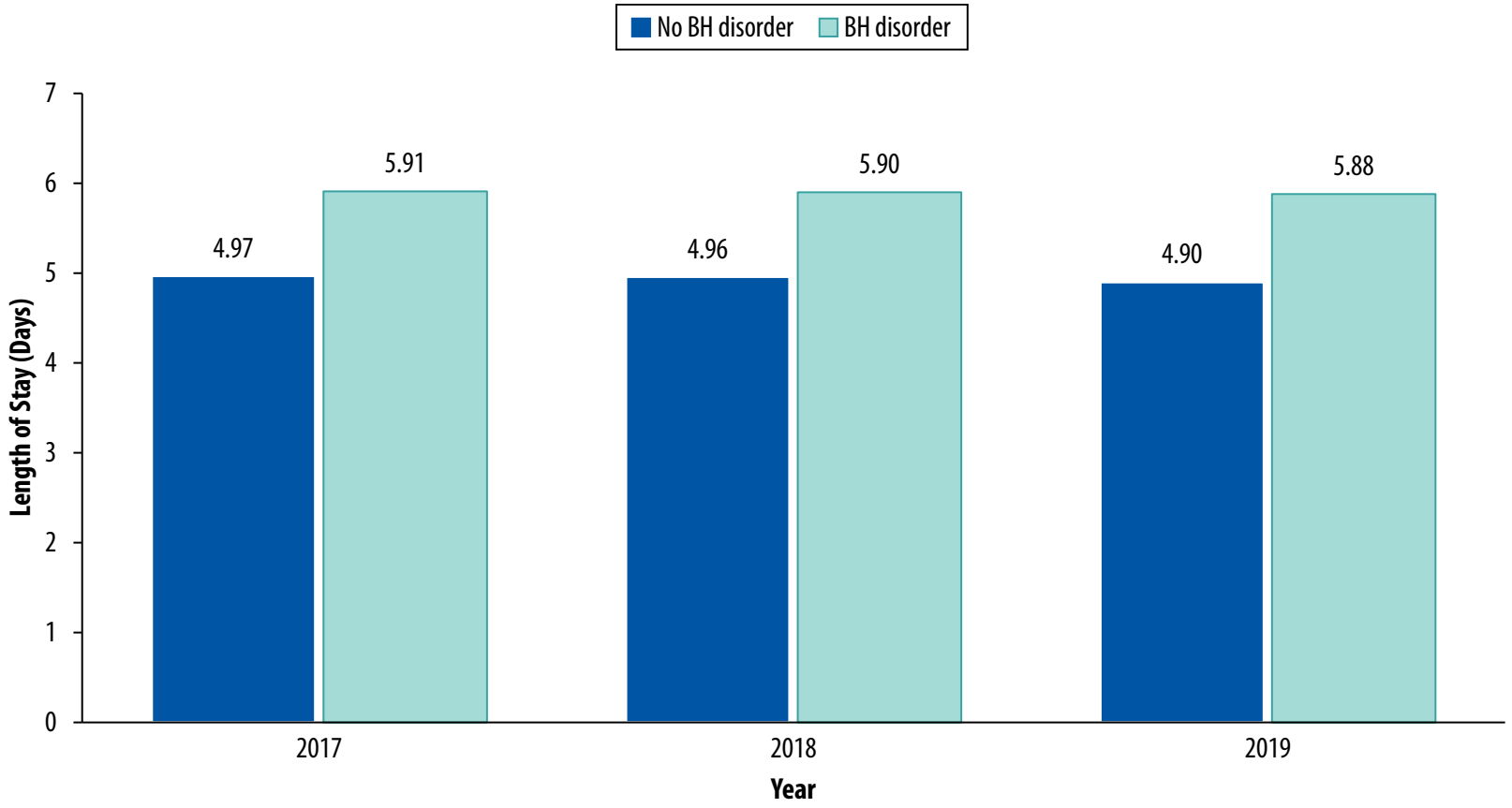
EXHIBIT 4-21 Comparison of All-Cause Annual Service Utilization by Medicare Beneficiaries With Any Service Utilization, With and Without a Behavioral Health Diagnosis or any Behavioral Health-Related Service Use, 2017–2019

Service Type	BH Disorder											
	No BH						Any BH					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Physician E&M Visits	8.21	6.52	8.20	6.53	8.23	6.55	12.89	9.61	12.93	9.75	13.05	9.93
Acute Inpatient Stays	1.31	0.72	1.31	0.73	1.31	0.73	1.62	1.13	1.62	1.14	1.61	1.14
Outpatient ED Visits	1.43	0.93	1.42	0.93	1.42	0.94	1.83	1.81	1.82	1.80	1.81	1.78

NOTE: Total BH N = 8,764,590 in 2017, 8,931,256 in 2018, and 9,115,395 in 2019. Beneficiaries were defined as having a BH-diagnosis or BH-related service use if they had any MH- or SUD-related diagnosis, procedure, or NDCs during the year. These beneficiaries were matched 1:1 based on age and sex with beneficiaries without any BH diagnosis or BH-related service use. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 4-22 Comparison of Average Length of All-Cause Inpatient Stays for Individuals With and Without a Behavioral Health Diagnosis or any Behavioral Health-Related Service Use, 2017–2019



NOTE: Beneficiaries were defined as having a BH-diagnosis or BH-related service use if they had any MH- or SUD-related diagnosis, procedure, or NDCs during the year. These beneficiaries were matched 1:1 based on age and sex with beneficiaries without any BH diagnosis or BH-related service use. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

5 Medicare Expenditures and Beneficiary Out-Of-Pocket Spending

This chapter presents Medicare expenditures and OOP spending for Medicare FFS beneficiaries aged 65 and older with a MH or SUD diagnosis or MH or SUD-related service use from 2017 through 2019. We also compared Medicare spending among older adults of similar age and sex with any BH diagnosis or BH-related service use, including for MAT, and older adults without without any diagnosis or service use.

- Among beneficiaries who had a MH diagnosis or any MH-related service use, total average annual Medicare spending increased slightly from $15,717 to $16,590 from 2017 to 2019 (**Exhibit 5-1**). Only a small fraction of average annual Medicare spending was for MH-related services.
- Among beneficiaries with a MH diagnosis or MH-related service use who had any Medicare spending within the service category, the average OOP payments for inpatient services were considerably higher than other types of services, ranging from an average of $1,834 to $1,906 from 2017 to 2019 (**Exhibit 5-2**).
- Average OOP payments for MH-related inpatient services were much higher than OOP for other services among beneficiaries with a MH diagnosis or MH-related service use who had any MH-related spending within the service category (**Exhibit 5-3**). For example, OOP payments for MH-related inpatient services averaged $2,132 to $2,313 per year among beneficiaries with any MH-related inpatient spending, compared to approximately $65 to $70 per year for MH-related prescription drugs from 2017 to 2019.
- Average annual Medicare spending on all-cause inpatient stays among beneficiaries with a MH diagnosis or any MH-related service use who had any inpatient spending increased from $20,790 to $22,503 during 2017 to 2019. Average annual Medicare spending on MH-related inpatient stays for those who had any inpatient spending was also relatively high, ranging from $14,876 to $15,751 from 2017 to 2019 (**Exhibit 5-4**).

- Average annual Medicare spending on all-cause inpatient services for beneficiaries with a SUD diagnosis or any SUD-related service use who had any inpatient spending was $24,836 to $26,528 from 2017 to 2019. Average Medicare annual Medicare spending on SUD-related inpatient stays for those who had any inpatient spending ranged from $10,072 to $11,553 from 2017 to 2019 (**Exhibit 5-8**).
- Across all service categories, Medicare beneficiaries with a BH diagnosis or any BH-related service use had higher average Medicare spending than beneficiaries without a BH diagnosis or BH-related service use, accounting for age and sex (**Exhibit 5-9** and **Exhibit 5-10**). Among beneficiaries with any spending in a service category, large differences remain in all-cause Medicare spending and OOP spending across all service categories between those with and without a BH diagnosis or BH-related service use (**Exhibits 5-11** to **5-14**).

