SAMHSA

Substance Abuse and Mental Health Services Administration

Behavioral Health Spending & Use Accounts 2006–2015

Acknowledgments

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EXECUTIVE SUMMARY

Background

The Behavioral Health Spending and Use Accounts (BHSUA) produces benchmark information about expenditures on and utilization of mental and substance use disorder (M/SUD) treatment. This information is used by the Substance Abuse and Mental Health Services Administration (SAMHSA)—as well as policymakers, providers, consumers, and researchers—to guide policy decisions by increasing understanding of what the nation uses and spends on M/SUD treatment, which payment sources fund that treatment, who delivers treatment, and how expenditures change over time. The estimates serve in part as a basis for tracking mental health (MH) and SUD spending following major economic shifts, such as the Great Recession (2007–2009), and major federal policy initiatives, such as the implementation of the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008 (MHPAEA) and the Patient Protection and Affordable Care Act of 2010 (PL 111-148). They also allow for the observation of changes in spending in relation to fluctuations in the incidence of M/SUDs, such as the rise in rates of suicide in recent years and the ongoing opioid epidemic.[i] However, the methods do not permit attribution of changes in spending to any specific event or policy.

The estimates presented in this report include spending for the direct treatment of M/SUDs. Expenditures for developmental or intellectual impairment or disorders that usually are or historically have been covered by general medical insurance, such as dementia and nicotine dependence, are excluded. The report does not include expenditures related to other comorbid health care costs that can result from M/SUDs (e.g., trauma and liver cirrhosis), other costs of care such as job training and subsidized housing, or indirect costs such as lost wages and productivity. It also does not include services delivered to individuals at federal, state, or local corrections and justice departments or agencies, unless these services are delivered by community providers.

The initial BHSUA report, issued in 1998,[ii] was the first to measure disease-specific spending in a comprehensive way using methods similar to those used in the National Health Expenditure Accounts (NHEA) produced annually by the Centers for Medicare & Medicaid Services (CMS).[iii] Subsequent reports updated and extended the years covered by the estimates. The current report introduces methodological changes to the prior estimation methods that represent a major shift in the approach to producing the estimates. This fundamental change involved the substitution of health care claims data for less detailed survey data for two major payers (Medicare and private insurance) to produce estimates from 2006–2015. The estimates use Medicare and private insurance claims data to form the foundation for the spending calculations and integrate national data sources from government agencies and private organizations to complete the estimates for the other payment sources. The revised methodology maintains comparability with the NHEA, including reliance on the definitions and concepts used in the NHEA.

The revised method improves the accuracy of the estimates by using actual submitted health claims data rather than less precise data from surveys. However, it resulted in revisions to prior results. Because the claims-based estimates are available only for 2006 forward, earlier time series of the BHSUA are not directly comparable to the current series.

Study Methods

The estimation approach combines two methods—a *bottom-up* approach that uses claims to estimate MH and SUD spending for private insurance and Medicare by building up the estimates from the individual claims and a *top-down* approach that uses survey and administrative data to estimate spending by other payers. The survey-based method is referred to as a top-down approach because it starts with the total NHEA spending amount for all health care and parses out spending for M/SUD treatment. The MH and SUD amounts are broken out within categories defined by the payer groups and provider type. Within each payer and provider type stratum, survey data are used to parse out MH and SUD spending from other health spending and stratify it by treatment setting (inpatient, outpatient, or residential). This stratification does not include retail prescription drugs or insurance administration. The revised methodology introduced in this report is a bottom-up approach because it begins by assigning individual claims to strata defined by diagnosis, provider, and setting and then builds up the expenditures within each category. The values presented are not adjusted for inflation; instead they are presented in the context of total health spending or compared with the gross domestic product so that changes in MH and SUD spending can be compared with relevant benchmarks.

There are several benefits to using claims data to produce estimates for MH and SUD spending. This revised estimation method improves the accuracy of diagnosis, provider, and setting splits within the payer estimates and expands the level of detail captured at individual and service levels. In particular, it significantly improves the allocation of treatment costs by diagnosis because costs associated with specific diagnoses and treatment for SUD in primary MH facilities can be more accurately applied to SUD. Maintaining consistency with the NHEA is beneficial in that it allows for an analysis of and comparison between MH and SUD and total health spending. In addition, both MH and SUD and total health spending can be followed over time as public programs and the health care system change. By incorporating data from large claims databases, which contain actual amounts paid for health services, the accuracy and precision of the estimates are improved. Incorporating Medicaid claims when complete data can be integrated feasibly into the methodology would further strengthen the approach and add to what can be contributed by survey data to estimate spending for this major payer of health care services.

These estimates use standard estimation techniques and the best available data sources. They represent the only MH and SUD spending estimates that are comparable to total health care spending for the United States. As in any effort of this magnitude, multiple data sources were used to assemble and cross-check information that ultimately formed the basis for the estimates. Each data source has its own strengths and weaknesses, which were assessed before determining the best data sources to use in producing the MH and SUD spending estimates.

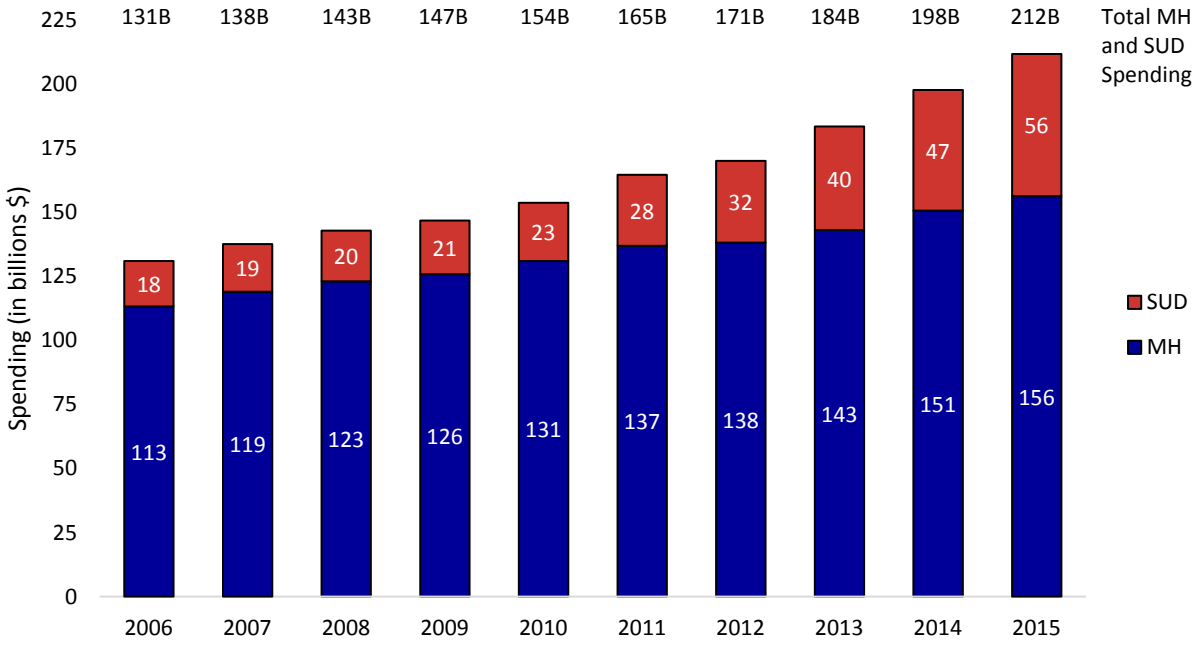
Key Findings

Total Mental Health and Substance Use Disorder Treatment Spending

Spending for MH and SUD treatment rose steadily from $131 billion in 2006 to $212 billion in 2015, representing a 62 percent increase. The increase was more pronounced for SUD spending than for MH spending, particularly from 2010 to 2015 when spending increased from $23 billion to $56 billion (Figure ES1). From 2006 to 2015, growth in MH spending was similar to growth in spending for total health care generally.

In 2015, combined MH and SUD spending constituted 6.9 percent of total health care spending, up from 6.2 percent in 2009. The higher share was driven by faster growth in SUD spending, which doubled as a percentage of total health growth from 0.9 percent in 2006–2010 to 1.8 percent in 2015. The faster recent growth in SUD spending compared with total health spending coincided with the continuing rise of the opioid epidemic and consequent demand for SUD treatment. It accelerated after passage of the MHPAEA, which was effective in 2010 and required private insurance coverage for SUD treatment at levels comparable to physical health coverage, and after passage of the Patient Protection and Affordable Care Act, which expanded dependent coverage through age 26 in September 2010 and expanded Medicaid eligibility in 2014 in the states that chose to expand their Medicaid program.

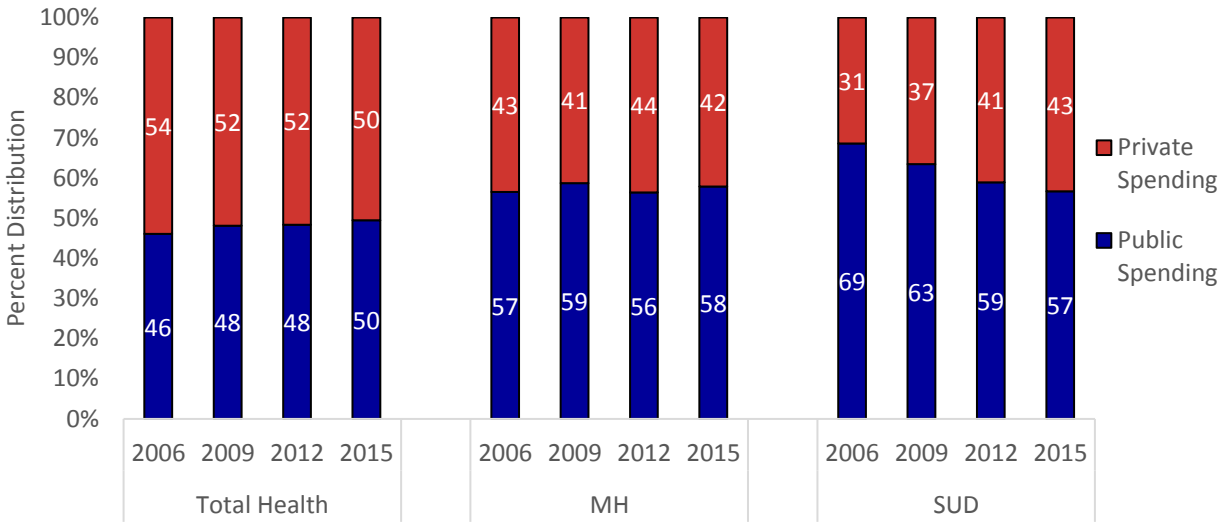
Figure ES1. MH and SUD Treatment Spending, 2006–2015



Abbreviations: MH, mental health; SUD, substance use disorder.

In 2015, half of total health care spending came from private sources and half came from public sources (Figure ES2). (As described in Appendix B, private sources include private health insurance and out-of-pocket spending and public sources include such programs as Medicaid and Medicare). This represented a slight shift since 2006, when 46 percent of total health spending was from public sources. Since 2006, the share of spending from public sources was higher for MH than for total health. However, unlike for total health, the share of public spending has remained relatively stable for MH, ranging between 56 and 59 percent, whereas there was a large shift for SUD spending, with the public spending share falling from 69 percent to 57 percent from 2006 to 2015. The shift was driven by private insurance spending, which increased from 19 percent of total SUD spending in 2006 to 29 percent of total SUD spending in 2015. Medicaid SUD spending also increased over that time period, from 17 percent to 24 percent of total SUD spending.

Figure ES2. Share of Public[a] and Private[b] Spending on MH, SUD, and Total Health Treatment, Selected Years

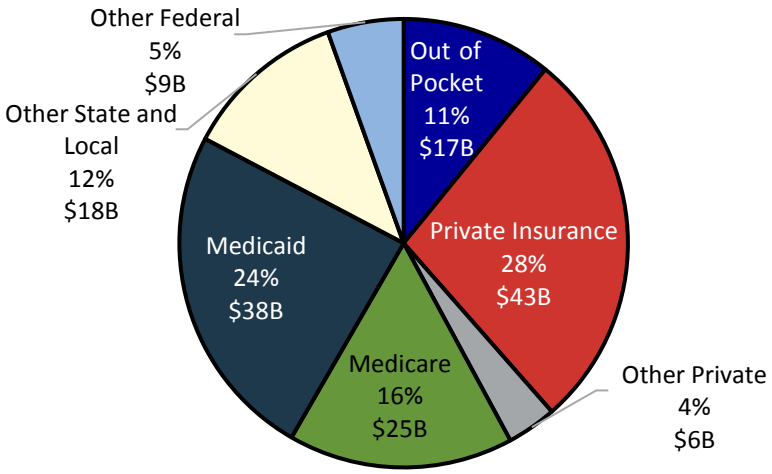


Abbreviations: MH, mental health; SUD, substance use disorder.
[a]Public payments include payments made on behalf of individual enrollees in Medicare or Medicaid or through other programs run by federal or state and local government agencies.
[b]Private payments include any payments made through private health insurance, out of pocket, or from other private sources such as charitable organizations.

Mental Health Treatment Spending Trends

Payer. The distribution of MH spending by payer was fairly constant over time, with private insurance paying the largest share of MH spending—28 percent in 2015 (Figure ES3). Out-of-pocket costs decreased from 14 percent of the MH total in 2006 to 11 percent in 2015. Out-of-pocket costs include copayments, deductibles, and coinsurance for individuals with health insurance, as well as costs paid by uninsured individuals who pay the full cost of their care. The drop in the share of MH care paid out of pocket was due to expanded insurance coverage and fewer individuals paying the total costs of their care.

Figure ES3. Distribution of MH Spending by Payer, 2015

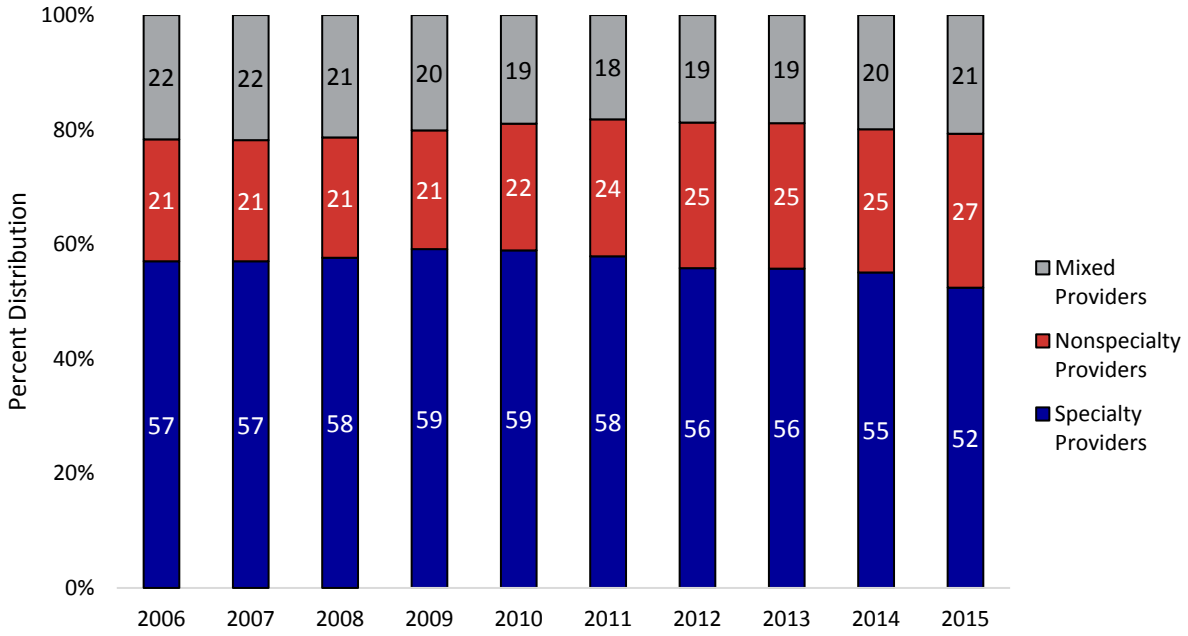


Abbreviation: MH, mental health.
Note: Percentages may not sum to 100 because of rounding.

Other federal government spending accounted for 5 percent of MH spending. Other federal spending included MH block grants from SAMHSA, which accounted for 0.3 percent of all MH spending.

Provider. A larger portion of MH care was provided by nonspecialty providers—that is, providers or settings where the primary focus may not be behavioral health treatment (e.g., nonpsychiatrist physicians or nonspecialty units in general hospitals). MH care provided by nonspecialty providers was 27 percent in 2015, up from 21 percent in 2006 (Figure ES4). This shift may indicate expanded capacity to provide treatment for mental disorders in primary care and other nonspecialty settings—for example, prescribing mental disorder medications such as antidepressants in general health care settings. However, it also might be due to increased demand or higher prices for treatment in nonspecialty settings. Integrating MH care into physical health settings has been a priority of MH advocates to help address the shortage of MH professionals and expand access to mental disorder treatment. To the degree that the shift in spending reflects a shift in utilization, the greater reliance on nonspecialty providers suggests that that efforts to integrate care may have been successful.

Figure ES4. Distribution of MH Spending by Specialty and Nonspecialty Providers and Those That Provide Both Types of Care (Mixed Providers), 2006–2015



Abbreviation: MH, mental health.

Note: Mixed providers include clinics that provide both specialty and nonspecialty services, for example, Federally Qualified Health Centers.

Setting. Prior reports showed a large shift in spending from inpatient MH care to other settings. Although the methods are not directly comparable, the *Behavioral Health Spending and Use Accounts, 1986–2014* report showed that the proportion of MH care spending in inpatient settings dropped from 41 percent in 1986 to approximately 20 percent in 2006.[iv] Current estimates show that in 2006, inpatient MH care comprised 21 percent of total MH spending and remained flat in 2015, suggesting that the shift from inpatient care to other settings has leveled off to about 20 percent of total MH spending.

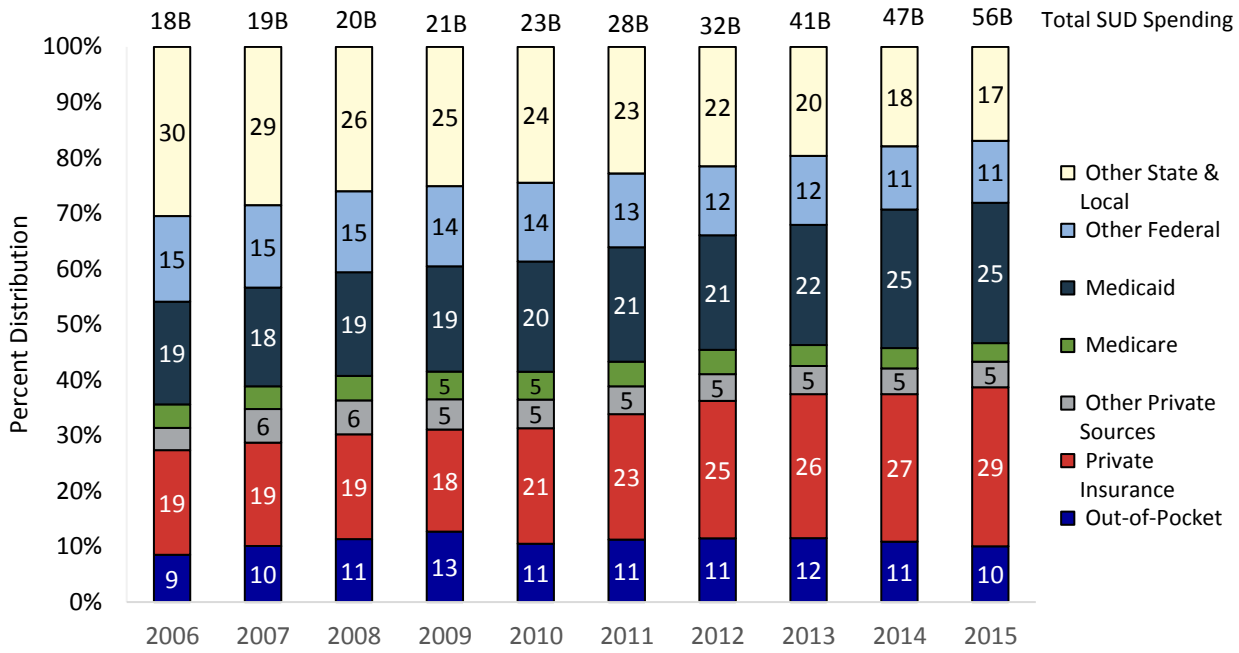
Prescription drugs. The percentage of total MH spending that went toward retail prescription drugs decreased over time from 33 percent in 2006 to 27 percent in 2015. This decrease resulted from greater availability of generic drugs and a lack of new MH prescription drugs coming to market. It resulted from a lower unit cost of medications, not less utilization of prescription MH drugs. Growth in MH prescription drug spending was outpaced by growth in spending for total health prescription drugs.

Substance Use Disorder Treatment Spending Trends

Payer. There were major shifts in payment sources for SUD treatment (Figure ES5). The share of SUD treatment paid for by private insurance increased from 19 percent in 2006 to 29 percent in 2015, making private insurance the largest payer of SUD treatment. Similarly, the share of costs paid for by Medicaid increased from 19 percent in 2006 to 25 percent in 2015. Medicare continues to be a small payer of SUD treatment. The share funded by other state and local sources decreased from 30 percent in 2006 to 17 percent in 2015. This represents a major change in the financing of SUD treatment, shifting from reliance on contracts and grants administered by federal, state, and local authorities to coverage by private insurance and Medicaid. This shift may drive changes in service delivery, that is, the types of services that are paid for, because the major payers—private insurance and Medicaid managed care organizations—will shape the SUD service system.

Other federal government spending accounted for 11 percent of SUD treatment spending in 2015. Other federal spending included SUD block grants from SAMHSA, which accounted for 2.5 percent of all SUD spending (not shown in Figure ES5).

Figure ES5. Distribution of SUD Spending by Payer, 2006–2015



Abbreviation: SUD, substance use disorder.

Note: Bar segments less than 5 percent are not labeled.

