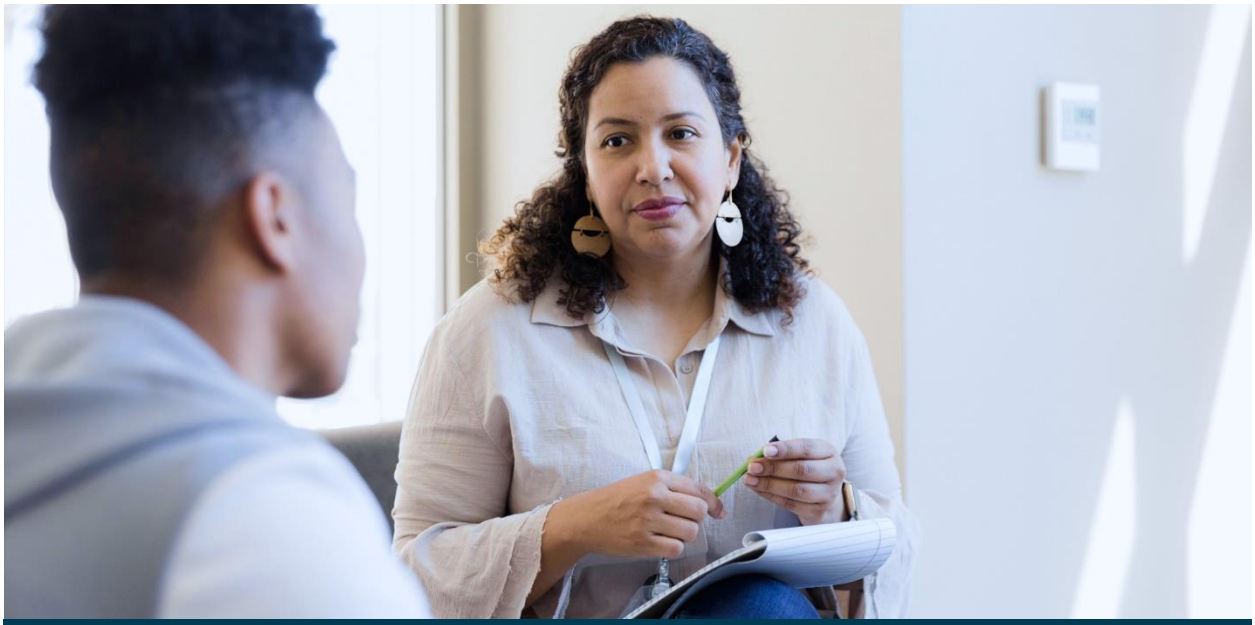

ACCESS TO BEHAVIORAL HEALTH CARE IN MICHIGAN, 2019 DATA UPDATE

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MICHIGAN HEALTH ENDOWMENT FUND

ALTARUM

Preface

The Michigan Health Endowment Fund contracted with Altarum to update our comprehensive assessment of access to behavioral health care in Michigan. The original study used data for calendar year 2016, while this study uses data for calendar year 2019.

This final report documents our findings on access to mental health and substance use disorder treatment in 2019, providing an updated picture of access just prior to the pandemic. We also identify changes that occurred in access to behavioral health care between 2016 and 2019.

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Contents

1 Summary of Key Findings

Between 2016 and 2019, prevalence of mental illness in Michigan increased, but access to care also improved, as measured by the share of those with any mental illness (AMI) who received outpatient or residential treatment. Of the nearly 2 million Michiganders with a mental illness in 2019, about two-thirds (68%) received treatment, leaving 32%, or more than 640,000 people untreated. This compares to 2016 estimates of 1.76 million people with AMI and 38% untreated.

The majority of Michiganders with a substance use disorder (SUD) go untreated, but access to SUD care also improved between 2016 and 2019. Of the 650,000 Michiganders with a SUD in 2019, 28% received treatment, leaving 72%, or 420,000 people, untreated. This compares to 2016 estimates of 638,000 people with SUD and 80% untreated. The reduction in the number and share of Michiganders untreated for SUD is driven in part by more complete data on SUD care received under Medicaid in 2019 versus the 2016 data used in the original study.

In both 2019 and 2016, *anxiety disorders* and *depressive episode* were the most common mental health conditions, and those most likely to go untreated. In both 2019 and 2016, *alcohol use disorder* was the primary SUD in Michigan, and the disorder most likely to go untreated.

Among those with insurance, Medicaid enrollees were the most likely to remain untreated for a mental illness. About 44% of Medicaid enrollees, 29% of the privately insured, and 12% of Medicare enrollees with AMI did not receive care. Among those with insurance, the privately insured were the most likely to remain untreated for a substance use disorder. About 85% of the privately insured, 46% of Medicaid enrollees, and 55% of Medicare enrollees with a substance use disorder did not receive care. The share of Medicaid enrollees not treated for SUD showed the most dramatic reduction between 2016 and 2019, falling from 69% to 46%. This improvement was due to a combination of slightly lower SUD prevalence for Medicaid enrollees and higher measured utilization, including an improvement in the capture of all Prepaid Inpatient Health Plan (PIHP) SUD data in the 2019 dataset compared to the 2016 dataset.

For Medicaid enrollees, where data on race and ethnicity is most robust, we find the share untreated was fairly consistent across race/ethnicity. Hispanic Medicaid enrollees had slighter higher unmet need for AMI while American Indians had the highest rate of unmet need for SUD. We did find that utilization of services was consistently lower for populations of color; however, prevalence rates were also lower, driving comparable shares untreated. Note that our study measures access to any behavioral health treatment during the year and does not reflect any differences in the course or quality of treatment, where disparities may be greater. Other research on disparities in the quality of treatment has found large racial gaps in Michigan.

In both 2016 and 2019, access to AMI and SUD treatment varied considerably across the state. There was a greater than two-fold difference in the share untreated between metropolitan areas with the best and worst access. Behavioral health provider capacity is especially low in the northern half of the lower peninsula, where four counties have no psychiatrist, no psychologist, and no SUD treatment facility. If all of Michigan could achieve the rates seen in best access areas of the state, another 336,000 people with a mental illness and 85,100 people with a SUD would receive care. Statewide rates of treatment would rise to 85% of those with a mental illness and 42% of those with a SUD.

New under this study, we took a closer look at several dimensions of behavioral health care utilization of particular interest. Highlights of these additional analyses included finding that 31% of Medicaid enrollees being treated for opioid use disorder received medication assisted treatment (MAT), slightly higher than the national rate of 27.8% estimated in recently published research. We also found that rates of screening for maternal depression during pregnancy or after birth were 26.4% under Medicaid and 45% under commercial insurance in 2019.

2 Background & Approach

In 2019, the Michigan Health Endowment Fund contracted with Altarum to produce an assessment of access to mental health and substance use disorder care in Michigan. The study was based on 2016 population, prevalence, and utilization data, and provided a baseline against which trends in access could be tracked. For the current study, the Health Fund again partnered with Altarum to update the assessment of access to 2019, providing a picture of access just prior to the pandemic that in the future can be compared to access post-COVID-19.

Behavioral health care in this study includes services to treat mild to moderate mental illness, serious mental illness, SUD, and co-occurring conditions. Intellectual or developmental disabilities are outside the scope of the study. The analysis considers behavioral health care provided in outpatient, intensive outpatient, and residential care settings.

We quantify gaps in access to care by comparing the underlying need for behavioral health care to the services being received. We estimate underlying need in 2019 by applying prevalence rates of mental illness and SUD by age, sex, and insurance type, with Michigan-specific adjustments, to Michigan population counts by age, sex, insurance type, and geographic location. Prevalence rates are from the National Survey on Drug Use and Health (NSDUH) and the National Survey on Children's Health. Michigan population data by age, sex, insurance status, and location are from the U.S. Census Bureau's American Community Survey. We estimate services received using 2019 administrative claims data. We use the IBM *MarketScan Research Database* for commercial claims, complete Medicaid claims data for Michigan, and Medicare Limited Data Set claims files for professionals and outpatient facilities to identify the share of individuals covered by each of these insurance types in Michigan who received behavioral health care services. Finally, for the uninsured and the small share of the population with coverage through the Veterans Administration, Military Health System, Indian Health Service, or other source not reflected in our combined claims data, we used data from the NSDUH to estimate the share untreated. A more detailed description of our data sources and methods is presented in Appendix A.

Our measure of access quantifies the share of those with a behavioral health condition who receive any behavioral health care, compared to the share that remain untreated. It represents a minimum standard for access and does not indicate whether the appropriate type and volume of care was provided.

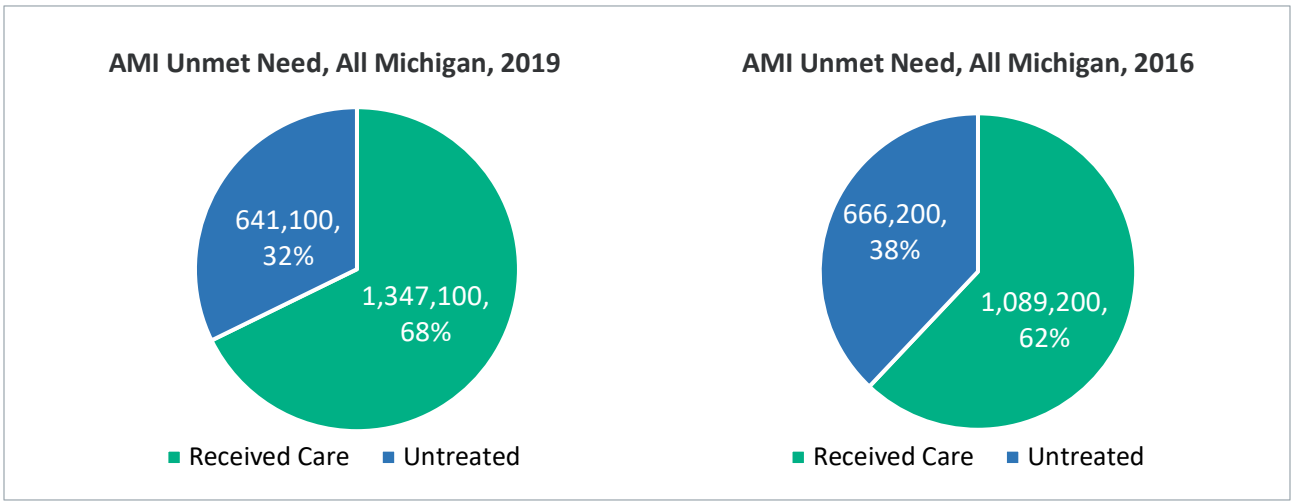
In addition to replicating the 2016-based measures of access and comparing them to access in 2019, this study examined several additional dimensions and populations of interest. We examine place of service for care delivery including use of telehealth in 2019. To remain consistent with the approach used in 2016, we did not include medication-assisted treatment (MAT) procedures in our SUD treatment analyses (although members that received MAT alongside other types of SUD treatment would still be included in our "received care" data). This choice was made in 2016 due to other MAT studies that were already underway in Michigan, and while we are consistent in the top-level findings in this report, we now show separately MAT utilization as a new section to quantify use of MAT for treatment of opioid use disorder. We provide descriptive analyses of behavioral health care use by fee-for-service Medicaid beneficiaries as compared to those covered under Medicaid managed care. Finally, we take an initial look at characterizing behavioral health services received by two special populations: women who were pregnant or gave birth in 2019 and children in the Michigan foster care system.

3 Overall Access to Behavioral Health Care

3.1 OVERALL ACCESS FOR TOTAL MICHIGAN POPULATION

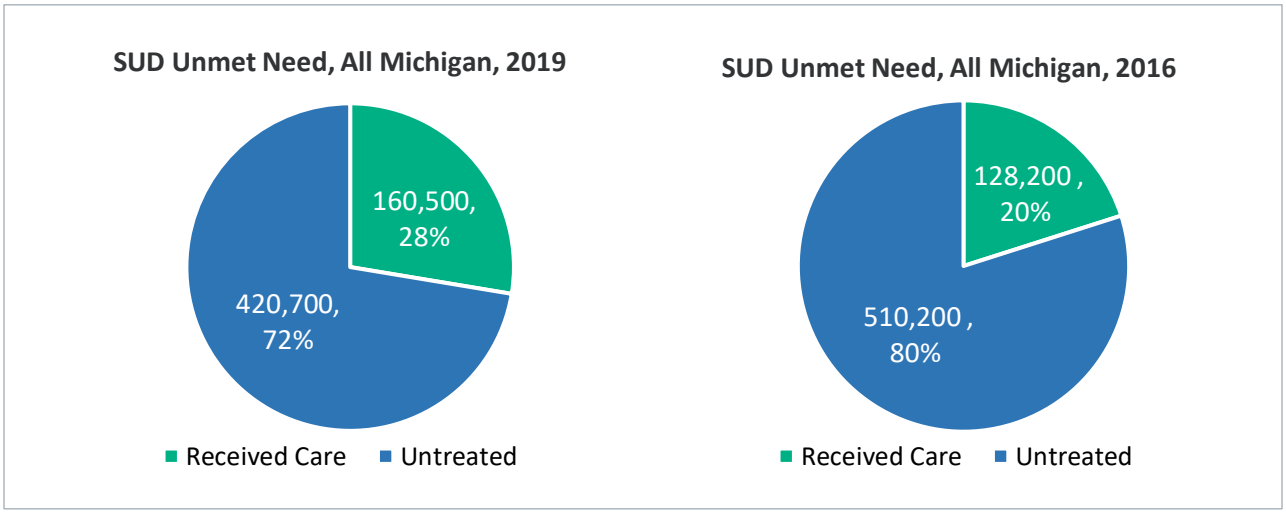
Of a total Michigan population of 9.9 million people, we estimate 1.99 million experienced any mental illness (AMI) in 2019, an increase over our estimate of 1.76 million people experiencing AMI in 2016. While the number of people with AMI increased, we find that access to AMI care improved. We estimate that 32% of those with AMI, or 641,00 people, were untreated for AMI in 2019, compared to 38%, or 666,000 people, untreated in 2016. (Figure 1).