5.1 Medicare Expenditures and Beneficiary Out-of-Pocket Spending among Beneficiaries with a Mental Health Diagnosis or any Mental Health-Related Service Use

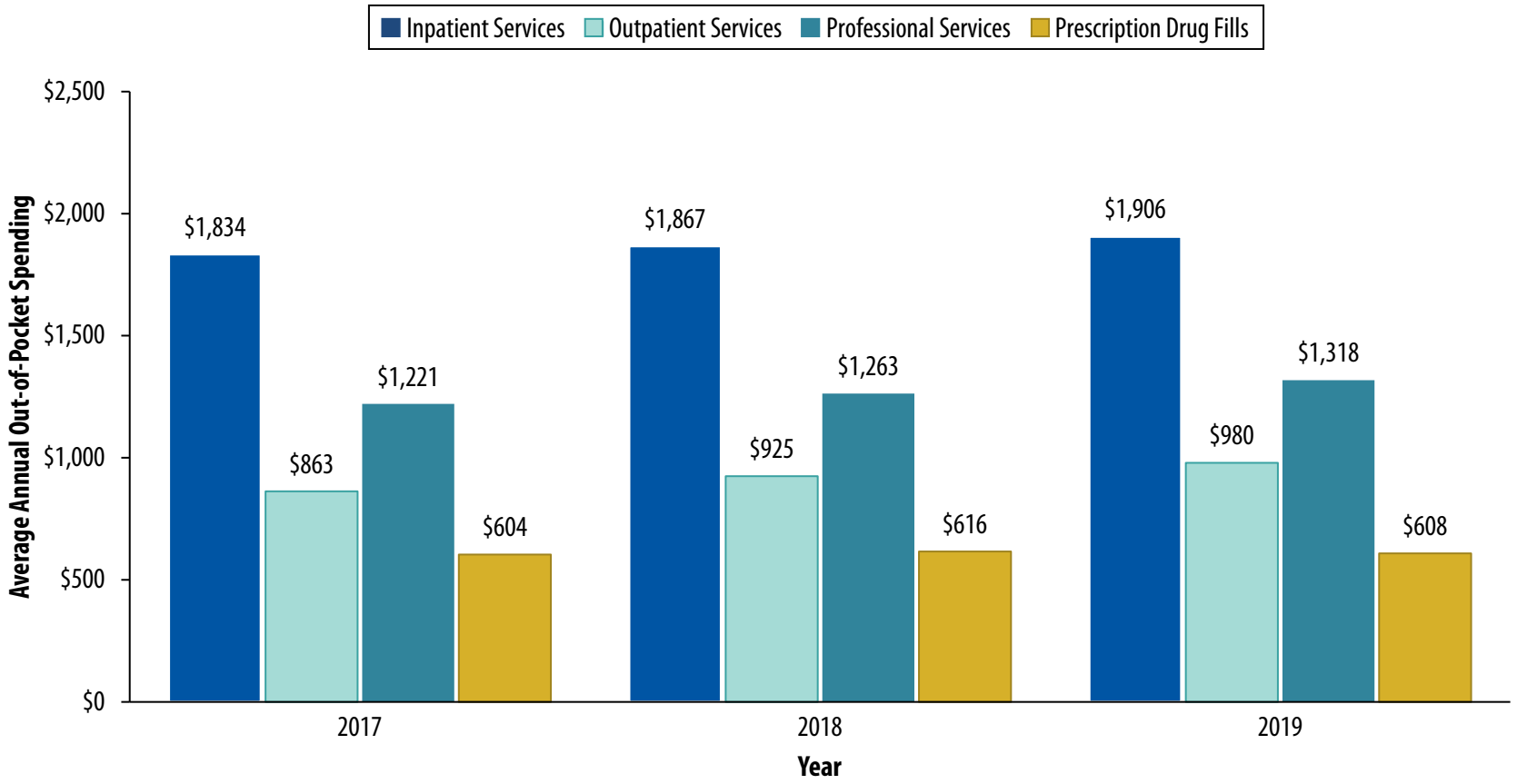
EXHIBIT 5-1 Average Annual Medicare Spending Per Beneficiary with a Mental Health Diagnosis or Mental Health-Related Service Use, by Service Type, 2017–2019

Service Type	Medicare Spending, $											
	All-cause						MH-related					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total FFS Spending	15,717	27,719	16,090	28,391	16,590	29,480	282	2,370	283	2,352	291	2,418
Inpatient Services	5,377	16,063	5,391	16,337	5,485	16,831	105	1,870	101	1,857	101	1,914
Outpatient Services	2,831	7,871	3,045	8,352	3,235	9,140	34	474	36	486	38	517
Physician Services	4,175	7,053	4,339	7,546	4,557	8,199	121	503	127	524	134	552
Prescription Drugs	2,226	9,628	2,375	10,624	2,527	11,947	110	806	114	946	120	1,100

NOTE: Total FFS spending is defined as the sum of all service lines, including inpatient, outpatient, carrier, home health, hospice, skilled nursing facility, and DME. Beneficiaries were included if they had any MH related diagnosis, procedure, or NDCs during the year. MH-related Medicare spending was defined as having summing payment amounts for claims with a principal diagnosis of any MH condition. MH-related prescription drug use was defined based having any Part D psychotherapeutic drug events. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. This analysis of PBPY spending includes all MH beneficiaries, regardless of whether they used services within these categories.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