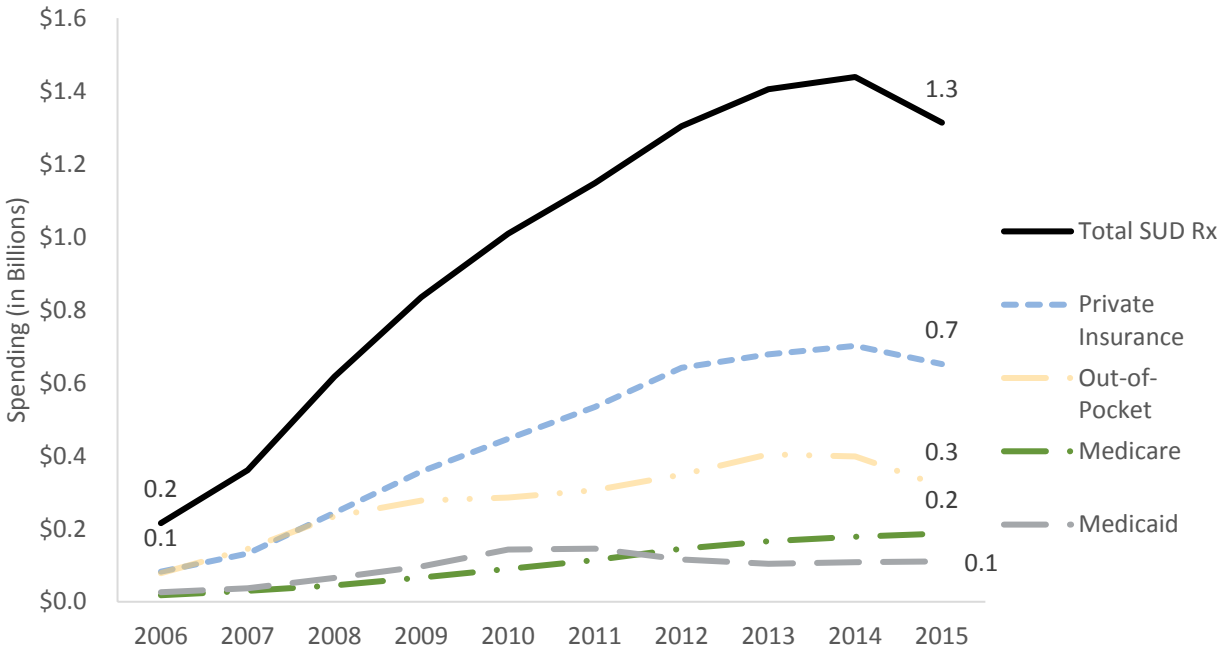
Provider. The trend toward greater reliance on nonspecialty providers for SUD treatment was similar to the increase in provision of MH care by nonspecialty providers. By 2015, 40 percent of expenditures for SUD care was paid to nonspecialty providers, up from 28 percent in 2006.

Setting. The percentage of SUD spending in outpatient settings increased from 29 percent in 2006 to 48 percent in 2015, becoming the largest setting share of SUD spending. The share of spending for inpatient care declined from 24 percent in 2006 to 15 percent in 2013–2015. This decline in spending for inpatient care may represent a levelling off of the portion of care provided in inpatient settings.

Retail prescription drugs. Growth in SUD retail prescription drug[v] spending spiked at 71 percent between 2007 and 2008 as the opioid epidemic escalated and after the limit on the number of patients that could be treated by waivered physicians was increased to 100 patients. The increase may be due to increased demand for treatment coupled with increased prescribing capacity. Overall expenditures for SUD prescription drugs continued to increase markedly through 2015 (Figure ES6). Expenditures dropped in 2015 following the introduction of generic buprenorphine/naloxone in 2013 resulting in lower unit cost for the medication.

Despite the growth in SUD retail medication expenditures and efforts to increase access to medication-assisted treatment with buprenorphine, buprenorphine/naloxone, and naltrexone to treat opioid use disorder, SUD prescription drug spending remains a very small portion of overall SUD treatment spending, decreasing from a high of 4 percent in 2009–2014 to 2 percent in 2015.

Figure ES6. SUD Spending on Retail Prescription Drugs by Payer[a], 2006–2015



Abbreviation: SUD, substance use disorder.

[a] Payments by other federal, other state and local, and other private sources totaled $0.1 billion or less over the time period and are not included on the graph. Value labels for overlapping lines and value labels less than $0.1 billion are not shown to improve legibility.

Summary

Overall, trends in MH spending were fairly constant and consistent with trends for total health spending from 2006 to 2015. Exceptions were the decline in prescription drug spending from 33 percent to 27 percent of total MH spending and the decline in out-of-pocket spending from 14 percent to 11 percent of total MH spending. The shift from inpatient settings to community settings for receipt of MH care appears to have leveled off to approximately 20 percent of all MH spending. Public versus private spending on MH was relatively constant, with private spending accounting for 42 percent of spending in 2015.

Conversely, spending on SUD treatment saw greater growth and major shifts in payer sources and care settings compared with MH and total health spending. Private insurance and Medicaid both became larger payers of SUD treatment. Care shifted from inpatient to outpatient settings. More care was funded by private payers, specifically private health insurance. Spending for SUD retail prescription drugs increased seven-fold—from $200 million to $1.4 billion in 2014—and then dropped to $1.3 billion in 2015 with the introduction of generic buprenorphine/naloxone.

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[i] https://www.cdc.gov/drugoverdose/epidemic/index.html

[ii] Mark, T. L., McKusick, D., King, E., Harwood, R., & Genuardi, J. (1998). *National expenditures for mental health, alcohol and other drug abuse treatment, 1996*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

[iii] Centers for Medicare & Medicaid Services. *National Health Expenditure Account*: *Methodology paper, 2015: Definitions, Sources, and Methods.* Retrieved from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/DSM-15.pdf

[iv] Substance Abuse and Mental Health Services Administration. (2016). *Behavioral health spending and use accounts, 1986–2014* (HHS Publication No. SMA-16-4975). Rockville, MD: Author.

[v] Retail prescription drug spending does not include methadone dispensed in Opioid Treatment Programs. These costs are captured in the Outpatient Setting category.

INTRODUCTION

To inform policy decisions and initiatives, the Substance Abuse and Mental Health Services Administration (SAMHSA) tracks national trends, establishes measurement and surveillance systems, and develops and promotes standards to improve the delivery of services to people with mental and substance use disorders (M/SUDs). That effort includes tracking national spending for and utilization of M/SUD treatment. The Behavioral Health Spending and Use Accounts (BHSUA) produce benchmark information on expenditures on and utilization of mental health (MH) services and SUD treatment. This information aids SAMHSA—as well as policymakers, providers, consumers, and researchers—by increasing their understanding of what the nation uses and spends when it comes to treatment of MH conditions and SUDs, which payment sources fund that treatment, who delivers treatment, the settings in which treatment is administered, and how expenditures change over time. The estimates serve in part as a basis for tracking MH and SUD spending following major economic shifts such as the Great Recession (2007–2009), and major federal policy initiatives, such as the implementation of the Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008 (MHPAEA) and the Patient Protection and Affordable Care Act of 2010 (PL 111-148). They also allow for the observation of changes in spending in relation to fluctuations in the incidence of M/SUDs, such as the rise in rates of suicide in recent years and the ongoing opioid epidemic.[1] However, the methods do not permit attribution of changes in spending to any specific event or policy.

The initial BHSUA report, issued in 1998,[2] was the first to measure disease-specific spending in a comprehensive way using methods similar to those used in the Centers for Medicare & Medicaid Services (CMS) National Health Expenditure Accounts (NHEA).[3] Subsequent reports, including the most recent issuance in 2016, updated and extended the years covered by the estimates. These earlier reports used the strongest data sources and methods available at the time to estimate the portion of total health care spending used for treatment of M/SUDs. The current report introduces methodological changes to the prior estimation methods that represent a major shift in the approach to producing the estimates. This fundamental change involves the substitution of health care claims data for less-detailed survey data for two major payers—Medicare and private insurance. On the basis of the availability of reliable claims data, the current report produces estimates from 2006–2015 (Appendix A).

The revised methodology maintains comparability with the NHEA, produced annually by CMS, including a reliance on the definitions and concepts used in the NHEA. The estimates use Medicare and private insurance claims data to form the foundation of the spending calculations and integrate national data sources from government agencies and private organizations to complete the estimates for the other payment sources, as summarized below and described in more detail in Appendices B and C.

Incorporating the claims data necessitated the development of methods to integrate the claims data with previously used survey and administrative data to estimate spending for the remaining payers. Further, the methods changes required refining some prior definitions of provider and setting. The revised methodology improves the accuracy of the estimates. Because the claims-based estimates are available for 2006 forward, earlier time series of the BHSUA are not directly comparable to the current series.

Overview of the Methods

The estimation approach for the BHSUA aligns with the definitions used in the NHEA, which constitute the framework for which CMS constructs the estimates of spending for all health care. The framework is a two-

dimensional matrix. One dimension consists of health care providers or services that comprise the U.S. health care industry, such as psychiatrists or home health care; the other dimension is composed of funding sources used to purchase this health care (e.g., private health insurance or Medicaid).

The current estimates of MH and SUD spending are based on two different methods—(1) a bottom-up method that uses claims to estimate MH and SUD spending for private insurance and Medicare by building up the estimates from the individual claims and (2) the existing top-down method, which uses survey and administrative data to estimate spending by other payers. The survey-based method is referred to as a *top-down* approach because it starts with the total NHEA spending amount for total health care and parses out spending for MH services and SUD treatment. In other words, MH and SUD treatment spending is a subcategory of total health spending that includes all types of health care and procedures. The MH and SUD amounts then are broken out within the payer groups and provider type categories. Within each payer and provider type strata, survey data are used to identify MH and SUD spending from other health spending and to stratify spending by treatment setting (inpatient, outpatient, or residential). This method is used to create spending by payer for most provider types. Separate estimates were developed using SAMHSA data for clinics and public health activities. Consistency across data sources was reviewed to ensure that no duplicate expenditures were included. Then, we developed total estimates for each payer and provider to obtain national estimates for MH, SUD, and total MH and SUD spending in the United States from 2006 through 2015.

The new claims-based methodology incorporated into producing the estimates is referred to as a *bottom-up* approach because it begins by assigning individual claims to strata defined by diagnosis, provider, and setting and then builds up the expenditures within each category. Because claims data currently are readily available only for private insurance and Medicare, a hybrid approach was used to estimate spending across all payer categories. Integrating Medicaid data may be feasible once CMS's Transformed Medicaid Statistical Information System is operational at a national level.

Both methods use claims data either directly or indirectly. As such, the assignment of expenditures to either the MH or SUD category is based on the primary diagnosis assigned to each claim. For a person receiving treatment for both a mental and a substance use disorder, each individual service would be allocated on the basis of the primary diagnosis. If multiple diagnosis codes are included on a claim, there is no valid way to distribute the cost across multiple diagnostic categories; therefore, we rely on the primary diagnosis code to assign claims to a spending category. (This may result in an underestimate of M/SUD costs).

Strengths of the approach. The benefit of maintaining consistency with the NHEA is that it allows analysis of and comparison between MH and SUD spending and total health spending. In addition, both MH and SUD spending and total health spending can be followed over time as public programs and the health care system change. Furthermore, spending by clinical condition—M/SUDs—can be studied to understand patterns of public and private spending, and the participation by types of providers can be monitored as treatment patterns change. Incorporating data from large claims databases, which contain actual amounts paid for health services, improves the accuracy and precision of the estimates and expands the analytic capabilities of the data at individual and service levels. Incorporating Medicaid claims when feasible would further strengthen the approach and add to what can be contributed by survey data to estimate spending for this major payer of health care services.

Limitations. The estimates in this report were prepared using standard estimation techniques with the best available survey information. They represent the only MH and SUD spending estimates that are comparable to total health care spending estimates for the United States. As in any effort of this type, multiple data sources were used to assemble and cross-check information that ultimately formed the basis for the estimates. Each data source has its own strengths and weaknesses, which were assessed before determining the best data sources to use in producing the MH and SUD spending estimates. Estimates for 2015 should be considered preliminary until more complete information to support them becomes available; the lag times vary by data source, and not all data sources were available for the final year of the estimates.

Scope. As in past reports, the full economic burden of M/SUDs is not incorporated into the spending estimates. Burden-of-illness studies include costs not directly related to treatment, such as the impact of M/SUDs on productivity, societal costs linked to drug-related crimes, housing costs, and other subsidies to assist people with an M/SUD. Further, the scope of this report does not include the physical consequences of M/SUD or related costs, such as cirrhosis of the liver, trauma, HIV and other infectious diseases, and exacerbation of chronic conditions such as diabetes and respiratory disease. In addition, expenditures for the diagnosis and treatment of developmental or intellectual impairment or disorders that usually or historically are covered by general medical insurance, such as dementia and nicotine dependence, are excluded. Services through self-help groups such as Alcoholics Anonymous also are not included in these estimates because these programs are free to people with an SUD. These estimates do not include MH and SUD services paid for by federal, state, or local corrections and justice departments or agencies, unless these funds pay for services that are subcontracted to community providers to treat M/SUDs among these populations. Finally, the estimates from the BHSUA do not include SUD or mental illness prevention, general wellness, or health promotion spending.

Organization of this Report

This report presents the latest estimates of expenditures on MH and SUD services for the years 2006–2015. It replaces prior reports and related journal articles of national MH and SUD spending estimates for these years that have been produced by SAMHSA since the inception of this project in 1996.[4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19]

The estimates are presented first for MH and SUD spending combined, followed by MH spending and then by SUD spending. This organization is used because expenditure patterns differ in some important ways by condition. The report contains the following sections:

- Overview of Mental Health and Substance Use Disorder Spending
- Mental Health Spending by Payment Source
- Mental Health Spending by Provider, Setting, and Specialty Treatment Type
- Substance Use Disorder Spending by Payment Source
- Substance Use Disorder Spending by Provider, Setting, and Specialty Treatment Type
- Appendix A—Tables
- Appendix B—Structure and Definitions
- Appendix C—Methods
- Appendix D—Abbreviations
- Appendix E—Contributors

Definitions

As in the NHEA, the physical location of services provided (referred to as an establishment by the U. S. Census Bureau) determined the provider category for health care spending. In other words, the MH and SUD expenditures by specific providers were categorized not by the spending for a specific service but by spending for services from a particular establishment. For example, home health care may be provided by freestanding home health agencies, but it also may be provided by home health agencies that are part of a hospital. In the former case, home health care spending was classified as home health care; in the latter case, it was classified as hospital care.

The following is a list of abbreviated definitions of payment source, provider, and setting categories used in the BHSUA spending estimates. They borrow extensively from those used in the NHEA.[20,21] More comprehensive descriptions can be found in Appendix B.

Payment Sources

The payment source, or *payer*, category classifies spending by payment source as defined below. It comprises all spending, including retail prescription drugs and insurance administration.

Private payments: Any payments made through private health insurance, out of pocket, or from other private sources.

- **Private health insurance:** Benefits paid by private health insurers (including behavioral health plans) for the provision of service, prescription drugs, or the administrative costs and profits of health plans. Private health insurance benefits paid through managed care plans on behalf of Medicare and Medicaid were excluded.
- **Out-of-pocket payments:** Direct spending by consumers for health care goods and services, including coinsurance, deductibles, and any amounts not covered by public or private insurance.
- **Other private:** Spending from philanthropic and other nonpatient revenue sources.

Public payments: Any payments made on behalf of individual enrollees in Medicare or Medicaid or through other programs run by federal or state and local government agencies.

- **Medicare:** The federal government program that provides health insurance coverage to eligible individuals who are aged or disabled. It includes payments made through fee-for-service and Medicare Advantage plans.
- **Medicaid (including the Children's Health Insurance Program [CHIP]):** A program jointly funded by the federal and state governments that provides health care coverage to certain classes of people with limited income and resources. It includes payments made through fee-for-service and managed care plans.
- **Other federal:** Programs other than Medicaid and Medicare provided through federal payment sources, including the Department of Veterans Affairs, the Department of Defense, the Community Mental Health Services Block Grant and the Substance Abuse Prevention and Treatment Block Grant programs[22] administered by SAMHSA, and treatment by the Indian Health Service, among other federal payment sources.
- **Other state and local:** Programs other than Medicaid that are funded primarily through state and local MH and SUD agencies.

Providers

The provider category is based on the origin of the bill for the service encounter. Care billed to a specific provider, that is, a physician or other professional, is included under professional services, as defined below. Other service encounters that are billed as a service from a facility are categorized by the location of the care, for example, payments to hospitals, nursing homes, or home health agencies. Retail prescription drugs and insurance administration comprise separate categories as defined below.

Hospital care: All billed services provided to patients by public and private hospitals, including general medical or surgical hospitals and psychiatric and SUD specialty hospitals. It may include detoxification, and other MH and SUD treatment services in inpatient, outpatient, emergency department, and residential settings that are located in or operated by a hospital or hospital system.

- **General hospitals:** Community medical or surgical and specialty hospitals other than MH and SUD specialty hospitals providing diagnostic and medical treatment, including MH and SUD care in specialized treatment units of general hospitals.
    - **General hospital specialty unit:** Designated unit of a general medical or surgical hospital (other than an MH or SUD specialty hospital) that provides care for diagnosed mental illness, SUD, or detoxification.
    - **General hospital nonspecialty unit:** Any general medical or surgical units of general hospitals (other than in MH or SUD specialty units) that provide treatment for a diagnosed mental illness, SUD, or detoxification.
- **Specialty hospitals:** Hospitals primarily engaged in providing diagnostic, medical treatment, and monitoring services for patients with mental illness or substance use diagnoses.

Professional services include physician services and other professional services that are billed to a specific provider. They include office-based care and care delivered in other settings—for example, when a physician sees a patient in a hospital and bills for the encounter.

Psychiatrists: Independently billed services of private or group practices of health practitioners having the degree of Doctor of Medicine (MD) or Doctor of Osteopathy (DO) who are engaged primarily in the practice of psychiatry or psychoanalysis, plus the independently billed portion of medical laboratory services.

- **Nonpsychiatric physicians:** Independently billed services provided in establishments operated by nonpsychiatric MDs and DOs and outpatient care centers (except specialty MH and SUD clinics). This category also includes services rendered by a physician in hospitals if the physician bills independently for those services. This excludes services provided within the psychiatrist group above.
- **Other professional services:** Care provided in locations operated by independent licensed health practitioners other than physicians and dentists, such as psychologists, social workers, and counselors who are permitted to bill directly for services. (Spending for services provided in doctors' offices by nurses, nurse practitioners, and physician assistants was classified with the spending received by their supervising physician.)

Long-term care: services provided by nursing home or home health care provider.

- **Home health care:** Medical care provided in the home by private and public freestanding home health agencies.

- **Nursing home care:** Services provided in private and public freestanding nursing home facilities.

Clinics and public health activities: This category includes clinical centers primarily providing outpatient and/or residential services run by private for-profit or nonprofit organizations or government agencies.

Retail prescription drugs: Psychotherapeutic medications sold through retail outlets and mail-order pharmacies. Sales through hospitals, exclusive-to-patient health maintenance organizations, and nursing home pharmacies were excluded. See Appendix B for specific medication classes. Spending on methadone dispensed to treat drug abuse was captured as part of spending for specialty SUD centers where methadone is dispensed, rather than with SUD prescription drug spending.

Insurance administration: Spending for the cost of running various government health care insurance programs, as well as the administrative costs and profit of private health insurance companies.

Settings of Care

Setting refers to the type of facility in which the care was provided, that is, an inpatient, outpatient, or residential care facility as defined below. Neither insurance administration nor retail prescription drugs are classified by setting.

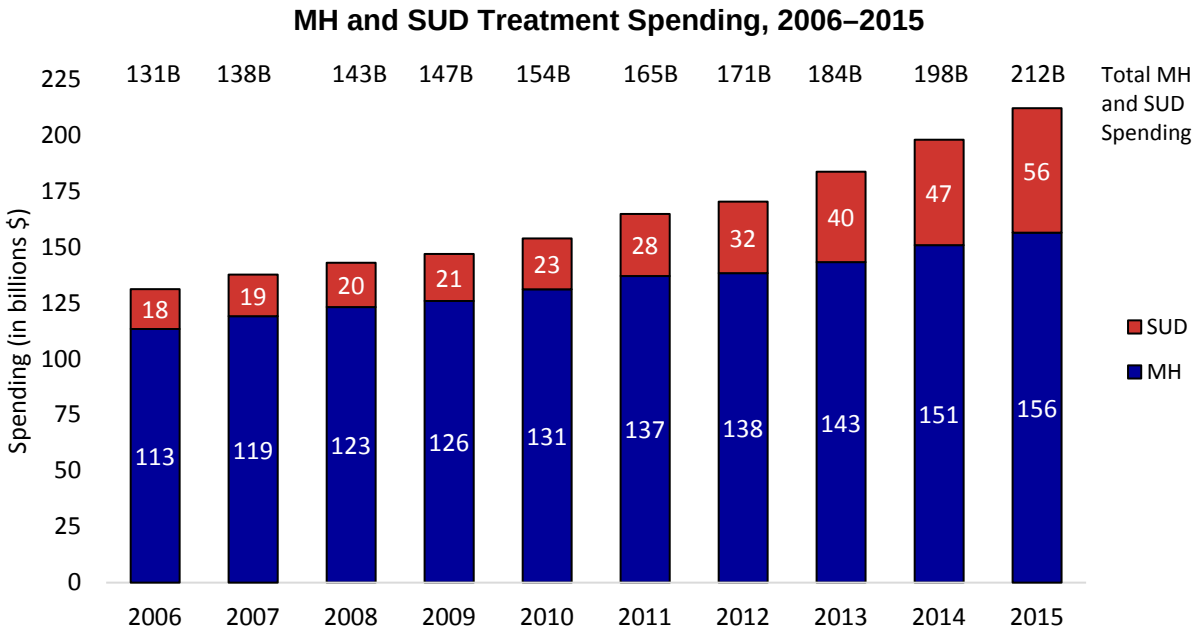
Inpatient services: Care provided in an acute medical care unit or setting of a general hospital or in specialty MH or SUD hospitals.

Outpatient services: Care provided in settings such as hospital outpatient departments, emergency departments, or offices and clinics of physicians and other medical professionals. This category includes partial hospitalization and intensive outpatient services offered by hospital outpatient departments as well as case management and intensive outpatient services offered by health clinics and specialty MH and SUD centers. Care provided by home health providers was counted as an outpatient service.

Residential services: Therapeutic care provided by licensed health professionals in a 24-hour care setting, including residential care in specialty MH and SUD centers and all nursing home care.