FIGURE 1: Unmet Need for Any Mental Illness (AMI) Care in Michigan, 2019 and 2016



For substance use disorder (SUD), there is a larger gap in access than for AMI, but the comparison between 2019 and 2016 tells a similar story. We find that 650,000 Michiganders experienced SUD in 2019, an increase over the 638,000 with SUD in 2016, but that that the access gap was reduced, with 73%, or 430,700 people untreated in 2019 compared to 80%, or 510,000 people, in 2016 (Figure 2). Note that even though access improved, nearly three-quarters of those with SUD remained untreated in 2019.

FIGURE 2: Unmet Need for Substance Use Disorder (SUD) Care in Michigan, 2019 and 2016

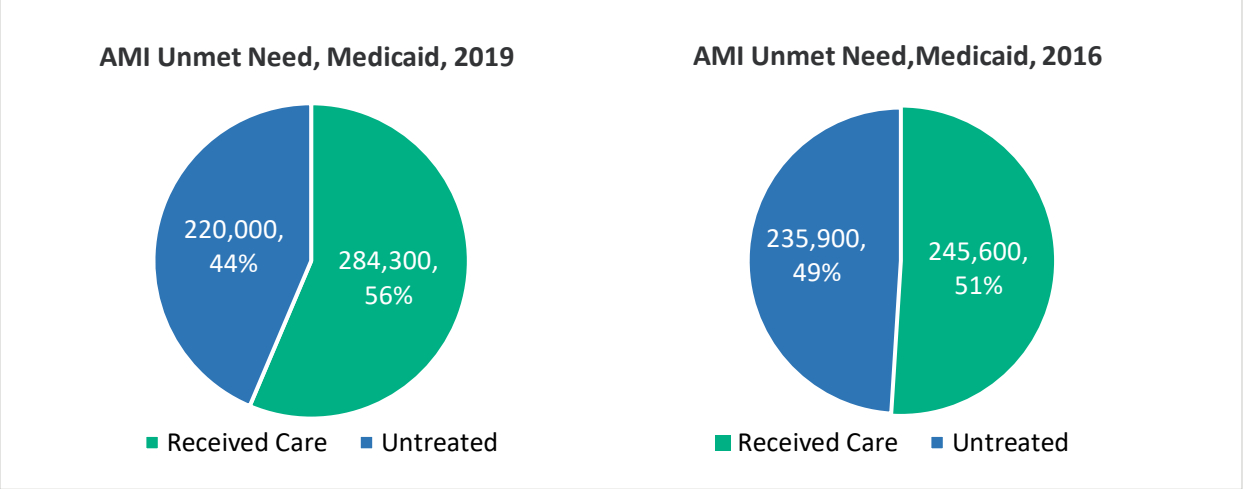


3.2 OVERALL ACCESS FOR MEDICAID ENROLLEES IN MICHIGAN

Of the 1.8 million Michiganders covered under the Medicaid program in 2019, we estimate 504,000 experienced AMI, indicating an increase in population prevalence as our estimates of the Medicaid population with AMI (481,000) were slightly lower in 2016 even as the total Medicaid population was slightly higher, at just under 2 million. We estimate fewer Medicaid enrollees with SUD in 2019, 126,000 compared to 148,000 in 2016 due to a slight decline in the prevalence of SUD in the Medicaid population in the 2019 NSDUH.

We find that access to care under Medicaid improved, with 44%, or 220,000 Medicaid enrollees with AMI not receiving care, compared to nearly half of Medicaid enrollees with AMI (49% or 236,000 people) in 2016 (Figure 3).

FIGURE 3: Unmet Need for AMI Care, Medicaid Enrollees in Michigan



For SUD care, the reduction in the access gap was even greater, with 46%, or 58,500 Medicaid enrollees with a SUD untreated in 2019 compared to 69% (102,300 people) untreated in 2016 (Figure 4). The magnitude of the improvement in the share of Medicaid enrollees untreated is driven by several factors, and it is important to note that because SUD prevalence as a percent of the total population is small, relatively small changes in both utilization and prevalence data can have a large impact on the treatment gap calculation. Our data show that an estimated 43,800 fewer Medicaid enrollees were “untreated” for a SUD in 2019 relative to 2016 and about half (21,600) of those individuals were due to a reduction in SUD prevalence over this time period in the NSDUH data. The remaining 22,200 of the fewer untreated were a result of greater treatment rates in the Medicaid claims data. We discuss these trends and other data on SUD treatment prevalence below.

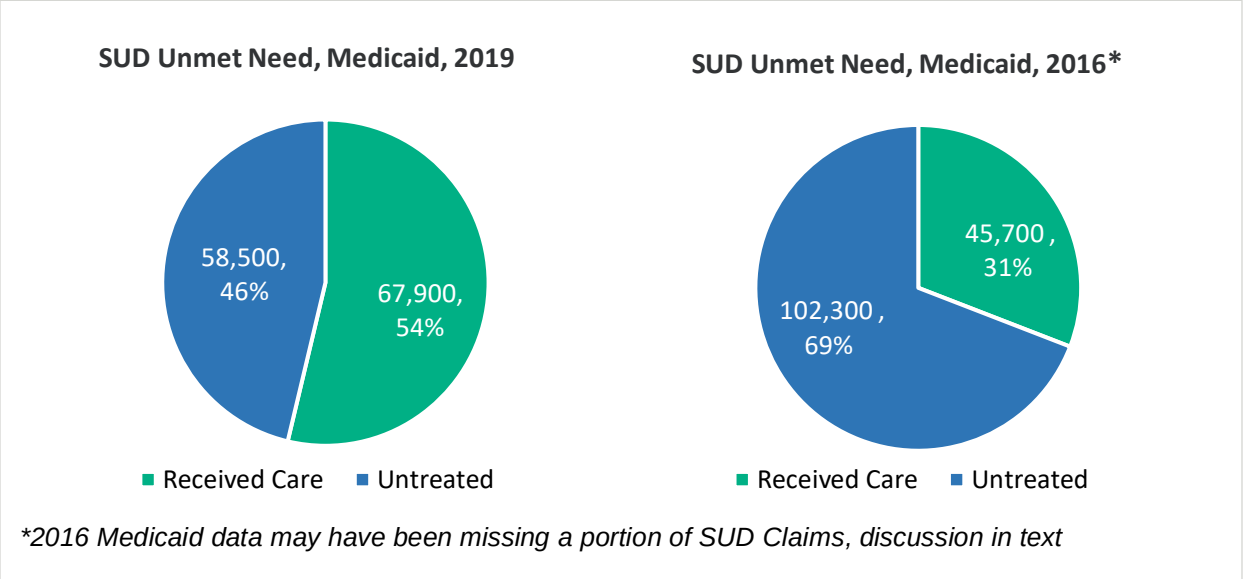
First, as mentioned previously, prevalence of SUD for this population declined slightly in 2019 as measured by the NSDUH. Even with the same level of utilization, if expected need decreases, the share receiving care will rise. Estimates derived from the NSDUH data indicate the expected overall prevalence of SUD conditions fell from 7.6% to 6.9% of enrollees, slightly greater than a national trend where Medicaid SUD prevalence fell 0.41 percentage points. Of note, due to the relatively infrequent prevalence of SUD conditions compared to AMI, these changes are well within the 95% confidence intervals of the NSDUH survey (8.93% - 10.47%), so it is very possible this “reduction” in the NSDUH data could be partially attributable to sampling error over time.

Second, in the Medicaid claims data, the rate of receiving SUD care for Medicaid services increased from 2.3% in 2016 to 3.7% in 2019. While only a 1.4 percentage point increase, it has

a meaningful impact on the overall access gap calculation due to the small population prevalence of SUD conditions. We interpret in the new results that some of this increase observed in the utilization data is a result of expanded access to SUD care within Medicaid, as confirmatory data from NSDUH indicate the rate of Michiganders "needing but not receiving SUD treatment at a specialty facility" fell from 7.3% in 2016 to 6.8% in 2019.

In addition to the real change in access, we also believe part of the observed utilization increase is due to the fact that the PIHP data on SUD care were more complete in the 2019 data than they were in the 2016 data. Our review of the data indicates changes in the Medicaid claims data between 2016 and 2019 that may also be contributing to the observed increased prevalence. Our original study using 2016 data was one of the first uses of Michigan Medicaid behavioral health data for analysis and following the direction of the Centers for Medicare & Medicaid Services, some data providers at that time had restricted release of many types of behavioral health claims for a number of years. Our investigation into the drivers of this Medicaid SUD change revealed that the share of SUD claims paid by the PIHPs looked much lower in 2016, and lower than what would be expected given PIHP statutory responsibilities for SUD care. In a review that compares the 2019 to 2016 data, we conclude that the 2016 data likely contain complete SUD care from the health plans and fee-for-service claims, but may have not contained all PIHP SUD claims, and that the 2019 data look to be a more accurate reflection of Medicaid SUD access.

FIGURE 4: Unmet Need for SUD Care, Medicaid Enrollees in Michigan



**2016 Medicaid data may have been missing a portion of SUD Claims, discussion in text*

A 2019 treatment rate of over 50% for SUD conditions among Medicaid enrollees may seem higher than expected; yet, it is very important to note our definition of "receiving any care" is a very low bar to meet—classified as any one instance of either SUD-specific outpatient treatment or an office visit for the primary purpose of treating a SUD diagnosis. As a result, we expect that even among the 54% "receiving care" in this analysis there remain very significant gaps and additional needed services to reach complete and robust treatment quality to achieve recovery. For example, some claims in our Medicaid data include procedures such as "drug tests to monitor substance use disorders" in our treatment set, which, while important as a part of a suite of SUD care, would be far from sufficient to be "quality" care for SUD by themselves. As a simple look at the impact of our "at least 1 service" data, if we instead change the definition to assess the number of Medicaid enrollees that had at least 2 treatments or visits within a year, the population falls from 67,900 receiving care to 47,600, nearly a third fewer individuals and the "untreated gap" would expand from 46% to 62.4%.

In looking at other data on Medicaid SUD utilization, we see that our 2019 rates of SUD treatment are broadly consistent with other studies. For example, a report to Congress entitled, *T-MSIS Substance Use Disorder (SUD) Data Book, Treatment of SUD in Medicaid, 2018*, found that in Michigan, by our definition, an estimated 3.9% of Medicaid enrollees received SUD treatment in 2018 (compared to our 2019 value of 3.7%). To generate this estimate of a 3.9% treatment rate from the T-MSIS report, we subtracted the total treatment rate for SUD conditions (9.8%) by the rate of treatment for tobacco (5.9%), a SUD condition that was excluded from our definition of a SUD in this report, leaving a utilization rate of 3.9%. This is confirmatory evidence that our 2019 utilization rates in Medicaid are likely accurate.

3.3 OVERALL ACCESS FOR MEDICARE ENROLLEES IN MICHIGAN

Of the 1.7 million Michiganders covered under the Medicare program, we estimate about 286,000 experienced AMI and about 57,000 experienced SUD in 2019. We find that 12% of Medicare enrollees with AMI, about 35,000 people, were untreated in 2019 (Figure 5), a notable improvement in access over 2016, when 21%, or about 52,000 Medicare enrollees were untreated. Access to SUD care for Medicare enrollees was little changed between 2016 and 2019, with 55%, or about 31,000 people untreated in 2019, compared to 59%, or 30,000 people untreated in 2016 (Figure 6).