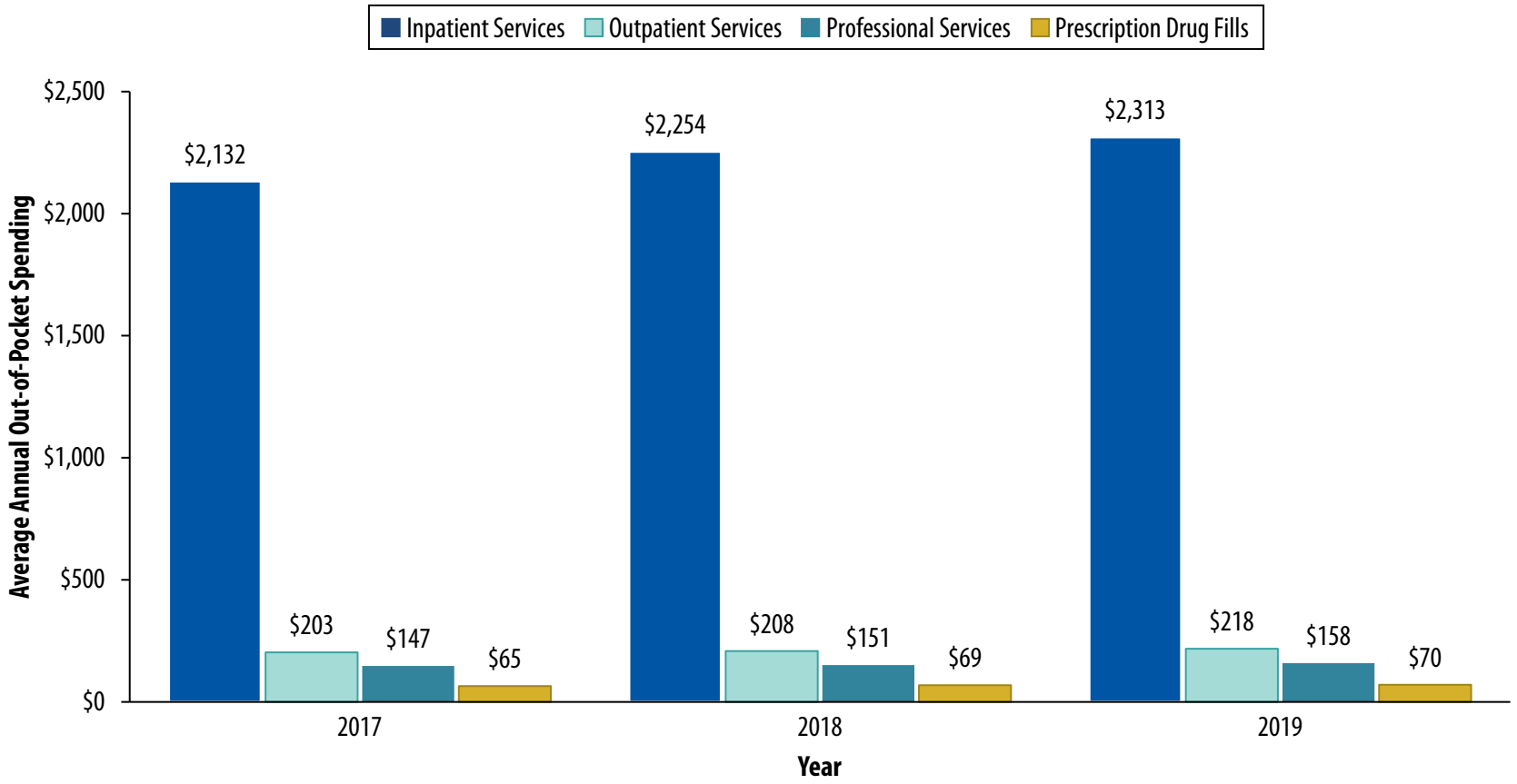
EXHIBIT 5-2 Average Annual Out-of-Pocket Spending for Any Medicare Services Among Beneficiaries with a Mental Health Diagnosis or Mental Health-Related Service Use Who had Any Spending within the Service Category, by Service Type, 2017–2019



NOTE: Professional OOP payments include beneficiary cost-sharing from both carrier and DME files to account for OOP Part B covered drug treatments. Prescription Drug OOP was calculated on beneficiaries with any drug fills during the year due to the large number of beneficiaries without any drug costs. Beneficiaries were included if they had any MH-related diagnosis, procedure, or NDCs during the year. MH-related utilization was defined as having any service with a principal diagnosis of any MH condition. MH-related prescription drug use was defined based on NDCs. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. Any Medicare services includes both BH and non-BH service utilization.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 5-3 Average Annual Out-of-Pocket Spending for Mental Health-related Medicare Services Among Beneficiaries with a Mental Health Diagnosis or Mental Health-Related Service Use Who had Any Spending within the Service Category, by Service Type, 2017–2019



NOTE: Professional OOP payments include beneficiary cost-sharing from both carrier and DME files to account for OOP Part B covered drug treatments. Prescription Drug OOP was calculated on beneficiaries with any drug fills during the year due to the large number of beneficiaries without any drug costs. Beneficiaries were included if they had any MH-related diagnosis, procedure, or NDCs during the year. MH-related utilization was defined as having any service with a principal diagnosis of any MH condition. MH-related prescription drug use was defined based on NDCs. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 5-4 Average Annual Medicare Spending for Beneficiaries with a Mental Health Diagnosis or Mental Health-Related Service Use Who Had Any Spending within the Service Category, by Service Type, 2017–2019

Service Type	Medicare Spending, $											
	All-cause						MH-related					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total FFS Spending	15,857	27,803	16,230	28,474	16,735	29,567	1,056	4,499	1,036	4,412	1,063	4,530
Inpatient Services	20,790	26,024	21,590	26,817	22,503	27,915	14,876	16,549	15,051	16,990	15,751	17,989
Outpatient Services	3,368	8,478	3,628	8,999	3,847	9,848	612	1,910	624	1,944	651	2,057
Physician Services	4,232	7,084	4,397	7,579	4,618	8,237	498	923	511	953	538	1,002
Prescription Drugs	3,217	11,436	3,479	12,709	3,759	14,414	222	1,131	238	1,357	257	1,596

NOTE: Total FFS spending is defined as the sum of all service lines, including inpatient, outpatient, carrier, home health, hospice, skilled nursing facility, and DME. Beneficiaries were included if they had any MH related diagnosis, procedure, or NDCs during the year. MH-related utilization was defined as having any service with a principal diagnosis of any MH condition. MH-related prescription drug use was defined based on NDCs. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. This analysis of PBPY spending includes only MH beneficiaries who used services within these categories.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

5.2 Medicare Expenditures and Beneficiary Out-of-Pocket Spending Among Beneficiaries with a Substance Use Disorder Diagnosis or any Substance Use Disorder-Related Service Use

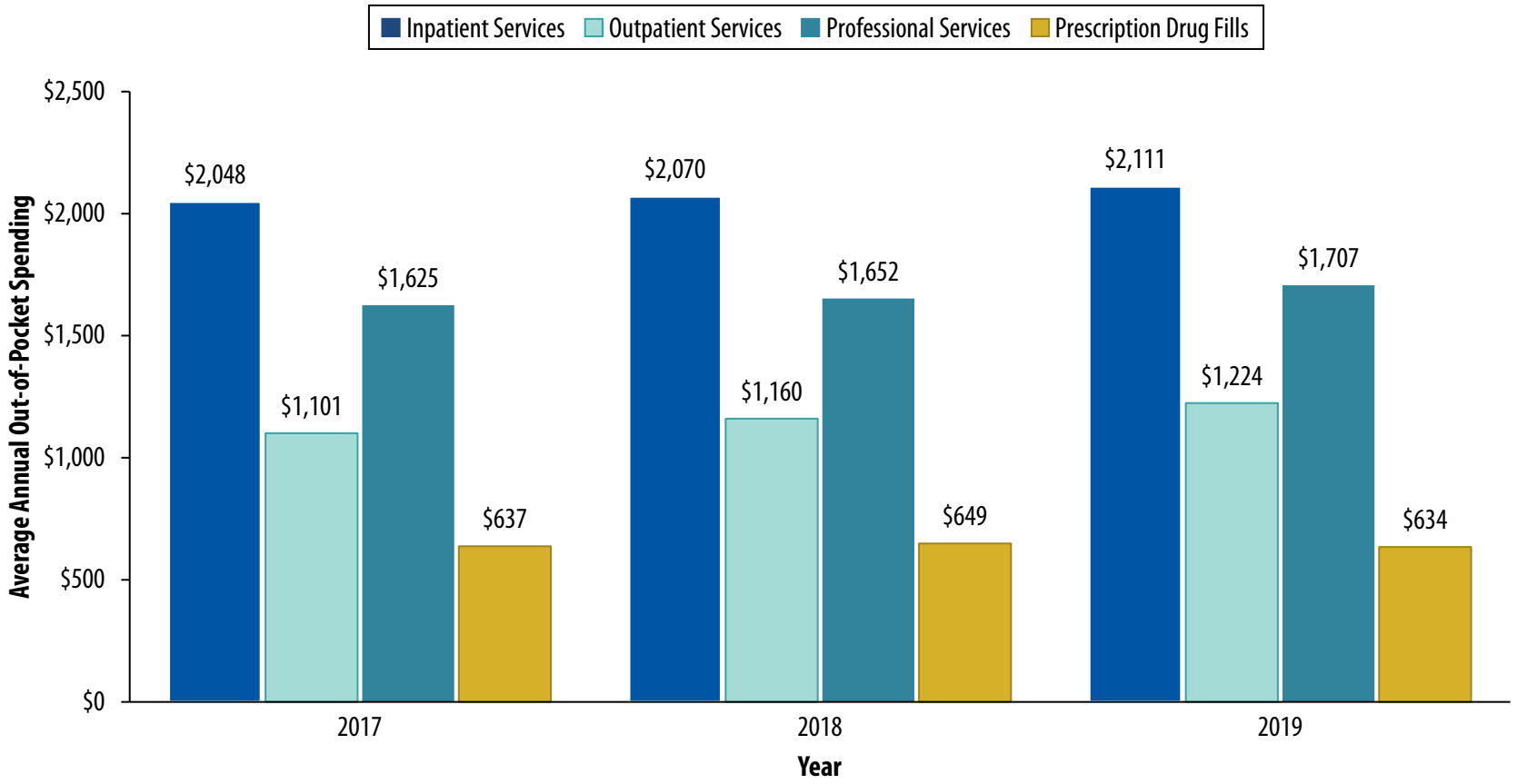
EXHIBIT 5-5 Average Annual Medicare Spending Per Beneficiary with a Substance Use Disorder Diagnosis or Substance Use Disorder-Related Service Use, by Service Type, 2017–2019