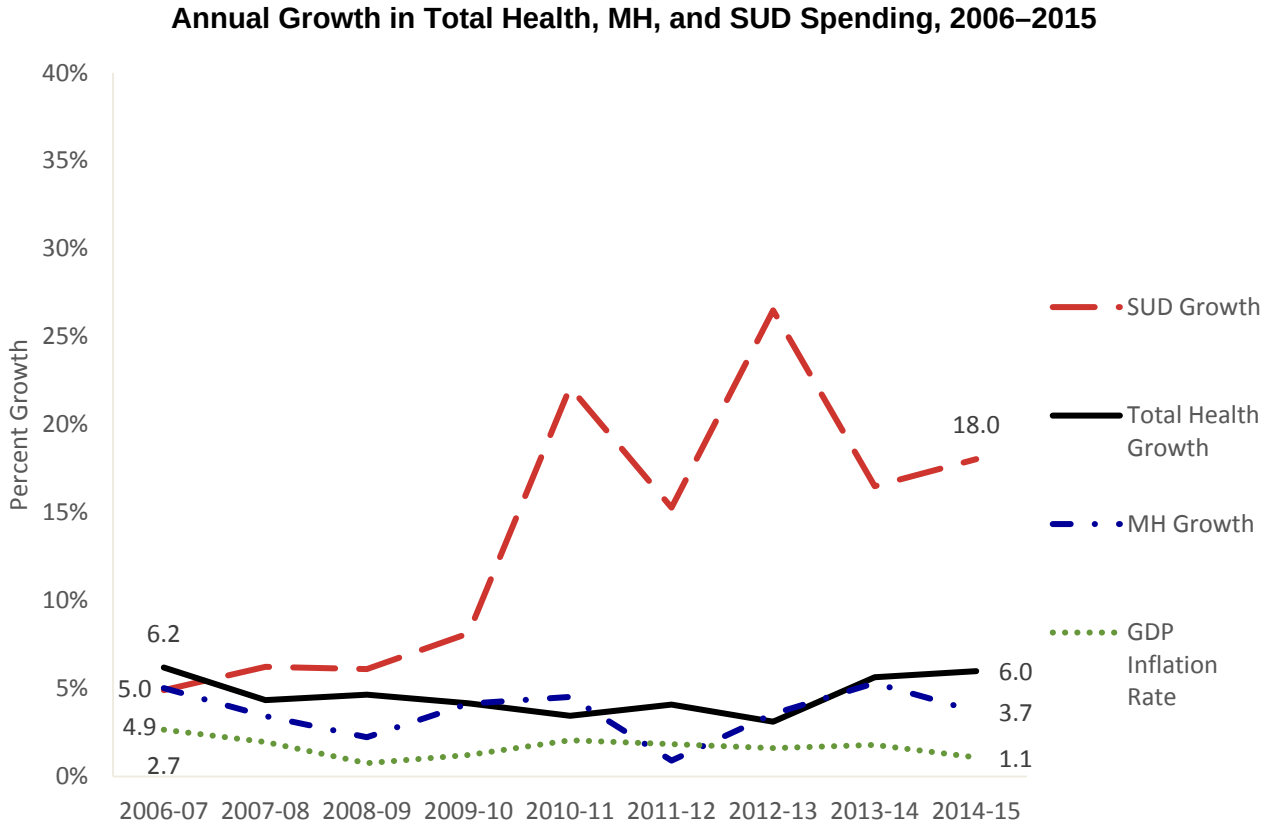
OVERVIEW OF MENTAL HEALTH AND SUBSTANCE USE DISORDER SPENDING

Figure 1. In 2015, Mental Health (MH) and Substance Use Disorder (SUD) Spending Totaled $212 Billion, up From $131 Billion in 2006



- In 2015, MH and SUD spending totaled $212 billion. MH spending amounted to $156 billion, or 74 percent, of all MH and SUD spending; SUD spending amounted to $56 billion, or 26 percent.
- Overall MH and SUD spending increased by 62 percent between 2006 and 2015, from $131 billion in 2006 to $212 billion in 2015. Relative to the 2006 to 2010 period when spending increased by 18 percent, there was a higher increase, 38 percent, in overall spending between 2010 and 2015. The faster recent growth in SUD spending compared with total health spending coincided with the continuing rise of the opioid epidemic and consequent demand for SUD treatment. It accelerated after passage of the MHPAEA, which was effective in 2010 and required private insurance coverage for SUD treatment at levels comparable to physical health coverage, and after passage of the Patient Protection and Affordable Care Act, which expanded dependent coverage through age 26 in September 2010 and expanded Medicaid eligibility in 2014 in the states that chose to expand their Medicaid program.
- SUD spending increased more than threefold between 2006 and 2015, from $18 billion to $56 billion. MH spending increased by almost 40 percent during this period, from $113 billion to $156 billion.
- The SUD share of MH and SUD spending increased over time from 14 percent in 2006 to 26 percent in 2015.
- The MH share of MH and SUD spending decreased over time from 86 percent in 2006 to 74 percent in 2015.

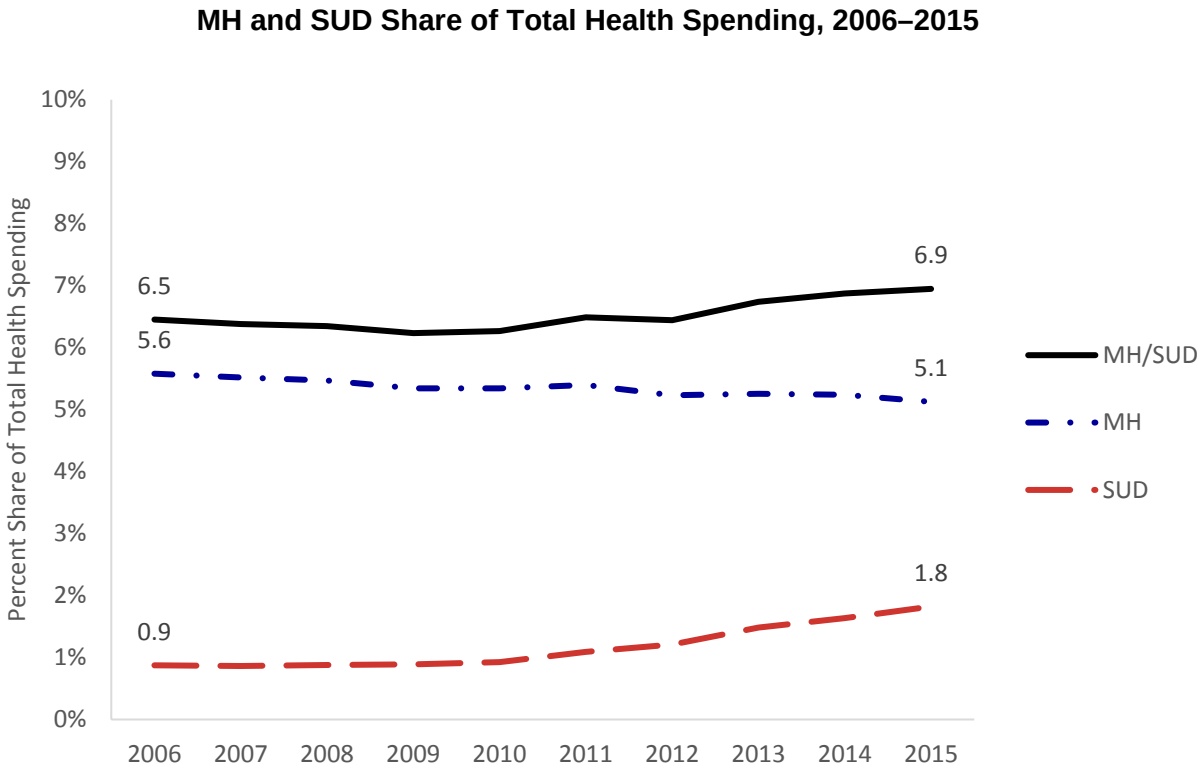
Figure 2. From 2012 to 2015, Mental Health and Substance Use Disorder Spending Increased at a Faster Rate Than Total Health Spending



Abbreviations: MH, mental health; GDP, gross domestic product; SUD, substance use disorder.

- Spending growth in SUD treatment had a significant increase starting in 2010. Although the SUD spending growth was generally between 6 to 8 percent between 2006 and 2010, it varied between 15 and 26 percent from 2010 to 2015. As described, the growth in SUD spending compared with total health spending coincided with the continuing rise of the opioid epidemic, and accelerated after passage of the MHPAEA (effective in 2010) and after passage of the Patient Protection and Affordable Care Act, which expanded dependent coverage through age 26 in September 2010 and expanded Medicaid eligibility in 2014 in the states that chose to expand their Medicaid program
- Annual growth rates in total health spending and in MH and SUD spending were consistently higher than the annual gross domestic product (GDP) inflation rate.

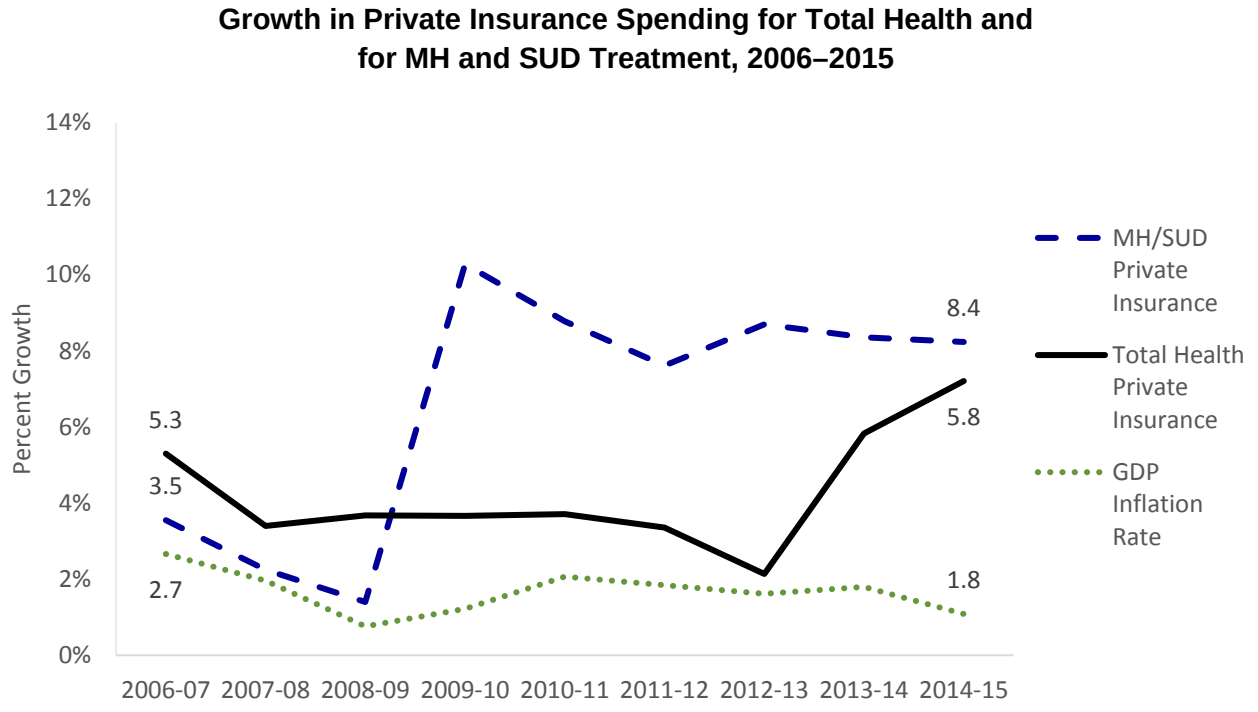
Figure 3. From 2006 to 2015, Spending for Substance Use Disorder Treatment Spending Increased Twofold as a Share of Total Health Spending



Abbreviations: MH, mental health; SUD, substance use disorder.

- There was a small increase in the percentage share of MH and SUD spending in total health spending, from 6.5 percent in 2006 to 6.9 percent in 2015.
- The percentage share of MH spending in total health spending decreased from 5.6 percent in 2006 to 5.1 percent in 2015.
- The percentage share of SUD spending in total health spending had a significant twofold increase, from 0.9 percent in 2006 to 1.8 percent in 2015.
- The percentage share of SUD spending in total health spending increased particularly after 2010.

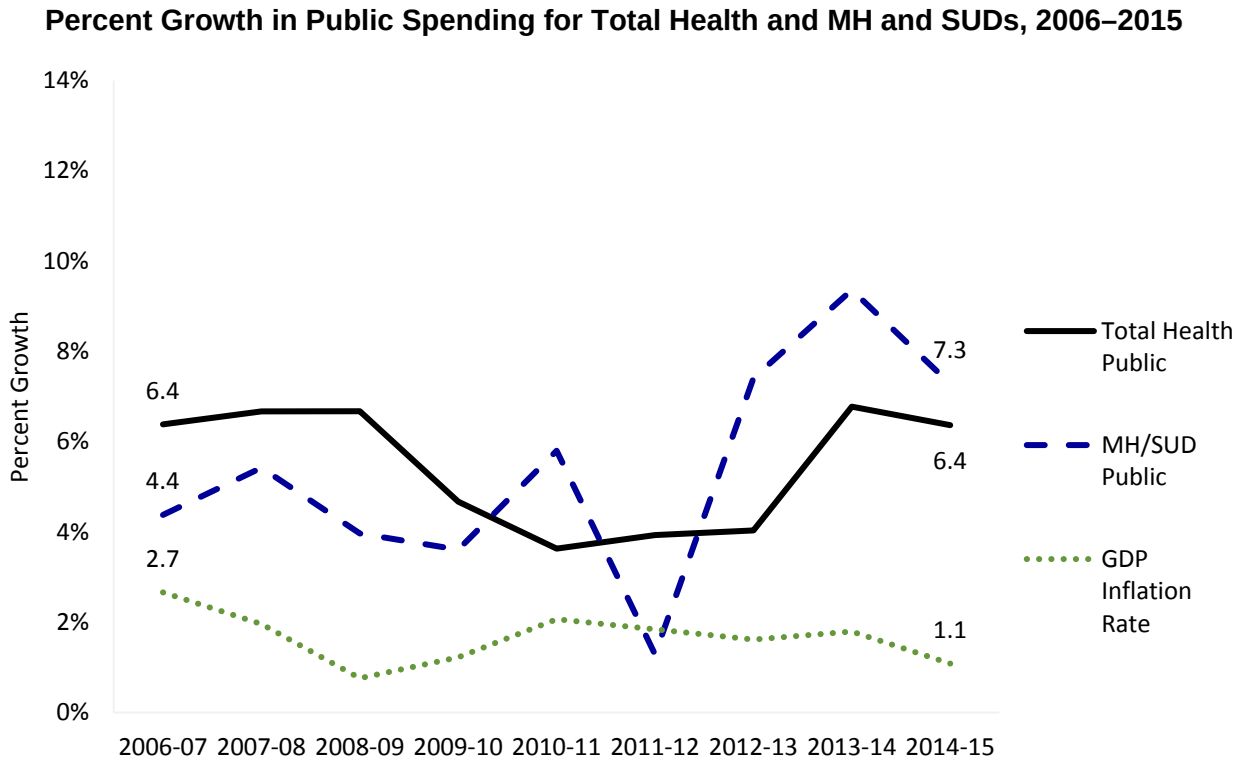
Figure 4. The Average Annual Growth Rate in Private Insurance Spending for Mental Health and Substance Use Disorder Treatment Exceeded That for Total Health Treatment From 2009 to 2015



Abbreviations: MH, mental health; GDP, gross domestic product; SUD, substance use disorder.

- There was a significant increase in the annual growth of private insurance spending after 2009. For MH and SUD, private insurance spending increased from a range of 1 to 3 percent before 2009 to a range of 8 to 10 percent after 2009.
- Annual growth in private insurance spending for MH and SUD was higher than the growth in total health spending for the last 6 years.
- The significant increase in annual growth of private insurance spending for MH and SUD after 2009 may be a result of increased substance use with the opioid epidemic, the parity requirements in MHPAEA (2010), and initial changes from the Affordable Care Act (e.g., coverage of adult children through age 26 years in September 2010 and Medicaid expansion in 2014).
- The annual growth rates in private insurance spending for total health and MH and SUD consistently were higher than the GDP inflation rate between 2006 and 2015.

Figure 5. Growth in Public Spending for Mental Health and Substance Use Disorder Treatment Was More Rapid Than Growth in Total Health From 2012 to 2015

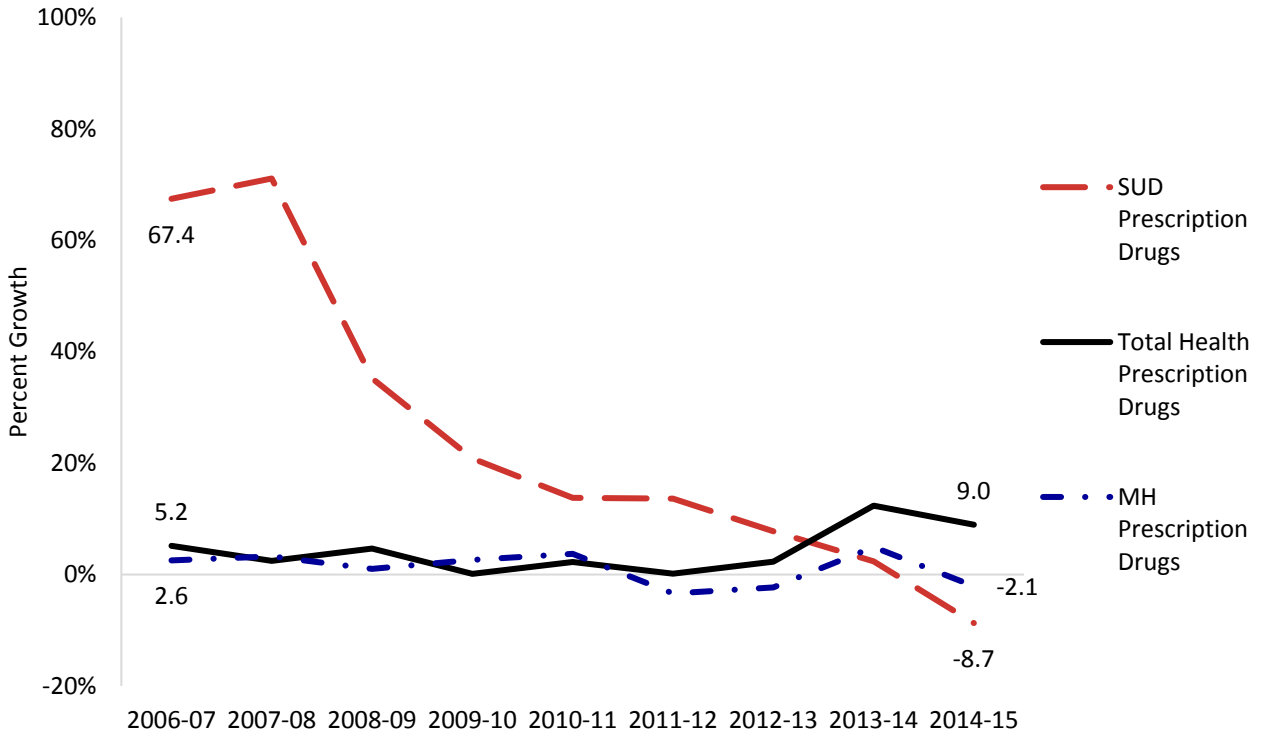


Abbreviations: MH, mental health; GDP, gross domestic product; SUD, substance use disorder.

- There was a substantial increase in annual growth in public spending for MH and SUD over the study period, from 4.4 percent in 2006–2007 to 7.3 percent in 2014–2015.
- Annual growth in public spending for MH and SUD was higher than the growth in total health public spending for the last 3 years.
- Except for 2011–2012, the annual growth rates in public spending for total health and MH and SUD were higher than the GDP inflation rate between 2006 and 2015. The slower growth in 2011–2012 was driven by lower Medicaid and Medicare spending for MH in 2012 that rebounded in the following years.

Figure 6. Annual Growth in Spending on SUD Retail Prescription Drugs Decreased Substantially Between 2006 and 2015

Annual Growth in Spending on Total Health, MH, and SUD Retail Prescription Drugs, 2006–2015

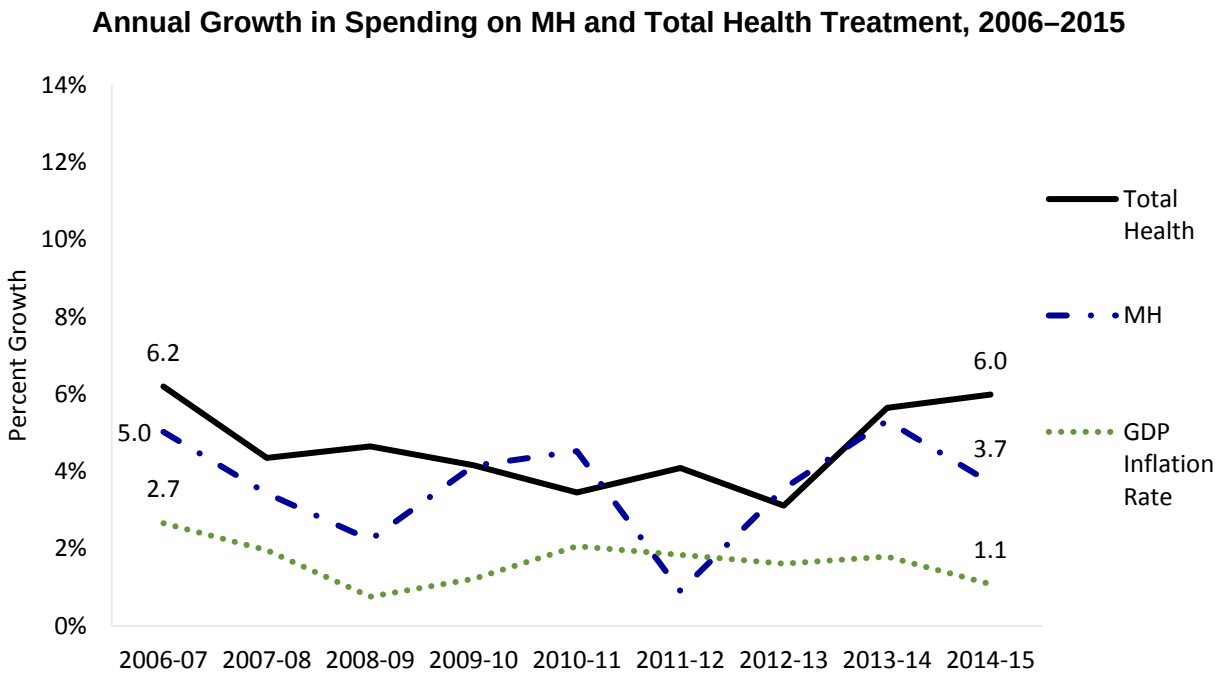


Abbreviations: MH, mental health; SUD, substance use disorder.

- Annual growth in spending on MH prescription drugs and total health prescription drugs followed a similar trend, with growth in spending on total health prescription drugs. Growth in total health prescription drug spending outpaced growth in spending on MH drugs in the last 4 years. The slower growth in MH drugs is due to a greater number of generic drugs being available and no new major MH drugs coming to market during that time frame.
- Growth in annual spending on SUD prescription drugs spiked in 2007–2008 and then decreased over the remainder of the study period. Events that might have affected spending on SUD prescription drugs include the Drug Addiction Treatment Act waiver increase allowing providers to treat up to 100 patients in 2007, generic buprenorphine becoming available in 2009, and generic buprenorphine/naloxone becoming available in 2013.
- From 2013 to 2015, the annual growth rate in MH and SUD prescription drug spending was lower than the growth rate in total health prescription drug spending.