FIGURE 5: Unmet Need for AMI Care, Medicare Enrollees in Michigan

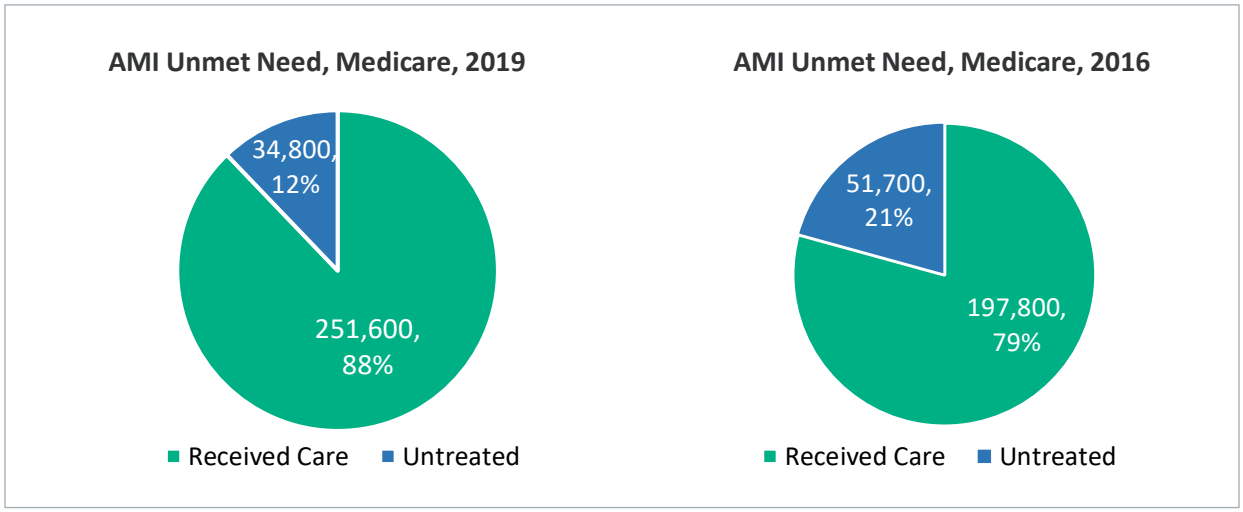
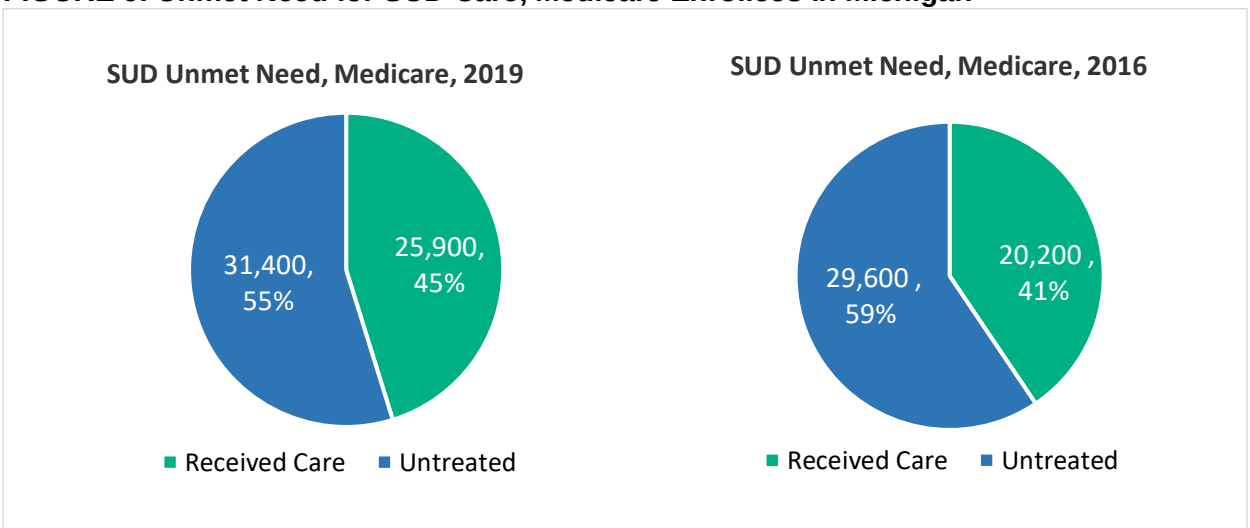


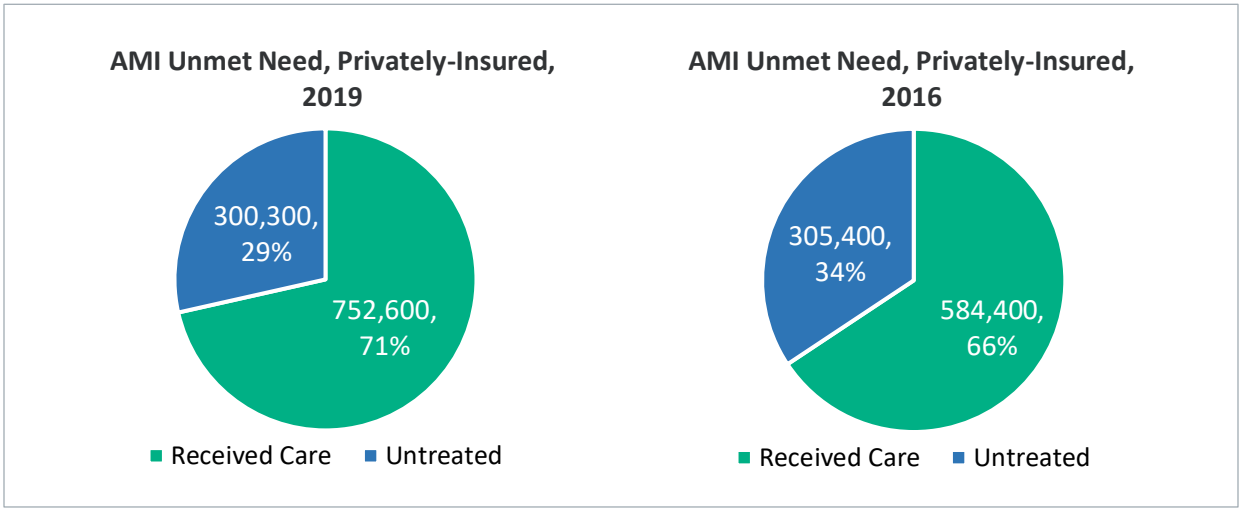
FIGURE 6: Unmet Need for SUD Care, Medicare Enrollees in Michigan



3.4 OVERALL ACCESS FOR PRIVATELY INSURED IN MICHIGAN

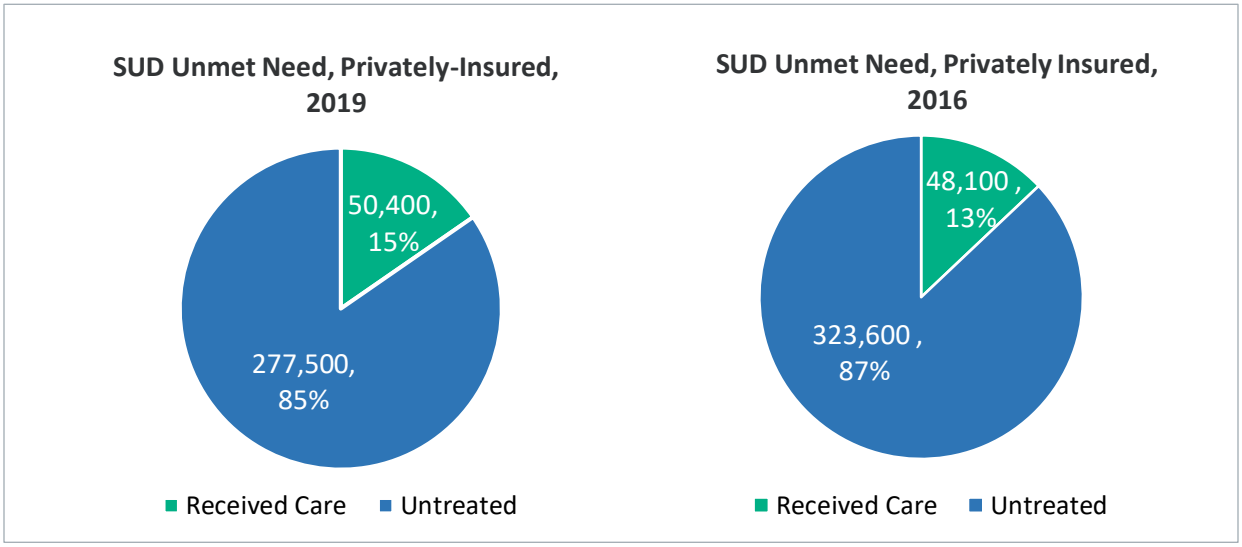
Of the 5.6 million Michiganders with private health insurance, we estimate 1.05 million people experienced AMI, an increase over the 890,000 we estimated for 2016. Despite higher prevalence, we find that access to AMI care for the privately insured improved slightly between 2016 and 2019, with the share going untreated dropping to 29%, or 300,000 people, compared to one-third (34%), or more than 305,000 people in 2016 (Figure 7). Because prevalence of AMI for the privately insured went up in 2019, the lower *share* untreated is a similar *number* of people untreated compared to 2016.

FIGURE 7: Unmet Need for AMI Care, Privately Insured in Michigan



We estimate 328,000 Michiganders with private health insurance experienced SUD in 2019, fewer than the 372,00 estimated for 2016. The share of privately insured with SUD who were untreated changed little between 2016 and 2019, with 85% untreated in 2019 compared to 87% in 2016 (Figure 8).

FIGURE 8: Unmet Need for SUD Care, Privately Insured in Michigan

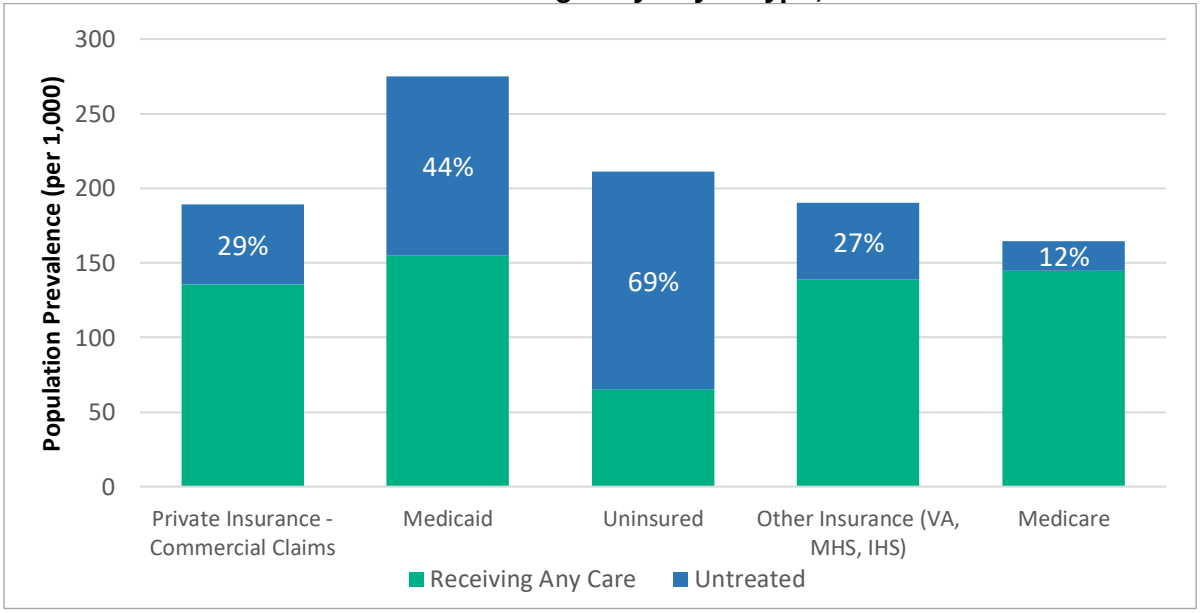


4 Comparisons Across Payer Type

4.1 OVERALL COMPARISONS BY PAYER TYPE

Medicaid enrollees had a higher prevalence of AMI than Michiganders with other types of coverage, at about 275 people per 1,000 in 2019 (Figure 9). In Figure 9 and similar bar charts presented throughout this report, the height of the bars represents the prevalence of disease for that group in numbers of people per 1,000, while the shaded and labeled shares represent proportions treated and untreated. Across payer type, the uninsured experienced the next highest prevalence rate, at 211 per 1,000, those covered under private insurance and other insurance experienced AMI at a rate of about 190 people per 1,000, and Medicare enrollees had the lowest prevalence, at a rate of about 165 people per 1,000. Prevalence rates for AMI shifted up across all the payer types between 2016 and 2019, with comparable rates in 2016 ranging from 150 per 1,000 for Medicare to 250 people per 1,000 for Medicaid.