Service Type	Medicare Spending, $											
	All-cause						SUD-related					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total FFS Spending	25,262	37,213	25,123	37,522	25,617	38,787	467	3,168	459	3,529	462	3,301
Inpatient Services	11,109	23,776	10,818	23,710	10,898	24,265	299	2,668	295	3,093	288	2,772
Outpatient Services	3,740	8,794	3,937	9,258	4,144	10,195	52	465	52	454	53	477
Physician Services	5,747	8,135	5,841	8,835	6,069	9,446	76	322	75	332	77	375
Prescription Drugs	2,669	11,567	2,819	11,843	2,981	12,498	18	224	22	260	26	281

NOTE: Total FFS spending is defined as the sum of all service lines, including inpatient, outpatient, carrier, home health, hospice, skilled nursing facility, and DME. Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. SUD-related utilization was defined as having any service with a principal diagnosis of any SUD. SUD-related prescription drug use was defined based on NDCs. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. This analysis of PBPY spending includes all SUD beneficiaries, regardless of whether they used services within these categories.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

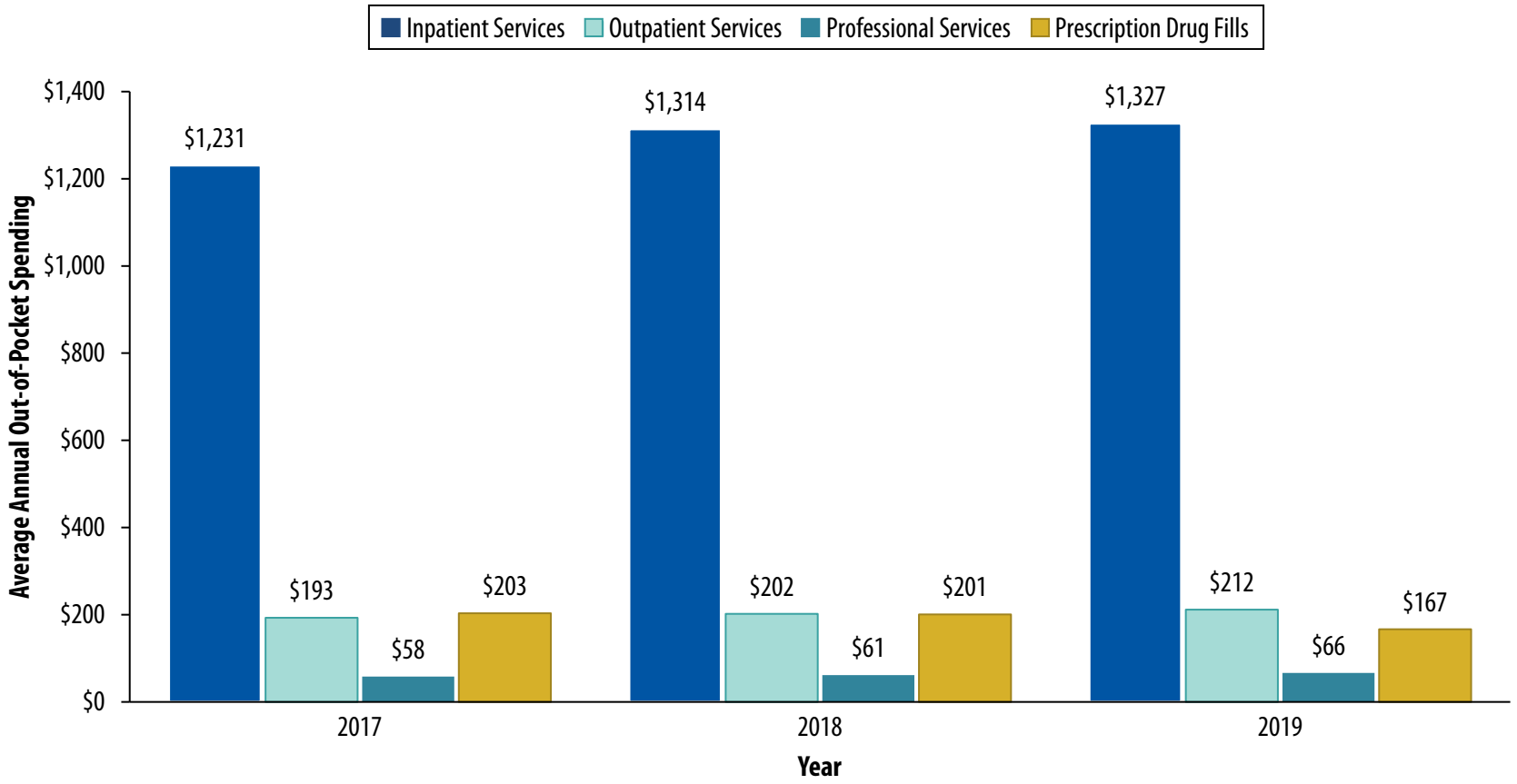
EXHIBIT 5-6 Average Annual Out-of-Pocket Spending for Any Medicare Services Among Beneficiaries with a Substance Use Disorder Diagnosis or Substance Use Disorder-Related Service Use Who Had Any Spending within the Service Category, 2017–2019



NOTE: Professional OOP payments include beneficiary cost-sharing from both carrier and DME files to account for OOP Part B covered drug treatments. Prescription Drug OOP was calculated on beneficiaries with any drug fills during the year due to the large number of beneficiaries without any drug costs. Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDC codes during the year. SUD-related utilization was defined as having any service with a principal diagnosis of any SUD. SUD-related prescription drug use was defined based on NDC codes. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. Services include both BH and non-BH services.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 5-7 Average Annual Out-of-Pocket Spending for Substance Use Disorder-Related Medicare Services Among Beneficiaries with a Substance Use Disorder Diagnosis or Substance Use Disorder-Related Service Use Who Had Any Spending within the Service Category, 2017–2019



NOTE: Professional OOP payments include beneficiary cost-sharing from both carrier and DME files to account for OOP Part B covered drug treatments. Prescription Drug OOP was calculated on beneficiaries with any drug fills during the year due to the large number of beneficiaries without any drug costs. Beneficiaries included if they had any SUD-related diagnosis, procedure, or NDCs during the year. SUD-related utilization was defined as having any service with a principal diagnosis of any SUD. SUD-related prescription drug use was defined based on NDCs. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 5-8 Average Annual Medicare Spending Per Beneficiary with a Substance Use Disorder Diagnosis or Substance Use Disorder-Related Service Use Who Had Any Spending within the Service Category, by Service Type, 2017–2019

