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Costs of the Seriously Mentally Ill and Severely Emotionally Disturbed for Florida Medicaid Managed Care: 2017 and 2018**

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ABSTRACT

Objectives: Mental health disorders affect 46.6 million individuals, 19% of all U.S. adults. With 2020 costs estimated at $238.4 billion, mental health disorders have become the costliest health related conditions in the nation. Medicaid plays a substantial role in covering and paying for mental health services especially among low-income populations. In the U.S., Medicaid is the single largest payer for mental health services accounting for approximately 26% of all behavioral health spending. Moreover, while only one in five individuals enrolled in Medicaid has a behavioral health diagnosis, they account for almost half of all Medicaid expenditures and, in most states, are a rapidly growing problem. However, there is limited research on important aspects of mental health expenditures. No studies have comprehensively detailed state mental health charges and costs for institutional, office, and pharmacy services or expenditures related to the costliest Medicaid mental health patients; those that are diagnosed as seriously mentally ill (SMI) or with serious emotional disturbances (SED). Our study seeks to fill this gap and detail the mental health expenditures for the Florida Medicaid managed medical assistance (MMA) programs with a focus on SMI and SED patients.

Study Design: A comparative two-year descriptive analysis of Florida Medicaid MMA charges and estimated costs for both SMI and SED patients detailing institutional, office, pharmacy, and total Medicaid population expenditures. Charges and estimated costs are separated for the top 1%, 5%, and 10%, as well as overall totals in each of these mental health diagnoses.

Data Sources: All Medicaid claims data for calendar years 2017 and 2018 aggregated from the Agency for Health Care Administration (AHCA) - Florida's Medicaid administrator.

Principal Findings: The top percentages of SMI and SED patients in each area – institutions, offices, and pharmacy – represent a substantial share of Florida MMA overall charges and costs in both 2017 and 2018 but the pattern is mixed in interesting ways. Of the 1,340,316 MMA Medicaid patients that had an institutional visit in 2018, 64,816 of the patients had a diagnosis of SMI. The top 1% of this population, just 648 SMI patients, accounted for 2.3% of total MMA institutional costs and averaged $184,029 per patient while representing only 0.05% of total Medicaid population. In contrast, while the SED MMA Medicaid institutional population in 2018 was 123,000 patients, nearly double the SMI population size, the top 1% of SED patients accounted for 2.4% of total MMA institutional costs, nearly the same share as the 1% for the SMI population. For the 2.5 million MMA Medicaid patients that had an office visits, costs averaged $1,253 which was an 8.4% increase over 2017 costs. For the 286,000 patients that received SMI or SED MMA Medicaid pharmacy services, this cohort represented 35% of total Medicaid MMA pharmacy costs in 2018. Overall, for the 2,584,375 MMA Medicaid patients that received any type of MMA Medicaid service, 1% of this population represented 29% of the total

MMA costs, 5% of the population accounted for 49.8%, and 10% of the Medicaid patients represented 62.5% of total costs. In 2018, of the MMA Medicaid patients receiving mental health services, 12.5% had a diagnosis of SMI or SED but they accounted for over one-quarter (26.6%) of the Medicaid MMA program's estimated costs.

Conclusions: Florida Medicaid MMA patients represent an important share of program payments and small groups' mental health patients with a diagnosis of SMI or SED have substantial impacts on Medicaid program costs.

INTRODUCTION

In 2018, the Lancet Commission report on mental health found that mental disorders were on the rise in every country in the world. Worldwide, they concluded, one in four people are affected by mental or neurological disorders at some point in their lives and approximately 450 million people worldwide currently suffer from such conditions. As a result, mental disorders were among the leading causes of ill-health and disability. They estimated mental health illnesses will cost the global economy $16 trillion by 2030 with the economic costs primarily due to the early onset of mental illness and lost productivity with an estimated 12 billion working days lost due to mental illness every year.[1]

In the U.S., in 2017, 46.6 million people, or 18.9% of all U.S. adults, were estimated to have a mental health condition.[2] Yet, less than half of all people with mental illnesses received treatment due to factors such as stigma and lack of access to care.[3] Nevertheless, despite this overwhelming lack of treatment, mental health disorders top the list of the costliest conditions in the U.S.,[4] with costs estimated in 2020 to be $238.4 billion.[5]

This rise to the costliest health condition has been dramatic. In 1996, the costliest medical conditions, by far, were heart conditions, with $105 billion in costs while the costs of mental health disorders were a distant second at $79 billion. By 2004, heart conditions and mental health disorders were about equal in spending at $131 billion each. However, by 2013, spending on mental health disorders had moved far ahead of heart conditions reaching $201 billion versus $147 billion.[6]

Very prominent among the conditions in the mental health population are those with a serious mental illness (SMI) and, the analogous definition for youth and children (less than 18 years of age), those with a serious emotional disturbance (SED). These mental disorders are mental, behavioral, and/or emotional disorders resulting in serious functional impairment which substantially interferes with or limits one or more major life activities.[7,8] The lifespan of SMI patients, or those that progress to SMI, is much shorter than the general population with this decreased mortality due to physical illnesses related to individual lifestyle choices, the side effects of psychotropic treatment, and disparities in health care access, utilization and provisions.[9]

Consequently, patients with severe mental health conditions are some of the most difficult and costly to treat and their numbers are considerable. In 2017, there were an estimated 11.2 million adults aged 18 or older in the U.S. with SMI.[10] Among youth, less than 18 years old, 16.5% experienced a mental health disorder in 2016 (7.7 million youth). A recent meta-analysis found that 10% of youths met federal criteria for SED in at least one area of functioning and concluded that one in 10 pediatric patients is likely to require treatment or referral for appropriate mental health services.[11]

What are the costs of such groups of high users and where does the burden for these costs fall? Numerous studies have shown that very small groups of the top users of health care services are extremely costly. In 1996, for example, research found that the top 1% of the U.S. population accounted for 28% of the total health care expenditures and the top 5% for more than half of health care expenditures. More recent estimates, for 2017, showed

the top 1% had dropped to 22% of total health care expenditures, while the top 5% still accounted for about half of all health care expenditures and the bottom 50% still accounted for about 3%.[12]

And, in the U.S., much of the burden for treating mental health disorders, especially for low-income populations, falls on state Medicaid programs. Covering nearly 73 million beneficiaries in 2018 or about 20% of Americans, Medicaid has emerged as the largest health insurance program in the United States.[13] With the Medicaid population including infants, children, young mothers, homeless adults, individuals with disabilities, and individuals who are dually eligible for Medicare and Medicaid, total Medicaid spending in the US was $616 billion in FY 2019 with approximately 62% paid by the federal government and 38% financed by states.[14] Thus, while only one in five individuals enrolled in Medicaid has a behavioral health diagnosis, they account for almost half of all Medicaid expenditures and, in many states, mental health conditions account for much greater percentage of state expenditures and are a rapidly growing problem.[15,16]

In addition, complicating the costs of these programs, with the passage of Patient Protection and Afford Care Act (Obamacare) in 2010, among the new patients who receive health insurance coverage through the Medicaid expansion, approximately 29% had either a mental health condition, a substance use disorder, or both.[17] Accordingly, the Congressional Budget Office (CBO) projected outlays for the Medicaid program from 2022 through 2029 will grow by 6%.[18]

Florida Medicaid

In the state of Florida these problems with mental health coverage and payment are especially acute.[19] Nearly 4 million people have health care coverage through their state's Medicaid program; similar to the national level of coverage with about one in five Floridians covered. Close to 3.8% of the population's 19.9 million adults, approximately 750,000 adults, live with an SMI condition such as schizophrenia, bipolar disorder, and major depression.[20] Nevertheless, only 36.3% of adults in Florida are estimated to receive any form of treatment from either the public system or private providers.[21]

Complicating the challenges of treating patients with mental health conditions, the State of Florida changed its Medicaid payment approach and began in 2013 contracting with 11 managed care programs to provide medical services to their Medicaid populations. These managed care programs now cover most Florida Medicaid services and, in 2018, cost $17.5 billion; 65.3% of Florida's Medicaid expenditures.[22,23]

Perhaps, not surprisingly, spending on Florida's Medicaid program increased by 22% between fiscal years 2012 and 2016 with the most likely cause being the influence of the Patient Protection and Affordable Care Act – popularly known as Obamacare (PPACA).[24] By fiscal years 2017-2018, Florida Medicaid expenditures were $26.8 billion with the federal-state matching program paying 61.6% and the state paying 38.4%. Average spending per eligible enrollee was $6,619 in 2018.