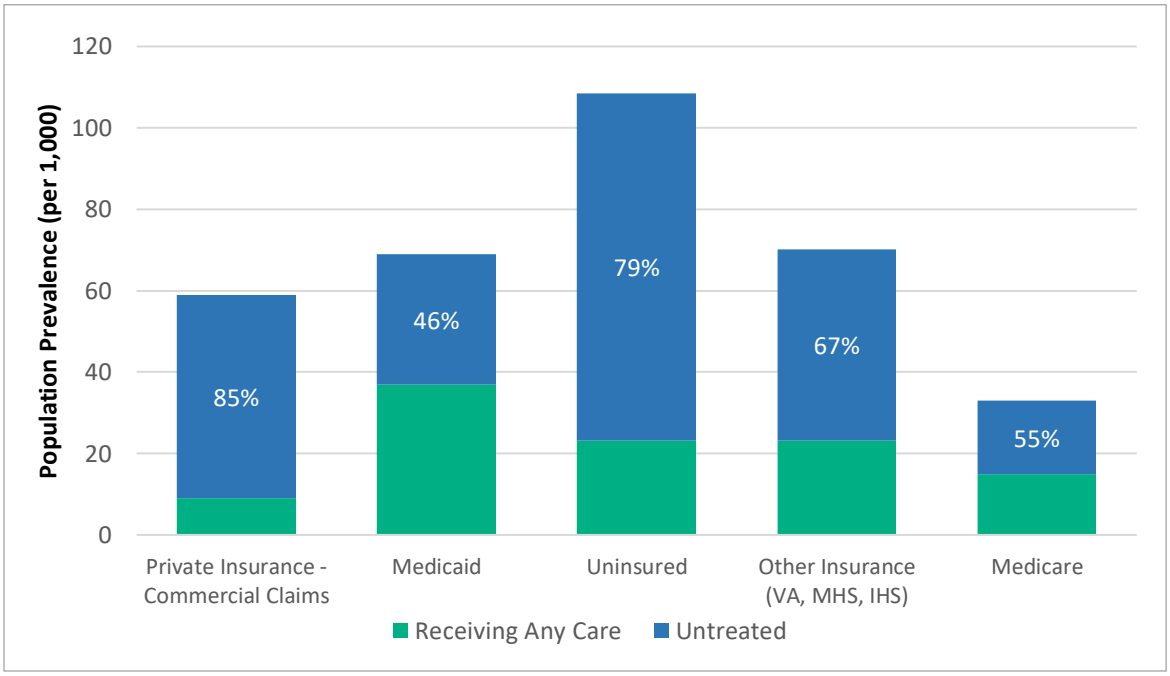
FIGURE 9: Unmet Need for AMI in Michigan by Payer Type, 2019



Not surprisingly, the uninsured had the highest share untreated in 2019, at 69% (Figure 9). Among those with insurance, Medicaid enrollees had the largest share untreated for AMI, at 44%. About 29% of the privately insured with AMI and 12% of those with Medicare (a combination of Medicare Advantage and Fee-for-Service enrollees) were untreated.

The highest prevalence of SUD was experienced by the uninsured population in Michigan, followed by the Medicaid population and those with other insurance (Figure 10). The privately-insured had the largest share untreated, at 85%. The share untreated was between 55% and 79% for Medicare, the uninsured, and those with other insurance. The best access to SUD care was again under Medicaid, where 46% of those with SUD are untreated. A notable difference between results in 2019 and 2016 is the smaller share untreated for SUD under Medicaid. For 2019, we estimated 46% of Medicaid enrollees were untreated for SUD, while in 2016, we estimated the share untreated at 70%. As discussed in more detail in the Medicaid section, we believe at least part of this decrease in reported untreated rates for SUD among Medicaid between 2016 and 2019 is due to more complete PIHP data in the 2019 claims set when compared to the 2016 data, although national SUD treatment data among Medicaid recipients has also shown improvements for this population over the same three-year period.

FIGURE 10: Unmet Need for SUD in Michigan by Payer Type, 2019



4.2 PRIVATE, MEDICAID, AND MEDICARE PAYER SUBTYPE COMPARISONS

In addition to computing the percent of those with AMI/SUD conditions receiving treatment by major insurance category, we use the available claims data to assess differences in utilization of behavioral health care by different insurance subtype categories. The necessary prevalence data from NSDUH are unfortunately not available for specific insurance subtypes or plan types; therefore, these analyses are limited to differences in the percent receiving any service. In these analyses differing rates in utilization across different insurance subtypes within each category are likely driven both by differences in the way plan subtypes impact access, but also due to health differences in the populations across subtypes. For example, we might expect that those enrolled in a Medicare Advantage plan would have, on average, a lower prevalence of behavioral health conditions compared to those in the Medicare FFS population, and similarly those enrolled in a Michigan Medicaid managed care organization (MCO) Health Plan may look healthier than those that are excluded from this managed care population. Despite the limitation in not having insurance subtype specific prevalence estimates, these analyses reveal interesting findings on how different insurance specifications can impact the use of behavioral health care services.

Figure 11 shows the rate per 1,000 enrollees receiving care for any mental illness across the available payer subtypes. In private insurance, we find that utilization was much higher in HMO and PPO plans than it was in High-Deductible/Consumer-Directed plans and “Other/Unlisted” plans. This difference is likely driven both by the fact that those choosing to enroll in HDHP/CDHP plans may be healthier on average, but also that those plans put up far greater cost sharing restrictions than traditional plans. For Medicare, we find that utilization was higher among those enrolled in “traditional” fee-for-service Medicare than those in Medicare Advantage, a fact likely driven both by wider networks for fee-for-service enrollees, but also potentially a sicker population. For Medicaid, we find that utilization of AMI treatment was higher among those without a MCO Health Plan enrollment identifier (those who may be excluded from this population due to unique circumstances or exclusionary diagnoses).

FIGURE 11: Utilization of AMI Care by Insurance Subtypes, 2019

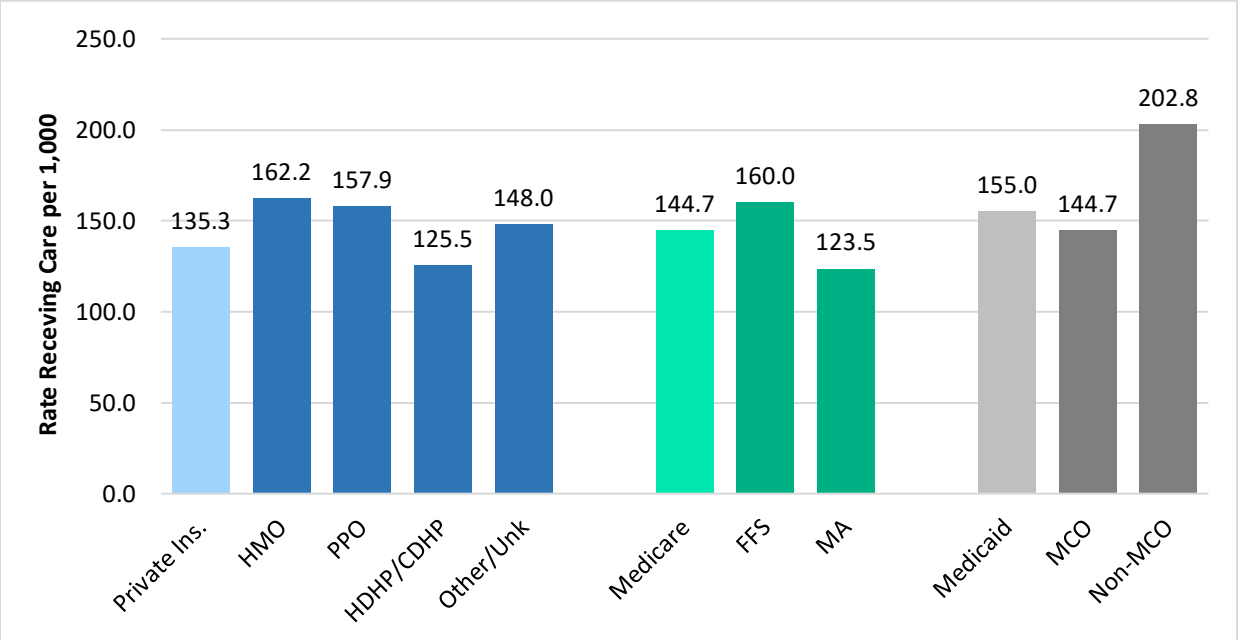
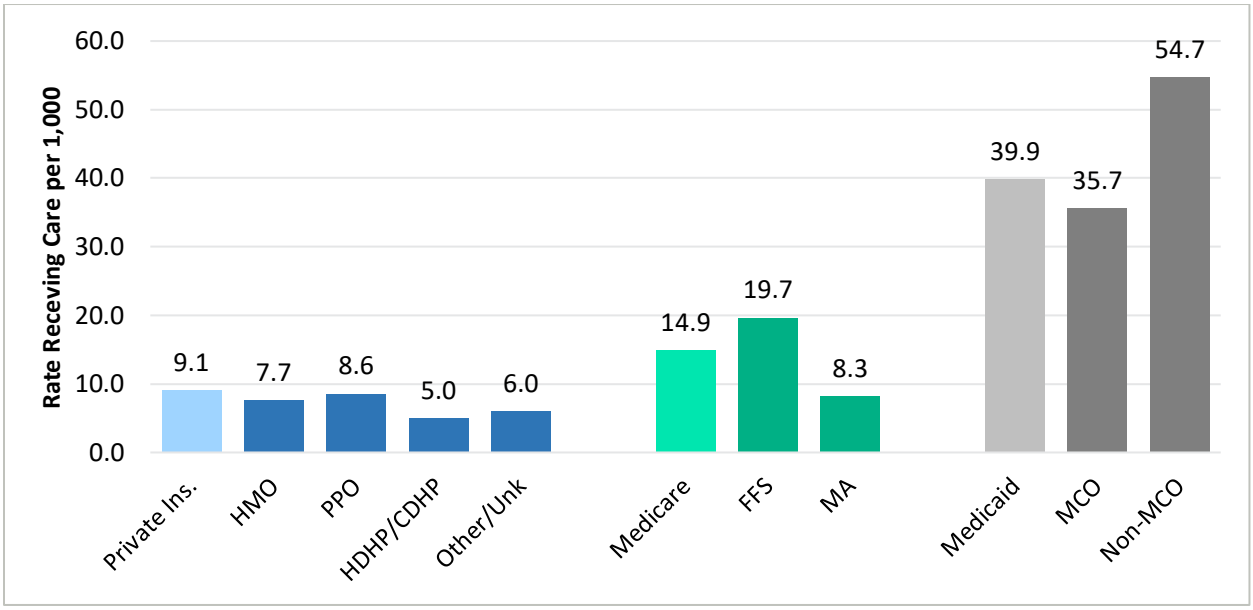


Figure 12 shows the same comparison of utilization rates across payer subtypes for SUD treatment and finds a similar relative rate of care received to the AMI figure above. While the relative Medicaid treatment rate for SUD was much higher than the Medicare and private insurance major categories, in 2019 HDHP/CDHP plans have lower utilization rates for SUD treatment relative to other private insurance subtypes, while Medicare Advantage enrollees have lower utilization compared to the Medicare FFS population. In Medicaid, those without an MCO enrollee identifier have a much greater rate of SUD treatment compared to those in an MCO plan.

FIGURE 12: Utilization of SUD Care by Insurance Subtypes, 2019



Within the Michigan Medicaid program, there are three primary payer subtypes that can be assigned to cover behavioral health treatment: (1) Traditional MCO health plans (MCOs); (2) Prepaid Inpatient Health Plans (PIHPs); and (3) Fee-for-service claims (FFS). While payment for claims within each mental illness condition and SUD category are split among all three payer types, the traditional MCOs tend to cover less severe instances of mental illness treatment, while PIHPs are required to cover severe mental illness and all of SUD treatment, and FFS payments cover care not provided by either of the other two options.

In Figure 13, we show the split of AMI and SUD care paid for under each of the three major Medicaid payer types. We show the percent of enrollees with an MCO assignment vs. those without an MCO assignment who had care paid for by each Medicaid payer subtype, and the comparable proportions of total claims paid. For example, we see that for AMI, 71% of enrollees and 75% of claims paid were for those with an MCO assignment. Claims paid by the MCOs were more common for AMI than for SUD care and when an individual was enrolled with an MCO. As expected, the percent of those with an AMI claim paid by a PIHP were greater when an individual did not have an MCO assignment. Also as expected, FFS claims were far more common among those not enrolled with an MCO and for AMI rather than SUD care. The small percentage of claims paid by an MCO for those not assigned to an MCO plan in the Medicaid enrollment file are likely a result of short enrollment period data gaps.