MENTAL HEALTH: SPENDING BY PAYMENT SOURCE

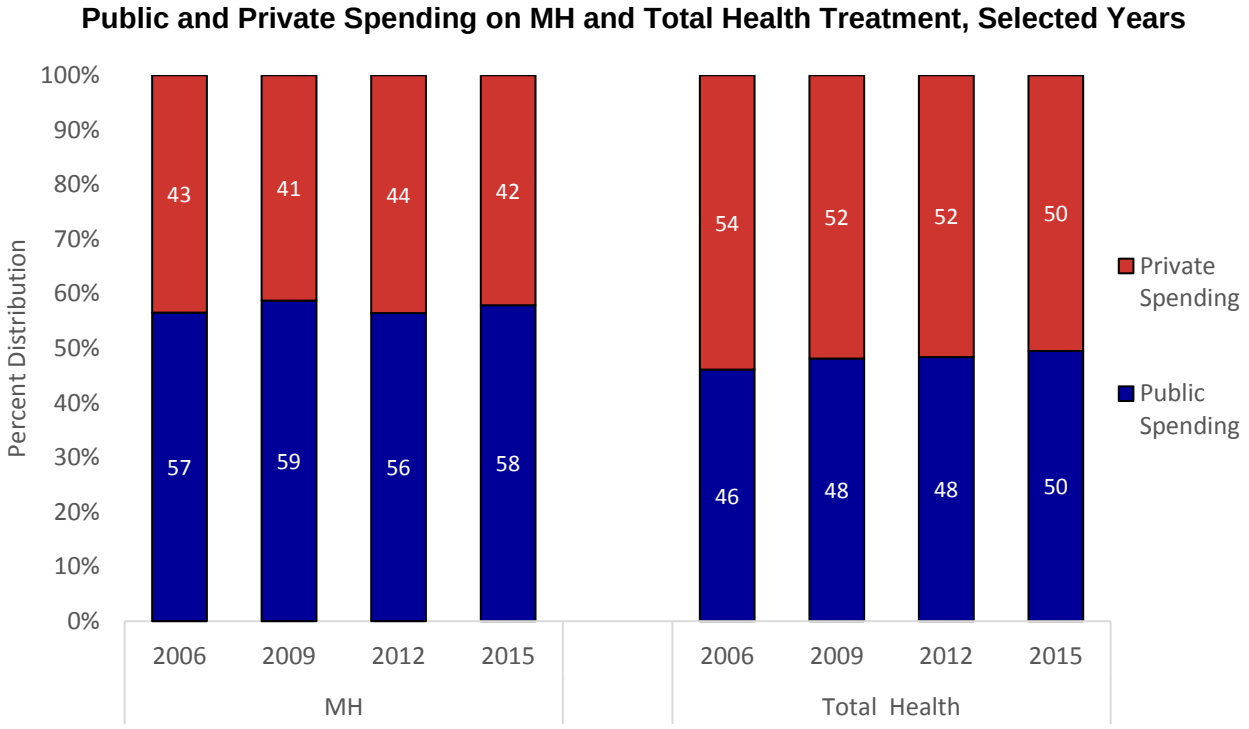
Figure 7. Annual Growth Rate in Total Health Spending Has Been Higher Than the Annual Growth Rate in Mental Health Spending in Most Years Between 2006–2015



Abbreviations: MH, mental health; GDP, gross domestic product.

- Annual growth rates in spending on MH and total health treatment were 3.7 percent and 6.0 percent, respectively, in 2015.
- In most years between 2006 and 2015, the annual growth rate in total health spending was higher than the annual growth rate in MH spending.

Figure 8. Shares of Public and Private Spending on Total MH and Total Health Treatment Have Been Fairly Consistent Between 2006 and 2015

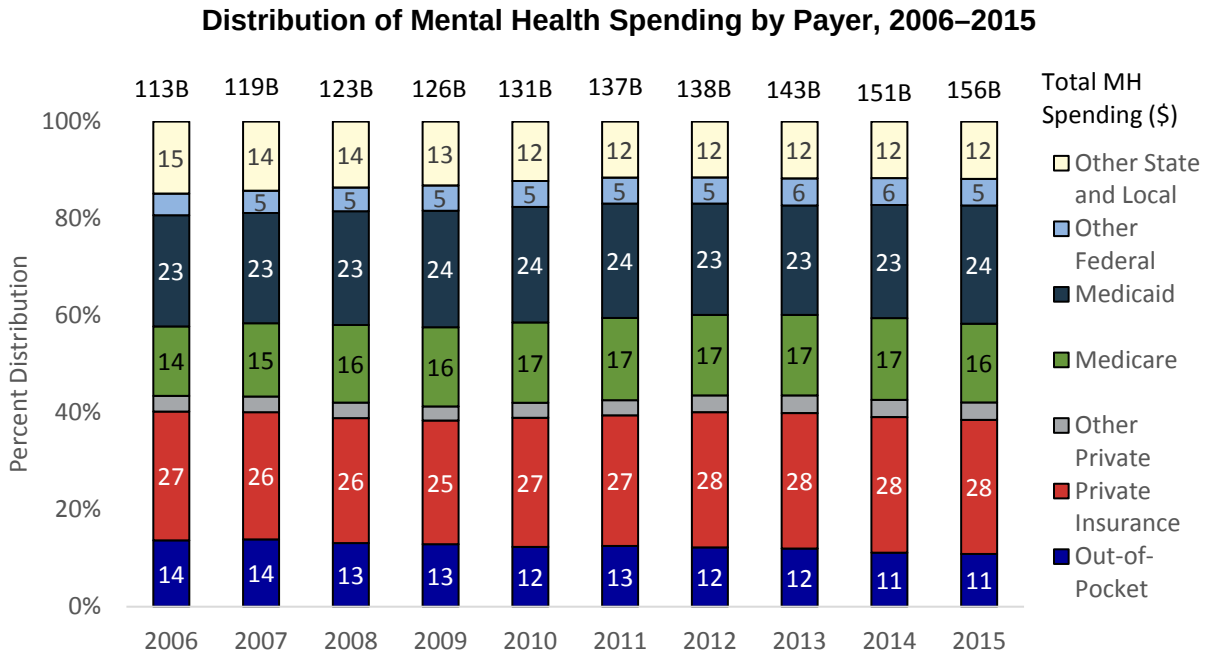


Abbreviation: MH, mental health.

Note: Percentages may not sum to 100 percent because of rounding.

- Public spending on MH treatment (~57 percent) was consistently greater than private spending (~43 percent).
- Public spending on total health treatment was similar to private spending (both around 50 percent).

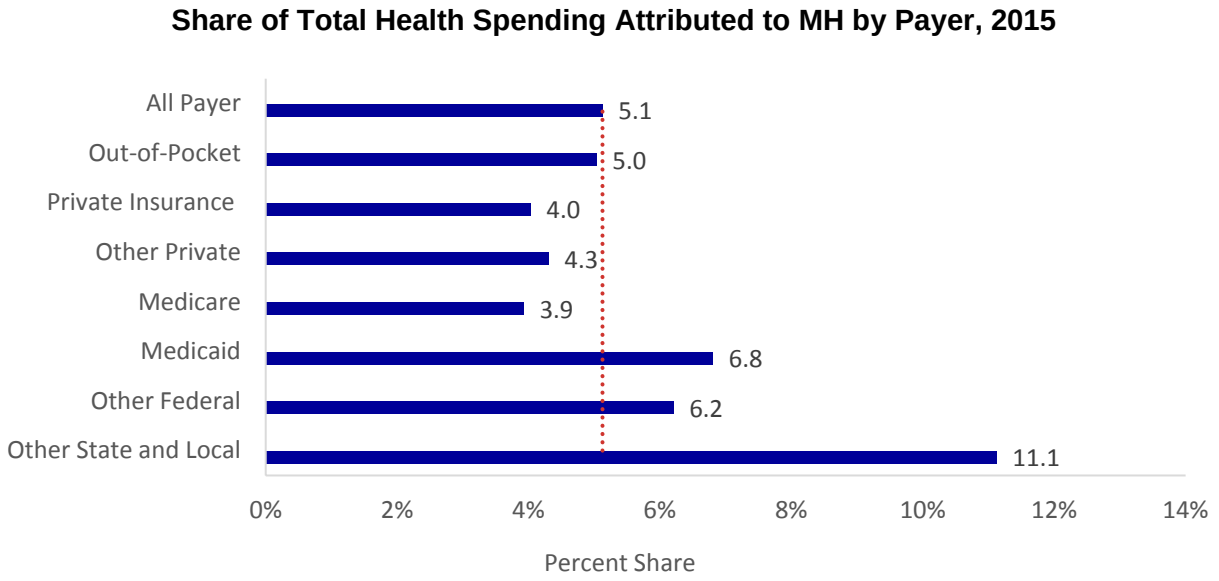
Figure 9. The Share of Out-of-Pocket Spending in Total Mental Health Spending Decreased Between 2006 and 2015



Notes: Bar segments less than 5 percent are not labeled. Percentages may not sum to 100 percent because of rounding.

- The shares of Medicaid, Medicare, and private insurance spending in total MH spending have risen slightly between 2006 and 2015.
- There were small decreases in the share of MH spending from out-of-pocket and from other state and local sources. The out-of-pocket spending share declined from 14 percent in 2006 to 11 percent in 2015. The other state and local spending share declined from 15 percent in 2006 to 12 percent in 2015.
- Other federal government spending accounted for 5 percent of MH spending in 2015. Other federal spending included MH block grants from SAMHSA, which accounted for 0.29 percent of all MH spending.

Figure 10. Among All Funding Sources, Other State and Local Payers Had the Highest Share of Mental Health Spending in Their Total Health Spending

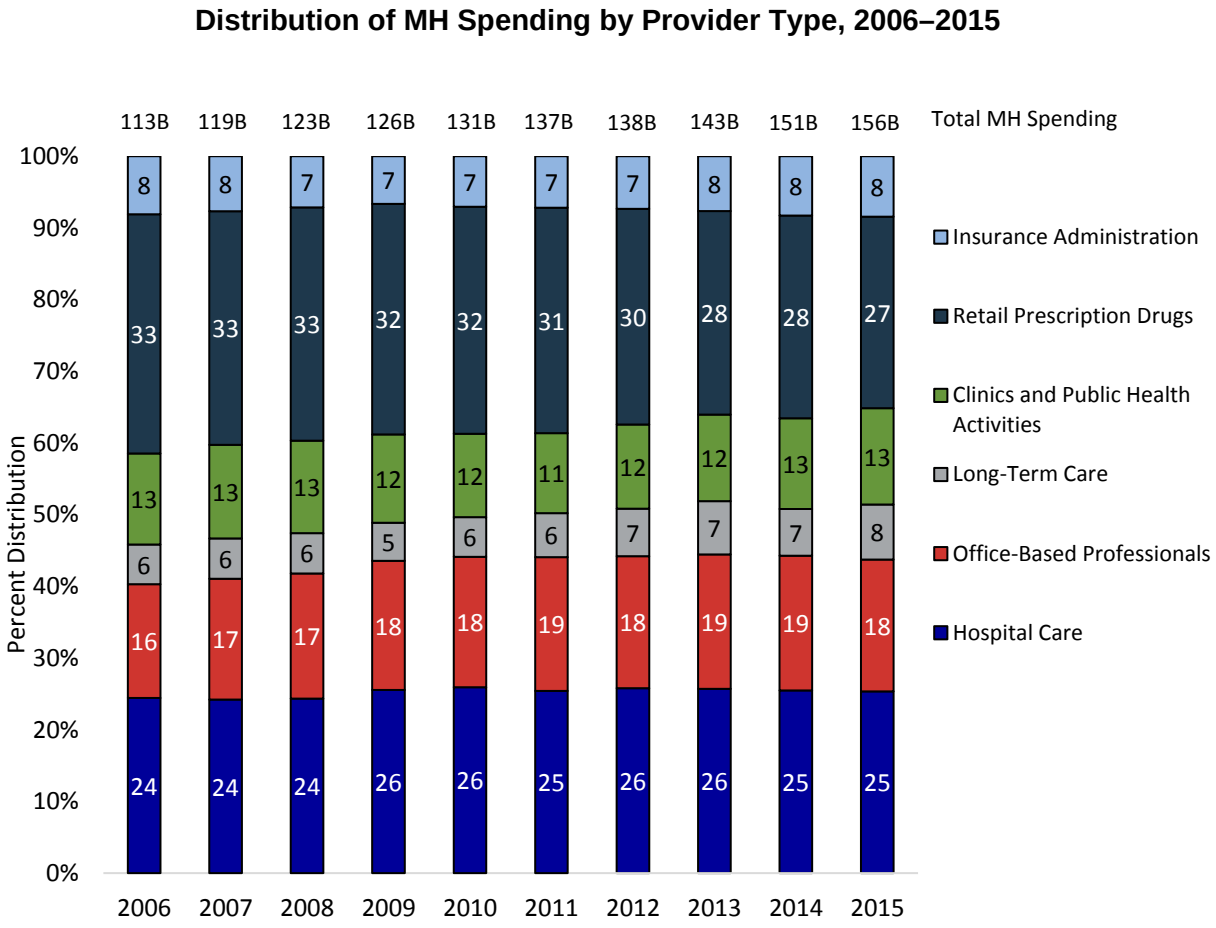


Abbreviations: MH, mental health; SUD, substance use disorder.

- This figure illustrates differences in the share of total health spending directed toward MH conditions between payers. In 2015, all payers dedicated 5.1 percent of total health spending to MH.
- Payers spending a lower share of total health spending on MH included out-of-pocket, private insurance, other private, and Medicare sources. Conversely, in 2015, Medicare, other federal, and other state and local payers spent a higher share of total spending on MH care than the average payer.
- For most payers, the share of spending on MH in their total health spending was between 4 and 7 percent. For example, for every $100 spent on out-of-pocket payments for total health, $5 was spent on MH.
- For other state and local payers, the share of spending on MH was more than 11 percent of total health spending.

MENTAL HEALTH: SPENDING BY PROVIDER, SETTING, AND SPECIALTY TYPE

Figure 11. Hospital Care and Prescription Drugs Accounted for More Than Half of the Total Mental Health Spending Between 2006 and 2015

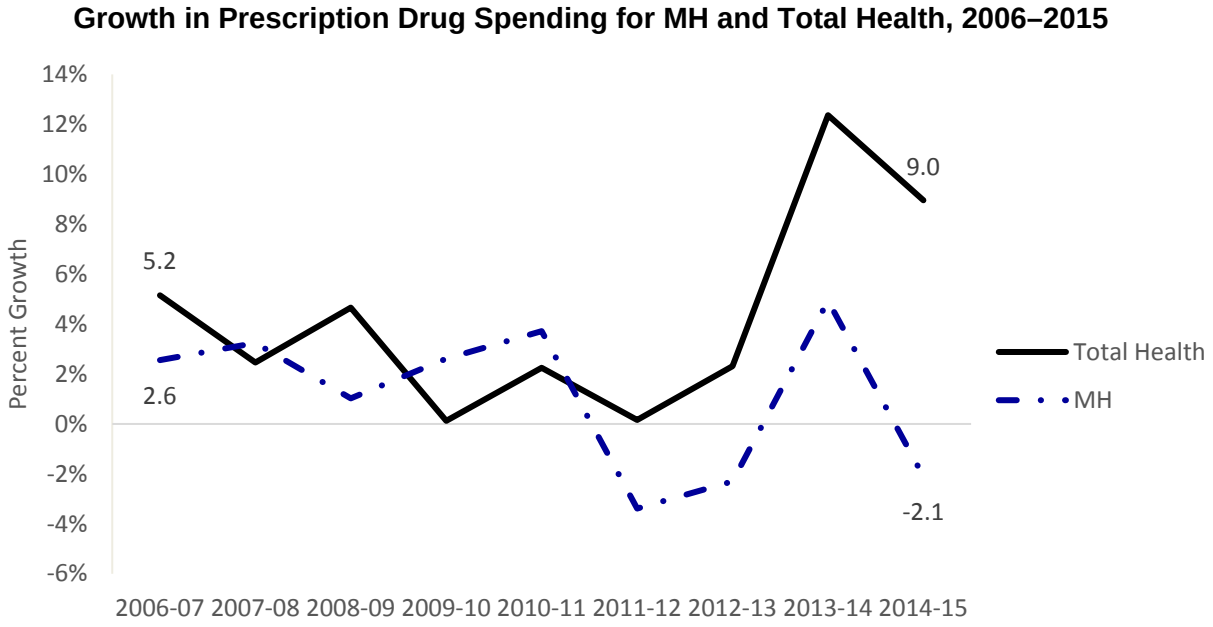


Abbreviation: MH, mental health.

Note: Percentages may not sum to 100 percent because of rounding.

- From 2006 to 2015, MH spending increased by $43 billion. Hospital treatment and prescription medications accounted for most of the spending (25 percent and 27 percent, respectively, in 2015).
- Spending on prescription drugs decreased from 33 percent to 27 percent from 2006 to 2015, whereas spending on care by office-based professionals rose from 16 to 18 percent and spending on long-term care rose from 6 to 8 percent.
- Spending on care in clinics and public health activities and insurance administration stayed steady at around 13 percent and 8 percent, respectively.

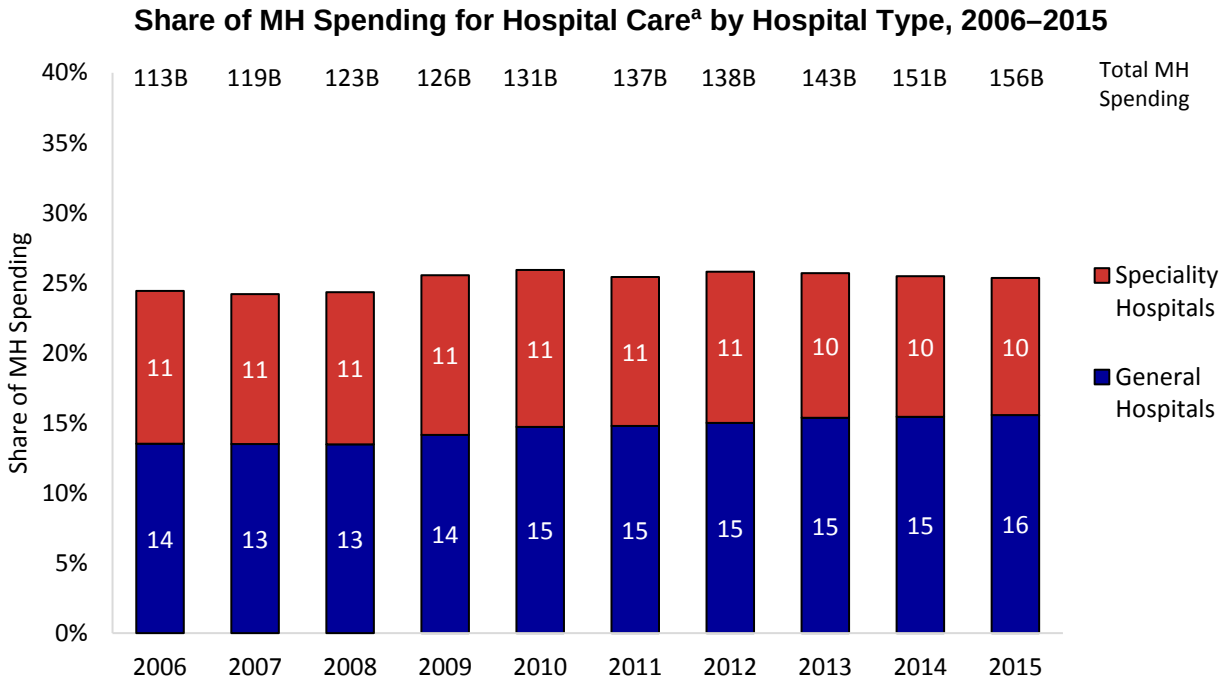
Figure 12. Annual Growth in Prescription Drug Spending Decreased Between 2006 and 2015



Abbreviation: MH, mental health.

- Growth in total health medication spending slowed in 2015, after increasing rapidly in 2013. There was a similar trend in prescription drug spending growth for MH.
- Growth in MH spending was 2.6 percent in 2006, peaked at 4.9 percent in 2014, and declined to –2.1 percent in 2015. Recent research from the Kaiser Family Foundation indicates a 32.0 percent decrease in the unit cost of mental disorder drugs largely resulting from the introduction of generic versions. The reduction in the annual growth rate in MH medication spending was mainly due to unit cost decrease rather than a decrease in use of medications.
- From 2006 to 2015, the average annual growth rate in MH medication spending was 1.0 percent.

Figure 13. Mental Health Spending for Hospital Care Was One-Fourth of Total Mental Health Spending Between 2006 and 2015

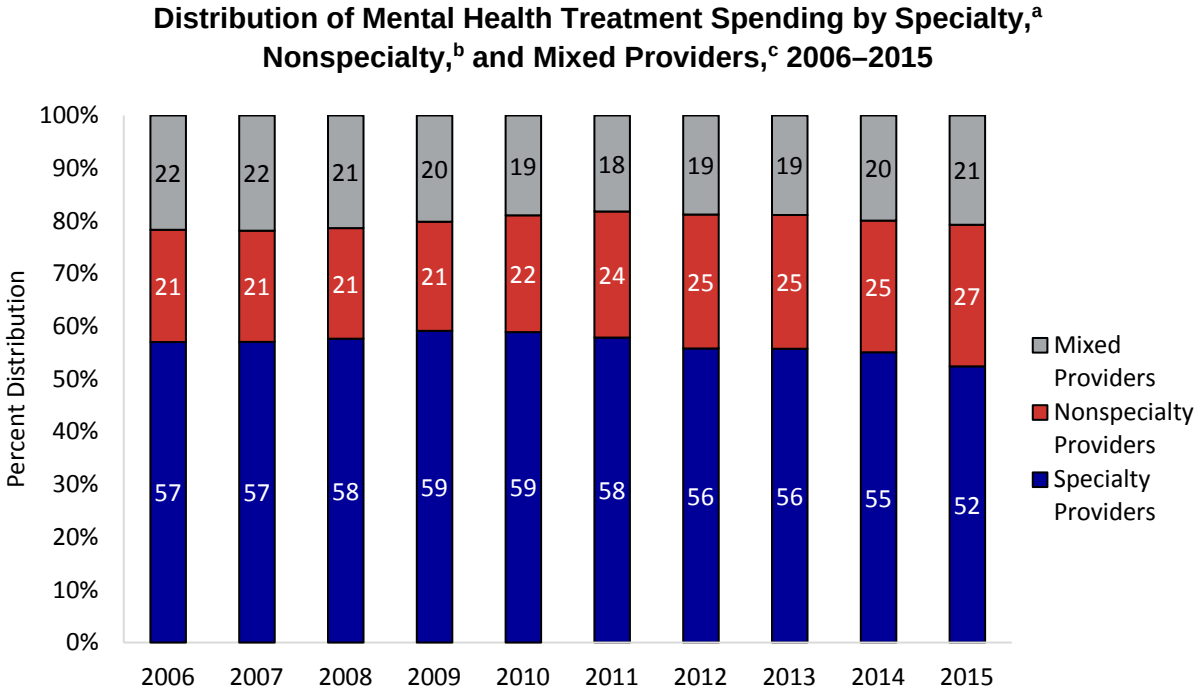


Abbreviation: MH, mental health.