To our knowledge, no studies have comprehensively examined Medicaid mental health costs separating institutional, office, and pharmacy services costs for SMI and SED patients and focusing on the top user groups. While numerous studies have shown that medical care expenses are highly concentrated among relatively small groups of users, there is a dearth of evidence detailing these costs for mental health patients at the state level. Our investigation seeks to fill this shortcoming by analyzing the charges and estimated costs of the Florida Medicaid population in calendar years 2017 and 2018 and focusing on SMI and SED mental health patients with the highest costs.

DATA AND METHODS

Data for our study are from AHCA claims data and represent counts and charges/payments for all Florida Medicaid MMA patients for the years 2017 and 2018. These payments embody the major areas of Florida Medicaid payments.[25] As noted above, in 2017, managed care Medicaid spending for services represented 65% of managed care services cover approximately 78% of Florida's Medicaid population.[26] We use the AHCA data to identify the top 1%, 5% and 10% of Florida Medicaid managed care patients based on the total charges for their medical services.

We further separated the AHCA data based on the charge source of the data – 1) institutional/hospital, 2) office/physician, and 3) pharmacy. Our totals in Table 4 shows the sums for these three sources of data. For each source of payment, two measures are reported in our tables: 1) billed charges and 2) estimated costs using a cost/charge ratio. Each of these financial measures is defined as follows. Billed charges are the charge amounts submitted to AHCA by the provider. The cost-to-charge (CCR) ratio is the ratio between a hospital's expenses and what they charge. For office and pharmacy claims, costs are estimated based on the paid claims as defined below.

For institutional costs, we use the overall hospital CCR ratio to measure the markup of chargemaster rates over Medicare-allowable costs. The CCR is calculated as a hospital's total gross charges divided by its total Medicare-allowable cost.[27] Medicare-allowable cost includes both direct patient cost (for example, emergency department, operating room, and intensive care) and indirect general service cost (for example, administration, laundry, and pharmacy) but excludes items not related to the patient care provided by the hospital, such as services of the gift shop and private physicians' offices. Costs reflect the actual expenses incurred in the production of services, such as wages, supplies, and utility costs while charges represent the amount billed for the service. Ample evidence shows that charges are typically not closely related to costs and ample markups typically occur.[28,29,30]

In our study, for our institutional cost estimates, we use a CCR of 22.7% for 2017 and 20.5% for 2018. These CCR estimates are based on the calculations from the U.S. Department of Labor for Florida in 2018.[31] The 2018 CCR value is also consistent with the median all-payer inpatient CCR of 20.4% for Florida hospitals from the Hospital Cost and Utilization Project (HCUP).[32]

For both office visits and pharmacy claims, there are no similar methodologies to CCRs that we are aware of. Moreover, since many office and pharmacy payments are based on larger contractual arrangements between the MMA healthcare companies and AHCA, only the charge is reported on the Medicaid patients claim and the specific costs of a visit or pharmacy service may not report or only reported for the balance of the payment. Therefore, we estimated these costs as follows. For office visits, for each visit and procedure, we first calculated all positive payments within the visit and procedure that fell in the 20 to 80 percentile range. We assumed the 20 to 80 percentile payment range would represent majority of payments and be reasonable and conservative estimates of the costs of each visit or service provided. Consequently, for each payment, if a payment was less than the mean payment minus the standard deviation, it was replaced with the mean payment for the visit and/or service based on the payment value in the 20 to 80 percentile.[33]

For pharmacy claims, most claims had descriptive pharmacy data related to the prescription but missing the payment amounts. Of the 35 million pharmacy claims in 2018, for example, 93% had a missing payment of all claims. Rather than lose this data, we used the National Drug Code (NDC) to impute payment amounts for claims with missing payments. We began, like the office calculations, by first calculating the percentile of payments by each NDC that fell in the 20 to 80 percentile range. For those payments that were less than the mean payment minus the standard deviation of the 20 to 80 percentile, we used the mean NDC value to replace just those pharmacy costs with missing payment values. Other payments remained unchanged and the actual cost (payment) is used. Finally, for each Medicaid patient, we summed their pharmacy costs and used this cost as the basis for Table 3.

In addition, to reporting the total Florida Medicaid payments for each of these payment categories in 2017 and 2018, we separated the totals into three groups: 1) SMI, 2) SED, and 3) SMI and SED totals combined. Specifically, SMI is based on the age of the individual, functional impairment, duration of the disorder and the diagnosis. Adults must meet all of the following four criteria: 1) Age: must be an adult 18 years of age or older; 2) Diagnoses: must have one of the diagnoses as defined under the current American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders such as schizophrenia, bipolar disorder, or recurrent major depression and the diagnosis would have been determined within the prior 12 month period by an appropriately licensed professional; 3) Functional Impairment: the disturbance is excessive and causes clinically significant distress or impairment in social, occupational, or other important areas of functioning; and 4) Duration: the disability must be expected to persist for six months or longer.[34,35]

SED is defined like SMI and SED determination is based on the age of the individual, diagnoses, functional impairment or symptoms, and duration of the disorder but the age of the patient is typically under 18 years of age. The child/adolescent must meet all of the following criteria: 1) Age: must be a person under the age of 18 or received services prior to 18th birthday; 2) Diagnoses: The child/adolescent has an emotional and/or behavioral disability that has been diagnosed by a licensed psychiatrist, licensed

psychologist, or other licensed expert recognized by Florida under the classification system in the American Psychiatric Association Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR); 3) Functional Impairment: represented by impairment in one or more of the following areas: Functioning in self-care: functioning in community, functioning in social relationships: functioning in the family: or functioning at school/work; and 4) Symptoms: In one of the following groups: Psychotic symptoms: symptoms are characterized by defective or lost contact with reality, often with hallucinations or delusions; Danger to self, others and property as a result of the emotional disturbance; The individual is self-destructive, e.g., at risk for suicide, and/or at risk for causing injury to self, other persons, or significant damage to property, and trauma symptoms; and children experiencing or witnessing serious unexpected events that threaten them or others.[36]

As defined, SMI and SED represent two unique Florida Medicaid patient populations and, consequently, their corresponding charges and estimated costs are mutually exclusive.

RESULTS

Our results are shown in 4 tables. Table 1 reports the institutional totals for billed charges and estimated CCRs separated into for 4 groupings – total, SMI, SED, and combined SMI and SED in 2017 and 2018 by the top 1%, 5%, and 10% of the Medicaid MMA population. We also show the one-year 2017-2018 percentage change. Tables 2 through 4 report charges and costs for office, pharmacy, and then the combined totals for institutional, office, and pharmacy, respectively, in a similar format to Table 1.

Institutional Charges and Estimated Costs

All Institutional Patients

Table 1 shows that a total of 1,340,316 Medicaid patients had an institutional visit in 2018 while in 2017 there were 1,374,897 visits, 34,581 fewer patients or a 2.5% decline. However, while charges increased 0.9%, estimated costs declined overall for institutional visits -8.2%. Table 1 shows that 1% of Florida Medicaid patients, or just 13,403 in 2018 Medicaid patients charged $6.3 billion and cost $1.4 billion. The top 1% of MMA Medicaid patients represented 27.2% of total institutional costs while the top 10% represented 60.6% of total institutional costs. The average cost per patient for the institutional MMA Medicaid patients was $3,830 but for the top 1% of the MMA Medicaid population it averaged $104,233 but dropping to $23,191 for the top 10% in this group. For all groups of MMA Medicaid patients, there was a decline in their mean cost ranging from -13.6% to 8.2% and these averages for each group was about 8 percentage points lower than the mean charge. In part, this decline likely reflects the 2.5% decline in the number of MMA Medicaid patients from 2017 to 2018.