FIGURE 13: Percent of Members and Proportion of Claims Paid by Medicaid Plans, 2019

(columns may not add to 100% due to rounding and/or overlap)	Percent of Those with any Claim from each Subtype	Percent of All Claims Paid
Treatment for Any Mental Health Condition		
Percent of Enrollees with an MCO Assignment	71.3%	75.4%
and had claims from an MCO	75%	68%
and had claims from an PIHP	18%	28%
and had claims from FFS	5%	3%
and had an Unknown Claim	1%	1%
Percent without an MCO Assignment	28.7%	24.6%
and had claims from an MCO	27%	25%
and had claims from an PIHP	17%	29%
and had claims from FFS	57%	46%
and had an Unknown Claim	0%	0%
Treatment for Any Substance Use Disorder		
Percent of Enrollees with an MCO Assignment	69.4%	74.6%
and had claims from an MCO	56%	27%
and had claims from an PIHP	48%	70%
and had claims from FFS	6%	3%
and had an Unknown Claim	1%	1%
Percent without an MCO Assignment	30.6%	25.4%
and had claims from an MCO	21%	11%
and had claims from an PIHP	44%	69%
and had claims from FFS	42%	20%
and had an Unknown Claim	1%	0%

Figure 14 breaks out the share of Medicaid enrollees with and without a PIHP-paid claim by mental health and SUD condition. As expected, the percentage of those with a claim paid for by a PIHP was greater among those with a SUD (59%) than those with AMI (21%). However, despite the PIHP requirement to cover SUD treatment services and also those enrollees with severe mental illness, there remains a significant portion of behavioral health care that was also paid for by the FFS system and MCO payers. Not surprisingly, mental illness conditions that are more often mild to moderate, including *anxiety disorders*, *PTSD & stress disorders*, *ADHD & hyperkinetic disorders*, and singular *depressive episodes,* are less likely to generate PIHP claims. Among these four mental illnesses, fewer than 20% of enrollees have a claim paid for by a PIHP. For those AMI conditions more likely to be severe and require coverage by a PIHP, such as *recurrent depression* and *bipolar disorder*, between 24% and 30% of individuals have a PIHP claim in a year. Among the SUD conditions, *opioid use disorder* was more commonly covered by a PIHP (68% of enrollees with a claim), while *alcohol use disorder* (56%) and *cannabis use disorder* (52%) have a smaller share of Medicaid enrollees with a PIHP claim.

FIGURE 14: Percent of all Medicaid Enrollees with and without a PIHP Paid Claim, by Mental Illness and SUD Conditions, 2019

AMI/SUD Condition	Percent with a PIHP Claim	Percent without a PIHP Claim
Mental Illness Conditions		
Any Mental Illness	21%	79%
Bipolar Disorder	30%	70%
Depressive Episode	17%	83%
Recurrent Depression	24%	76%
Other Mood Disorders	19%	81%
Anxiety Disorders	11%	89%
PTSD & Stress Disorders	13%	87%
ADHD & Hyperkinetic Disorders	15%	85%
SUD Conditions		
Any Substance Use Disorder	59%	41%
Alcohol Use Disorder	56%	44%
Opioid Use Disorder	68%	32%
Cannabis Use Disorder	52%	48%

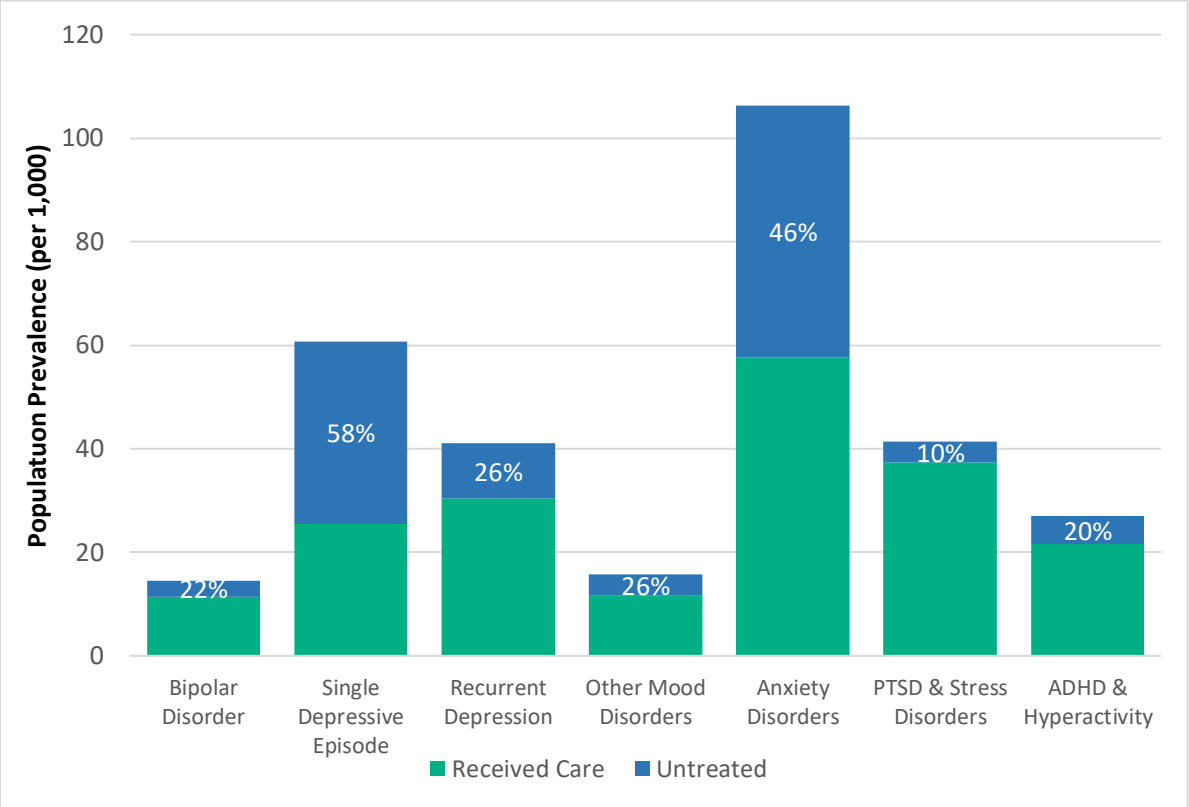
5 Results for Common Conditions

We examined results by common AMI and SUD conditions for the Medicaid, Medicare, and privately insured populations in Michigan.

5.1 COMMON MENTAL HEALTH CONDITIONS

As we saw for 2016, unmet need for AMI in Michigan in 2019 was greatest for the more prevalent, mild-to-moderate conditions. Figure 15 shows the variation in 2019 estimated prevalence and unmet need for some of the most common mental health condition diagnostic categories. As in 2016, the conditions with the largest shares going untreated are *single depressive episode* (58% untreated) and *anxiety disorders* (46% untreated). More serious conditions such as *bipolar disorder* (22%), *recurrent depression* (26%), and *other mood disorders* (26%) show about one-quarter untreated, while 20% of ADHD and 10% of *post-traumatic stress disorder (PTSD)* went untreated in 2019.

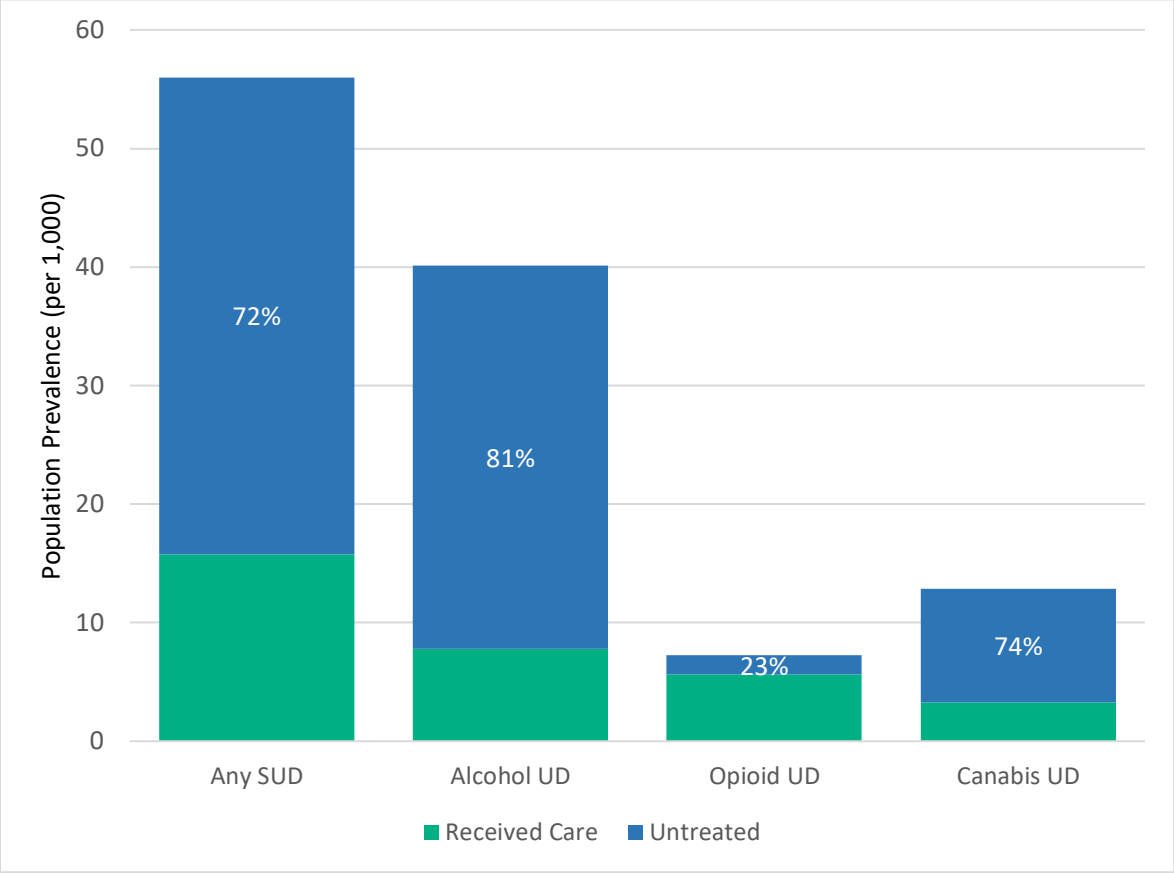
FIGURE 15: Prevalence and Unmet Need for AMI Care in Michigan by Common Condition, 2019



5.2 COMMON SUBSTANCE USE DISORDERS

As we saw in 2016, among common SUDs in Michigan in 2019, prevalence and the unmet need was greatest for *alcohol use disorder* (Figure 16). Michiganders experienced *alcohol use disorder* at about four times the rate as *cannabis use disorder* or *opioid use disorder*, and 81% of those with *alcohol use disorder* were untreated. While lower in prevalence, unmet need was high for *cannabis use disorder*, with nearly three-quarters (74%) going untreated. Finally, 23% of those with an *opioid use disorder* went untreated in 2019, a notable increase in access from 2016, when the share untreated was 33%.

Figure 16: Prevalence and Unmet Need for SUD Care in Michigan, by Common Disorders



Our original study excluded medication-assisted treatment (MAT) and in comparing 2016 to 2019 access we also exclude MAT for consistency (although any individual who received both MAT procedures alongside other types of SUD treatment would still be included in our definition of "received care").

However, in this updated study, we added a separate analysis of the use of MAT for SUD treatment. In particular, we were able to identify substantial use of MAT for Medicaid enrollees being treated for opioid use disorder. We find that of 43,300 Medicaid members treated for *opioid use disorder*, 13,205, or 31%, received MAT. This ratio is slightly higher than the national rate of 27.8% of those with an *opioid use disorder* receiving MAT that was estimated in recently published research. Our analyses of MAT services among the privately insured and Medicare populations revealed trivial counts of enrollees receiving *opioid use disorder* care that included MAT procedures or services (4.1% and 1.1%, respectively). While we might expect MAT utilization to be highest amongst the Medicaid population, these rates in the commercial and Medicare population are quite low and may be more indicative of differences in claims or billing procedures related to MAT with these insurers, so that this care is less visible in the claims data.