Service Type	Medicare Spending, $											
	All-cause						SUD-related					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total FFS Spending	25,510	37,311	25,366	37,620	25,865	38,892	1,826	6,061	1,864	6,922	1,970	6,596
Inpatient Services	24,836	30,379	25,525	30,838	26,528	31,916	10,072	11,888	10,978	15,455	11,553	13,335
Outpatient Services	4,293	9,294	4,548	9,808	4,807	10,831	679	1,554	709	1,529	744	1,629
Physician Services	5,825	8,162	5,919	8,868	6,151	9,484	347	615	353	649	381	764
Prescription Drugs	4,110	14,146	4,367	14,509	4,635	15,335	837	1,294	901	1,406	898	1,398

NOTE: Total FFS spending is defined as the sum of all service lines, including inpatient, outpatient, carrier, home health, hospice, skilled nursing facility, and DME. Beneficiaries were included if they had any SUD-related diagnosis, procedure, or NDCs during the year. SUD-related utilization was defined as having any service with a principal diagnosis of any SUD. SUD-related prescription drug use was defined based on NDCs. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. This analysis of PBPY spending includes only SUD beneficiaries who used services within these categories.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

5.3 Comparison of Medicare Expenditures and Beneficiary Out-of-Pocket Spending Between Those With and Without a Behavioral Health Diagnosis or Behavioral Health-Related Service Use

EXHIBIT 5-9 Comparison of Medicare Spending Per Age/Gender Matched Medicare Beneficiary With and Without a Behavioral Health Diagnosis or Behavioral Health-Related Service Use, 2017–2019

Service Type	BH Disorder, $											
	No BH						Any BH					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total FFS Spending	5,976	13,662	6,177	14,180	6,419	14,745	15,740	27,686	16,104	28,351	16,601	29,445
Inpatient Services	1,572	7,168	1,578	7,367	1,615	7,534	5,430	16,090	5,442	16,362	5,538	16,865
Outpatient Services	1,317	4,960	1,420	5,247	1,511	5,752	2,830	7,858	3,043	8,337	3,232	9,131
Physician Services	2,172	4,603	2,254	4,995	2,370	5,402	4,174	7,048	4,335	7,544	4,551	8,191
Prescription Drugs	878	5,979	946	6,638	1,022	7,383	2,205	9,589	2,353	10,581	2,502	11,897

NOTE: Total BH N = 8,764,590 in 2017, 8,931,256 in 2018, and 9,115,395 in 2019. Total FFS spending is defined as the sum of all service lines, including inpatient, outpatient, carrier, home health, hospice, skilled nursing facility, and DME. Beneficiaries were defined as having a BH-diagnosis or BH-related service use if they had any MH- or SUD-related diagnosis, procedure, or NDCs during the year. These beneficiaries were matched 1:1 based on age and sex with beneficiaries without any BH diagnosis or BH-related service use. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. The sample was not required to have a full 12 months of Part D enrollment, thus differences in prescription drug spending between the BH and non-BH samples may reflect underlying differences in Part D enrollment. This analysis of PBPY spending includes all BH beneficiaries and matched non-BH beneficiaries, regardless of whether they used services within these categories.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

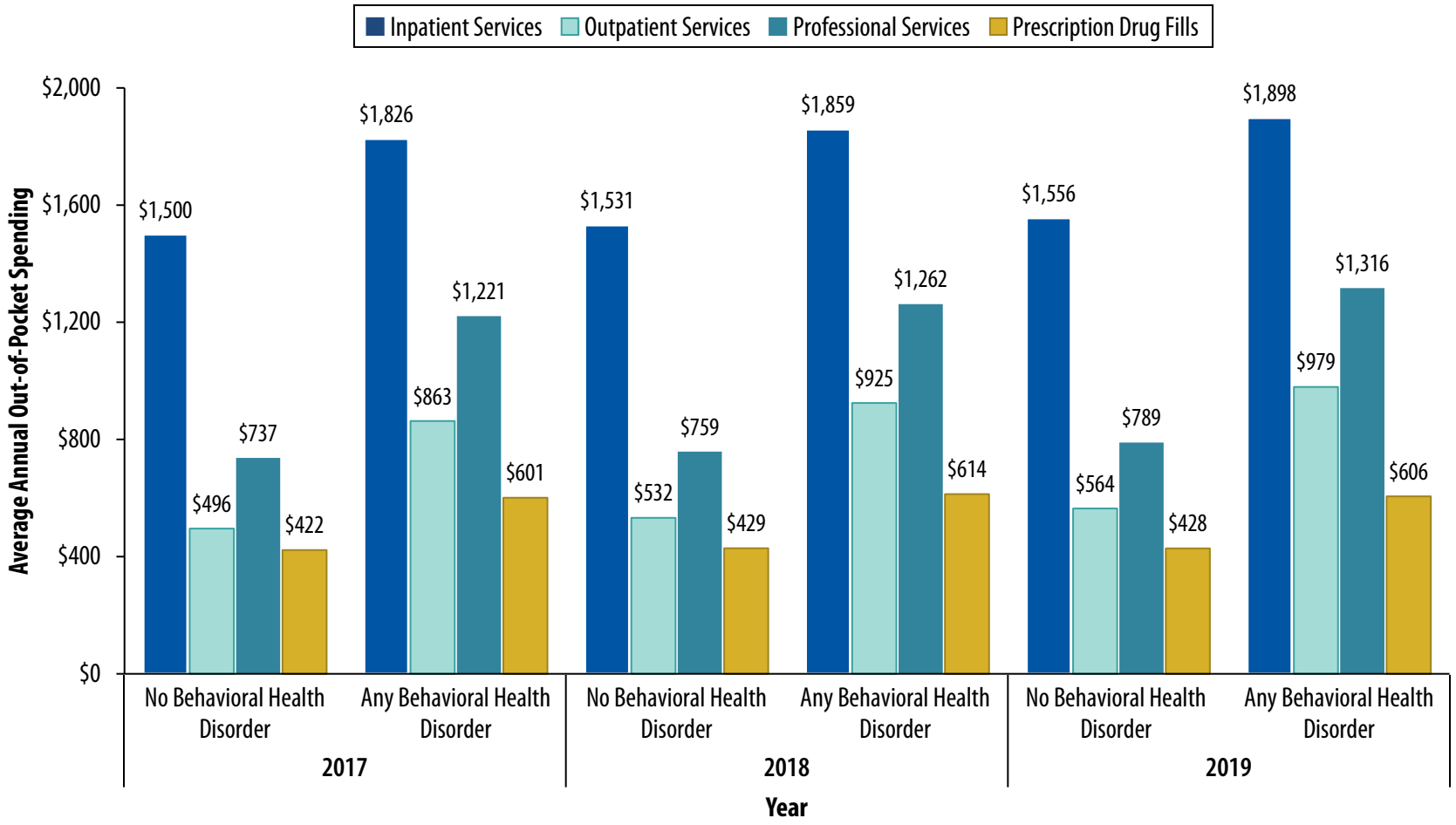
EXHIBIT 5-10 Comparison of Mean Part D Prescription Drug Spending Per Medicare Beneficiary with 12 Months of Part D Enrollment, With and Without a Behavioral Health Diagnosis or Behavioral Health-Related Service Use, 2017–2019

Prescription Drug Use	No BH						Any BH					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Only Part D enrolled	$1,409	$7,530	$1,501	$8,319	$1,597	$9,184	$2,739	$10,636	$2,925	$11,744	$3,108	$13,210