SMI Institutional Patients

For SMI patients, Table 1 reveals that of the 1,340,316 MMA Medicaid patients that had an institutional visit in 2018, 64,816 of the patients had an SMI. Just 1% of this population, 648 SMI patients, accounted for 2.3% of total MMA institutional costs and averaged $184,029 per patient. In comparison, 10% of the 2018 SMI patients that received MMA Medicaid services in 2018, accounted for 14.8% of total Medicaid MMA program costs. In contrast to the overall institutional population, all four groups of patients showed increases in their mean charges over the 2017-18 period ranging from 1.1% to 6.8% but declines in their mean costs ranging from -9.7% to -3.8%.

SED Medicaid Institutional Patients

The SED MMA Medicaid institutional population in 2018, as shown in Table 1, was nearly double the size of the SMI population with 123,000 SED patients versus 64,816 SMI patients. 1% of this population, 1,230 SED patients, accounted for 2.4% of total MMA institutional costs and averaged $98,884 per child or young adult. However, 10% of this population was not as costly as the SMI population in 2018 accounting for only 8.9% of total Medicaid MMA program costs versus 14.8% for the SMI population. Nevertheless, comparing 2017 with 2018 costs shows that, except for the mean costs for the 1% group of SED MMA Medicaid patients, all other mean charges and costs increased for this group.

SMI and SED Institutional Patients

The bottom group of tables in Table 1 shows that there was a total of 187,816 SMI and SED MMA Medicaid patients in 2018 and they represented 14% of the 1,340316 Medicaid MMA patients receiving institutional services. These SMI and SED patients in 2018 represented nearly one-quarter (23.7%) of Medicaid MMA program costs but, SMI and SED combined, shows and overall decline in costs between 2017 and 2018 ranging from 5.3% to 2.0%, respectively, for each group although the average increase in patients was 1.7% between the two years.

Office Charges and Estimated Costs

All Office Patients

Table 2 reports MMA Medicaid office related charges and costs for 2017 and 2018. The 2,501,904 MMA Medicaid patients that had an office visit in 2018 was almost double the 1,340,316 patients that experienced an institutional visit in that year although the number of patients having an office visit declined by 3.1% from 2017. Nevertheless, mean charges and mean costs for each group of patients increased between 2017 and 2018 with all the increases in mean charges and costs for each of the groups (SMI, SED, and SMI and SED patients in the top 1%, 5%, and 10% groups) being double digit increases while their respective populations grew at 1.1% of less. For both mean charges and mean costs, Table 2 shows that, regardless of the grouping, the 1-year percentage change was always greatest for the top 1% group and progressively declined for each successive group and the total. Overall, the MMA Medicaid office cost averaged $1,253

for the 2.5 million patients: an 8.4% increase over 2017 costs. For the top 1%, the cost increase over 2017 for the office group of MMA Medicaid patients was 14.9%

SMI Office Patients

Table 2 shows that there were 87,021 MMA Medicaid patients that were diagnosed with SMI that had an office visit in 2018 and this group accounted for 8.4% of total office visit costs in that year. For the top 1% of SMI patients with an office visit, their mean cost was $46,257 for 2018, an increase of 18.3% over 2017.

SED Office Patients

For the SED MMA Medicaid office patient population in 2018, as shown in Table 2, they were nearly triple the size of the SMI population; 233,901 vs 87,201 (2.7 times). These MMA Medicaid office patients accounted for 18.3% of total MMA office costs and averaged $2,450 per SED patient. In this case, in contrast to the SMI population, SED total costs were more than double the SMI costs, $573 million vs $265 million, and these total costs had increased 9.1% over the previous year. Comparing mean costs in 2017 with 2018 reveals a 21.5% increase in mean costs for the top 1%: the largest increase among office costs in Table 2.

SMI and SED Office Patients

Finally, combining SMI and SED MMA Medicaid patients, Table 2 shows in 2018 that there was a total of 320,928 SMI and SED MMA Medicaid office service patients in 2018 and they represented 26.7% of the total office costs. For the 32,092 patients in 2018, that represented 10% of these MMA Medicaid patients, their share of total costs was 13.5% just about half of the total costs for this group.

Pharmacy Charges and Estimated Costs

All Pharmacy Patients

Table 3 reveals 2017 and 2018 MMA Medicaid pharmacy charges and costs. There were 1,890,167 Medicaid MMA pharmacy patients in Florida in 2018 with a total of $2.7 billion in charges and $1.6 billion in costs. Among all the CCRs, the costs of pharmacy represented 61.2% of total charges and the highest ratio among the three areas (institution, office, and pharmacy) that we analyzed. Overall, the number of Medicaid MMA patients provided pharmacy services decline 2.8% between 2017 and 2018 but both mean charges and mean costs increased by 5.5% or more for all the groupings. Overall, the MMA Medicaid cost averaged $873 for the 1.9 million patients of pharmacy services and represented a 5.5% increase over 2017 costs.

SMI Pharmacy Patients

There were 82,462 SMI pharmacy patients in 2018, as shown in Table 3, and this group accounted for 16.0% of total MMA Medicaid pharmacy costs in that year. For this group, their mean costs increased 8.2% over 2017 mean costs and grew at a rate of

8.2%. For the top 1% of SMI patients with a pharmacy service, their mean cost was $24,625 for 2018 and represented the largest increase over 2017 of 24.9%. Similarly, the 5% and 10% groups had increases in costs between 2017 and 2018 that were nearly 20% with 19.9% and 18.6% increases, respectively.

SED Pharmacy Patients

For the SED MMA Medicaid pharmacy population in 2018, as shown in Table 3, mean costs for the top 1% were the highest of any of the groupings at $33,541 for the 2,041 patients. These costs had increased at a rate of 8.1% over the previous year which was about 4 times greater than the 1.9% increase of mean costs for the total group of 204,138 patients. However, even though the mean cost was relatively low, the $313.8 million in total costs for the SED group represented 19.0% of the total MMA Medicaid pharmacy costs in 2018.

SMI and SED Pharmacy Patients

The combined totals of the SMI and SED MMA Medicaid pharmacy patients, Table 3, indicates that the 286,600 patients represented 35% of the total pharmacy costs in 2018. Mean costs averaged $2,015 per patient and had increased 4.4% over 2017 while the Medicaid population treated by MMA companies grew 1%.

All Categories Charges and Estimated Costs

All Patients

Table 4 summarizes the combined of data the previous three tables. As noted early, these three areas of Medicaid services represent the major financial outlays for Florida Medicaid's program costs.

Overall, a total of 2,584,375 Medicaid patients received MMA services in 2018 although this number of patients was 3% lower than the number of MMA services in the previous year. Of these MMA Medicaid patients, 1% represented 29% of the total costs, 5% accounted for 49.8%, and 10% represented 62.5% of the costs. Overall, for the combined groups, the mean cost in 2018 declined between -1% and -2.9% for each patient group with the largest decline overall of -2.9% for the top 1% and a -1% decline for the total 2.6 million MMA Medicaid population.

All SMI Patients

Table 4 reveals that of the 2,584,375 Medicaid patients that received Medicaid MMA services in 2018, 87,586 (3.4%) had a diagnosis of SMI. These patients accounted for 13.0% of total Medicaid MMA program costs. One percent or just 875 of these SMI Medicaid patients in 2018 accounted for 1.9% of the estimated SMI costs for Medicaid MMA or $189 million. For this 1% of SMI Medicaid MMA patients, these costs averaged $215,515 per patient and overall, these estimated SMI cost expenditures represented 13.0% of total Medicaid MMA program costs. Compared to 2017, SMI mean costs in 2018 decreased -3.0% for the top 1% for each Medicaid MMA program population while increasing slightly for the other groups from 0.2% to 1.2% while this population grew 0.1%.