6 Variation by Age & Sex

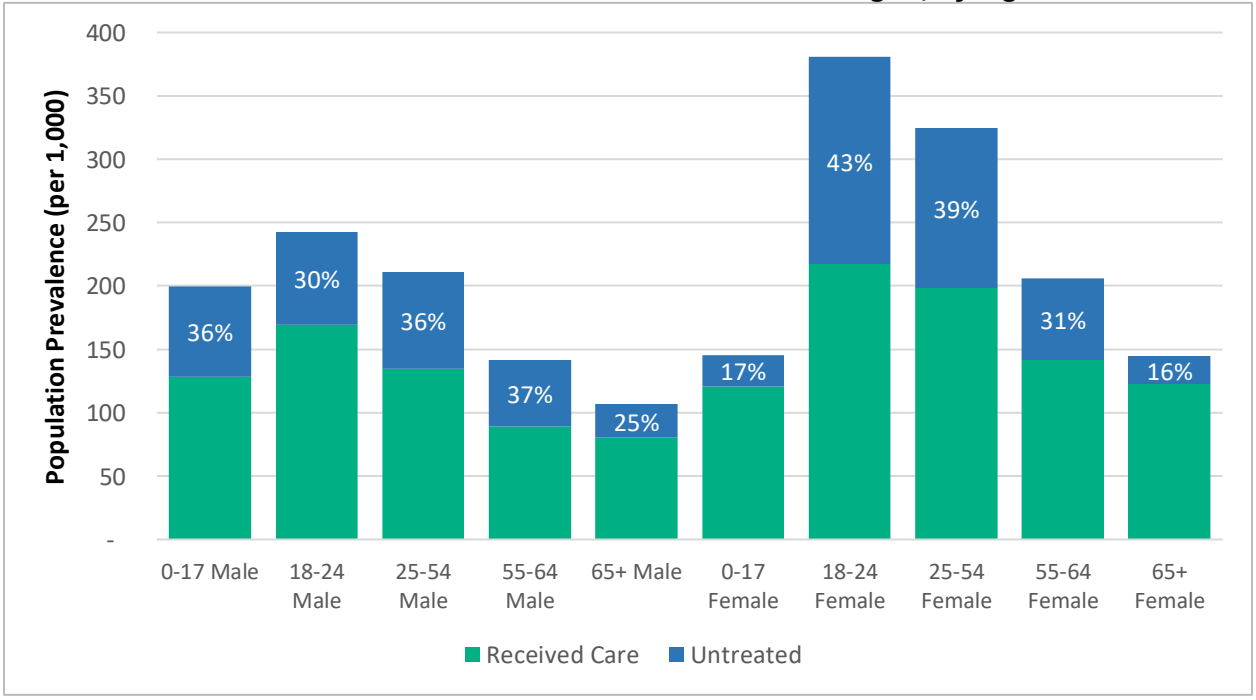
6.1 MENTAL HEALTH CONDITIONS BY AGE & SEX

Male children (age 0 to 17) had a higher prevalence of AMI than female children in 2019 (Figure 17). For every other age group, females had a significantly higher prevalence of AMI than males. This pattern was seen in 2016 as well.

For males, the share untreated for AMI in 2019 was similar across the age groups through age 64, ranging from 30% to 37%. Female children had among the second lowest unmet need, with 17% untreated, while young adult females, ages 18 to 24, had the highest unmet need, at 43% untreated (the lowest unmet need was for women over 65). The change in unmet need from the second lowest access gap for female children to the highest gap for young adult women is observed in both Medicaid and private insurance data (the two common insurers for these populations) and is largely attributable to a large jump in prevalence for conditions between these two age groups. Rates of depression, anxiety disorders, and bipolar disorders are at least double in the 18-24 vs. the 0-17 age group for females and rates of any mental illness among the 18-24 population have skyrocketed since 2016. In the raw NSDUH data, the rate of AMI (for adolescent boys and girls combined) for Michigan increased from 21.9% to 28.4% in 2019. It is clear from our data that while prevalence has increased, the rate of treatment for this population (particularly for young women) has not kept pace.

Note that the prevalence of AMI and the profile of underlying conditions varies by age and gender, so that large differences in the share untreated are not unexpected. Michiganders aged 65 and older had lower prevalence and better access than most of the other age groups, with only 16% of women and 25% of men in this age group untreated for AMI.

FIGURE 17: Prevalence and Unmet Need for AMI Care in Michigan, by Age & Sex

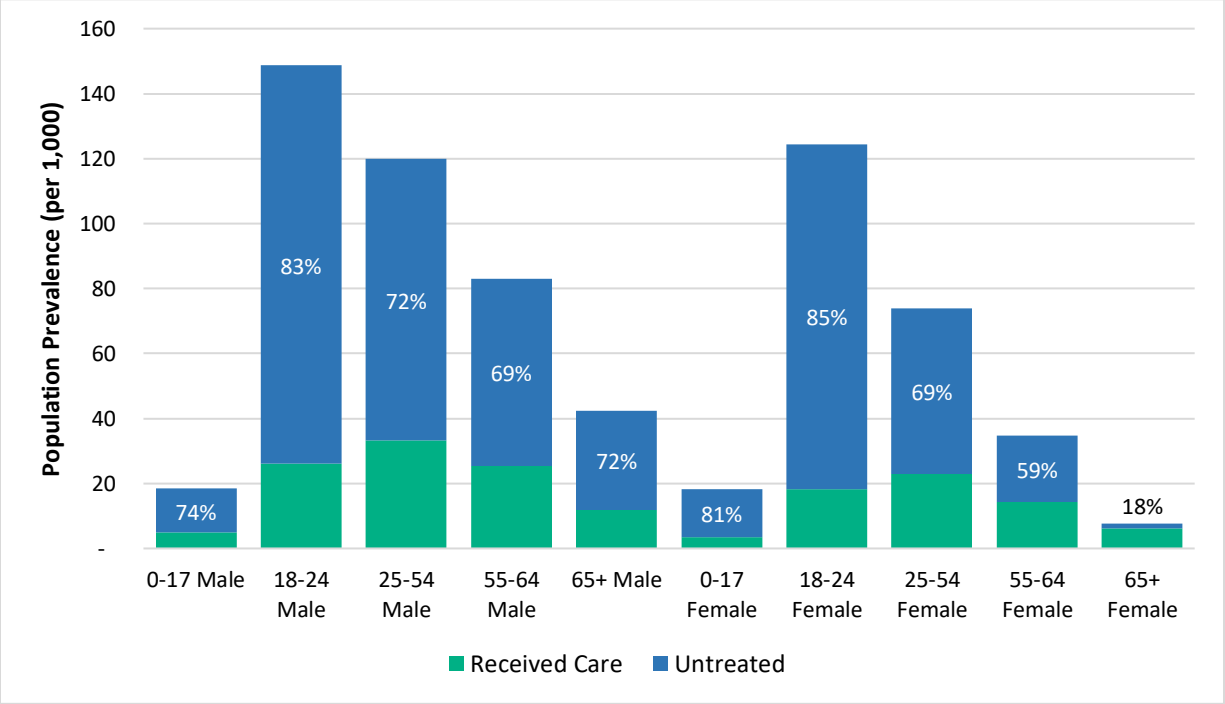


Substance Use Disorders by Age & Sex

For SUDs in Michigan, prevalence was highest among young men ages 18 through 24, followed by young women ages 18 through 24, and then men ages 25 through 54 (Figure 18). Prevalence of SUD dropped significantly for older adults aged 65 and older.

As in 2016, unmet needs for SUD in 2019 across all age groups were much higher than for AMI. At any age, most individuals with a SUD did not receive care. The percent of individuals not receiving SUD care was between 69% and 85% for all age/sex categories in 2019, similar to the 2016 range of 70% to 90%.

FIGURE 18: Prevalence and Unmet Need for SUD Care in Michigan, by Age & Sex



7 Variation by Race

Reliable demographic data was available in the Medicaid claims data allowing comparison of access by race and ethnicity. In 2019, populations of color had lower rates of prevalence of AMI than the non-Hispanic White population (Figure 19). While the rate of receiving care was lower for the non-White groups, the overall percent of those with AMI who were untreated in 2019 for all four demographic groups were broadly similar, ranging from 46% for African Americans / Blacks with Medicaid to 59% for Hispanics with Medicaid. It is important to note that despite a similar untreated proportion, the absolute percent of the population receiving any mental health services is far greater for Whites than Non-Whites, and this trend holds across all major mental illness conditions detailed in this study (Figure 20).

The reason for a similar gap in access across all race categories in Medicaid is due to a much higher estimated prevalence of AMI among white Medicaid enrollees from the NSDUH dataset. Nationally in 2019, the NSDUH estimates that 40.2% of Non-Hispanic, White Medicaid enrollees had AMI in the past year, nearly double the rate for Hispanic Medicaid enrollees (26.0%) and Non-Hispanic Black enrollees (23.6%). More research is needed to understand this very large gap in prevalence of mental health conditions across different race and demographic Medicaid enrollees and if some of this variation may be the result of survey response bias.

FIGURE 19: Prevalence and Unmet Need by Race for Medicaid Enrollees with AMI

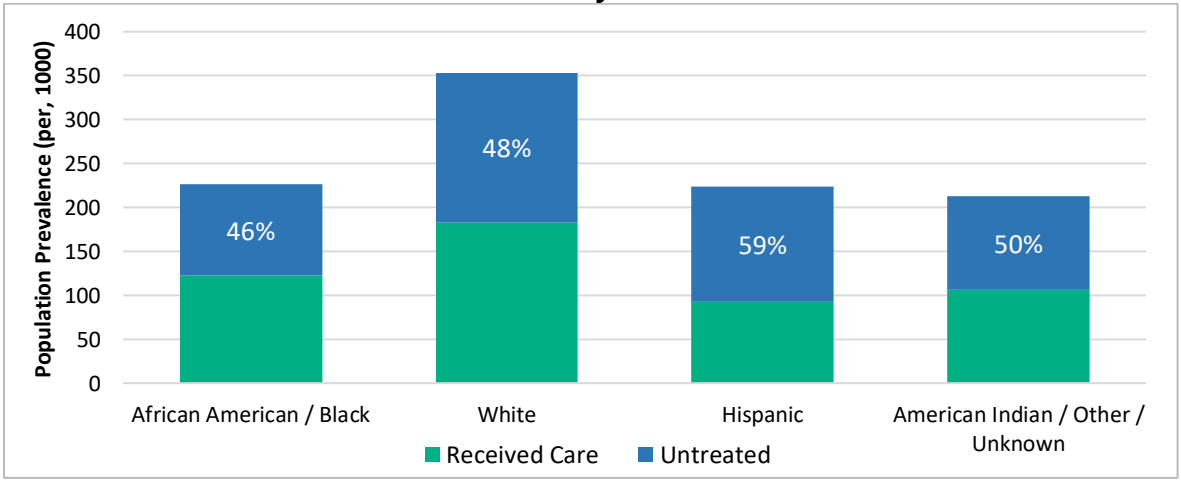
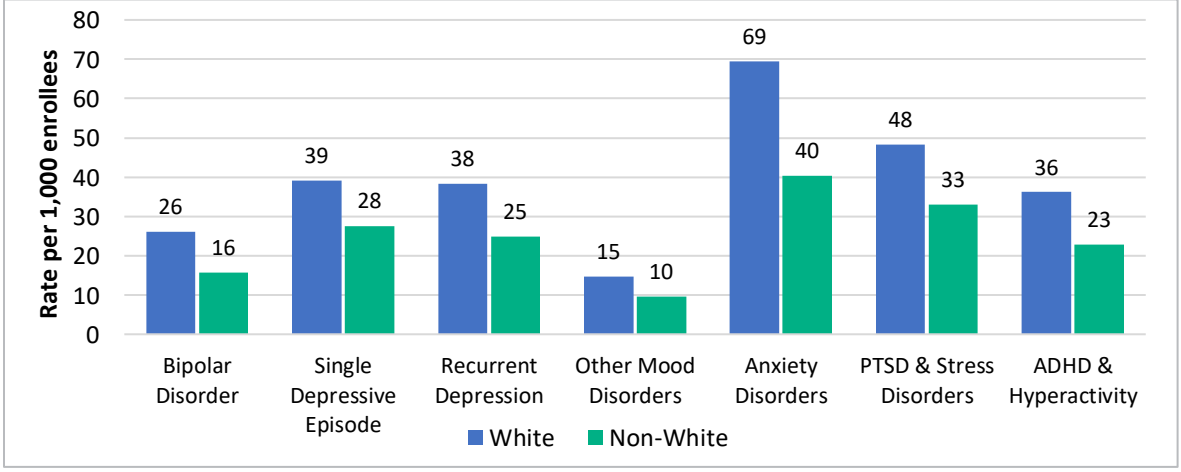


FIGURE 20: Rate of Utilization for Medicaid Enrollees with AMI, by Race and Disorder



Similarly, prevalence of SUD was highest for White Medicaid enrollees and the share untreated did not vary significantly across race/ethnicity (Figure 21). Much of the greater prevalence of SUD for Whites comes from the rate of *alcohol use disorder* (data not shown) and similar to Medicaid service utilization for AMI, Whites had greater overall rate of receiving SUD care across a variety of SUD types compared to non-Whites (Figure 22). Hispanics had the lowest prevalence of SUDs, and American Indians / Other Races had the highest rate of unmet need, at 57% untreated.

It is important to note that our study measures access to any behavioral health treatment during the year and does not reflect any differences in the course or quality of treatment, where disparities may be greater. Other research that has included more targeted metrics of behavioral health care quality—such as the rate of follow-up care after an AMI or SUD emergency visit—has found significant racial disparities for Michigan Medicaid enrollees. For example, the rate of follow-up care for alcohol and other drug use dependence had a double-digit gap between Black and White patients and only two measures of mental health ED follow-ups showed equity in the quality of care for Black patients.