NOTE: Beneficiaries with a BH diagnosis or BH-related service were matched 1:1 based on age and sex with beneficiaries without any BH diagnosis or BH-related service use We restricted the matched sample to beneficiaries with 12 months of Part D enrollment during the year. Total non-BH N = 5,422,109 in 2017, 5,588,721 in 2018, and 5,796,831 in 2019. Total BH N = 6,999,168 in 2017; 7,128,373 in 2018; and 7,285,634 in 2019. This analysis of PBPY spending includes all BH beneficiaries and matched non-BH beneficiaries, regardless of whether they used services within these categories.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 5-11 Average Annual Out-of-Pocket Spending Per Beneficiary With and Without a Behavioral Health Diagnosis or Behavioral Health-Related Service Use Who Had Any Spending within the Service Category, by Service Type, 2017–2019



NOTE: Professional OOP payments include beneficiary cost-sharing from both carrier and DME files to account for OOP Part B covered drug treatments. Prescription Drug OOP was calculated on beneficiaries with any drug fills during the year due to the large number of beneficiaries without any drug costs. Beneficiaries were defined as having a BH-diagnosis or BH-related service use if they had any MH- or SUD-related diagnosis, procedure, or NDCs during the year. These beneficiaries were matched 1:1 based on age and sex with beneficiaries without any BH diagnosis or BH-related service use. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. The sample was not required to have a full 12 months of Part D enrollment, thus differences in prescription drug OOP payments between the BH and non-BH samples may reflect underlying differences in Part D enrollment.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 5-12 Comparison of Medicare Part D Out-of-Pocket Spending Per Medicare Beneficiary With 12 Months of Part D Enrollment With and Without a Behavioral Health Diagnosis or Behavioral Health-Related Service Use Who Had Any Prescription Drug Fill, 2017–2019

Prescription Drug Use	No BH						Any BH					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Only Part D enrolled	$426	$728	$431	$750	$431	$734	$606	$927	$618	$950	$610	$929

NOTE: We restricted the matched sample to beneficiaries with 12 months of Part D enrollment during the year. Total non-BH N = 5,422,109 in 2017, 5,588,721 in 2018, and 5,796,831 in 2019. Total BH N = 6,999,168 in 2017; 7,128,373 in 2018; and 7,285,634 in 2019.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 5-13 Comparison of Medicare Spending Per Beneficiary With and Without a Behavioral Health Diagnosis or Behavioral Health-Related Service Use Who Had Any Spending Within the Service Category, by Service Type, 2017–2019

Service Type	BH Disorder, $											
	No BH						Any BH					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Total FFS Spending	6,560	14,179	6,775	14,713	7,027	15,289	15,885	27,772	16,248	28,436	16,751	29,535
Inpatient Services	15,341	17,034	15,954	17,876	16,670	18,306	20,772	25,915	21,573	26,706	22,484	27,816
Outpatient Services	1,936	5,913	2,086	6,249	2,207	6,838	3,369	8,466	3,628	8,985	3,847	9,842
Physician Services	2,415	4,793	2,504	5,204	2,628	5,628	4,233	7,080	4,394	7,578	4,614	8,229
Prescription Drugs	2,240	9,390	2,431	10,473	2,623	11,649	3,219	11,442	3,483	12,720	3,760	14,421

NOTE: Total BH N = 8,764,590 in 2017, 8,931,256 in 2018, and 9,115,395 in 2019. Total FFS spending is defined as the sum of all service lines, including inpatient, outpatient, carrier, home health, hospice, skilled nursing facility, and DME. Beneficiaries were defined as having a BH-diagnosis or BH-related service use if they had any MH- or SUD-related diagnosis, procedure, or NDCs during the year. These beneficiaries were matched 1:1 based on age and sex with beneficiaries without any BH diagnosis or BH-related service use. Beneficiaries needed a full 12 months of eligibility (Part A/B, no HMO, alive, 65 and older, and residing in the 50 states) to be included in the analysis. This analysis of PBPY spending includes only BH beneficiaries and matched non-BH beneficiaries who used services within these categories.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

EXHIBIT 5-14 Comparison of Mean Part D Prescription Drug Spending Per Medicare Beneficiary With 12 Months of Part D Enrollment, With and Without a Behavioral Health Diagnosis or Behavioral Health-Related Service Use, Who Had Any Part D Spending, 2017–2019

Prescription Drug Use	No BH						Any BH					
	2017		2018		2019		2017		2018		2019	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Only Part D enrolled	$2,250	$9,416	$2,439	$10,498	$2,631	$11,671	$3,242	$11,500	$3,503	$12,774	$3,781	$14,483

NOTE: Beneficiaries with a BH diagnosis or BH-related service were matched 1:1 based on age and sex with beneficiaries without any BH diagnosis or BH-related service use. We restricted the matched sample to beneficiaries with 12 months of Part D enrollment during the year. Total non-BH N = 5,422,109 in 2017, 5,588,721 in 2018, and 5,796,831 in 2019. Total BH N = 6,999,168 in 2017; 7,128,373 in 2018; and 7,285,634 in 2019.

SOURCE: Medicare Summary Beneficiary Files and Medicare FFS claims.

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Appendix

EXHIBIT A-1 Definition of All-Cause and Behavioral Health Specific Service Utilization and Spending Measures

Service Category	All-Cause Definition	BH-related definition
Utilization		
Acute inpatient admissions	Number of admissions during the year where the 3rd digit of the provider number is not a character, and 3rd through 6th digits of the provider number fall within the 0001-0879 range OR the 3rd through 6th digits of PRVDR_NUM fall within the 1300-1399 range.	Any inpatient admission with a primary diagnosis of a MH or SUD in either acute hospital or psychiatric hospital defined using provider number where the last 4 digits do not have a character, and the number falls within the 4000-4499 range OR the 3rd digit of the provider number is "M" or "S".
ED visits (Treat and Release)	Number of outpatient claims during the year where the revenue codes were the following: 0450, 0451, 0452, 0456, 0459, 0981, or 0762 or 0762 with HCPCS = G0378.	Any ED visit with a primary diagnosis of a MH disorder or SUD.
E&M Visits	Number of claims per person per year from the outpatient or carrier file with any evaluation and management procedure code, or revenue center code indicating a visit to the rural health center or federally qualified health center: 0510-0519 0520-0529 0982-0983	Any E&M visit with a primary diagnosis of a MH disorder or SUD.
BH-Outpatient Visits	N/A	Any outpatient or carrier claim with a principal diagnosis of a MH disorder or SUD. We excluded any claim that was an ED visit.
Spending		
Inpatient Spending	Sum of payment amounts among acute hospitalization. OOP were summed using the deductible and coinsurance amounts on the claim.	Sum of payment amounts among acute or psych hospitalization where the principal diagnoses was a MH disorder or SUD.
Outpatient Spending	Sum of payment amounts among services at an outpatient facility. OOP payments were summed using the deductible and coinsurance amounts on the revenue lines.	Sum of payment amounts among services at an outpatient facility where the principal diagnosis was a MH disorder or SUD.
Physician Spending	Sum of payment line-level payment amounts in the carrier claims. OOP payments combined coinsurance and deductible payments from the carrier and DME files to capture beneficiary payments for professional services.	Sum of payment amounts among acute or psych hospitalization where the principal diagnoses was a MH disorder or SUD.
Prescription Drug Spending	Sum of drug cost amount among service dates that occur during the year. Part D OOP payments were calculated using the beneficiary payment amount.	Any NDC code that corresponded with the following class of psychotherapeutic drugs: Benzodiazepines, anxiolytics, sedatives, and hypnotics; antipsychotics and antimanics; antidepressants; analeptics (attention-deficit hyperactivity disorder [ADHD] medications); and some anticonvulsants. Medication used for SUD-related treatment include buprenorphine, acamprosate, disulfiram, naloxone, and naltrexone