All SED Patients

Of the 2,584,375 Medicaid patients that received Medicaid MMA services in 2018, Table 4 indicated that 234,509 had a diagnosis of SED at an annual cost of $5,728 per patients and represented 13.5% of MMA Medicaid costs. While the population had grown 1.1% over the 2017-2018 period, mean costs increases for the groupings of patients were all at least 5.2% or higher. One percent or just 2,345 of these SED Medicaid patients, in 2018, accounted 2.9% of MMA costs ($289 million). The SED costs averaged $123,196 in 2018 per patient and show a 9.3% increase over 2017.

All SMI and SED Patients

Finally, Table 4 shows that combined in 2018 there were 322,095 SMI and SED MMA Medicaid patients. Of the 2,584,375 total MMA Medicaid patients in 2018, this shows that 12.5% of the SMI and SED patients were receiving services and these patients accounted for over one-quarter (26.6%) of the Medicaid MMA program's estimated costs. For the top 1% of this population, their 4.8% share of Medicaid MMA program costs averaged $148,283 per Medicaid patient. Comparing the 2018 to 2017 results in Table 4 to the 2017 results, it appears there was an overall increase of 0.8% in MMA Medicaid patients with an overall increase in mean costs per patient of 3.0%.

Discussion

For Medicaid MMA institutional inpatients, overall there was a -2.5% decline in the number of inpatients between 2017 and 2018 with an accompanying decline for costs and most charges for all Medicaid MMA inpatients. However, there was an 1.1% increase in SMI inpatients but the mean cost for all four groups of SMI inpatients – top 1%, 5%, 10% and total all declined by -3.8% or more. In contrast, for SED inpatients, the population grew by 2.1% over the one-year period and all but top 1% of SED inpatients saw a 2.0% or greater increase in estimated costs. Thus, while both SMI and SED Medicaid MMA institutional populations grew during the 2017 to 2018 period, the cost pattern between the SMI and SED inpatients appears to be the opposite. SMI incurring lower costs while the SED inpatient population generally increased costs.

One possible explanation for the decreased costs of the Medicaid institutional MMA populations could be the increased number of office visits and use of pharmacy for these patients. That is, the use or substitute of less expensive services or resources for the SMI population. Our results indicate that the estimated costs of the SMI population grew by more than 10.1% and 18.6% for the office and pharmacy resources, respectively, over the 2017-2018 for the top 10% of these populations and the increase in costs over the one-year period was even greater for the top 1% and 5% of SMI for office and pharmacy resources. While the SMI Medicaid MMA populations may not be totally consistent in their use of institutional, office, and pharmacy services, over the annual period or even within a specific year, the results suggest a plausible rationale for the decline in institutional costs for the SMI population.

This potential pattern of office and pharmacy services substituting for institutional services does not appear as plausible in the SED population. While the SED Medicaid MMA patients grew 1.1% and 1.4%, respectively, for office and pharmacy costs between 2017 and 2018, for the top 10% in these populations, growth in estimated costs were 12.7% for office services and 5.9% for pharmacy services. For the top 1% of the SED population over the one-year period, the cost increases were even higher, 21.5% for office and 8.1% for pharmacy utilization. Remembering that SMI patients are adults while SED are primarily young adults or children, this difference in the pattern of usage between SMI and SED Medicaid MMA patients doesn't rule out that shifts between institutional services and office and pharmacy services may be successful and/or growing. However, it appears to be more plausible for SMI Medicaid MMA patients than for the SED Medicaid patients. These patterns and differences require further study.

It is critical to temper our conclusions given the results are based on charges and any healthcare costs estimated from healthcare charges need to be carefully assessed and thoughtfully generalized. While one of the advantages of our study is that we have comprehensive up-to-date Florida Medicaid charge data on the MMA populations, clearly, as we noted earlier in our manuscript, there are important issues and concerns about converting charges to costs and then interpreting and validating the results. While it is crucial for state and national policymakers to begin to move forward in this area of identifying the direct costs associated with the expenditure of incredible amounts of public monies, we need to be cautious. While we have used publicly available CCRs for institutional charges that are consistent with BLS and HCUP CCRs, we are very sensitive to the influence even small changes in these can have on our cost estimates. Consequently, we included in our tables both the original Medicaid charge data summaries, the estimated cost data, and the 2017 to 2018 percentage change so the reader can gauge the influence of the CCRs.

Similarly, we utilized realistic methods for updating the missing office and pharmacy charges and costs based on similar office services or pharmacy prices. While we feel these office and pharmacy methodologies are reasonable, with 93% of the 35 million pharmacy claims missing, the results represent, at best, a rough approximation. To our knowledge, there are no similar studies focused on Florida MMA data in these areas and it is an area of inquiry that would benefit greatly from further study. Subsequently, we seek to explicitly recognize these methodological issues and concerns, note they are potentially significant caveat in our study, and encourage further research and validation in these areas.

Another pattern of considerable interest is how the management of these mental health patients influences their outcomes and costs. There are 11 major MMA programs in the state of Florida that have the responsibility of providing care for most the state's Medicaid patients. It would be informative and critical to policymakers to be able to separate the costs of each SMI and SED patient in these MMAs and compare their treatment variations and outcomes. An important consideration in carrying out such an evaluation of Medicaid mental health costs relates to the budgeting process in the State of Florida where AHCA, the state's Medicaid agency, negotiates bundled contracts with major managed care providers. This process of bundling payments into 'health packages'

creates unique difficulties in the evaluation process related to the quality, access, and cost of the Medicaid services provided.[37]

In a typical bundled payment agreement, the concept is quite simple; a health care provider receives a fixed, lump-sum payment to be divided at its discretion among the facilities and providers involved with a distinct episode of care for a given patient. The intent of the bundled payment agreement is typically to decrease health care spending because studies have shown there are large variations in health care costs associated with the hospitalization, physician services, readmissions, and post-acute care[38,39,40] and, thus, the potential for cost savings by splitting some portion of the savings.

While bundling payments is appealing for many payers and state Medicaid programs because of these saving incentives, the potential problems with bundled payments are noteworthy. These include: trouble defining discrete episodes of care for chronic conditions, potential to avoid critical specialty care, inability to easily account for value, and implementation challenges.[41,42]

Moreover, in these packages, costs are especially difficult to discern and applying these costs to specific services or treatments is enigmatic. The essential information needed to determine the value of the bundled services especially among chronic mental health services like SMI and SED becomes confusing and unreliable.[43,44] These patients, as we have shown, are very costly but, in addition, with the questionably high degrees of uncertainty related to their needs, care, and outcomes, also very high variability in their costs among the top high users making them potentially big financial liabilities.[45,46]

Finally, as noted earlier and in many other studies, the significant impact of high users on the costs of health care services is not new. High volume healthcare users are very costly, and the top percentages of these patients consume most of the healthcare services for most payers. Our study underscores their importance and the impact high cost users have on the Florida Medicaid MMA program. This impact is especially pronounced for SMI and SED Medicaid patients that are high cost users. The top percentages of SMI and SED patients in each of these areas – institutions, offices, and pharmacy – represent a substantial share of Florida MMA Medicaid's overall charges and costs in both 2017 and 2018 with little evidence their impact will abate.

Limitations

The CCR ratio is influenced by individual hospitals' cost control practices and, therefore, is not a perfect measure of the variation that may exist in different institutions. Since, the CCRs for institutional payments we used in Table 1 varied, using 0.227 in 2017 and 0.205 in 2018 to adjust our charge data, we would expect some of the resulting variation in the one-year percentage differences to be due to CCR differences. That is, if we had used the same CCR in both years, we would have expected to see a cost pattern in Table 1 about 0.022% higher in 2018, narrowing the difference between these two years.