[a] Hospital spending includes spending on care in inpatient, outpatient, and residential settings.

- In 2015, MH spending for hospital care was around $41 billion, which was about 26 percent of total MH spending.
- Care in specialty hospitals constituted 10 percent and care in general hospitals constituted 16 percent of total MH spending in 2015.
- The share of spending on specialty hospital and on general hospital care in total MH spending was steady between 2006 and 2015.

Figure 14. Share of Mental Health Spending on Treatment by Specialty Providers Decreased Between 2006 and 2015



Note: Percentages may not sum to 100 percent due to rounding.

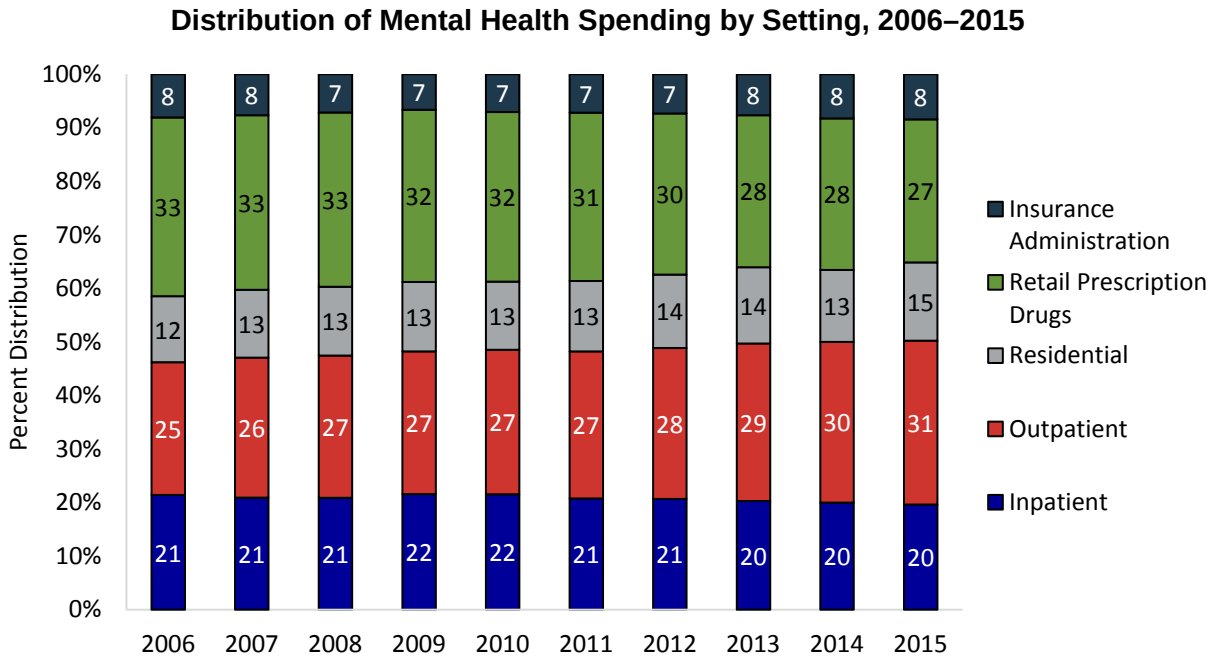
[a] Specialty providers included psychiatric units of general hospitals, specialty psychiatric hospitals, psychiatrists, and other MH professionals such as psychologists and licensed clinical social workers.

[b] Nonspecialty providers included nonspecialty units in general hospitals, nonpsychiatric physicians, home health, and nursing homes.

[c] Mixed providers included clinics and other public health activities which provide both specialty and nonspecialty services, for example, a Federally Qualified Health Center.

- The share of all MH spending for treatment by specialty providers decreased from 57 percent in 2006 to 52 percent in 2015.
- The share of all MH spending for treatment by nonspecialty providers increased from 21 percent in 2006 to 27 percent in 2015.

Figure 15. The Share of Spending on Outpatient and on Residential Treatment in Total Mental Health Spending Increased Between 2006 and 2017

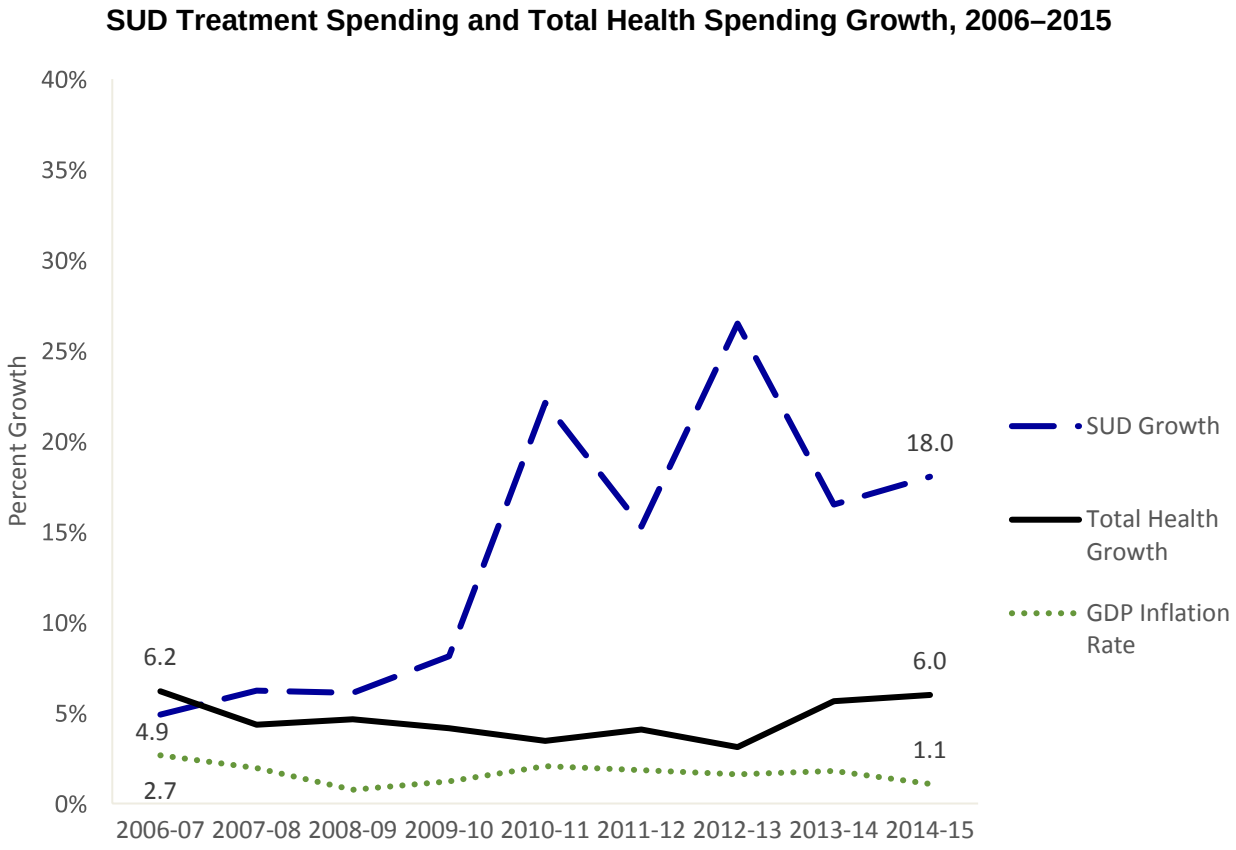


Note: Percentages may not sum to 100 percent because of rounding.

- From 2006 to 2015, the share of spending on outpatient MH treatment increased from 25 percent of MH spending to 31 percent, and residential treatment spending increased from 12 percent to 15 percent of MH spending.
- Spending on prescription drugs decreased from 33 percent of all MH treatment spending in 2006 to 27 percent in 2015.

SUBSTANCE USE DISORDERS: SPENDING BY PAYMENT SOURCE

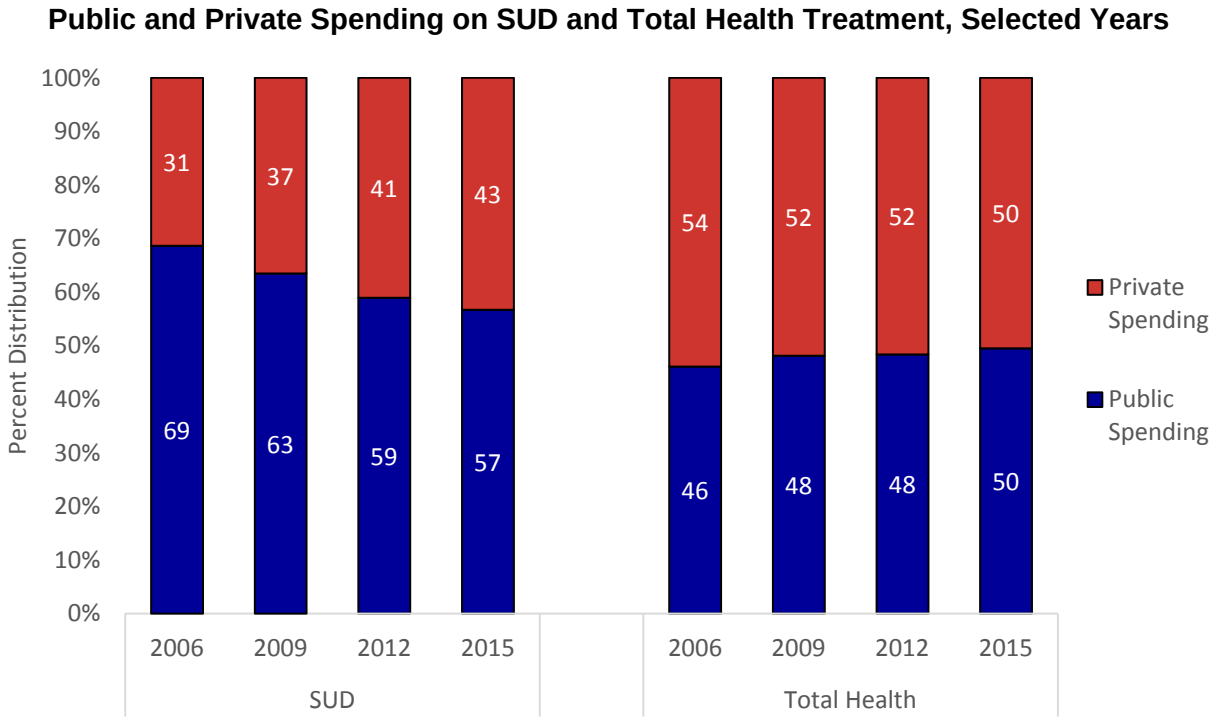
Figure 16. Spending Growth for Substance Use Disorder Treatment Exceeded Growth in Total Health Spending Between 2007 and 2015



Abbreviations: GDP, gross domestic product; SUD, substance use disorder.

- In all years except 2006–2007, spending growth for SUD treatment exceeded growth in total health spending.
- Beginning in 2010–2011, growth in SUD spending far exceeded growth in total health spending. In 2015, spending growth for SUD treatment (18.0 percent) increased at three times the rate of total health spending.
- The sharp increase in SUD treatment spending starting in 2010–2011 could be explained in part by increased treatment efforts related to the opioid epidemic; the Centers for Disease Control and Prevention reported an uptick in heroin overdose deaths beginning in 2010 and synthetic opioid overdose deaths beginning in 2013.[23]

Figure 17. Although Public Spending Still Accounts for Almost Two-Thirds of Spending on Substance Use Disorder Treatment, Share of Private Spending Increased Substantially Between 2006 and 2015

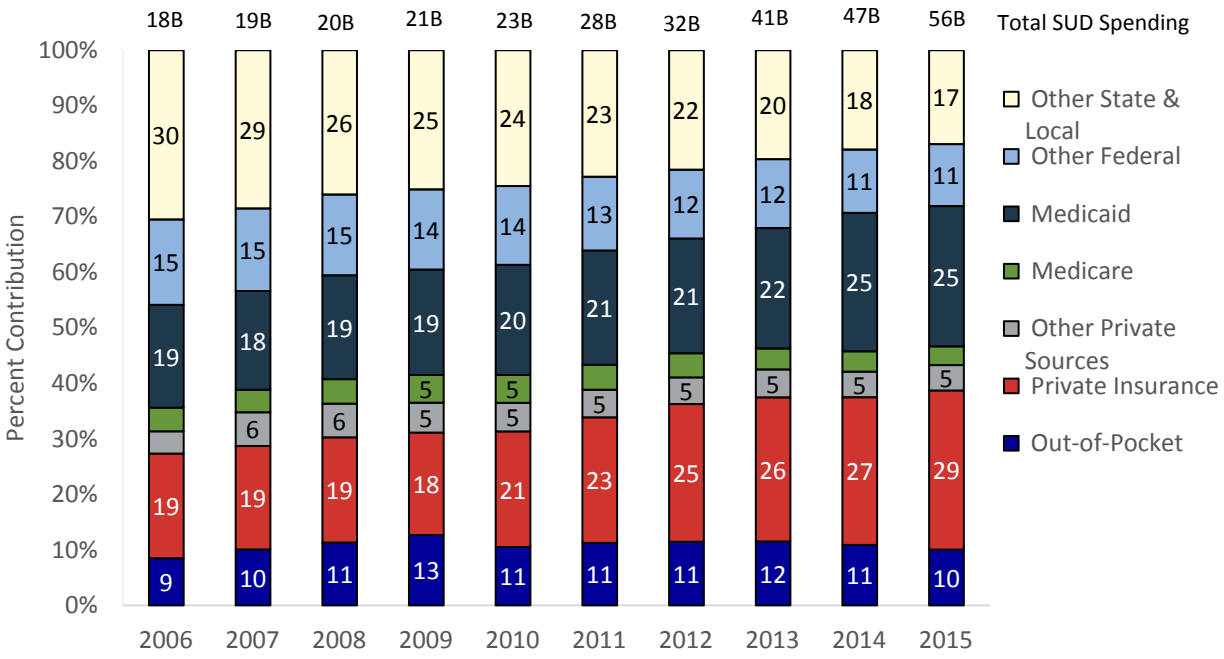


Abbreviation: SUD, substance use disorder.

Note: Percentages may not sum to 100 percent because of rounding.

- Private spending for SUD treatment increased across the time period, increasing from a 31 percent share in 2006 to 43 percent share in 2015. This was driven primarily by increases in private insurance spending.
- The large increase in the share of private spending that occurred between 2006 and 2009 resulted from increases in out-of-pocket costs, increases in private insurance spending that pre-dated the legislative actions to expand coverage, and a decrease in state and local government spending that might have resulted from the Great Recession (2007—2009). Also, the opioid epidemic was gaining strength at the time.
- The continued increasing share of private spending after 2009 was driven by increased private insurance spending, out-of-pocket spending, while state and local spending decreased and federal government spending leveled off.

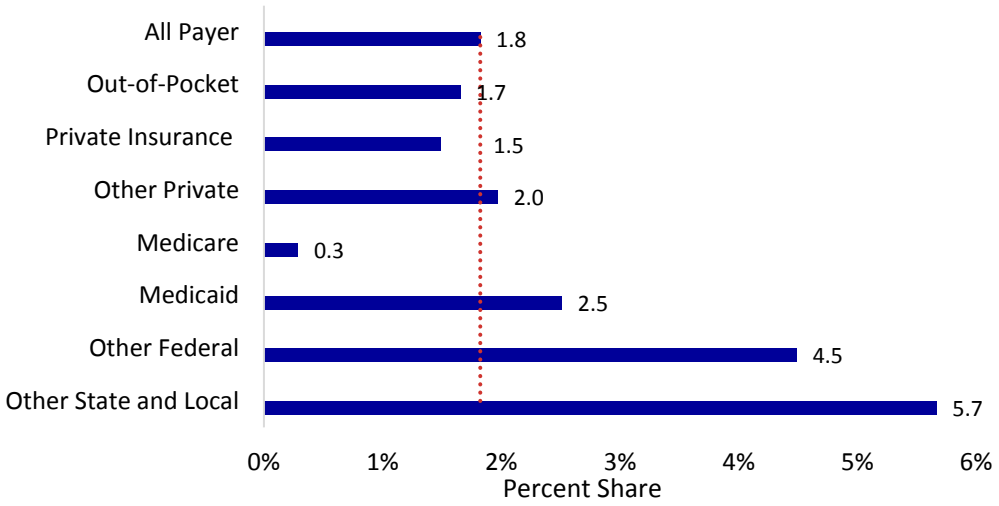
Figure 18. The Share of Private Insurance and Medicaid Spending in Total Substance Use Disorder Treatment Spending Increased Between 2006 and 2015



Notes: Bar segments less than 5 percent are not labeled. Percentages may not sum to 100 percent because of rounding.

- Beginning in 2010, the share of SUD spending coming from private insurance increased, from 18 percent in 2009 to 29 percent in 2015. This change may have been related to the implementation of MHPAEA and the early stages of the Affordable Care Act, which expanded private insurance coverage to adult children under age 26 years.
- Private insurance spending on SUD treatment gradually rose as a share of total SUD spending through 2015. This increase could be explained in part by the opioid crisis.
- Similar increases in Medicaid spending on SUD treatment as a share of total SUD spending was also apparent, with Medicaid shares increasing from 19 percent to 25 percent between 2006 and 2015.
- Other state and local government spending as a share of total spending on SUD treatment spending substantially declined, from 30 percent in 2006 to 17 percent in 2015.
- Although the share of other state and local government spending fell, the actual spending by these governments on SUD treatment did not. It simply grew more slowly than spending by other payers.
- In 2015, other federal government spending accounted for 11 percent of SUD treatment spending. Other federal spending included SUD block grants from SAMHSA, which accounted for 2.5 percent of all SUD spending.

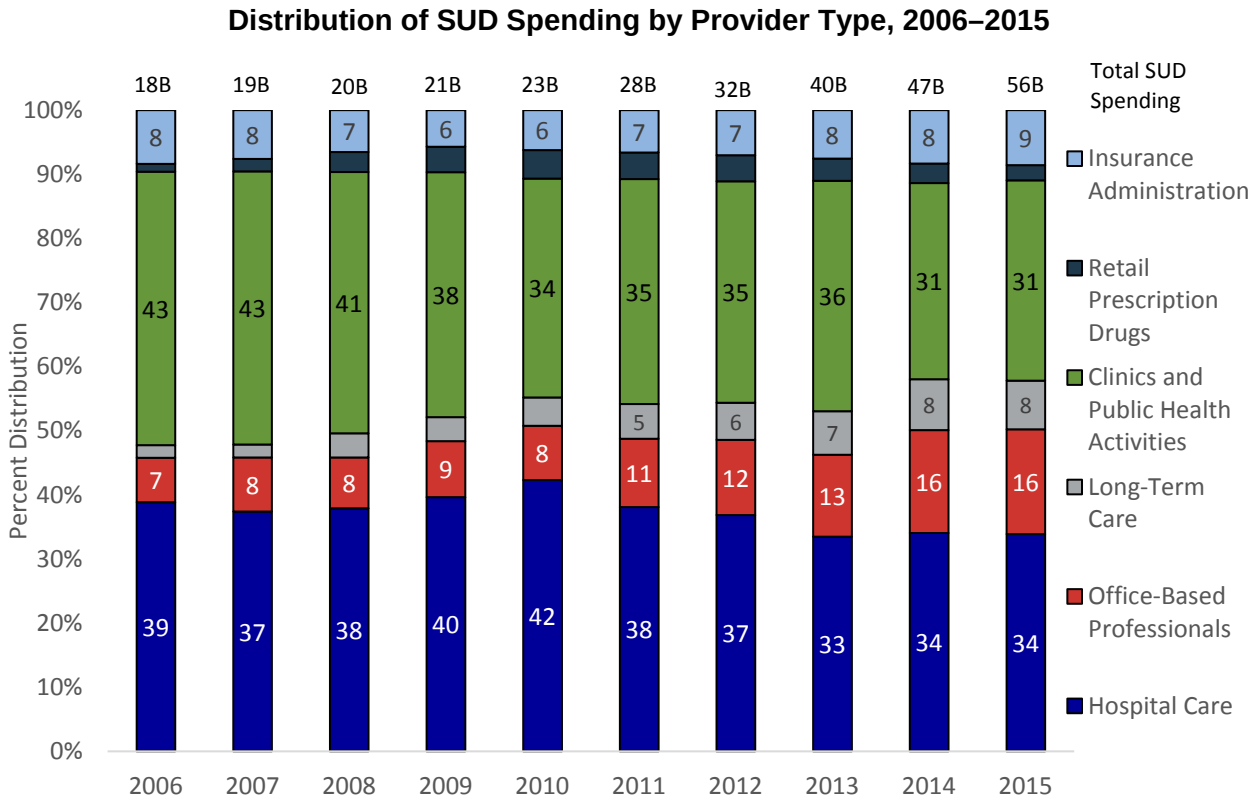
Figure 19. Substance Use Disorder Treatment Spending Constituted a Much Larger Share of Other Federal and Other State and Local Sources Spending on Total Health



- The share of total health spending attributed to SUD treatment by all payers amounted to 1.8 percent in 2015.
- The share of total health spending attributed to SUD treatment for out-of-pocket, private insurance, other private, and Medicaid sources (1.7 percent, 1.5 percent, 2.0 percent, and 2.5 percent, respectively) was similar to the all payer share.
- Medicare paid a far smaller share of total Medicare spending for SUD treatment (0.3 percent) because the population covered by this program (aged 65 years or older) has a greater prevalence of other health conditions and because Medicare is a low payer for SUD treatment services.
- Other federal and other state and local sources each paid a much larger share of their total health spending on SUD treatment (4.5 percent and 5.7 percent, respectively) than did other payers. The Department of Veterans Affairs comprised a large portion of other federal spending, whereas other state and local programs paid for people who were otherwise uninsured.