EXHIBIT A-2 Mental Health-Related Procedure Codes

Procedure Code	Description
90785	Interactive Complexity (List Separately In Addition To The Code For Primary Procedure)
90791	Psychiatric Diagnostic Evaluation
90792	Psychiatric Diagnostic Evaluation With Medical Services
90801	Psychiatric Diagnostic Interview Examination
90802	Interactive Psychiatric Diagnostic Interview Examination Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Communication
90804	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Office Or Outpatient Facility, Approximately 20 To 30 Minutes Face-To-Face With The Patient
90805	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Office Or Outpatient Facility, Approximately 20 To 30 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90806	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Office Or Outpatient Facility, Approximately 45 To 50 Minutes Face-To-Face With The Patient
90807	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Office Or Outpatient Facility, Approximately 45 To 50 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90808	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Office Or Outpatient Facility, Approximately 75 To 80 Minutes Face-To-Face With The Patient
90809	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Office Or Outpatient Facility, Approximately 75 To 80 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90810	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Office Or Outpatient Facility, Approximately 20 To 30 Minutes Face-To-Face With The Patient
90811	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Office Or Outpatient Facility, Approximately 20 To 30 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90812	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Office Or Outpatient Facility, Approximately 45 To 50 Minutes Face-To-Face With The Patient
90813	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Office Or Outpatient Facility, Approximately 45 To 50 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90814	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Office Or Outpatient Facility, Approximately 75 To 80 Minutes Face-To-Face With The Patient
90815	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Office Or Outpatient Facility, Approximately 75 To 80 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90816	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 20 To 30 Minutes Face-To-Face With The Patient
90817	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 20 To 30 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90818	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 45 To 50 Minutes Face-To-Face With The Patient
90819	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 45 To 50 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90821	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 75 To 80 Minutes Face-To-Face With The Patient

(continued)

EXHIBIT A-2 Mental Health-Related Procedure Codes *(continued)*

Procedure Code	Description
90822	Individual Psychotherapy, Insight Oriented, Behavior Modifying And/Or Supportive, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 75 To 80 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90823	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 20 To 30 Minutes Face-To-Face With The Patient
90824	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 20 To 30 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90825	Psychiatric Evaluation/Records-Reports Bundled 7/1/96
90826	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 45 To 50 Minutes Face-To-Face With The Patient
90827	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 45 To 50 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90828	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 75 To 80 Minutes Face-To-Face With The Patient
90829	Individual Psychotherapy, Interactive, Using Play Equipment, Physical Devices, Language Interpreter, Or Other Mechanisms Of Non-Verbal Communication, In An Inpatient Hospital, Partial Hospital Or Residential Care Setting, Approximately 75 To 80 Minutes Face-To-Face With The Patient; With Medical Evaluation And Management Services
90832	Psychotherapy, 30 Minutes
90833	Psychotherapy Performed With Evaluation And Management Visit, 30 Minutes
90834	Psychotherapy, 45 Minutes
90836	Psychotherapy With Evaluation And Management Visit, 45 Minutes
90837	Psychotherapy, 60 Minutes
90838	Psychotherapy With Evaluation And Management Visit, 60 Minutes
90839	Psychotherapy For Crisis, First 60 Minutes
90840	Psychotherapy For Crisis; Each Additional 30 Minutes (List Separately In Addition To Code For Primary Service)
90845	Psychoanalysis
90846	Family Psychotherapy, 50 Minutes
90847	Family Psychotherapy Including Patient, 50 Minutes
90849	Multiple-Family Group Psychotherapy
90853	Group Psychotherapy (Other Than Of A Multiple-Family Group)
90857	Interactive Group Psychotherapy
90862	Pharmacologic Management, Including Prescription, Use, And Review Of Medication With No More Than Minimal Medical Psychotherapy
90863	Pharmacologic Management, Including Prescription And Review Of Medication, When Performed With Psychotherapy Services (List Separately In Addition To The Code For Primary Procedure)
90875	Individual Psychophysiological Therapy Incorporating Biofeedback Training With Psychotherapy, 30 Minutes
90889	Preparation Of Report Of Patient's Psychiatric Status
90899	Unlisted Psychiatric Service Or Procedure
96101	Psychological Testing With Interpretation And Report By Psychologist Or Physician Per Hour
96102	Psychological Testing (Includes Psychodiagnostic Assessment Of Emotionality, Intellectual Abilities, Personality And Psychopathology, E.g., MMPI And WAIS), With Qualified Health Care Professional Interpretation And Report, Administered By Technician, Per Hour Of Technician Time, Face-To-Face
96103	Psychological Testing (Includes Psychodiagnostic Assessment Of Emotionality, Intellectual Abilities, Personality And Psychopathology, E.g., MMPI), Administered By A Computer, With Qualified Health Care Professional Interpretation And Report

(continued)

EXHIBIT A-2 Mental Health-Related Procedure Codes *(continued)*

Procedure Code	Description
96116	Neurobehavioral Status Examination By Qualified Health Care Professional With Interpretation And Report, First 60 Minutes
96118	Neuropsychological Testing, Interpretation, And Report By Psychologist Or Physician Per Hour
96119	Neuropsychological Testing (E.g,, Halstead-Reitan Neuropsychological Battery, Wechsler Memory Scales And Wisconsin Card Sorting Test), With Qualified Health Care Professional Interpretation And Report, Administered By Technician, Per Hour Of Technician Time, Face-To-Face
96120	Neuropsychological Testing (E.g., Wisconsin Card Sorting Test), Administered By A Computer, With Qualified Health Care Professional Interpretation And Report
96121	Neurobehavioral Status Examination By Qualified Health Care Professional With Interpretation And Report, Additional 60 Minutes
96127	Brief Emotional Or Behavioral Assessment
96130	Psychological Testing Evaluation By Qualified Health Care Professional, First 60 Minutes
96131	Psychological Testing Evaluation By Qualified Health Care Professional, Additional 60 Minutes
96132	Neuropsychological Testing Evaluation By Qualified Health Care Professional, First 60 Minutes
96133	Neuropsychological Testing Evaluation By Qualified Health Care Professional, Additional 60 Minutes
96136	Psychological Or Neuropsychological Test Administration And Scoring By Qualified Health Care Professional, First 30 Minutes
96137	Psychological Or Neuropsychological Test Administration And Scoring By Qualified Health Care Professional, Additional 30 Minutes
96138	Psychological Or Neuropsychological Test Administration And Scoring By Technician, First 30 Minutes
96139	Psychological Or Neuropsychological Test Administration And Scoring By Technician, Additional 30 Minutes
H0031	Mental Health Assessment, By Non-Physician
H0032	Mental Health Service Plan Development By Non-Physician
H0035	Mental Health Partial Hospitalization, Treatment, Less Than 24 Hours
H0036	Community Psychiatric Supportive Treatment, Face-To-Face, Per 15 Minutes
H0037	Community Psychiatric Supportive Treatment Program, Per Diem
H0038	Self-Help/Peer Services, Per 15 Minutes
H0039	Assertive Community Treatment, Face-To-Face, Per 15 Minutes
H0040	Assertive Community Treatment Program, Per Diem
H1011	Family Assessment By Licensed Behavioral Health Professional For State Defined Purposes
H2011	Crisis Intervention Service, Per 15 Minutes
H2012	Behavioral Health Day Treatment, Per Hour
H2013	Psychiatric Health Facility Service, Per Diem
H2014	Skills Training And Development, Per 15 Minutes
H2015	Comprehensive Community Support Services, Per 15 Minutes
H2016	Comprehensive Community Support Services, Per Diem
H2017	Psychosocial Rehabilitation Services, Per 15 Minutes
H2018	Psychosocial Rehabilitation Services, Per Diem
H2019	Therapeutic Behavioral Services, Per 15 Minutes
H2020	Therapeutic Behavioral Services, Per Diem
H2021	Community-Based Wrap-Around Services, Per 15 Minutes
H2022	Community-Based Wrap-Around Services, Per Diem
H2023	Supported Employment, Per 15 Minutes
H2024	Supported Employment, Per Diem
H2025	Ongoing Support To Maintain Employment, Per 15 Minutes
H2026	Ongoing Support To Maintain Employment, Per Diem
H2027	Psychoeducational Service, Per 15 Minutes
H2028	Sexual Offender Treatment Service, Per 15 Minutes
H2030	Mental Health Clubhouse Services, Per 15 Minutes
H2031	Mental Health Clubhouse Services, Per Diem