Another potential limitation is that Medicaid cost reports are based on administrative records submitted by hospitals, offices, and other providers and there may be human error and inaccuracies within the data. Third, not all hospitals have the same cost structure and there can be significant cost variation across hospitals that may systematically bias our results.[47,48,49]

Table 1: Total Charges and Costs of FL Medicaid Managed Medical Assistance Institutional Claims for CY 2017 and 2018

2017 ALL MMA Patients with Institution Claims							
		Total Charges			Total Estimated Costs		
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	13,748	$6,784,907,976	30.1%	$493,520	$1,659,419,627	28.9%	$120,703
Top 5%	68,744	$11,898,212,453	52.8%	$173,080	$2,828,736,909	49.3%	$41,149
Top 10%	137,489	$14,781,721,073	65.6%	$107,512	$3,499,283,436	61.0%	$25,451
Total	1,374,897	$22,540,254,728	100.0%	$16,394	$5,735,372,664	100.0%	$4,171

2018 ALL MMA Patients with Institution Claims						
	Total Charges			Total Estimated Costs		
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
13,403	$6,325,864,371	28.5%	$471,974	$1,397,037,976	27.2%	$104,233
67,015	$11,429,875,107	51.5%	$170,557	$2,481,133,790	48.3%	$37,024
134,031	$14,318,586,532	64.6%	$106,830	$3,108,364,958	60.6%	$23,191
1,340,316	$22,172,414,514	100.0%	$16,543	$5,132,828,584	100.0%	$3,830

One Year % Change		
# of Patients	Mean Charge	Mean Cost
-2.5%	-4.4%	-13.6%
	-1.5%	-10.0%
	-0.6%	-8.9%
	0.9%	-8.2%

2017 SMI MMA Patients with Institution Claims							
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	641	$672,802,228	3.0%	$1,049,613	$130,589,857	2.3%	$203,728
Top 5%	3,205	$1,465,002,978	6.5%	$457,099	$308,074,197	5.4%	$96,123
Top 10%	6,410	$1,928,455,435	8.6%	$300,851	$412,095,747	7.2%	$64,290
Total	64,109	$3,311,755,476	14.7%	$51,658	$783,358,226	13.7%	$12,219

2018 SMI MMA Patients with Institution Claims						
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
648	$687,915,850	3.1%	$1,061,599	$119,250,882	2.3%	$184,029
3,240	$1,557,761,060	7.0%	$480,790	$295,156,438	5.8%	$91,098
6,481	$2,064,579,238	9.3%	$318,559	$398,814,288	7.8%	$61,536
64,816	$3,575,499,881	16.1%	$55,164	$762,192,269	14.8%	$11,759

% Change		
# of Patients	Mean Charge	Mean Cost
1.1%	1.1%	-9.7%
	5.2%	-5.2%
	5.9%	-4.3%
	6.8%	-3.8%

2017 SED MMA Patients with Institution Claims							
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	1,205	$393,926,622	1.7%	$326,910	$119,529,007	2.1%	$99,194
Top 5%	6,026	$734,476,128	3.3%	$121,885	$213,864,776	3.7%	$35,490
Top 10%	12,052	$934,509,293	4.1%	$77,540	$262,968,085	4.6%	$21,819
Total	120,525	$1,546,842,134	6.9%	$12,834	$438,494,279	7.6%	$3,638

2018 SED MMA Patients with Institution Claims						
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
1,230	$421,432,711	1.9%	$342,628	$121,626,747	2.4%	$98,884
6,150	$794,809,145	3.6%	$129,237	$227,885,398	4.4%	$37,055
12,300	$1,012,868,485	4.6%	$82,347	$280,415,313	5.5%	$22,798
123,000	$1,684,590,177	7.6%	$13,696	$456,327,800	8.9%	$3,710

% Change		
# of Patients	Mean Charge	Mean Cost
2.1%	4.8%	-0.3%
	6.0%	4.4%
	6.2%	4.5%
	6.7%	2.0%

2017 SMI and SED MMA Patients with Institution Claims							
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	1,846	$1,066,728,850	4.7%	$577,860	$250,118,864	4.4%	$135,492
Top 5%	9,231	$2,199,479,106	9.8%	$238,271	$521,938,974	9.1%	$56,542
Top 10%	18,462	$2,862,964,728	12.7%	$155,073	$675,063,832	11.8%	$36,565
Total	184,634	$4,858,597,610	21.6%	$26,315	$1,221,852,505	21.3%	$6,618

2018 SMI and SED MMA Patients with Institution Claims						
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
1,878	$1,109,348,561	5.0%	$590,707	$240,877,629	4.7%	$128,263
9,390	$2,352,570,205	10.6%	$250,540	$523,041,835	10.2%	$55,702
18,781	$3,077,447,723	13.9%	$163,860	$679,229,600	13.2%	$36,166
187,816	$5,260,090,058	23.7%	$28,007	$1,218,520,068	23.7%	$6,488

% Change		
# of Patients	Mean Charge	Mean Cost
1.7%	2.2%	-5.3%
	5.1%	-1.5%
	5.7%	-1.1%
	6.4%	-2.0%

Table 2: Total Charges and Costs of FL Medicaid Managed Medical Assistance Office Claims for CY 2017 and 2018

2017 ALL MMA Patients with Office Claims							
		Total Charges			Total Estimated Costs		
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	25,807	$2,360,727,619	21.3%	$91,476	$780,886,073	26.2%	$30,259
Top 5%	129,038	$4,641,595,103	41.9%	$35,971	$1,338,912,810	44.9%	$10,376
Top 10%	258,077	$6,157,419,056	55.6%	$23,859	$1,712,487,123	57.4%	$6,636
Total	2,580,778	$11,077,655,310	100.0%	$4,292	$2,983,335,903	100.0%	$1,156

2018 ALL MMA Patients with Office Claims						
	Total Charges			Total Estimated Costs		
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
25,019	$2,408,942,248	21.9%	$96,285	$869,719,164	27.7%	$34,762
125,095	$4,668,161,219	42.4%	$37,317	$1,436,152,495	45.8%	$11,480
250,190	$6,167,122,938	56.0%	$24,650	$1,814,110,978	57.9%	$7,251
2,501,904	$11,020,828,802	100.0%	$4,405	$3,135,681,237	100.0%	$1,253

One Year % Change		
# of Patients	Mean Charge	Mean Cost
-3.1%	5.3%	14.9%
	3.7%	10.6%
	3.3%	9.3%
	2.6%	8.4%

2017 SMI MMA Patients with Office Claims							
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	869	$122,936,694	1.1%	$141,469	$33,983,291	1.1%	$39,106
Top 5%	4,348	$312,125,018	2.8%	$71,786	$79,473,776	2.7%	$18,278
Top 10%	8,697	$448,570,178	4.0%	$51,578	$110,699,253	3.7%	$12,728
Total	86,976	$1,021,759,260	9.2%	$11,748	$246,528,288	8.3%	$2,834

2018 SMI MMA Patients with Office Claims						
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
870	$135,627,340	1.2%	$155,893	$40,244,025	1.3%	$46,257
4,351	$330,375,435	3.0%	$75,931	$88,977,859	2.8%	$20,450
8,702	$469,918,731	4.3%	$54,001	$121,979,971	3.9%	$14,017
87,021	$ 1,061,585,854	9.6%	$12,199	$264,787,049	8.4%	$3,043

% Change		
# of Patients	Mean Charge	Mean Cost
0.1%	10.2%	18.3%
	5.8%	11.9%
	4.7%	10.1%
	3.8%	7.4%

2017 SED MMA Patients with Office Claims							
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	2,314	$196,627,616	1.8%	$84,973	$98,953,001	3.3%	$42,763
Top 5%	11,570	$436,834,677	3.9%	$37,756	$198,235,672	6.6%	$17,134
Top 10%	23,141	$601,211,842	5.4%	$25,980	$264,609,635	8.9%	$11,435
Total	231,418	$1,267,821,660	11.4%	$5,478	$519,840,156	17.4%	$2,246

2018 SED MMA Patients with Office Claims						
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
2,339	$228,299,744	2.1%	$97,606	$121,504,264	3.9%	$51,947
11,695	$491,670,642	4.5%	$42,041	$230,405,657	7.3%	$19,701
23,390	$667,361,347	6.1%	$28,532	$301,459,274	9.6%	$12,888
233,907	$1,363,794,880	12.4%	$5,831	$573,175,363	18.3%	$2,450