FIGURE 21: Prevalence and Unmet Need by Race for Medicaid Enrollees with SUD

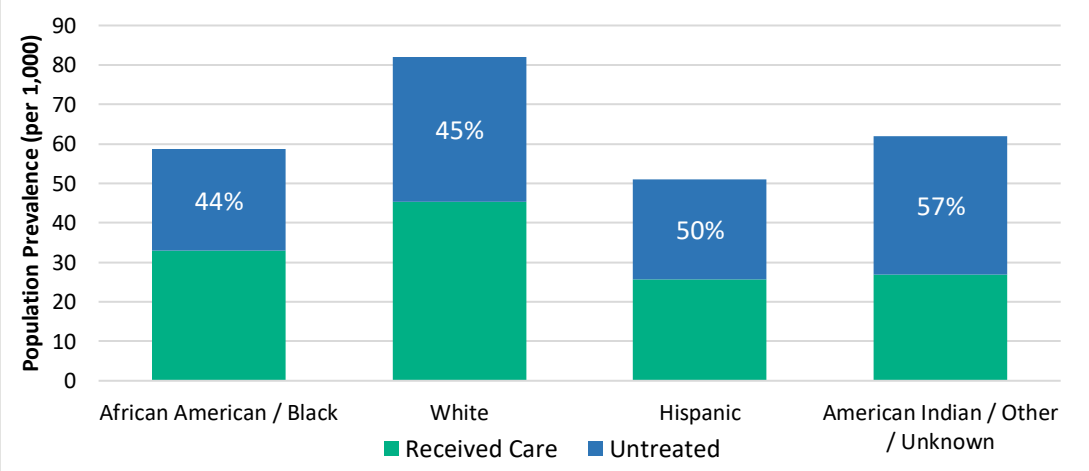
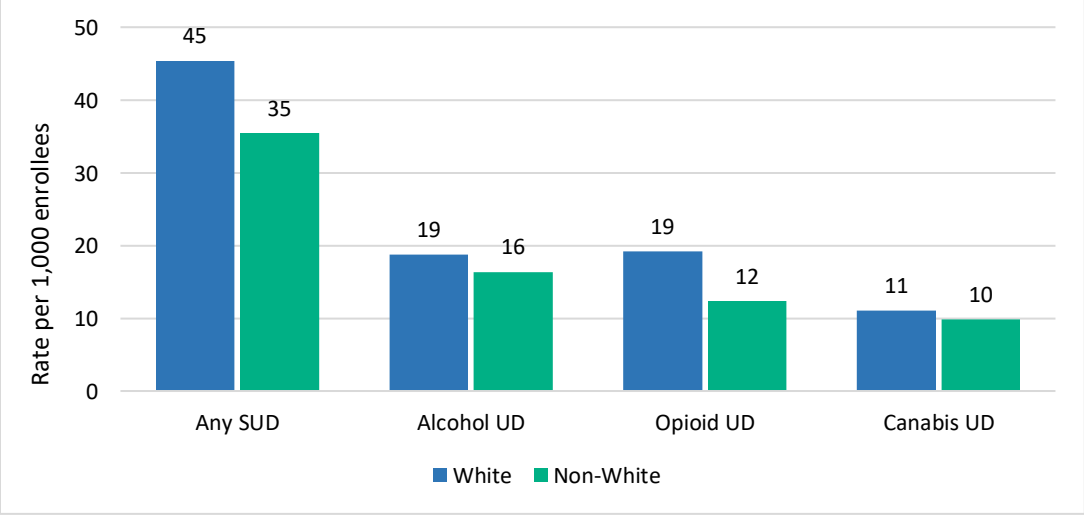


FIGURE 22: Rate of Utilization for Medicaid Enrollees with SUD, by Race and Disorder



8 Geographic Variation

8.1 VARIATION BY METROPOLITAN STATISTICAL AREA

Access to mental health and SUD treatment services varies by geographic area across the state of Michigan. Among the 17 regions defined by the 16 Metropolitan Statistical Areas (MSAs) and the single combined non-MSA area, the percentage of individuals with AMI not receiving care ranges from 20% in both the Grand Rapids-Wyoming, MI and Lansing, MI MSAs to 45% in Detroit-Dearborn-Livonia MSA (Figure 23). There is over a two-fold difference between the best and worst MSA regions for mental health care access gaps in the state. While the gaps in access for SUD care are on average much higher, the variation in gaps in access across the state MSA regions for SUD are somewhat tighter than AMI care. The gap between the best and worst MSA regions in state for SUD care access ranged from 62% (Muskegon) to 77% (Ann Arbor), with a few other MSAs at 76% untreated (Figure 24). In the 2019 data, we see that the non-MSA regions look similar or even slightly better than the rest of the state on gaps in access to both mental illness and SUD treatment, while the Detroit population center ranks near the bottom for access to both types of care. This results in a large number of Michiganders not receiving mental health services and SUD care in the most densely populated region of the state.

FIGURE 23: Prevalence and Unmet Need by MSA for Any Mental Illness

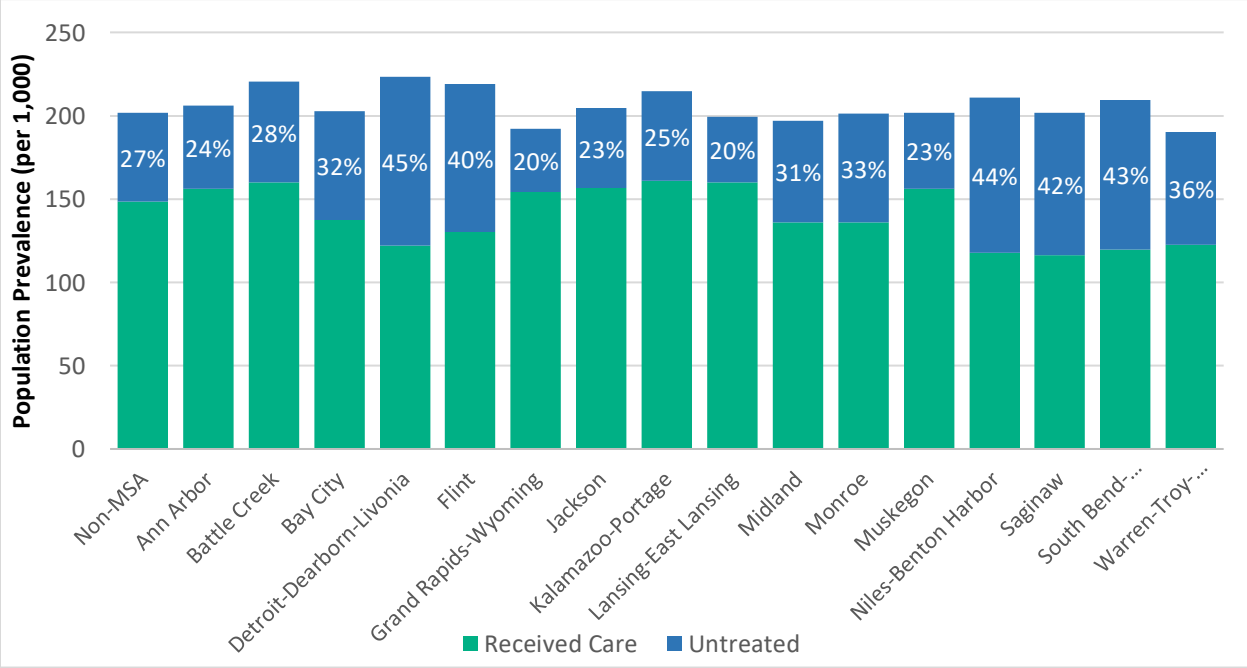
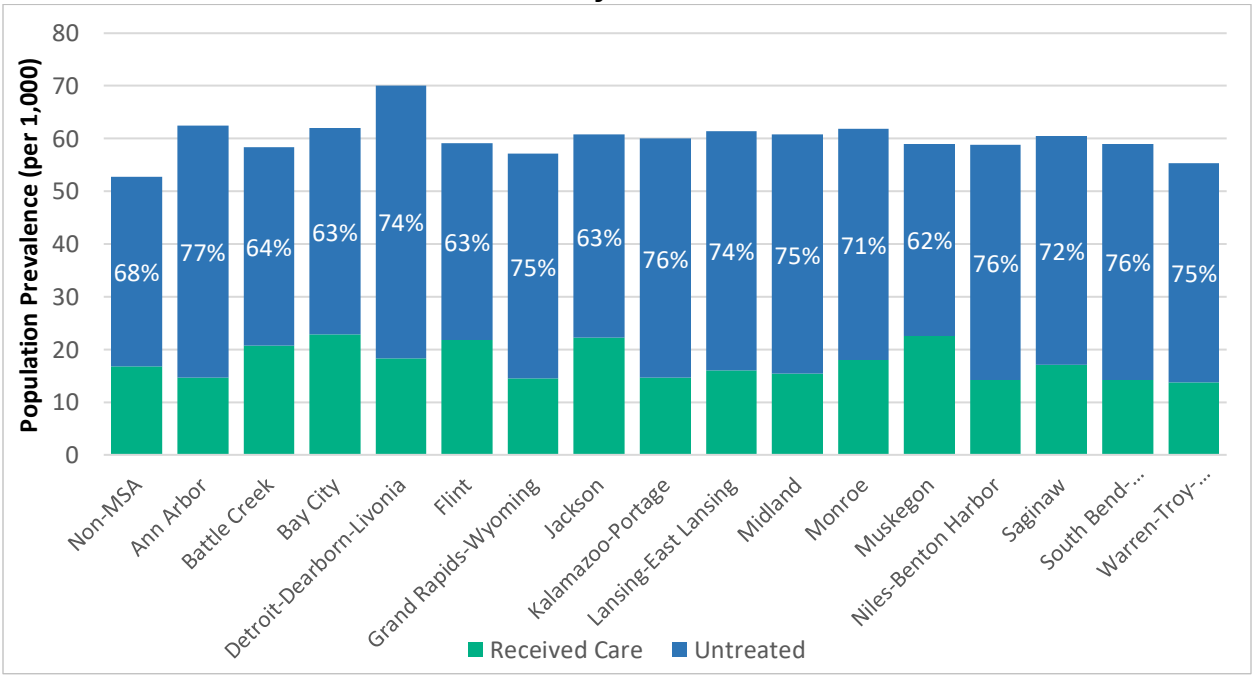


FIGURE 24: Prevalence and Unmet Need by MSA for Substance Use Disorder



In comparing the results of the MSA data from 2016 to 2019, we find that most MSAs improved in access to mental illness and SUD treatment care. The region with the greatest improvement for AMI care was Grand Rapids, falling from 42% untreated in 2016 (data not shown) to 20% untreated in 2019. The only MSA region to get worse over this period for AMI care was Monroe, MI, which showed an increase from 31% to 33% untreated. Notably, the non-MSA regions of the state improved markedly in their treatment gaps, averaging 27% untreated for AMI care in 2019.

A similar story is true for SUD treatment care in that each of the 17 MSA regions improved from 2016 to 2019. A few regions had a greater than 75% access gap (South Bend-Mishawaka, Niles-Benton Harbor, Kalamazoo-Portage, and Ann Arbor) but this still represented an improvement as each had a gap of over 80% in 2016.

8.2 VARIATION BY REGION

Among the 10 Michigan Prosperity Regions, the percentage of individuals with AMI not receiving care ranged from 20% in Region 7 (Central Michigan/Lansing region) to 39% in Region 10 (Detroit/SE Michigan Region) (Figure 26). The access gaps for SUD treatment across Prosperity Regions ranged from 64% in Region 3 to 74% in Regions 7,9, and 10 (Figure 27). The range of access gaps for both AMI and SUD are somewhat tighter using the Michigan Prosperity Region definitions as compared to MSAs. Of note, in 2019 it appears the gaps in access for AMI and SUD care for some of the most rural and northern parts of the state are moving closer to the state average than they were in 2016. Regions 2, 7, and 9 remain generally strong performers in access in 2019, continuing their trends from 2016.

Figure 25 is provided as reference for the Region geographies and names.