SUBSTANCE USE DISORDERS: SPENDING BY PROVIDER, SETTING, AND SPECIALTY TYPE

Figure 20. Hospitals and Clinics and Public Health Agencies Were the Major Providers of Substance Use Disorder Treatment Between 2006 and 2015

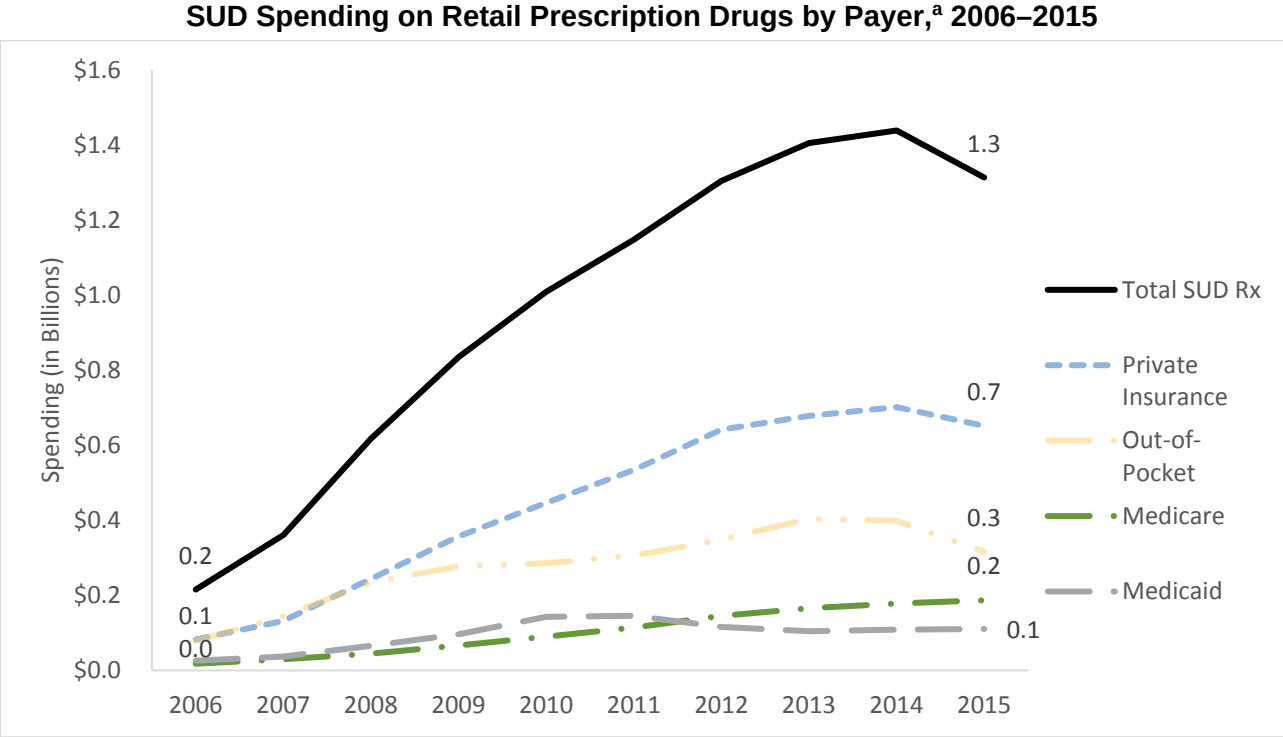


Abbreviation: SUD, substance use disorder.

Notes: Bar segments less than 5 percent are not labeled. Percentages may not sum to 100 percent because of rounding.

- There were shifts in the distribution of SUD spending by provider type over the 2006–2015 period.
- An increasing share of SUD spending was for treatment by office-based professionals (16 percent in 2015, up from 7 percent in 2006) and long-term care (8 percent in 2015, up from 2 percent in 2006). The increase in office-based care may be attributed to increased office-based treatment for opioid use disorder.
- A decreasing share of SUD spending was for treatment from clinics and public health activities (31 percent in 2015, down from 43 percent in 2006) and for hospitals (34 percent in 2015, down from 39 percent in 2006).
- Nevertheless, the largest share of SUD spending continued to be for hospitals and for clinics and public health activities.

Figure 21. Private Insurance and Out-of-Pocket Payments Constitute Majority of the Spending on Substance Use Disorder Medications



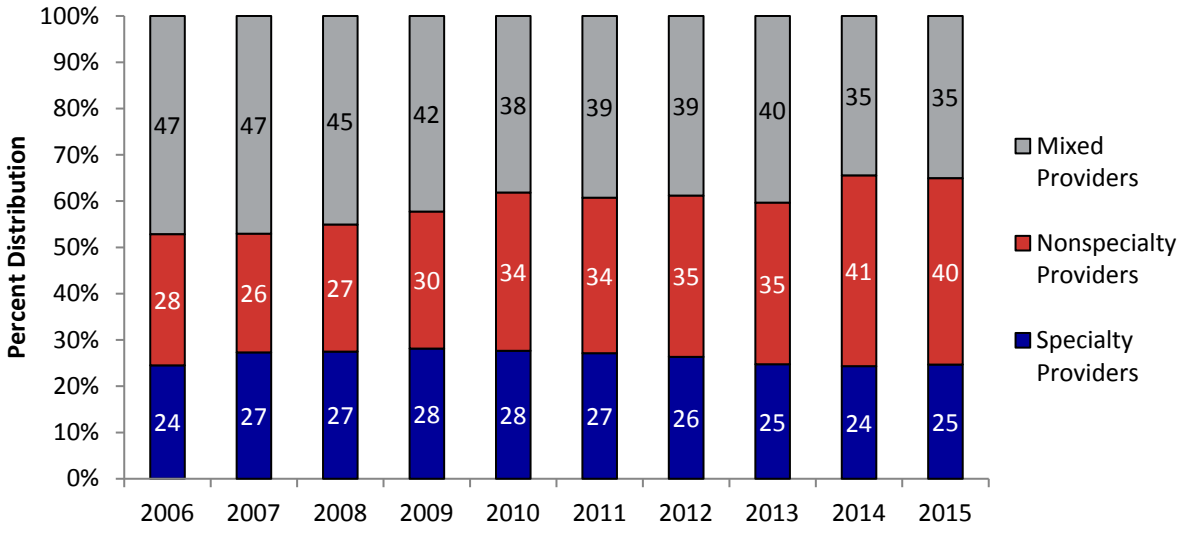
Abbreviations: Rx, prescription; SUD, substance use disorder.

[a]Payments by other federal, other state and local, and other private sources totaled $0.1 billion or less over the time period and are not included on the graph. Value labels for overlapping lines and value labels less than $0.1 billion are not shown to improve legibility.

- Although spending on SUD medications was very small relative to all SUD spending ($1.3 billion in 2015, or 2 percent of all SUD spending), it grew tremendously during the 2006–2015 period (from $0.2 million in 2006).
- Overall spending on SUD medications dipped from $1.4 billion in 2014 to $1.3 billion in 2015, which could be explained by the availability of generic buprenorphine/naloxone in 2015.
- The payer that spent the most on SUD medications in 2015 was private insurance at $0.7 billion, which was followed by out-of-pocket spending at $0.3 billion.

Figure 22. Share of Substance Use Disorder Treatment by Nonspecialty Providers Grew

Distribution of Substance Use Disorder Treatment Spending by Specialty,[a] Nonspecialty,[b] and Mixed Providers,[c] 2006–2015



Note: Percentages may not sum to 100 percent because of rounding.

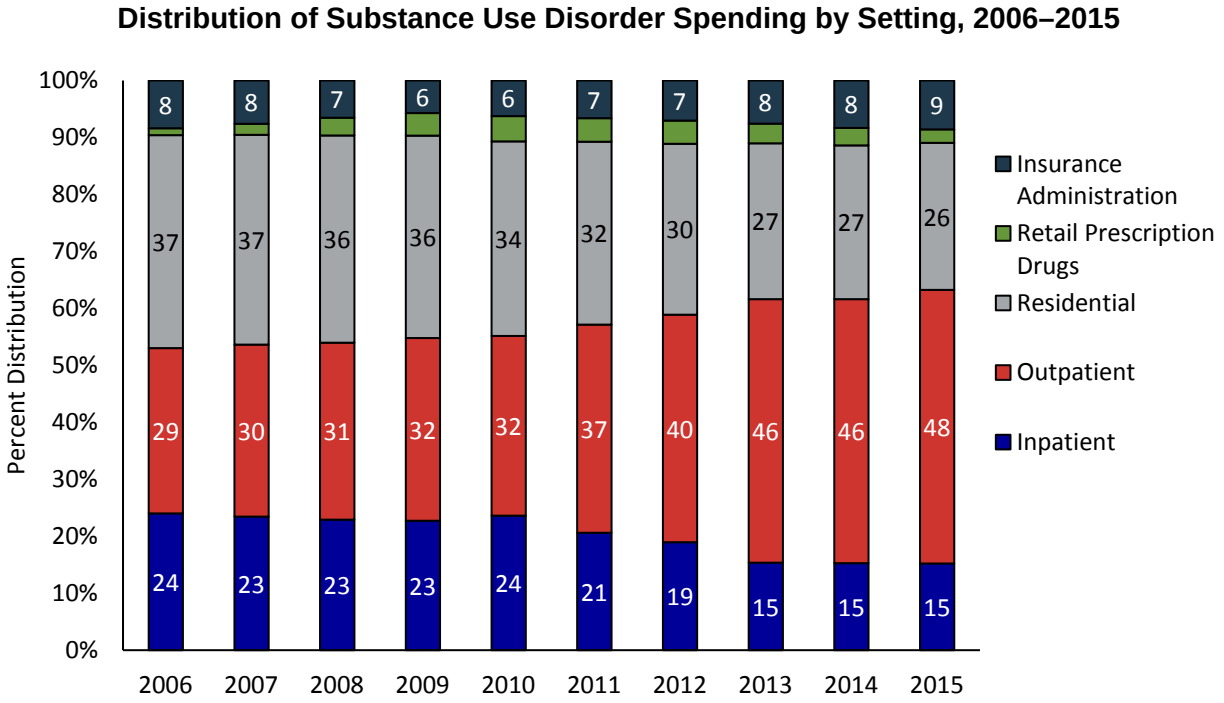
[a] Specialty providers included psychiatric units of general hospitals, specialty psychiatric hospitals, psychiatrists, and other MH professionals such as psychologists and licensed clinical social workers.

[b] Nonspecialty providers included nonspecialty units in general hospitals, nonpsychiatric physicians, home health, and nursing homes.

[c] Mixed providers include clinics and other public health activities, which provide both specialty and nonspecialty services, for example, a Federally Qualified Health Center.

- The share of SUD treatment spending going to nonspecialty providers rose from 2006 to 2015, from 28 percent to 40 percent.
- The share of SUD treatment spending going to mixed providers decreased from 2006 to 2015, from 47 percent to 35 percent, whereas the share going to specialty providers remained fairly constant between 24 percent and 28 percent of the time period.

Figure 23. Outpatient Treatment Spending Has Become the Largest Share of Total Substance Use Disorder Treatment Spending



Notes: Bar segments less than 5 percent are not labeled. Percentages may not sum to 100 percent because of rounding.

- Outpatient treatment spending captured an increasing proportion of SUD spending from 2006 through 2015. It rose from a 29 percent share in 2006 to a 48 percent share in 2015.
- Inpatient SUD treatment spending fell by almost 10 percentage points, from 24 percent in 2006 to 15 percent in 2015.
- Likewise, the share of SUD residential treatment spending fell from 37 percent in 2006 to 26 percent in 2015.
- Combined, SUD prescription drug and insurance administration spending amounted to 10 percent in 2015, almost the same share (9 percent) as in 2006.

[1] https://www.cdc.gov/drugoverdose/epidemic/index.html

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APPENDIX A: TABLES

Table A1. Spending by Provider: Levels and Percentage Distribution for Mental Health (MH), Substance Use Disorders (SUDs), and Total Health, 2015

	MH and SUDs		MH		SUDs		Total Health	
Type of Provider	**$, Millions**	**%**	**$, Millions**	**%**	**$, Millions**	**%**	**$, Millions**	**%**
Total	211,972	100	156,369	100	55,603	100	3,050,828	100
Total all service providers and products[a]	194,012	92	143,184	92	50,828	91	2,798,159	92
Total all service providers[b]	150,935	71	101,420	65	49,515	89	2,085,274	68
All hospitals	58,482	28	39,642	25	18,840	34	1,036,112	34
General hospitals	37,751	18	24,346	16	13,405	24	ND	ND
General hospitals, specialty units[c]	17,981	8	14,656	9	3,325	6	ND	ND
General hospitals, nonspecialty units	19,771	9	9,690	6	10,080	18	ND	ND
Specialty hospitals	20,731	10	15,296	10	5,435	10	ND	ND
All physicians	19,427	9	13,140	8	6,288	11	634,918	21
Psychiatrists	8,240	4	7,588	5	652	1	ND	ND
Nonpsychiatric physicians	11,187	5	5,552	4	5,636	10	ND	ND
Other professionals[d]	18,424	9	15,621	10	2,803	5	87,716	3
Freestanding nursing homes	14,430	7	10,294	7	4,136	7	156,798	5
Freestanding home health	1,783	1	1,699	1	83	0	88,804	3
Clinics and public health activities	38,389	18	21,024	13	17,365	31	163,322	5
Retail prescription drugs	43,078	20	41,764	27	1,313	2	324,552	11
Insurance administration	17,960	8	13,185	8	4,775	9	252,669	8

Abbreviation: ND, no data available.

Note: Because of rounding, numbers and percentages may not sum to category totals.

[a] Excludes insurance administration.

[b] Total health includes spending for dentists and other durable and nondurable medical products.

[c] All spending for psychiatric services in Department of Veteran Affairs hospitals is included in general hospital specialty unit providers.

[d] Includes psychologists, counselors, and social workers.

Sources: SAMHSA Behavioral Health Spending and Use Accounts; Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Expenditure Accounts.

Table A2. Spending by Payment Source: Levels and Percentage Distribution for Mental Health (MH), Substance Use Disorders (SUDs), and Total Health, 2015

	MH and SUD		MH		SUD		All Health	
Type of Payer	**$, Millions**	**%**	**$, Millions**	**%**	**$, Millions**	**%**	**$, Millions**	**%**
Total	211,972	100	156,369	100	55,603	100	3,050,828	100
Private—Total	89,918	42	65,843	42	24,076	43	1,540,532	50
Out-of-pocket	22,614	11	17,026	11	5,588	10	338,150	11
Private insurance	59,125	28	43,205	28	15,921	29	1,072,057	35
Other private	8,179	4	5,612	4	2,567	5	130,325	4
Public—Total	122,053	58	90,526	58	31,527	57	1,510,296	50
Medicare	27,239	13	25,378	16	1,861	3	646,245	21
Medicaid	52,149	25	38,097	24	14,052	25	559,753	18
Other federal[a]	14,783	7	8,578	5	6,205	11	138,248	5
Other state and local[a]	27,883	13	18,474	12	9,409	17	166,050	5

Note: Because of rounding, numbers and percentages may not sum to category totals.

[a] SAMHSA block grants to “state and local” agencies are part of “other federal” government spending.

Sources: SAMHSA Behavioral Health Spending and Use Accounts; Center for Medicare & Medicaid Services, Office of the Actuary, National Health Expenditure Accounts.

Table A3. Spending by Specialty, Nonspecialty, and Mixed Providers: Levels, Percentage of Total Expenditures, and Percentage Within Sector for Mental Health (MH) and Substance Use Disorders (SUDs), 2015

Type of Provider	MH and SUD			MH			SUD		
	$, Millions	Total Expenditures, %	Within Sectors, %	$, Millions	Total Expenditures, %	Within Sectors, %	$, Millions	Total Expenditures, %	Within Sectors, %
Total	211,972	100	NA	56,369	100	NA	55,603	100	NA
Specialty sector providers	65,375	31	100	53,161	34	100	12,215	22	100
General hospitals, specialty units[a]	17,981	8	28	14,656	9	28	3,325	6	27
Specialty hospitals	20,731	10	32	15,296	10	29	5,435	10	44
Psychiatrists	8,240	4	13	7,588	5	14	652	1	5
Other professionals[b]	18,424	9	28	15,621	10	29	2,803	5	23
General sector providers	47,170	22	100	27,235	17	100	19,935	36	100
General hospitals, nonspecialty care[c]	19,771	9	42	9,690	6	36	10,080	18	51
Nonpsychiatric physicians	11,187	5	24	5,552	4	20	5,636	10	28
Freestanding nursing homes	14,430	7	31	10,294	7	38	4,136	7	21
Freestanding home health	1,783	1	4	1,699	1	6	83	0	0
Mixed sector providers	38,389	18	100	21,024	13	100	17,365	31	100
Clinics and public health activities	38,389	18	100	21,024	13	100	17,365	31	100
Retail prescription drugs	43,078	20	NA	41,764	27	NA	1,313	2	NA
Insurance administration	17,960	8	NA	13,185	8	NA	4,775	9	NA

Abbreviation: NA, not applicable.

Note: Because of rounding, numbers and percentages may not sum to category totals.

[a] Includes specialty units of general hospitals and all MH and SUD expenditures; spending for psychiatric services in Department of Veteran Affairs hospitals is included in general hospital specialty unit providers.

[b] Includes psychologists, counselors, and social workers.

[c] Includes general hospital nonspecialty units but excludes nonspecialty units of Veterans Affairs hospitals.

Source: SAMHSA Behavioral Health Spending and Use Accounts.

Table A4. Mental Health and Substance Use Disorder Spending by Provider: Levels and Percentage Distribution, Selected Years

Type of Provider	$, Millions				% Distribution			
	2006	2009	2012	2015	2006	2009	2012	2015
Total	131,097	146,864	170,220	211,972	100	100	100	100
Total all service providers and products	120,433	137,289	157,835	194,012	92	93	93	92
Total all service providers	82,388	95,988	114,923	150,935	63	65	68	71
All hospitals	34,579	40,477	47,451	58,482	26	28	28	28
General hospitals	20,581	23,583	28,920	37,751	16	16	17	18
General hospitals, specialty units[a]	12,406	14,183	15,783	17,981	9	10	9	8
General hospitals, nonspecialty units	8,174	9,400	13,136	19,771	6	6	8	9
Specialty hospitals	13,999	16,895	18,531	20,731	11	12	11	10
All physicians	9,333	10,274	14,557	19,427	7	7	9	9
Psychiatrists	5,460	5,584	6,819	8,240	4	4	4	4
Nonpsychiatric physicians	3,874	4,690	7,738	11,187	3	3	5	5
Other professionals[b]	9,895	14,226	14,635	18,424	8	10	9	9
Freestanding nursing homes	5,860	6,435	9,522	14,430	4	4	6	7
Freestanding home health	763	1,041	1,484	1,783	1	1	1	1
Clinics and public health activities	21,957	23,535	27,275	38,389	17	16	16	18
Retail prescription drugs	38,045	41,301	42,912	43,078	29	28	25	20
Insurance administration	10,664	9,575	12,385	17,960	8	7	7	8
Addendum by specialization of provider								
Specialty providers[c]	41,760	50,888	55,769	65,375	32	35	33	31
Nonspecialty providers[d]	18,671	21,565	31,879	47,170	14	15	19	22
Clinics and public health activities[e]	21,957	23,535	27,275	38,389	17	16	16	18

Note: Because of rounding, numbers and percentages may not sum to category totals.

[a] All spending for psychiatric services in Department of Veteran Affairs hospitals is included in general hospital specialty unit providers.

[b] Includes psychologists, counselors, and social workers.

[c] Includes specialty units of general hospitals, specialty hospitals, psychiatrists, other professionals, specialty mental health centers, and specialty substance abuse centers.

[d] Includes nonspecialty units in general hospitals, nonpsychiatric physicians, home health, and nursing homes.

[e] Includes a mix of specialty and nonspecialty providers.

Sources: SAMHSA Behavioral Health Spending and Use Accounts.

Table A5. Mental Health Spending by Provider: Levels and Percentage Distribution, Selected Years

Type of Provider	$, Millions				% Distribution			
	2006	2009	2012	2015	2006	2009	2012	2015
Total	113,345	125,871	138,260	156,369	100	100	100	100
Total all service providers and products	104,169	117,494	128,120	143,184	92	93	93	92
Total all service providers	66,339	77,028	86,512	101,420	59	61	63	65
All hospitals	27,684	32,153	35,676	39,642	24	26	26	25
General hospitals	15,332	17,817	20,746	24,346	14	14	15	16
General hospitals, specialty units[a]	10,748	12,446	13,657	14,656	9	10	10	9
General hospitals, nonspecialty units	4,584	5,371	7,089	9,690	4	4	5	6
Specialty hospitals	12,353	14,336	14,929	15,296	11	11	11	10
All physicians	8,475	9,257	12,044	13,140	7	7	9	8
Psychiatrists	5,210	5,365	6,295	7,588	5	4	5	5
Nonpsychiatric physicians	3,265	3,892	5,749	5,552	3	3	4	4
Other professionals[b]	9,519	13,409	13,402	15,621	8	11	10	10
Freestanding nursing homes	5,518	5,669	7,711	10,294	5	5	6	7
Freestanding home health	757	1,024	1,439	1,699	1	1	1	1
Clinics and public health activities	14,386	15,516	16,241	21,024	13	12	12	13
Retail prescription drugs	37,830	40,466	41,608	41,764	33	32	30	27
Insurance administration	9,176	8,378	10,140	13,185	8	7	7	8
Addendum by specialization of provider								
Specialty providers[c]	37,829	45,556	48,283	53,161	33	36	35	34
Nonspecialty providers[d]	14,124	15,956	21,988	27,235	12	13	16	17
Clinic and public health activities[e]	14,386	15,516	16,241	21,024	13	12	12	13

Note: Because of rounding, numbers and percentages may not sum to category totals.

[a] All spending for psychiatric services in Department of Veteran Affairs hospitals is included in general hospital specialty unit providers.

[b] Includes psychologists, counselors, and social workers.

[c] Includes specialty units of general hospitals, specialty hospitals, psychiatrists, other professionals, specialty mental health centers, and specialty substance abuse centers.

[d] Includes nonspecialty units in general hospitals, nonpsychiatric physicians, home health, and nursing homes.

[e] Includes a mix of specialty and nonspecialty providers.

Sources: SAMHSA Behavioral Health Spending and Use Accounts.

Table A6. Substance Use Disorder Spending by Provider: Levels and Percentage Distribution, Selected Years

Type of Provider	$, Millions				Percentage Distribution			
	2006	2009	2012	2015	2006	2009	2012	2015
Total	17,752	20,993	31,960	55,603	100	100	100	100
Total all service providers and products	16,264	19,795	29,715	50,828	92	94	93	91
Total all service providers	16,049	18,960	28,411	49,515	90	90	89	89
All hospitals	6,895	8,324	11,775	18,840	39	40	37	34
General hospitals	5,249	5,766	8,173	13,405	30	27	26	24
General hospitals, specialty units[a]	1,658	1,738	2,126	3,325	9	8	7	6
General hospitals, nonspecialty units	3,590	4,028	6,047	10,080	20	19	19	18
Specialty hospitals	1,646	2,558	3,602	5,435	9	12	11	10
All physicians	858	1,017	2,513	6,288	5	5	8	11
Psychiatrists	250	220	525	652	1	1	2	1
Nonpsychiatric physicians	608	797	1,989	5,636	3	4	6	10
Other professionals[b]	376	816	1,233	2,803	2	4	4	5
Freestanding nursing homes	342	766	1,811	4,136	2	4	6	7
Freestanding home health	7	18	45	83	0	0	0	0
Clinics and public health activities	7,570	8,019	11,034	17,365	43	38	35	31
Retail prescription drugs	216	835	1,304	1,313	1	4	4	2
Insurance administration	1,488	1,198	2,246	4,775	8	6	7	9
Addendum by specialization of provider								
Specialty providers[c]	3,931	5,332	7,486	12,215	22	25	23	22
Nonspecialty providers[d]	4,547	5,610	9,891	19,935	26	27	31	36
Clinic and public health activities[e]	7,570	8,019	11,034	17,365	43	38	35	31

Note: Because of rounding, numbers and percentages may not sum to category totals.