% Change		
# of Patients	Mean Charge	Mean Cost
1.1%	14.9%	21.5%
	11.4%	15.0%
	9.8%	12.7%
	6.4%	9.1%

2017 SMI and SED MMA Patients with Office Claims							
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	3,183	$319,564,310	2.9%	$100,397	$132,936,292	4.5%	$41,764
Top 5%	15,918	$748,959,695	6.8%	$47,051	$277,709,448	9.3%	$17,446
Top 10%	31,838	$1,049,782,021	9.5%	$32,973	$375,308,889	12.6%	$11,788
Total	318,394	$2,289,580,920	20.7%	$7,191	$766,368,444	25.7%	$2,407

2018 SMI and SED MMA Patients with Office Claims						
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
3,209	$363,927,083	3.3%	$113,408	$161,748,288	5.2%	$50,405
16,046	$822,046,078	7.5%	$51,231	$319,383,516	10.2%	$19,904
32,092	$1,137,280,077	10.3%	$35,438	$423,439,245	13.5%	$13,195
320,928	$2,425,380,734	22.0%	$7,557	$837,962,412	26.7%	$2,611

% Change		
# of Patients	Mean Charge	Mean Cost
0.8%	13.0%	20.7%
	8.9%	14.1%
	7.5%	11.9%
	5.1%	8.5%

Table 3: Total Charges and Costs of FL Medicaid Managed Medical Assistance Pharmacy Claims for CY 2017 and 2018

2017 ALL MMA Patients with Pharmacy Claims							
		Total Charges			Total Estimated Costs		
% of MMA Patients	# of Patients	Total Charge	% of Total	Mean Charge	Total Cost	% of Total Costs	Mean Cost
Top 1%	19,443	$1,344,265,531	52.7%	$69,139	$361,887,956	22.5%	$18,613
Top 5%	97,216	$1,911,923,651	74.9%	$19,667	$424,463,198	26.4%	$4,366
Top 10%	194,433	$2,148,638,030	84.2%	$11,051	$566,405,964	35.2%	$2,913
Total	1,944,339	$2,551,082,882	100.0%	$1,312	$1,609,484,526	100.0%	$828

2018 ALL MMA Patients with Pharmacy Claims							
		Total Charges			Total Estimated Costs		
# of Patients	Total Charge	% of Total	Mean Charge	Total Cost	% of Total Costs	Mean Cost	
18,901	$1,444,204,081	53.6%	$76,409	$390,428,876	23.7%	$20,657	
94,508	$2,044,983,025	75.8%	$21,638	$438,147,125	26.6%	$4,636	
189,016	$2,288,049,040	84.9%	$12,105	$590,819,491	35.8%	$3,126	
1,890,167	$2,696,268,547	100.0%	$1,426	$1,649,931,394	100.0%	$873	

One Year % Change		
# of Patients	Mean Charge	Mean Cost
-2.8%	10.5%	11.0%
	10.0%	6.2%
	9.5%	7.3%
	8.7%	5.5%

2017 SMI MMA Patients with Pharmacy Claims							
% of MMA Patients	# of Patients	Total Charge	% of Total	Mean Charge	Total Cost	% of Total Costs	Mean Cost
Top 1%	825	$103,990,998	4.1%	$126,050	$16,269,758	1.0%	$19,721
Top 5%	4,125	$214,781,879	8.4%	$52,068	$22,168,321	1.4%	$5,374
Top 10%	8,251	$284,018,724	11.1%	$34,422	$36,164,455	2.2%	$4,383
Total	82,516	$438,327,039	17.2%	$5,312	$243,976,474	15.2%	$2,957

2018 SMI MMA Patients with Pharmacy Claims						
# of Patients	Total Charge	% of Total	Amount	Total Cost	% of Total Costs	Mean Cost
824	$110,720,348	4.1%	$134,369	$20,290,763	1.2%	$24,625
4,123	$231,528,553	8.6%	$56,155	$26,559,475	1.6%	$6,442
8,246	$308,300,947	11.4%	$37,388	$42,851,615	2.6%	$5,197
82,462	$473,985,512	17.6%	$5,748	$263,753,951	16.0%	$3,198

% Change		
# of Patients	Mean Charge	Mean Cost
-0.1%	6.6%	24.9%
	7.8%	19.9%
	8.6%	18.6%
	8.2%	8.2%

2017 SED MMA Patients with Pharmacy Claims							
% of MMA Patients	# of Patients	Total Charge	% of Total	Mean Charge	Total Cost	% of Total Costs	Mean Cost
Top 1%	2,013	$153,060,325	6.0%	$76,036	$62,438,560	3.9%	$31,018
Top 5%	10,067	$231,140,952	9.1%	$22,960	$83,410,334	5.2%	$8,286
Top 10%	20,134	$280,525,608	11.0%	$13,933	$89,726,524	5.6%	$4,456
Total	201,349	$462,497,412	18.1%	$2,297	$303,907,372	18.9%	$1,509

2018 SED MMA Patients with Pharmacy Claims						
# of Patients	Total Charge	% of Total	Amount	Total Cost	% of Total Costs	Mean Cost
2,041	$169,046,969	6.3%	$82,826	$68,457,348	4.1%	$33,541
10,206	$256,416,810	9.5%	$25,124	$89,139,330	5.4%	$8,734
20,413	$308,546,324	11.4%	$15,115	$96,355,877	5.8%	$4,720
204,138	$490,603,703	18.2%	$2,403	$313,838,880	19.0%	$1,537

% Change		
# of Patients	Mean Charge	Mean Cost
1.4%	8.9%	8.1%
	9.4%	5.4%
	8.5%	5.9%
	4.6%	1.9%

2017 SMI and SED MMA Patients with Pharmacy Claims							
% of MMA Patients	# of Patients	Total Charge	% of Total	Mean Charge	Total Cost	% of Total Costs	Mean Cost
Top 1%	2,838	$257,051,323	10.1%	$90,575	$78,708,318	4.9%	$27,734
Top 5%	14,192	$445,922,831	17.5%	$31,421	$105,578,655	6.6%	$7,439
Top 10%	28,385	$564,544,332	22.1%	$19,889	$125,890,978	7.8%	$4,435
Total	283,865	$900,824,451	35.3%	$3,173	$547,883,846	34.0%	$1,930

2018 SMI and SED MMA Patients with Pharmacy Claims						
# of Patients	Total Charge	% of Total	Mean Charge	Total Cost	% of Total Costs	Mean Cost
2,865	$279,767,317	10.4%	$97,650	$88,748,111	5.4%	$30,977
14,329	$487,945,363	18.1%	$34,053	$115,698,804	7.0%	$8,074
28,659	$616,847,271	22.9%	$21,524	$139,207,492	8.4%	$4,857
286,600	$964,589,215	35.8%	$3,366	$577,592,831	35.0%	$2,015

% Change		
# of Patients	Mean Charge	Mean Cost
1.0%	7.8%	11.7%
	8.4%	8.5%
	8.2%	9.5%
	6.1%	4.4%

Table 4: Total Charges and Costs of FL Medicaid Managed Medical Assistance Claims (Institution, Office, Pharmacy) for CY 2017 and 2018

2017 ALL MMA Patients with Institution/Office/Pharmacy Claims							
		Total Charges			Total Estimated Costs		
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	26,640	$11,264,256,284	31.1%	$422,832	$3,058,593,389	29.6%	$114,812
Top 5%	133,201	$19,875,344,225	55.0%	$149,213	$5,200,509,379	50.4%	$39,043
Top 10%	266,402	$24,804,855,944	68.6%	$93,111	$6,518,298,771	63.1%	$24,468
Total	2,664,022	$36,168,992,919	100.0%	$13,577	$10,328,193,093	100.0%	$3,877