(continued)

EXHIBIT A-2 Mental Health-Related Procedure Codes *(continued)*

Procedure Code	Description
H2033	Multisystemic Therapy For Juveniles, Per 15 Minutes
M0064	Brief Office Visit For The Sole Purpose Of Monitoring Or Changing Drug Prescriptions Used In The Treatment Of Mental Psychoneurotic And Personality Disorders
Q5008	Hospice Care Provided In Inpatient Psychiatric Facility
S9480	Intensive Outpatient Psychiatric Services, Per Diem
S9482	Family Stabilization Services, Per 15 Minutes
S9484	Crisis Intervention Mental Health Services, Per Hour
S9485	Crisis Intervention Mental Health Services, Per Diem
T1025	Intensive, Extended Multidisciplinary Services Provided In A Clinic Setting To Children With Complex Medical, Physical, Mental And Psychosocial Impairments, Per Diem
T1026	Intensive, Extended Multidisciplinary Services Provided In A Clinic Setting To Children With Complex Medical, Physical, Medical And Psychosocial Impairments, Per Hour
T2038	Community Transition, Waiver; Per Service
T2048	Behavioral Health; Long-Term Care Residential (Non-Acute Care In A Residential Treatment Program Where Stay Is Typically Longer Than 30 Days), With Room And Board, Per Diem

EXHIBIT A-3 Substance Use Disorder-Related Procedure Codes

Procedure Code	Description
Detox Value Set	
H0008	Alcohol And/Or Drug Services; Sub-Acute Detoxification (Hospital Inpatient)
H0009	Alcohol And/Or Drug Services; Acute Detoxification (Hospital Inpatient)
H0010	Alcohol And/Or Drug Services; Sub-Acute Detoxification (Residential Addiction Program Inpatient)
H0011	Alcohol And/Or Drug Services; Acute Detoxification (Residential Addiction Program Inpatient)
H0012	Alcohol And/Or Drug Services; Sub-Acute Detoxification (Residential Addiction Program Outpatient)
H0013	Alcohol And/Or Drug Services; Acute Detoxification (Residential Addiction Program Outpatient)
H0014	Alcohol And/Or Drug Services; Ambulatory Detoxification
H0016	Alcohol And/Or Drug Services; Medical/Somatic (Medical Intervention In Ambulatory Setting)
S9475	Ambulatory Setting Substance Abuse Treatment Or Detoxification Services, Per Diem
9462	Alcohol Detoxification
9465	Drug Detoxification
9468	Combined Alcohol And Drug Detoxification
HZ2ZZZZ	Detoxification Services for Substance Abuse Treatment
116	Room & Board - Private (Medical or General)- Detoxification
126	Room & Board - Semi-private Two Bed (Medical or General) - Detoxification
136	Room & Board - Semi-Private - Three And Four Beds - Detoxification
146	Room & Board - Private (Deluxe) - Detoxification
156	Room & Board - Ward (Medical or General) - Detoxification

Procedure Code	Description
SUD-Outpatient Treatment Value Set	
H0005	Alcohol And/Or Drug Services; Group Counseling By A Clinician
H0006	Alcohol And/Or Drug Services; Case Management
H0007	Alcohol And/Or Drug Services; Crisis Intervention (Outpatient)
H0015	Alcohol And/Or Drug Services; Intensive Outpatient (Treatment Program That Operates At Least 3 Hours/Day And At Least 3 Days/Week And Is Based On An Individualized Treatment Plan), Including Assessment, Counseling; Crisis Intervention, And Activity Therapies Or Education
H0022	Alcohol And/Or Drug Intervention Service (Planned Facilitation)
H0047	Alcohol And/Or Other Drug Abuse Services, Not Otherwise Specified
H2035	Alcohol And/Or Other Drug Treatment Program, Per Hour
T1006	Alcohol And/Or Substance Abuse Services, Family/Couple Counseling
T1007	Alcohol And/Or Substance Abuse Services, Treatment Plan Development And/Or Modification
T1012	Alcohol And/Or Substance Abuse Services, Skills Development
94.6	Alcohol And Drug Rehab And Detoxification
94.61	Alcohol Rehabilitation
94.64	Drug Rehabilitation
94.66	Drug Rehabilitation And Detoxification
94.63	Alcohol Rehabilitation And Detoxification
94.67	Combined Alcohol And Drug Rehabilitation
94.69	Combined Alcohol And Drug Rehabilitation And Detoxification
HZ30ZZZ	Individual Counseling for Substance Abuse Treatment, Cognitive
HZ31ZZZ	Individual Counseling for Substance Abuse Treatment, Behavioral

(continued)

EXHIBIT A-3 Substance Use Disorder-Related Procedure Codes *(continued)*

Procedure Code	Description
SUD-Outpatient Treatment Value Set *(continued)*	
HZ32ZZZ	Individual Counseling for Substance Abuse Treatment, CBT
HZ33ZZZ	Individual Counseling for Substance Abuse Treatment, 12-step
HZ34ZZZ	Individual Counseling for Substance Abuse Treatment, Interpersonal
HZ35ZZZ	Individual Counseling for Substance Abuse Treatment, Vocational
HZ36ZZZ	Individual Counseling for Substance Abuse Treatment, Psychoeducation
HZ37ZZZ	Individual Counseling for Substance Abuse Treatment, Motivational Enhancement
HZ38ZZZ	Individual Counseling for Substance Abuse Treatment, Confrontational
HZ39ZZZ	Individual Counseling for Substance Abuse Treatment, Continuing Care
HZ3BZZZ	Individual Counseling for Substance Abuse Treatment, Spiritual
HZ40ZZZ	Group Counseling for Substance Abuse Treatment, Cognitive
HZ93ZZZ	Pharmacotherapy for Substance Abuse Treatment, Antabuse
HZ96ZZZ	Pharmacotherapy for Substance Abuse Treatment, Clonidine
SUD-Methadone Value Set	
H0020	Alcohol And/Or Drug Services; Methadone Administration And/Or Service (Provision Of The Drug By A Licensed Program)
SUD-Residential Value Set	
H0017	Behavioral Health; Residential (Hospital Residential Treatment Program), Without Room And Board, Per Diem
H0018	Behavioral Health; Short-Term Residential (Non-Hospital Residential Treatment Program), Without Room And Board, Per Diem
H0019	Behavioral Health; Long-Term Residential (Non-Medical, Non-Acute Care In A Residential Treatment Program Where Stay Is Typically Longer Than 30 Days), Without Room And Board, Per Diem
H2036	Alcohol And/Or Other Drug Treatment Program, Per Diem

Procedure Code	Description
MOUD Value Set	
J0571	Buprenorphine/Naloxone
J0572	Buprenorphine/Naloxone
J0573	Buprenorphine/Naloxone
J0574	Buprenorphine/Naloxone
J0575	Buprenorphine/Naloxone
J2315	Naltrexone

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