[a] All spending for psychiatric services in Department of Veteran Affairs hospitals is included in general hospital specialty unit providers.

[b] Includes psychologists, counselors, and social workers.

[c] Includes specialty units of general hospitals, specialty hospitals, psychiatrists, and other professionals.

[d] Includes nonspecialty units in general hospitals, nonpsychiatric physicians, home health, and nursing homes.

[e] Includes a mix of specialty and nonspecialty providers.

Sources: SAMHSA Behavioral Health Spending and Use Accounts.

Table A7. Mental Health (MH) and Substance Use Disorder (SUD) Spending by Payment Source: Levels and Percentage Distribution, Selected Years

Type of Payment Source	$, Millions				Percentage Distribution			
	2006	2009	2012	2015	2006	2009	2012	2015
Total MH and SUD	131,097	146,864	170,220	211,972	100	100	100	100
Total private, MH and SUD	54,840	59,625	73,362	89,918	42	41	43	42
Out-of-pocket	16,999	18,894	20,572	22,614	13	13	12	11
Private insurance	33,469	35,931	46,382	59,125	26	24	27	28
Other private	4,372	4,799	6,408	8,179	3	3	4	4
Total public, MH and SUD	76,258	87,240	96,858	122,053	58	59	57	58
Medicare	16,970	21,607	24,310	27,239	13	15	14	13
Medicaid	29,253	34,194	38,336	52,149	22	23	23	25
Other federal[a]	7,808	9,585	11,400	14,783	6	7	7	7
Other state and local[a]	22,227	21,854	22,812	27,883	17	15	13	13
Total MH	113,345	125,871	138,260	156,369	100	100	100	100
Total private, MH	49,272	51,958	60,239	65,843	43	41	44	42
Out-of-pocket	15,490	16,232	16,906	17,026	14	13	12	11
Private insurance	30,122	32,068	38,465	43,205	27	25	28	28
Other private	3,661	3,658	4,869	5,612	3	3	4	4
Total public, MH	64,073	73,913	78,021	90,526	57	59	56	58
Medicare	16,217	20,561	22,915	25,378	14	16	17	16
Medicaid	25,968	30,212	31,741	38,097	23	24	23	24
Other federal[a]	5,071	6,551	7,430	8,578	4	5	5	5
Other state and local[a]	16,817	16,589	15,935	18,474	15	13	12	12
Total SUD	17,752	20,993	31,960	55,603	100	100	100	100
Total private, SUD	5,568	7,667	13,123	24,076	31	37	41	43
Out-of-pocket	1,510	2,662	3,666	5,588	9	13	11	10
Private insurance	3,347	3,863	7,917	15,921	19	18	25	29
Other private	711	1,142	1,539	2,567	4	5	5	5
Total public, SUD	12,185	13,326	18,838	31,527	69	63	59	57
Medicare	753	1,045	1,395	1,861	4	5	4	3
Medicaid	3,285	3,982	6,595	14,052	19	19	21	25
Other federal[a]	2,737	3,034	3,970	6,205	15	14	12	11
Other state and local[a]	5,410	5,264	6,877	9,409	30	25	22	17
Total Health	2,031,361	2,355,707	2,642,203	3,050,828	100	100	100	100
Total private, total health	1,094,714	1,221,844	1,363,963	1,540,532	54	52	52	50
Out-of-pocket	273,197	293,133	317,607	338,150	13	12	12	11
Private insurance	737,559	832,550	925,132	1,072,057	36	35	35	35
Other private	83,958	96,161	121,224	130,325	4	4	5	4
Total public, total health	936,647	1,133,863	1,278,240	1,510,296	46	48	48	50
Medicare	403,689	498,872	569,513	646,245	20	21	22	21
Medicaid	314,942	385,536	435,359	559,753	16	16	16	18
Other federal[a]	84,135	105,717	119,954	138,248	4	4	5	5
Other state and local[a]	133,881	143,738	153,414	166,050	7	6	6	5

Note: Because of rounding, numbers and percentages may not sum to category totals.

[a] SAMHSA block grants to “state and local” agencies are part of “other federal" government spending.

Sources: SAMHSA Behavioral Health Spending and Use Accounts.

Table A8. Average Annual Growth by Payment Source for Mental Health (MH), Substance Use Disorders (SUDs), and Total Health, Selected Periods

Type of Payment Source	Average Annual Growth, %											
	MH and SUD			MH			SUD			Total Health		
	2006–2009	2009–2012	2012–2015	2006–2009	2009–2012	2012–2015	2006–2009	2009–2012	2012–2015	2006–2009	2009–2012	2012–2015
Total	3.9	5.0	7.6	3.6	3.2	4.2	5.7	15.0	20.3	5.1	3.9	4.9
Total, private	2.8	7.2	7.0	1.8	5.1	3.0	11.3	19.6	22.4	3.7	3.7	4.1
Out-of-pocket	3.6	2.9	3.2	1.6	1.4	0.2	20.8	11.3	15.1	2.4	2.7	2.1
Private insurance	2.4	8.9	8.4	2.1	6.3	3.9	4.9	27.0	26.2	4.1	3.6	5.0
Other private	3.2	10.1	8.5	0.0	10.0	4.8	17.1	10.5	18.6	4.6	8.0	2.4
Total, public	4.6	3.5	8.0	4.9	1.8	5.1	3.0	12.2	18.7	6.6	4.1	5.7
Medicare	8.4	4.0	3.9	8.2	3.7	3.5	11.6	10.1	10.1	7.3	4.5	4.3
Medicaid	5.3	3.9	10.8	5.2	1.7	6.3	6.6	18.3	28.7	7.0	4.1	8.7
Other federal	7.1	6.0	9.0	8.9	4.3	4.9	3.5	9.4	16.0	7.9	4.3	4.8
Other state and local	–0.6	1.4	6.9	–0.5	–1.3	5.1	–0.9	9.3	11.0	2.4	2.2	2.7

Sources: SAMHSA Behavioral Health Spending and Use Accounts; Centers for Medicare & Medicaid Services, Office of the Actuary, National Health Expenditure Accounts, Bureau of Economic Analysis.

APPENDIX B: BEHAVIORAL HEALTH SPENDING AND USE ACCOUNTS STRUCTURE AND DEFINITIONS

This appendix presents the structure used in the Substance Abuse and Mental Health Services Administration (SAMHSA) Behavioral Health Spending and Use Accounts (BHSUA) to estimate treatment spending for mental disorders and for substance use disorders (SUDs). It also describes the classification system used as a basis for that structure and defines key concepts used in the BHSUA. It draws heavily on the definitions used for the National Health Expenditure Accounts (NHEA) that are posted on the Centers for Medicare & Medicaid Services (CMS) NHEA website.[29]

Behavioral Health Spending and Use Accounts Structure

The BHSUA measured aggregate spending on the treatment of mental and/or substance use disorders (M/SUDs). Historical estimates were constructed in four dimensions:

- Diagnosis
  - Mental disorders
  - SUDs
- Providers and products
  - Hospital care: general and specialty hospitals[30]
  - Physician services: psychiatrists and other physicians[31]
  - Other professional services: psychologists, clinical social workers, and others
  - Nursing home care
  - Home health care
  - Clinics and public health activities
  - Retail prescription drugs
  - Insurance administration
- Setting[32]
  - Inpatient
  - Outpatient
  - Residential
- Payment source
  - Private insurance
  - Out-of-pocket
  - Other private: philanthropic and other revenues
  - Medicare
  - Medicaid (including the Children's Health Insurance Program [CHIP])
  - Other federal
  - Other state and local

Expenditures in the BHSUA measure the amounts spent to (1) provide services to specific individuals who have diagnoses related to M/SUDs, (2) pay for prescription medications with indications for treatments related to those diagnoses, (3) cover the costs of insurers to administer various public and private insurance programs, and (4) cover the costs of philanthropic organizations to administer their programs. Unlike the NHEA, the BHSUA does not include expenditures related to mental health (MH) and SUD research and investment in structures, dental services, durable medical equipment, or nondurable medical products.

Classification System

The classification system for private establishments (i.e., generally single locations of production of services) is laid out in the North American Industrial Classification System (NAICS) by the federal government. Sector 62 defines establishments in the Health Care and Social Assistance area. For public entities, classification of government operations parallels the NAICS system, such as the operation of public MH and SUD chemical dependency clinics. The NAICS groups the private sector establishments according to similar production processes. Each establishment is assigned a code that identifies the main nature of its operation within the broader industrial classification scheme. For the health care and social assistance industry, the NAICS also is structured to capture the continuum of medical and social care. The NAICS structure for health care and social assistance ranges from medical care facilities providing acute care (offices and clinics of physicians and hospitals) to less acute medical care facilities (residential treatment centers, nursing homes, and continuing care facilities) to social assistance facilities providing little or no medical care.

Table B1 details how the NHEA crosswalks to NAICS and the BHSUA. As shown below, some NHEA categories map to more than one BHSUA category. Additionally, each BHSUA category may include more than one NHEA category. For example, the BHSUA Clinics and Public Health Activities category aligns with the following NHEA categories: (1) part of Physician and Clinical; (2) Other Health, Residential, and Personal Care; and (3) Public Health Activities.

Table B1. North American Industry Classification System for Health Care Services Crosswalk to the BHSUA and the National Health Expenditure Accounts

NHEA Category	BHSUA Expenditure Account Category	NAICS Code	NAICS Industry Title
Physician and Clinical Services	Nonpsychiatric Physician Services	621111	Offices of Physicians (except Mental Health Specialists)
	Psychiatrists	621112	Offices of Physicians, Mental Health Specialists
	Clinics and Public Health Activities	6214	Outpatient Care Centers
Other Health, Residential, and Personal Care		62322	Residential Mental Health and SUD Facilities
Public Health Activities		N/A	
Other Professional Services	Other Professional Services	6213	Offices of Other Health Practitioners
Home Health Care	Home Health Care	6216	Home Health Care Agencies
Hospital Care	General Hospitals	6221, 6223	General Medical/Surgical Hospitals; Specialty Hospitals (except Psychiatric and SUD Hospitals)
	Specialty (Psychiatric and Substance Abuse) Hospitals	6222	Psychiatric and SUD Hospitals
Nursing Home Care	Nursing Home Care	6231	Nursing Care Facilities
		623311	Continuing Care Retirement Communities (with on-site nursing home facilities)

Abbreviations: BHSUA, Behavioral Health Spending and Use Accounts; SUD, substance use disorder; NAICS, North American Industrial Classification System; NHEA, National Health Expenditure Accounts; N/A, not applicable.

Source: Centers for Medicare & Medicaid Services. (2015). *National Health Expenditure Accounts: Methodology paper, 2015: Definitions, sources, and methods.* Retrieved from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/DSM-15.pdf

In addition, three categories of spending that are not defined by NAICS are included in the BHSUA. Unlike other spending categories in which the establishment's primary function is medical care, this spending is for services or products delivered by nonmedical establishments. The first category is spending on retail prescription drugs. This category includes prescription drugs sold in retail establishments such as community pharmacies, mass merchandise retailers, or grocery stores or through mail-order pharmacies. The second category is insurance administration, which includes the cost of running government health care programs and private health insurance. The third category is public health activities, which consists of government expenditures for organizing and delivering public health services.

Definitions

The following list provides definitions of diagnosis, provider, payment source, and setting categories used with the MH and SUD spending and use accounts. The NAICS codes referenced in these definitions can be found in Table B1.

Diagnoses

We defined spending for MH and SUD services by diagnostic codes found in the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) as mental disorders (i.e., codes in sections 290 through 319) through September 2015. We excluded a subset of these conditions as being outside the

scope of this project: dementias (290), transient mental disorders caused by conditions classified elsewhere (293), persistent mental disorders caused by conditions classified elsewhere (294), nondependent use of drugs–tobacco abuse disorder (305.1), specific delays in development (315), and mental retardation (317–319). We also excluded cerebral degenerations (e.g., Alzheimer's disease, 331.0) and psychic factors associated with diseases classified elsewhere (316). We included two pregnancy-related complications: complications mainly related to pregnancy–drug dependence (648.3) and mental disorders (648.4). We used the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) to code services provided on or after October 1, 2015. We used the CMS 2015 General Equivalence Mappings to create a crosswalk to generate a comparable list of ICD-10 codes.[33]

The allocation of MH and SUD spending for services was based on primary diagnosis and did not include spending associated with secondary diagnoses. The diagnostic categories selected generally reflect what payers (insurers) consider as M/SUDs. They excluded costs not directly related to treatment, such as those stemming from lower productivity, missed workdays, and/or drug-related crimes. They also excluded expenditures on non-M/SUD conditions that were caused by M/SUDs, such as liver cirrhosis.

Providers

The Provider category is based on the origin of the bill for the service encounter. Care billed to a specific provider, that is, a physician or other professional, is included under Professional Services, as defined below. Other service encounters that are billed as a service from a facility are categorized by the location of the care, for example, payments to hospitals, nursing homes, or home health agencies. Retail prescription drugs and insurance administration comprise separate categories as defined below.

The definitions below align with the CMS NHEA document[34] and from the U.S. Census Bureau's NAICS website.[35] Providers of service are classified according to the major types of services they furnish. These services are listed in Table B1. Providers often perform functions in addition to the major types of services they deliver. For example, a hospital primarily provides inpatient health care services, but it also may operate a home health agency or nursing home wing and provide physician services through staff physicians in clinics and outpatient departments. We made the classification of spending on the basis of the primary services provided, even though the provider also may fill other functions. The reason for this classification scheme is that providers often furnish the data used to estimate spending. These providers seldom categorize spending by function, which would be necessary information to produce a "functional" display of spending.

Hospital care includes all billed services provided to patients by public and private general medical/surgical and psychiatric and SUD specialty hospitals. It may include detoxification and other M/SUD treatment services in inpatient, outpatient, emergency department, and residential settings that are located in or operated by a hospital or hospital system.

- *General hospitals* are community medical or surgical and specialty hospitals other than MH and SUD specialty hospitals providing diagnostic and medical treatment, including MH and SUD care in specialized treatment units of general hospitals. *General hospital specialty mental health and substance use disorder units* are any units in general medical/surgical hospitals or nonpsychiatric and nonsubstance abuse specialty hospitals that are designated as an MH or SUD *specialty unit* specifically designated for the treatment of patients with an M/SUD diagnosis. Inpatient care in Veterans Affairs (VA) hospitals is included in this category.

- *General hospital nonspecialty care* is any unit in a general medical or surgical hospital or a nonpsychiatric and nonsubstance abuse specialty hospital that is not designated as an MH or SUD specialty unit. Outpatient treatment in emergency departments is included in this category. For purposes of these estimates, we only counted spending for patients with primary diagnoses of mental illness or SUD in this category.
- *Specialty hospitals* are establishments that are designated as primarily engaged in providing diagnostic, medical treatment, and monitoring services for patients who have an M/SUD.

Professional care includes physician services and other professional services that are billed to a specific provider. It includes office-based care and care delivered in other settings, for example, when a physician sees a patient in a hospital and bills for the encounter.

- *Psychiatrists* include independently billing private or group practices of health practitioners with the degree of Doctor of Medicine (MD) or Doctor of Osteopathy (DO) who are engaged primarily in the practice of psychiatry or psychoanalysis, plus the independently billed portion of medical laboratory services.
- *Nonpsychiatric physician services* include independently billed services provided in establishments operated by nonpsychiatric MDs and DOs and outpatient care centers (except specialty MH and SUD clinics). This category also includes services rendered by a physician in hospitals, if the physician bills independently for those services. This excludes services provided within the psychiatrist group described above.
- *Other professional services* cover services provided in establishments operated by health practitioners other than physicians and dentists. These professional services include those provided by private duty nurses, chiropractors, podiatrists, optometrists, and physical, occupational, and speech therapists; for the MH and substance use field, these include services of psychologists, psychoanalysts, psychotherapists, clinical social workers, professional counselors and SUD counselors, and marriage and family therapists. For the BHSUA, these are establishments primarily engaged in the diagnosis and treatment of mental, emotional, and behavioral disorders and/or the diagnosis and treatment of individual or group social dysfunction brought about by such causes as mental illness, alcohol and substance abuse, physical and emotional trauma, or stress.

Long-term care as a summary category includes home health and nursing home care.

- *Home health care* covers medical care provided in the home by private and public freestanding home health agencies (HHAs). The *freestanding* designation means that the agency is not facility-based—that is, based out of a hospital, nursing home, or other type of provider whose primary mission is something other than home health services. Medical equipment sales or rentals billed through HHAs are included. Nonmedical types of home care (e.g., Meals on Wheels, chore-worker services, friendly visits, or other custodial services) are excluded.
- *Nursing home care* covers services provided in private and public freestanding nursing home facilities. The *freestanding* designation means that the nursing home is not based out of a hospital or other type of provider whose primary mission is something other than nursing home care. These facilities include nursing and rehabilitative services generally for an extended period of time by

staffs of registered or licensed practical nurses with physician consultation or oversight. Services provided in nursing facilities operated by the VA also were included.

Clinics and public health activities includes clinical centers and government spending for organizing and delivering public health. Clinical centers are facilities designated as primarily providing outpatient and/or residential services. These include clinics designed to provide behavioral health services, including multiservice mental health organizations providing MH services and/or co-occurring M/SUD treatment to individuals. Additionally, substance abuse residential facilities include residential substance abuse facilities providing residential care, detoxification, and treatment for patients with an SUD. Outpatient treatment centers and clinics, which generally do not provide residential care, include establishments with medical and/or nonmedical staff primarily engaged in providing outpatient diagnostic, detoxification, and treatment services related to SUDs as well as renal disease treatment centers, rural health clinics, federally qualified health centers, and rehabilitation facilities. Public health activities are services performed directly by the public health department within outpatient care centers. These include health services such as epidemiological surveillance, disease prevention, and immunizations.

Retail prescription drugs includes the sales of psychotherapeutic and SUD medications sold through retail outlets such as community pharmacies; pharmacies in mass merchandise stores, grocery stores, and department stores; and mail-order pharmacies. It excludes sales through hospital pharmacies, exclusive-to-patient health maintenance organizations, and nursing home pharmacies, which instead were counted with the establishment (hospital, physicians' offices, or nursing home) where the pharmacy is located. The classifications of *psychotherapeutic drugs* included benzodiazepines, anxiolytics, sedatives, and hypnotics; antipsychotics and antimanics; antidepressants; analeptics (attention-deficit hyperactivity disorder [ADHD] medications); and some anticonvulsants. The study also included medications approved to treat SUDs: buprenorphine, acamprosate, disulfiram, naloxone, and naltrexone. Formulations of buprenorphine used primarily for treating pain were excluded. Methadone treatment for opioid use disorder was captured in the clinics and public health activities category, not from pharmacy claims.

Adjustments were made to reflect prescription drug spending for rebates. These adjustments measured rebates that were returned to the insurer directly from the manufacturer after the pharmacy transaction took place at a retail pharmacy, thereby reducing the true cost. These rebates serve as incentives for insurers to include particular drugs on an insurer's formulary, thus helping the manufacturer increase its sales volume.

Insurance administration includes spending for the cost of administering Medicaid, Medicare, and other state and local programs. It also covers the net cost[36] of private health insurance (the difference between premiums earned by insurers and the claims or losses incurred for which insurers become liable). The net cost of private insurance includes claims processing costs, reserves to cover future liabilities, advertising costs, premium taxes, investor dividends, and profits of insurance companies.

Payment Sources

The Payment Source, or "payer," category classifies spending by payment source as defined below. It includes all spending including retail prescription drugs and insurance administration.

Private payments are any payments made through private health insurance, out-of-pocket, or other private sources.

- *Private health insurance* includes (1) benefits paid by private insurance to providers of service or for prescription drugs and (2) the net cost of private insurance—the difference between health premiums

earned and benefits incurred—that was included in the category of *insurance administration*. The net cost of private insurance included costs associated with bill processing, advertising, sales commissions, other administrative costs, net additions to reserves, rate credits and dividends, premium taxes, and profits or losses.

- *Out-of-pocket* payments include direct spending by consumers for health care goods and services, including coinsurance, deductibles, and any amounts paid for health care services that were not covered by public or private insurance and services purchased by persons without health insurance. Health insurance premiums paid by individuals are not included but are included indirectly as part of private health insurance.
- *Other private* includes spending from philanthropic and foundation sources and from nonpatient revenues. Nonpatient revenues are monies received for nonhealth purposes, such as from the operation of gift shops, parking lots, cafeterias, and educational programs, or from returns on investments.

Public payments are any payments made on behalf of enrollees in Medicare or Medicaid or through other programs run by the federal government or individual state government agencies.

- *Medicare* is a federal government program that provides health insurance coverage to eligible individuals who are aged 65 years or older or disabled. It is composed of four parts: (1) Part A—coverage of institutional services, including inpatient hospital services, nursing home care, initial home health visits, and hospice care; (2) Part B—coverage for physicians and other professional services, outpatient clinic or hospital services, laboratory services, rehabilitation therapy, and home health visits not covered by Part A, among other services; (3) Part C—Medicare Advantage program providing coverage through private plans; and (4) Part D—coverage for prescription drugs, starting in 2006.[37]
- *Medicaid,* including CHIP, is a program jointly funded by the federal and state governments that provides health care coverage to certain classes of individuals with limited income and resources. Within federal guidelines, state governments set eligibility standards, determine services provided, set reimbursement rates, and administer the program. Spending represents both federal and state portions unless otherwise specified. Medicaid payments also include payments made through fee-for-service and managed care plans. This line also includes CHIP spending that is administered as part of the Medicaid program.
- *Other federal* includes spending provided through the VA, the Department of Defense, the Community Mental Health Services Block Grant and Substance Abuse Prevention and Treatment Block Grant programs[38] administered by SAMHSA, and treatment by the Indian Health Service.
- *Other state and local* includes programs funded primarily through state and local offices of MH and SUDs, but it also may include funding from other state and local sources such as general assistance or state and local hospital subsidies.

Settings of Care

Setting refers to the type of facility the care was provided in, that is, an inpatient, outpatient, or residential care facility as defined below. Neither insurance administration nor retail prescription drugs are classified by setting.

Inpatient services cover inpatient care provided in an acute medical care unit or setting, which usually is a hospital. It includes medication administered in inpatient settings.

Outpatient services includes care provided in an ambulatory setting such as a hospital outpatient department or emergency department and in physicians' and other medical professionals' offices and clinics, including specialty MH and SUD centers. All home health care expenditures are counted as outpatient care.

Residential services includes services from a 24-hour-care setting that provides therapeutic care to patients using licensed mental or behavioral health professionals. All nursing home care, whether provided in a freestanding or hospital-based nursing home, is counted as residential care.