2018 ALL MMA Patients with Institution/Office/Pharmacy Claims							
		Total Charges			Total Estimated Costs		
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	25,843	$10,855,962,045	30.2%	$420,074	$2,880,228,277	29.0%	$111,451
Top 5%	129,218	$19,480,135,470	54.3%	$150,754	$4,936,392,847	49.8%	$38,202
Top 10%	258,437	$24,421,388,558	68.0%	$94,496	$6,200,361,621	62.5%	$23,992
Total	2,584,375	$35,889,511,862	100.0%	$13,887	$9,918,441,214	100.0%	$3,838

One Year % Change		
# of Patients	Mean Charge	Mean Cost
-3.0%	-0.7%	-2.9%
	1.0%	-2.2%
	1.5%	-1.9%
	2.3%	-1.0%

2017 SMI MMA Patients with Institution/Office/Pharmacy Claims							
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	874	$916,553,507	2.5%	$1,048,688	$194,235,312	1.9%	$222,237
Top 5%	4,372	$2,009,600,411	5.6%	$459,652	$452,430,560	4.4%	$103,484
Top 10%	8,745	$2,669,793,071	7.4%	$305,294	$614,689,330	6.0%	$70,290
Total	87,452	$4,771,841,775	13.2%	$54,565	$1,273,862,989	12.3%	$14,566

2018 SMI MMA Patients with Institution/Office/Pharmacy Claims							
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost	
875	$943,848,030	2.6%	$1,078,683	$188,575,831	1.9%	$215,515	
4,379	$2,136,595,829	6.0%	$487,919	$454,173,143	4.6%	$103,716	
8,758	$2,850,263,901	7.9%	$325,447	$621,849,288	6.3%	$71,004	
87,586	$5,111,071,246	14.2%	$58,355	$1,290,733,269	13.0%	$14,737	

% Change		
# of Patients	Mean Charge	Mean Cost
0.1%	2.9%	-3.0%
	6.1%	0.2%
	6.6%	1.0%
	6.9%	1.2%

2017 SED MMA Patients with Institution/Office/Pharmacy Claims							
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	2,319	$737,469,028	2.0%	$318,012	$261,398,144	2.5%	$112,720
Top 5%	11,595	$1,399,944,950	3.9%	$120,737	$481,732,392	4.7%	$41,547
Top 10%	23,191	$1,820,380,391	5.0%	$78,495	$619,841,209	6.0%	$26,728
Total	231,914	$3,277,161,206	9.1%	$14,131	$1,262,241,807	12.2%	$5,443

2018 SED MMA Patients with Institution/Office/Pharmacy Claims							
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost	
2,345	$805,583,301	2.2%	$343,532	$288,894,509	2.9%	$123,196	
11,725	$1,530,696,944	4.3%	$130,550	$534,026,460	5.4%	$45,546	
23,450	$1,988,394,314	5.5%	$84,793	$681,390,737	6.9%	$29,057	
234,509	$3,538,988,760	9.9%	$15,091	$1,343,342,043	13.5%	$5,728	

% Change		
# of Patients	Mean Charge	Mean Cost
1.1%	8.0%	9.3%
	8.1%	9.6%
	8.0%	8.7%
	6.8%	5.2%

2017 SMI and SED MMA Patients with Institution/Office/Pharmacy Claims							
% of MMA Patients	# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost
Top 1%	3,193	$1,654,022,535	4.6%	$518,015	$455,633,457	4.4%	$142,698
Top 5%	15,967	$3,409,545,361	9.4%	$213,537	$934,162,952	9.0%	$58,506
Top 10%	31,936	$4,490,173,462	12.4%	$140,599	$1,234,530,538	12.0%	$38,656
Total	319,366	$8,049,002,981	22.3%	$25,203	$2,536,104,796	24.6%	$7,941

2018 SMI and SED MMA Patients with Institution/Office/Pharmacy Claims							
# of Patients	Total Charges	% of Total Charges	Mean Charge	Total Costs	% of Total Costs	Mean Cost	
3,220	$1,749,431,331	4.9%	$543,302	$477,470,340	4.8%	$148,283	
16,104	$3,667,292,773	10.2%	$227,726	$988,199,603	10.0%	$61,364	
32,208	$4,838,658,215	13.5%	$150,232	$1,303,240,025	13.1%	$40,463	
322,095	$8,650,060,006	24.1%	$26,856	$2,634,075,312	26.6%	$8,178	

% Change		
# of Patients	Mean Charge	Mean Cost
0.8%	4.9%	3.9%
	6.6%	4.9%
	6.9%	4.7%
	6.6%	3.0%

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References

[1] Lancet Commission, *Lancet* 2018; 392: 1553–98. Published Online: https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)31612-X/fulltext?utm_campaign=tlgmh18&utm_source=twitter&utm_medium=social Accessed on February 12, 2020.

[2] National Institute of Mental Health, Transforming the understanding and treatment of mental illnesses. https://www.nimh.nih.gov/health/statistics/mental-illness.shtml Accessed February 12, 2020.

[3] Weiss R, Study: U.S. Leads In Mental Illness, Lags in Treatment, Washington Post, June 7, 2005. http://www.washingtonpost.com/wp-dyn/content/article/2005/06/06/AR2005060601651.html?noredirect=on Accessed on February 12, 2020.

[4] Roehrig C. Mental Disorders Top the List of The Most Costly Conditions In The United States: $201 Billion. *Health Affairs*. 2016 35(6):1130-1135. DOI: 10.1377/hlthaff.2015.1659.

[5] Substance Abuse and Mental Health Services Administration (SAMHSA), Projections of National Expenditures for Treatment of Mental and Substance Use Disorders, 2010-2020, October 2014. https://www.statista.com/statistics/252393/total-us-expenditure-for-mental-health-services/ Accessed on February 12, 2020.

[6] Roehrig C. Mental Disorders Top the List Of The Most Costly Conditions In The United States: $201 Billion. *Health Affairs*. 2016 35(6):1130-1135. DOI: 10.1377/hlthaff.2015.1659.

[7] Insel T, Post by Former NIMH Director Thomas Insel: Getting Serious About Mental Illnesses, July 31, 2013. https://www.nimh.nih.gov/about/directors/thomas-insel/blog/2013/getting-serious-about-mental-illnesses.shtml Accessed on February 12, 2020.

[8] Substance Abuse and Mental Health Services Administration (SAMHSA), *Interdepartmental Serious Mental Illness Coordinating Committee: The Way Forward: Federal Action for a System That Works for All People Living with SMI and SED and Their Families and Caregivers*, December 13, 2017. https://www.samhsa.gov/ismicc Accessed on February 12, 2020.

[9] De Hert M, Correll CU, Bobes J, Cetkovich-Bakmas M, Cohen D, Asai I, Detraux J, Gautam S, Möller HJ, Ndetei DM, Newcomer JW, Uwakwe R, Leucht S, Physical illness in patients with severe mental disorders. I. Prevalence, impact of medications and disparities in health care. *World Psychiatry*. 2011 Feb;10(1):52-77. doi: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3048500/ Accessed on February 12, 2020.

[10] Substance Abuse and Mental Health Services Administration (SAMHSA), National Institute of Mental Health, Transforming the understanding and treatment of mental illnesses. https://www.nimh.nih.gov/health/statistics/mental-illness.shtml Accessed on February 12, 2020.

[11] Williams JN, L Scott, and GA Aarons, Prevalence of Serious Emotional Disturbance among U.S. Children: A Meta-Analysis. *Psychiatric Services* 69, no. 1 (2018): 32-40.

[12] Mitchell EM, *Concentration of Healthcare Expenditures and Selected Characteristics of High Spenders, U.S. Civilian Noninstitutionalized Population, 2017*. Statistical Brief #528. February 2020. Agency for Healthcare Research and Quality, Rockville, MD. https://meps.ahrq.gov/data_files/publications/st528/stat528.shtml Accessed on March 4, 2020.

[13] Centers for Medicare & Medicaid Services, Medicaid & CHIP: March 2019 Monthly Applications, Eligibility Determinations, and Enrollment Report. https://www.medicaid.gov/medicaid/program-information/medicaid-and-chip-enrollment-data/report-highlights/index.html. Accessed February 12, 2020.