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[29] Centers for Medicare & Medicaid Services. (2015). *National Health Expenditure Accounts: Methodology paper, 2015: Definitions, sources, and methods*. Retrieved from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/DSM-15.pdf

[30] Hospital care was estimated separately for specialty psychiatric and chemical dependency hospitals and, within general hospitals, separately for specialty units and nonspecialty care.

[31] Physician services were estimated separately for psychiatric physicians and for nonpsychiatric physicians.

[32] Neither prescription drugs nor insurance administration were classified by setting.

[33] CMS.gov. (n.d.). 2015 ICD-10-CM and GEMs. Retrieved from https://www.cms.gov/medicare/coding/icd10/2015-icd-10-cm-and-gems.html

[34] Centers for Medicare & Medicaid Services. (2015). *National Health Expenditure Accounts*: *Methodology paper, 2015: Definitions, sources, and methods*. Retrieved from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/DSM-15.pdf

[35] U.S. Census Bureau. (n.d.). North American Industry Classification System. Retrieved from http://www.census.gov/eos/www/naics/

[36] *Net cost* is the difference between the insurance premium cost and the benefits incurred. It includes all costs associated with administering health insurance (e.g., commissions, bill processing, reserves), dividends paid to stockholders, and other taxes and costs.

[37] For more information, see Centers for Medicare & Medicaid Services. (n.d.). *Medicare & you 2018.* Retrieved from www.medicare.gov/pubs/pdf/10050-Medicare-and-You.pdf

[38] For more information, see Substance Abuse and Mental Health Services Administration. (n.d.). Substance abuse and mental health block grants. Retrieved from https://www.samhsa.gov/grants/block-grants

APPENDIX C: METHODS

This appendix describes the methods and data sources used to produce the Substance Abuse and Mental Health Services Administration (SAMHSA) Behavioral Health Spending and Use Accounts (BHSUA) for 2006–2015. The BHSUA measures spending for mental health (MH) and substance use disorder (SUD) treatment by provider type, payment source, and treatment setting.

The initial report, issued in 1998,[39] was the first effort to measure disease-specific spending in a comprehensive way using methods similar to those used in the National Health Expenditure Accounts (NHEA).[40] Subsequent reports provided updates and extended the years covered by the estimates. The current report introduces methodological changes to data sources and methods previously used. The most fundamental change was the substitution of health care claims data for less-detailed survey data for two major payers—Medicare and private insurance. This change necessitated the development of methods to integrate that claims data with previously used survey and administrative data to estimate spending for the remaining payers. Further, the data and methods changes required refinements to some prior definitions of provider and setting.

Using the claims data improves the accuracy of the estimates. However, it results in revisions to prior spending estimates. Because the Medicare Limited Data Sets are available only for 2006 forward, earlier versions of the BHSUA are not directly comparable to the current report.

Overview of Methods and Algorithms for Determining Spending

The estimates use Medicare and private insurance claims data to form the foundation of the calculations, integrating national data sources from government agencies and private organizations to complete the estimates for the other payment sources. When multiple data sources were available, the strength of each source was evaluated as it applied to each component of the calculation (diagnosis, setting, provider or payer), with the strongest used, and the supporting sources monitored. We considered how comprehensive each data source was on a national level, how similar data sources compared with each other in terms of consistency, and how consistent our claims results were to prior results. Data were analyzed using both actuarial and statistical techniques. Complex issues must be addressed when combining the data to produce comprehensive estimates, such as ensuring consistency across data sources, avoiding duplicate accounting, and adjusting for incomplete observations in sample surveys. Methods to address these issues are detailed below in the section labeled Special calculations.

Expert advice. In the early years of developing the estimates, the methods for using multiple data sources to make the diagnosis, payer, and provider stratifications drew extensively on input from reviewers and a technical panel of experts. The advisors included experts in mental illness, SUDs, expenditure estimation, actuarial methods, health services research, and health economics. Experts on state programs (including the National Association of State Alcohol/Drug Abuse Directors and the National Association of State Mental Health Program Directors) also reviewed the methods and provided advice. With the current revision to the methodology, advisors include experts in similar areas in addition to those in statistics and prescription drug policy. Additional consultation with NHEA ensures alignment with their definitions and methods.

Overview of methods. The estimation approach was designed to be consistent with the NHEA methods and align with the NHEA estimates of total health care spending. The NHEA constitutes the framework on

which the Centers for Medicare & Medicaid Services (CMS) constructs the estimates of spending for all health care. The framework is a two-dimensional matrix. One dimension consists of health care providers or products that constitute the U.S. health care industry; the other dimension is composed of sources of funds used to purchase this health care. These are produced on an annual basis.

Because claims data currently are available only for private insurance and Medicare, a hybrid approach was used to estimate MH and SUD spending for all payer categories—a *bottom-up* method that uses claims to estimate MH and SUD spending for private insurance and Medicare by building up the estimates from the individual claims and the existing *top-down* method that uses survey and administrative data to estimate spending by other payers.

The new bottom-up methodology begins by assigning individual claims to strata defined by diagnosis, provider, and setting and then builds up the expenditures within each category. Data used for the claims approach included the IBM® MarketScan® Commercial Database, the Medicare Standard Analytic Files (SAF), and the Medicare Part D Drug Event File. The MarketScan Commercial Database contains health insurance claims across the continuum of care (inpatient, outpatient, residential, outpatient pharmacy) as well as enrollment data from large employers and health plans across the United States that provide private health care coverage for employees, their spouses, and dependents. The administrative claims database includes claims from a variety of fee-for-service and capitated health plans. Plans without prescription drug coverage and plans in which behavioral health services were carved out were excluded. Using the private insurance enrollment data from the Public Use Microdata Sample of the American Community Survey, the MarketScan enrollment and claims were weighted to represent all private insurance enrollees in the United States by age and sex. Capitated health care plans were excluded prior to calculating weights to scale to the national level because of the lack of complete spending information.

The Medicare SAF contains beneficiary-level claims data for all fee-for-service Medicare claims. Using detailed stratification of the Medicare population by age and sex, we inflated the fee-for-service claims to represent all Medicare spending, including spending by managed care and other plan types. Additional data from the Medicare Part D Drug Event File furnished prescription drug payment data for all Medicare beneficiaries.

These claims databases provided detailed information about the provider and setting of MH and SUD spending by private insurance and Medicare. Comparing the spending found using the claims database with the findings of the top-down method for private insurance and Medicare helped us create adjustment factors for the other payers.

Survey data also are used to stratify MH and SUD spending estimates by provider and payer into treatment setting (inpatient, outpatient, or residential). We removed duplicate expenditures to prevent double counting. Then, we summed sector estimates to obtain preliminary national spending for MH, SUD, and total MH and SUD in the United States from 2006 through 2015.

Strengths of the approach. Maintaining consistency with the NHEA allows for an analysis of and comparison between MH and SUD spending and total health spending. In addition, both MH and SUD spending and total health spending can be followed over time as public programs and the health care system change. Furthermore, spending by clinical problem—mental disorders and/or SUDs—can be studied to understand the patterns of public and private spending on these problems, and the participation by types of providers can be monitored as treatment patterns change. By incorporating data from large claims databases, which contain actual amounts paid for health services, the accuracy and precision of the estimates improve

and the analytic capacity of the estimates expands because of the level of detail captured at the individual and service levels.

Classifying claims. Table C1 lists the variables from the claims data used to identify diagnosis, provider, and setting.

Table C1. Variables in Claims Used to Identify Diagnosis, Provider, and Setting

Payer and Claim Variable	Used to Identify
Medicare	
Provider number	Provider
Claim facility type code	Provider
Line CMS provider specialty code	Provider – Carrier file
Line place of service code	Setting
Claim principal diagnosis code	Diagnosis
Claim payment amount	Spending
Private insurance	
Provider type	Provider
Facility bill type code	Provider
Place of service	Setting, Provider
Primary diagnosis	Diagnosis
Payments net	Spending

Abbreviation: CMS, Centers for Medicare & Medicaid Services.

Basic calculations. Table C2 summarizes the methods for estimating MH and SUD expenditures using the top-down approach. The specialty centers expenditure estimates, which now maps to the clinics and public health activities estimates, were drawn predominantly from specialty surveys by facility type and by payment source.

We followed three major steps for the basic calculations. First, we excluded spending on mental health conditions that were beyond the scope of these estimates (dementia, tobacco addiction, mental impairment, and developmental delays) from total revenues by facility. Second, we estimated revenues for providers who delivered multiple modes of care (inpatient, outpatient, and residential treatment) by modality or setting, using patient counts by modality and the average revenue per patient for single-modality providers specified by ownership type and region. Third, we summarized total revenues by type of provider and by payment source and diagnosis.

Table C2. Overview of Methods for the Top-Down Estimating Mental Health and Substance Use Disorder Expenditures

Method Component	Specialty Centers[a]	All Other Providers[b]
Data sources	Facility and organization surveys (facility-level reporting)	Encounter data (administrative claims and encounter-focused surveys)
Critical data elements	Total revenue by facility, modality of care, and payment source; client counts by facility, modality of care, and diagnosis; average salaries	Components of spending (service use and price) by provider type, payment source, and diagnosis

Method Component	Specialty Centers[a]	All Other Providers[b]
Basic calculations	Eliminated diagnoses out of scope (e.g., dementias, mental impairment and mental developmental delays, tobacco addiction)	Eliminated duplications with specialty providers
	Split multimodality revenue by modality on the basis of the cost of the product per patient for single-modality providers and patient counts by modality for multimodality facilities	Multiplied *components of spending* together for each diagnosis (mental health, alcohol, drug abuse, all other health disorders) and payment source to estimate diagnosis share of total health care expenditures by payment source
	Estimated total revenue by provider type, payment source, diagnosis	Multiplied national health care expenditures (excluding specialty MH and SUD providers) by *diagnosis share*
Special calculations	Imputations for missing revenue = *f* (modality, ownership, region of the country, number of patient days) by facility	None
	Survey nonresponse adjustments	Survey nonresponse adjustments
	Extrapolations and interpolations for missing years of data	Extrapolations and interpolations for missing years of data
	Projections for missing years of data	Projections for missing years of data
	Smooth expenditure estimates across all years	Smooth expenditure estimates across all years
Results for 2006–2015	MH and SUD specialty expenditures by provider type, payment source, and setting (modality)	MH and SUD nonspecialty provider expenditures by provider type, payment source, and setting

Abbreviations: MH, mental health; SUD, substance use disorder.

[a] Includes methods for estimating spending in specialty hospitals and specialty centers whose underlying data through 2009 came from specialty provider surveys sponsored by SAMHSA. For later years, the U.S. Census Bureau's Services Annual Survey data provided baseline revenue estimates by payment source; client counts by diagnosis type were drawn from the National Survey of Substance Abuse Treatment Services (N-SSATS) and the National Mental Health Services Survey (N-MHSS); and growth in the Medical Consumer Price Index (CPI), as calculated by the Bureau of Labor Statics, was used as a proxy for inflation in spending per client for inpatient services and the growth in the all item CPI was used for outpatient and residential care.

[b] For inpatient psychiatric units in general hospitals, estimates were based on specialty unit data reported in Medicare Cost Reports submitted by hospitals to CMS; for psychiatric hospitals, we used revenues of psychiatric hospitals from the Census of Service Industries. Private insurance drug spending was based on drug claims in MarketScan. Medicare Part D Drug Event File was used to calculate Medicare spending on MH and SUD drugs. For the other payers, we used IQVIA and Medical Expenditure Panel Survey (MEPS) data to produce the estimates and make the diagnosis and payer category splits.

For all other providers, we used the 2015 release of the NHEA to develop a top-down approach for measuring MH and SUD expenditures for the other providers, consistent with the methods of the NHEA. The NHEA reports health care expenditures only for all diagnoses. Providers were stratified to avoid double-counting the specialty service expenditures, which we estimated separately using specialty centers surveys as noted above.

We used principal diagnosis to distinguish MH and SUD from other general health care expenditures.[41] We calculated spending proportions for MH and SUDs by multiplying utilization by average prices (accounting for discounts and cost sharing) for each diagnostic group and dividing by the sum of all diagnoses. For

example, we examined the share of physician office visits that were for MH and SUD treatment using data from the National Ambulatory Medical Care Survey (NAMCS). We then looked at the ratio of average payments for physician office visits for MH and SUD compared with all diagnoses. We determined this ratio using data from the Medical Expenditure Panel Survey (MEPS) and IBM MarketScan Research Databases (commercial claims data). Once the ratio was determined, we multiplied the MH and SUD share of office visits by average payment ratio by payment source type (e.g., Medicare, private insurance). Finally, we applied ratios by payment source type of the NHEA Totals for Physician Expenditures for the final MH and SUD estimates.

We applied these proportions to the estimates from the NHEA to estimate total MH and SUD national spending. We made these estimations within the type of payment source and provider, as described next.

For the bottom-up approach, we used the NHEA definitions to classify providers using records derived from the Uniform Billing (UB04) form. This form contains information about the Place of Service, Provider Type, and Bill Type, which aligns with the definitions of different provider groups in the NHEA. Because comparison to the NHEA all heath estimates is a goal, we first calculated the total health spending estimates of each provider for private insurance and Medicare. We inflated these estimates to account for beneficiaries not enrolled in fee-for-service plans. We then determined MH and SUD spending by stratifying the spending by diagnosis using the primary diagnosis code associated with each claim. We then inflated these results to match NHEA to account for payments not captured through claims.

Calculations by type of payment source and provider. The public sector payment source categories include Medicare, Medicaid, state and local governments excluding contributions to Medicaid, and federal government other than Medicare and Medicaid (e.g., Department of Veterans Affairs, Department of Defense, and federal block grants from SAMHSA). Medicaid expenditures were combined federal, state, and local funds. The private sources were private insurance, out-of-pocket expenditures, and other private sources (e.g., philanthropy and other nonpatient revenues received by providers).

The provider categories are specialty MH and SUD hospitals, general hospitals with specialty units, general hospitals with services outside of specialty units, psychiatrists, nonpsychiatrist physicians, other nonphysician MH and SUD professionals (e.g., psychologists, psychotherapists, social workers, SUD counselors), freestanding home health agencies (HHAs), freestanding nursing homes, clinics and public health activities (which includes the previous group of specialty centers), and retail purchases of prescription drugs.

We also present MH and SUD estimates by grouping providers into specialty, nonspecialty, or mixed categories. Specialty providers included specialty MH and SUD hospitals, general hospital specialty units, psychiatrists, and other MH and SUD professionals. Nonspecialty providers included general hospitals with services outside of specialty units, nonpsychiatric physicians, HHAs, and nursing homes. The mixed category includes clinics and public health activities. The remaining two categories of spending, retail purchases of prescription drugs and insurance administration, are not given a specialty or nonspecialty designation and are reported separately.

We estimated the costs of health insurance administration based on NHEA data, using the administrative cost by payer as a share of total expenditures. This factor was applied to MH and SUD coverage to calculate the insurance administration estimates.

We further divided expenditures by provider and payment source into inpatient, outpatient, and residential care. In some cases, providers offered all three types of care. For example, hospital expenditures could cover inpatient, outpatient, or residential services. We classified home health expenditures as outpatient expenditures only, and we classified nursing home expenditures as residential expenditures only. Expenditures on retail purchases of prescription drugs (a medical product rather than a provider) and insurance administration were not subdivided into these settings of service.

Data Source Descriptions

Table C3 lists the data sources used to develop the BHSUA for each of the two methods, how they were used, and the years of data that contributed to the estimates.

The claims-based approach uses various claims-based sources, included at the top of Table C3. As described above, this method stratifies each record according to provider, diagnosis type, and setting. The individual files provide payer information specific only to that payer type (Medicare or private insurance).

The survey-based data relied on various data sources, listed second in Table C3. These sources included administrative claims, cost data, and surveys that collect encounter-level or patient-level data. In some cases, these surveys sampled a first stage of providers and then a second stage of encounters between providers and patients. We could calculate expenditures for specific treatments such as MH, SUD, or total health care because diagnosis on each encounter or patient is included in these sources.

Table C3. Data Sources for the Behavioral Health Spending and Use Accounts

Data Source	Use in Spending Estimates	Years Used
Claims-Based Bottom-up Approach		
IBM MarketScan Research Databases	Private insurance spending by provider type and setting	2008–2015
Medicare Limited Data Sets	Medicare health care spending, excluding prescription drugs	2007–2015
Medicare Research Identifiable Files	Medicare prescription drug spending	2006–2015
Public Use Microdata Sample of the American Community Survey	Creation of weights to project MarketScan to the national private insurance population	2008–2015
Survey-Based Top-Down Approach		
Inventory/Survey of Mental Health Organizations (IMHO/SMHO)	Expenditures in MH specialty centers	2004, 2009
SAMHSA Survey of Revenue and Expenses (SSRE)	Expenditures in specialty MH and SUD organizations	2009
National Health Expenditure Accounts (NHEA)	• National health care expenditures by provider and payment source • Distribution of total freestanding hospital-based nursing home, home health, and personal care agency payment	2006–2015
National Hospital Ambulatory Medical Care Survey (NHAMCS)	• Proportion of general hospital outpatient visits devoted to M/SUD diagnoses • Proportion of emergency department visits devoted to M/SUD diagnoses	• 2006–2015 • 2006–2015

Data Source	Use in Spending Estimates	Years Used
Claims-Based Bottom-up Approach		
National Ambulatory Medical Care Survey (NAMCS)	• Proportion of physician office visits devoted to M/SUD diagnoses • Proportion of office visits attributable to visits to psychiatrists	• 2006–2014 • 2006–2014
IBM MarketScan Research Databases	• Payment for MH and SUD nonpsychiatric physician visits and psychiatrist visits relative to all physician visits • Proportion of other provider bills (e.g., home health agencies) for M/SUD diagnoses • Distribution of other professional services by setting	• 2006–2015 • 2006–2015 • 2006–2015
IQVIA (formally IMS Health Inc.)	Spending on prescription drugs for M/SUD treatment	2006–2015
CMS-64s (financial reporting forms)	• Estimates of drug rebates • Medicaid spending growth for psychiatric hospitals	• 2006–2015 • 2006–2015
Healthcare Cost and Utilization Project (HCUP), Nationwide Inpatient Sample	• Proportion of general hospital inpatient days for M/SUD diagnoses • MH and SUD charges for inpatient hospitalizations by primary payment source • Charge differential between MH and SUD services and other health care services	• 2006–2014 • 2006–2014 • 2006–2014
Medical Expenditure Panel Survey (MEPS)	• Distribution of payments among multiple payment sources for services • Spending for psychologists and counselors • Distribution of spending by payment sources on drugs to treat mental illness	• 2006–2015 • 2006–2015 • 2006–2015
Economic Census, Health Care and Social Assistance Sector	• Data on number of establishments and receipts for offices of MH professionals (except physicians) • Estimates of specialty psychiatric hospital revenue total	• 2007, 2012 • 2007, 2012
Services Annual Survey	• Revenue from offices of other professionals (other than physicians) • Revenue for specialty psychiatric hospitals • Growth in revenue for outpatient specialty MH and SUD centers	• 2006–2015 • 2006–2015 • 2006–2015 quarterly data • 2005–2015
Department of Veterans Affairs	Spending on inpatient, outpatient, and residential M/SUD treatment	Selected years 2006–2015
Medicare Cost Reports	Costs of psychiatric units in nonpsychiatric hospitals for MH	2006–2015
National Association of State Mental Health Program Directors National Research Institute	Medicaid funding of state and local specialty hospitals	2005–2015

Abbreviations: CMS, Centers for Medicare & Medicaid Services; MH, mental health; M/SUD, mental and/or substance use disorder; SUD, substance use disorder.

Special calculations. For the top-down approach, we made several complex methodological adjustments to develop national spending estimates from the multiple and disparate data sets described in Table C.3.

- We devised methods to allocate spending by diagnosis for facility-level data where disease classifications differed across surveys. Specifically, when co-occurring alcohol and drug abuse was adopted as a survey classification for clients in SAMHSA surveys, we divided those co-existing SUD diagnoses expenditures between single-diagnosis care types. We imputed missing total revenues from MH and SUD facility surveys on the basis of numbers of clients and facility characteristics (ownership and region).
- With claims data, we avoided duplicate counting of costs by relying on primary diagnosis so that the same claim is not applied to multiple diagnosis categories. However, relying on primary diagnosis to allocate claim expenses has the limitation of not capturing all incidents where M/SUD diagnosis is a *contributing factor*. Many claims have multiple diagnoses associated with them, but the entire claim is allocated to only the primary diagnosis.
- We used moving average techniques to address high variance in data resulting from small sample sizes. This is a common approach for volatile data to minimize the impact of fluctuations in data due to small sample sizes.
- For rare instances where data were not available for all years, we either imputed interim results or projected for missing years. For example, data sources often have a lag in their reporting from the end of the calendar year. The timing of this report allows for most sources to be available through the projection period.

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[39] Mark, T. L., McKusick, D., King, E., Harwood, R., & Genuardi, J. (1998). *National expenditures for mental health, alcohol and other drug abuse treatment, 1996*. Rockville, MD: Substance Abuse and Mental Health Services Administration.

[40] Centers for Medicare & Medicaid Services. *National Health Expenditure Accounts*: *Methodology paper, 2015: Definitions, sources, and methods*. Retrieved from https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/DSM-15.pdf

[41] As a result, spending was not captured for nonpsychiatric physician visits in which a psychotherapeutic medication was prescribed but no MH diagnosis was included on the billing record.

APPENDIX D: ABBREVIATIONS

Abbreviation	Meaning (Sponsor)
ADHD	Attention deficit hyperactivity disorder
AHRQ	Agency for Healthcare Research and Quality
BHSUA	Behavioral Health Spending and Use Accounts
CMS	Centers for Medicare & Medicaid Services
DO	Doctor of Osteopathy
DoD	Department of Defense
HCUP	Healthcare Cost and Utilization Project
HHA	Home health agency
HHS	U.S. Department of Health and Human Services
HMO	Health maintenance organization
ICD-9-CM	International Classification of Diseases, Ninth Revision, Clinical Modification
ICD-10-CM	International Classification of Diseases, Tenth Revision, Clinical Modification
MHO	Inventory of Mental Health Organizations
MD	Doctor of Medicine
MEPS	Medical Expenditure Panel Survey
MH	Mental health
M/SUD	Mental and/or substance use disorder
NAICS	North American Industrial Classification System
NAMCS	National Ambulatory Medical Care Survey
NCHS	National Center for Health Statistics
NHEA	National Health Expenditure Accounts
N-SSATS	National Survey of Substance Abuse Treatment Services
SAMHSA	Substance Abuse and Mental Health Services Administration
CHIP	Children's Health Insurance Program
SMHO	Survey of Mental Health Organizations
SSRE	SAMHSA Survey of Revenue and Expenses
SUD	Substance use disorder
VA	Department of Veterans Affairs

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