[14] Kaiser Family Foundation, Total Medicaid Spending, FY 2018. https://www.kff.org/medicaid/state-indicator/total-medicaid-spending/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D Accessed on January 29, 2020.

[15] National Conference of State Legislators (NCSL), The Costs and Consequences of Disparities in Behavioral Health Care, February 2018. https://www.ncsl.org/Portals/1/HTML_LargeReports/DisparitiesBehHealth_Final.htm Accessed on March 2, 2020.

[16] Center for Medicare and Medicaid Services, Medicaid Program Benefits. https://www.benefits.gov/benefit/606 Accessed on January 30, 2020.

[17] Ali MM, Mutter R, and Teich JL, 2015. *The CBHSQ Report*: *State Participation in the Medicaid Expansion Provision of the Affordable Care Act: Implications for Uninsured Individuals with a Behavioral Health Condition*. Rockville, MD: Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality.

[18] Congressional Budget Office, 2019. *The Budget and Economic Outlook: 2019 to 2029*, Reports 54918, Congressional Budget Office.

[19] Garfield R, K Orgera, A Damico, Kaiser Family Foundation, The Coverage Gap: Uninsured Poor Adults in States that Do Not Expand Medicaid. https://www.kff.org/medicaid/issue-brief/the-coverage-gap-uninsured-poor-adults-in-states-that-do-not-expand-medicaid/ Accessed on March 2, 2020.

[20] Resources to Recover, Mental Health Resources in Florida. https://www.rtor.org/directory/mental-health-florida/ Accessed on February 12, 2020.

[21] Substance Abuse and Mental Health Services Administration (SAMHSA), State Estimates of Adult Mental Illness from the 2011 and 2012 National Surveys on Drug Use and Health. https://datafiles.samhsa.gov/study-publication/state-estimates-adult-mental-illness-2011-and-2012-national-surveys-drug-use-and Accessed on January 30, 2020.

[22] Kaiser Family Foundation, Total Medicaid Spending, FY 2018. https://www.kff.org/medicaid/state-indicator/total-medicaid-spending/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D Accessed on January 29, 2020.

[23] Agency for Health Care Administration, Statewide Medicaid Managed Care, https://www.flmedicaidmanagedcare.com/ Accessed on March 4, 2020.

[24] Kaiser Family Foundation, Medicaid Spending per Enrollee (Full or Partial Benefit), FY 2014. https://www.kff.org/medicaid/state-indicator/medicaid-spending-per-enrollee/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D

[25] Kaiser Family Foundation, Total Medicaid Spending, FY 2018. https://www.kff.org/medicaid/state-indicator/total-medicaid-spending/?currentTimeframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%22:%22asc%22%7D Accessed on January 29, 2020.

[26] Kidder B, Interim Deputy Secretary for Medicaid Agency for Health Care Administration, Florida Medicaid, Presentation to Senate Health and Human Services Appropriations Subcommittee January 11, 2017, https://ahca.myflorida.com/medicaid/recent_presentations/Senate_Health_Human_Services_Appropriations_Sub_Med_101-MMA_2017-01-11.pdf Accessed on February 12, 2020.

[27] Anderson GF. From 'Soak the Rich' to 'Soak the Poor': Recent Trends in Hospital Pricing. *Health Affairs (Millwood)* 2007;26(3):780-9.

[28] National Nurses United, Some Hospitals Set Charges at 10 Times their Costs, January 6, 2014. https://www.nationalnursesunited.org/press/new-data-some-hospitals-set-charges-10-times-their-costs Accessed on February 12, 2020.

[29] AMA *J Ethics*. 2015;17(11):1046-1052. doi:10.1001/journalofethics.2015.17.11.stas1-1511. https://journalofethics.ama-assn.org/article/challenge-understanding-health-care-costs-and-charges/2015-11 Accessed on February 12, 2020.

[30] Bai G, Anderson GF. Variation in the Ratio of Physician Charges to Medicare Payments by Specialty and Region. *JAMA.* 2017;317(3):315–318. doi: https://doi.org/10.1001/jama.2016.16230

[31] U.S Department of Labor, Office of Workers' Compensation Program, Cost to Charge Ratio High Values for FY 2019 (Effective 10/01/2018). https://www.dol.gov/owcp/regs/feeschedule/fee/feeSept3017/Effective_October_1_2018_CosttoChargeRatioTablesforInpatientnon-PPSHospitalServices.xlsx Accessed on February 12, 2020.

[32] Healthcare Cost and Utilization Project (HCUP), Cost-to-Charge Ratio Files. https://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp Accessed on January 29, 2020.

[33] Blalock, Jr., HM, Social Statistics, New York: McGraw-Hill Book Co., 1960.

[34] Substance Abuse and Mental Health Services Administration (SAMHSA), Mental Health and Substance Use Disorders. Accessed on February 12, 2020. *https://www.samhsa.gov/find-help/disorders*

[35] Sachdev PS, Mohan A, Taylor L, Jeste DV. DSM-5 and Mental Disorders in Older Individuals: An Overview. *Harv Rev Psychiatry*. 2015 Sep-Oct;23(5):320-8.

[36] Center for Behavioral Health Statistics and Quality, 2014 National Survey on Drug Use and Health: DSM-5 Changes: Implications for Child Serious Emotional Disturbance (unpublished internal documentation). Substance Abuse and Mental Health Services Administration, 2016, Rockville, MD. Published online: https://www.samhsa.gov/data/sites/default/files/NSDUH-DSM5ImpactChildSED-2016.pdf Accessed on February 12, 2020.

[37] Shih T, Chen LM, & Nallamothu BK, Will Bundled Payments Change Health Care? Examining the Evidence Thus Far in Cardiovascular Care. *Circulation* 2015 *131*(24), 2151–2158.

[38] Miller DC, Gust C, Dimick JB, Birkmeyer N, Skinner J, Birkmeyer JD. Large Variations in Medicare Payments for Surgery Highlight Savings Potential from Bundled Payment Programs. *Health Affairs (Millwood)* 2011;30:2107–2115.

[39] Chandra A, Dalton MA, Holmes J. Large Increases in Spending on Postacute Care in Medicare Point to the Potential for Cost Savings in These Settings. *Health Affairs (Millwood)* 2013;32:864–872.

[40] Mechanic R. Post-Acute Care – The Next Frontier for Controlling Medicare Spending. *N Engl J Med* 2014;370:692-694.

[41] Miller HD. From Volume to Value: Better Ways to Pay for Health Care. *Health Affairs (Millwood)* 2009;28:1418–1428.

[42] Eappen S, Lane BH, Rosenberg B, Lipsitz SA, Sadoff D, Matheson D, Berry WR, Lester M, Gawande AA. Relationship Between Occurrence of Surgical Complications and Hospital Finances. *JAMA* 2013;309:1599–1606.

[43] Porter M. What is Value in Health Care? *N Engl J Med* 2010:363;26-28.

[44] Porter M, S Larsson, TH Lee. Standardizing Patient Outcomes Measurement. *N Engl J Med* 2016:374;504-506.

[45]de Oliveira C, Cheng J, Vigod S, Rehm J, and Kurdyak P. Patients with High Mental Health Costs Incur Over 30 Percent More Costs Than Other High-Cost Patients. *Health Affairs (Millwood)* 2016:35;1,36-43.

[46] Dickson KS, Stadnick NA, Lind T, and Trask EV. Defining and Predicting High Cost Utilization in Children's Outpatient Mental Health Services. *Adm Policy Ment Health* (Nov 7 2019), doi: 10.1007/s10488-019-00988-1. Epub ahead of print.

[47] White C, Wu VY. How Do Hospitals Cope with Sustained Slow Growth in Medicare Prices? *Health Serv Res*. 2014;*49*(1):11–31.

[48] Stensland J, Gaumer ZR, Miller ME. Private-Payer Profits Can Induce Negative Medicare Margins. *Health Aff (Millwood)*. 2010;*29*(5):1045–51.

[49] Medicare Payment Advisory Commission. *Report to the Congress: Medicare payment policy* [Internet]. Washington (DC): MedPAC; 2014 Mar.