FIGURE 25: Map of Michigan Prosperity Regions

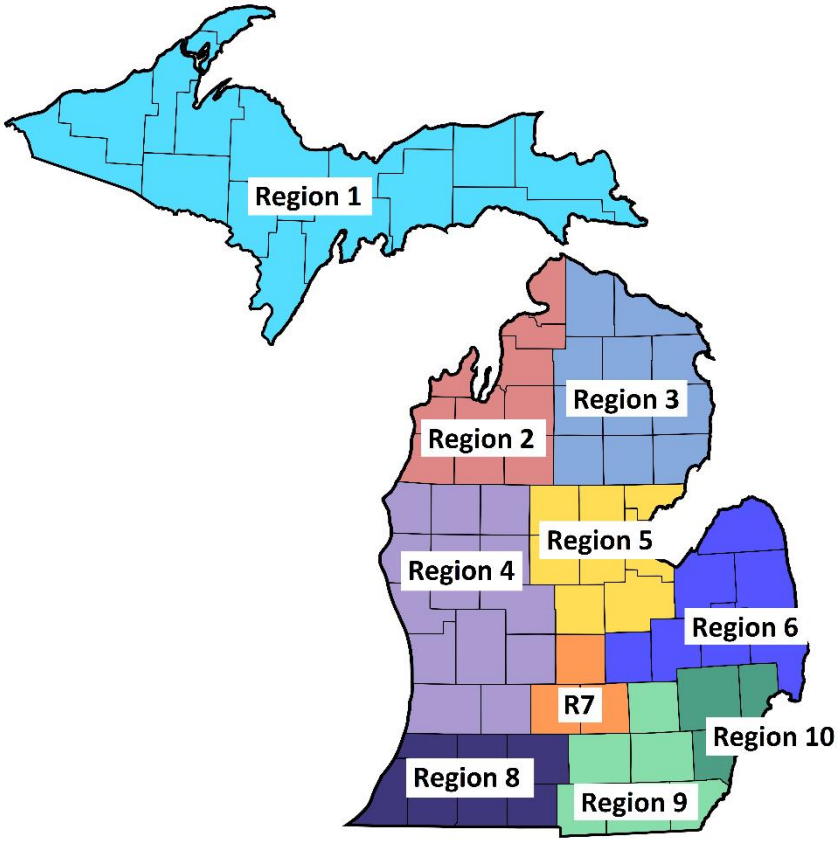


FIGURE 26: Prevalence and Unmet Need for AMI Care by Michigan Prosperity Regions

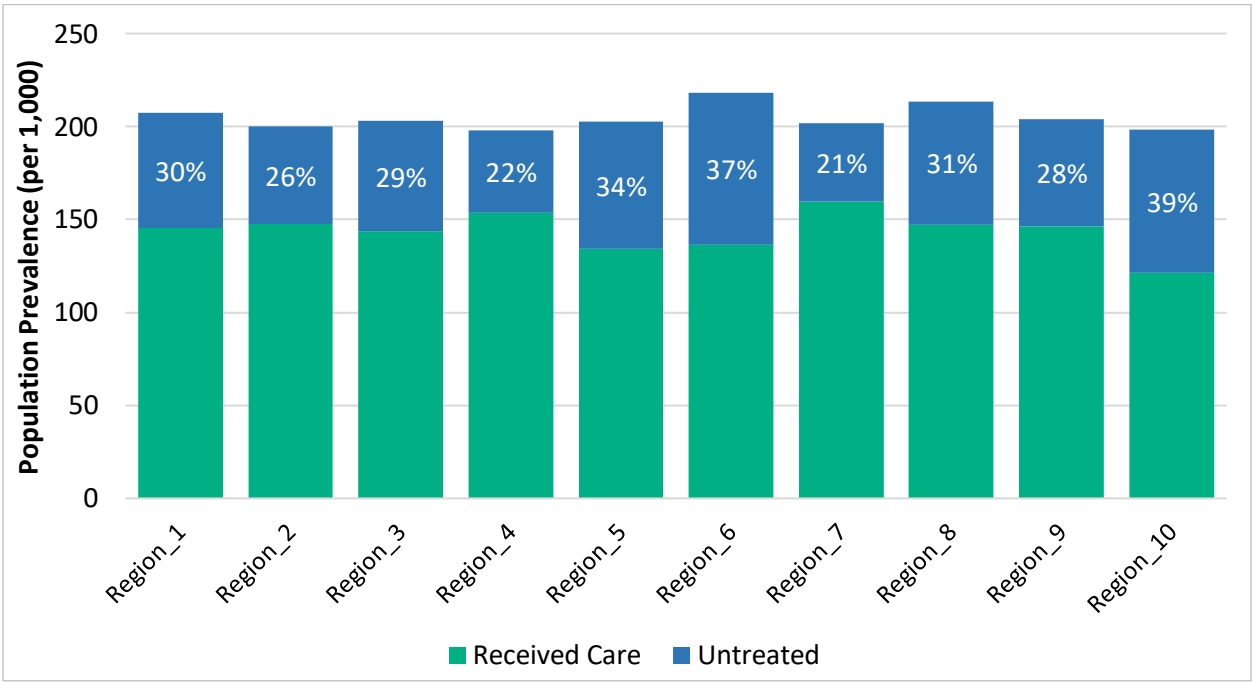
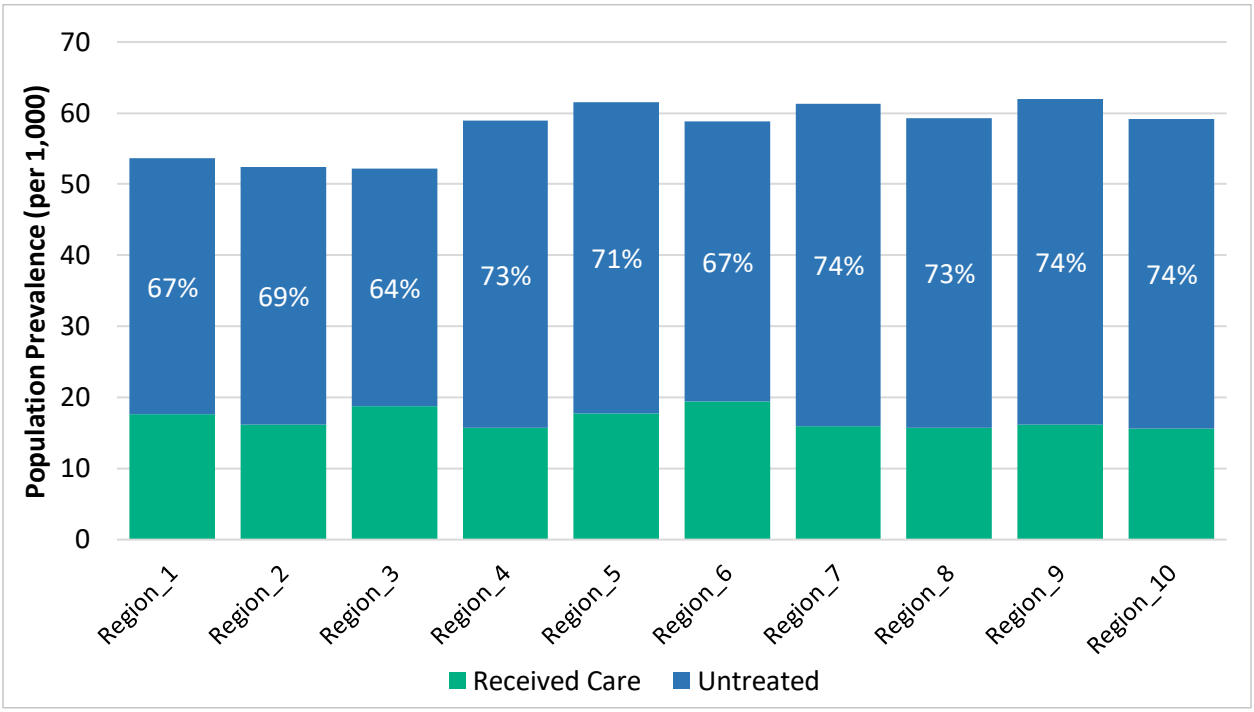


FIGURE 27: Prevalence and Unmet Need for SUD Care by Michigan Prosperity Regions



9 Place of Service

Using a combination of the place of service code and claims modifiers identifying telehealth services, we computed the distribution of services provided by place of service for each payer type (Figures 28 and 29). The office setting was the dominant setting of care under all payers, but the distribution varied by payer type. Some settings are mostly relevant to one payer type. For example, 10% of AMI care was provided in group homes, while care under private insurance was more likely to be provided in a residential treatment center.

Telehealth represented a very small share of services provided in 2019. For AMI care, the telehealth share ranged from 0.4% to 0.9%, with the highest share under Medicaid. For SUD care, the telehealth share was similarly small, from 0.1% to 0.4%.

FIGURE 28: Place of Service for AMI Treatment by Payer Type, 2019

Place of Service	Private Insurance	Medicare	Medicare Advantage	Medicaid
Office	81.4%	43.1%	49.6%	44.4%
Hospital Outpatient	7.7%	23.4%	20.3%	10.8%
Hospital Inpatient/Psychiatric Hospital Inpatient	1.3%	7.6%	1.5%	0.0%
Hospital Emergency	1.3%	1.4%	2.2%	1.8%
Federally Qualified Health Center	0.1%	2.2%	0.6%	1.0%
Rural Health Clinic	0.0%	2.3%	2.4%	1.0%
Nursing Facility/SNF/Assisted Living	0.1%	13.1%	8.7%	4.1%
Home	0.4%	2.7%	5.5%	11.3%
Group Home	0.0%	0.3%	0.1%	10.0%
Residential Treatment Center/SUD Treatment Center	5.3%	0.0%	0.0%	1.1%
Non-Residential Treatment Center/SUD Treatment Center	0.0%	0.0%	0.0%	0.4%
School	0.0%	0.0%	0.0%	2.9%
Independent Laboratory	1.0%	1.7%	2.1%	0.9%
Telehealth	0.4%	0.6%	0.1%	0.9%
Other	0.9%	1.6%	6.9%	9.3%
TOTAL	99.9%	100.0%	100.0%	100.0%

FIGURE 29: Place of Service for SUD Treatment by Payer Type, 2019

Place of Service	Private Insurance	Medicare	Medicare Advantage	Medicaid
Office	47.3%	41.9%	40.9%	47.7%
Hospital Outpatient	24.7%	16.8%	28.7%	8.9%
Hospital Inpatient/Psychiatric Hospital Inpatient	1.7%	14.4%	3.0%	0.0%
Hospital Emergency	5.4%	3.3%	5.3%	4.0%
Federally Qualified Health Center	4.5%	3.3%	0.3%	7.4%
Rural Health Clinic	0.0%	1.3%	1.7%	0.4%
Nursing Facility/SNF/Assisted Living	0.3%	7.0%	4.0%	0.9%
Home	0.2%	1.0%	3.5%	3.4%
Group Home	0.0%	0.0%	0.0%	2.1%
Residential Treatment Center/SUD Treatment Center	2.8%	0.0%	0.0%	7.9%
Non-Residential Treatment Center/SUD Treatment Center	0.2%	0.3%	0.1%	6.2%
School	0.0%	0.0%	0.0%	0.1%
Independent Laboratory	9.4%	9.0%	5.6%	4.9%
Telehealth	0.1%	0.4%	0.0%	0.4%
Other	3.3%	1.2%	6.9%	5.7%
TOTAL	100.0%	99.9%	100.0%	100.0%

10 Behavioral Health Care for Special Populations

In our examination of behavioral health care being received by two populations of interest – pregnant women and children in foster care – we focused on describing the services being received. Our sense was that the prevalence of behavioral health conditions for these populations was likely to be different enough from their age/sex cohorts that applying our NSDUH rates to compute measures of access would not be appropriate. The results presented here represent an initial look at behavioral health care in Michigan for these populations using Medicaid claims data. A more in-depth study that developed prevalence rates specific to these special populations and the remaining Medicaid population to allow for comparisons could be performed in the future to take the next step and compare access.

10.1 MATERNAL BEHAVIORAL HEALTH CARE ACCESS

We examined behavioral health care utilization under Medicaid and private insurance for women we identified in the claims data as either being pregnant or giving birth during calendar year 2019. We defined treatment of AMI or SUD using the same diagnosis and procedure codes and criteria as our general assessment of access to behavioral health care.

Among Medicaid enrollees, 88,851 women met our criteria of being pregnant or giving birth during 2019. We estimate 24,436, or 28%, received treatment for AMI and 10,089, or 11% received treatment for SUD. For the privately insured, we estimate 17,040 women were pregnant or gave birth during 2019. Of these, we estimate 4,379, or 26%, received treatment for AMI and 388 out of 17,040, or 2% received treatment for SUD. Shares receiving treatment by major condition or disorder, by payer type, are shown in Figure 30. Note that individuals may have received treatment for more than one condition.

FIGURE 30: Share of Pregnant Women Receiving Treatment by Payer Type, 2019

	Share Treated	
	Medicaid	Private Insurance
Mental Health Condition	28%	26%
Anxiety Disorder	16%	15%
Depressive Episode	12%	7%
PTSD/Stress	6%	7%
Recurring Depression	6%	5%
Bipolar Disorder	5%	1%
Hyperkinetic/ADHD	3%	2%
Other Mood Disorders	2%	1%
Substance Use Disorder	11%	2%
Cannabis Use Disorder	7%	1%
Opioid Use Disorder	3%	1%
Alcohol Use Disorder	2%	0%

In addition to estimating behavioral health treatments using definitions of care consistent with our overall access assessments, we looked specifically at rates of screening for maternal depression during pregnancy or after birth. For the Medicaid population, we found 6,580 out of 88,851 women, or 7.4%, received a depression screening when looking at medical claims for the mother. When we expanded our search to include claims associated with children up to one year of age, we found that 26.4% of such claims included a depression screening (which was presumably administered to the mother and not the infant).

For the privately insured, we estimate that 1,702 out of 17,040 women, or 10%, were screened for depression based on claims for the women. When we included claims of children up to one year old, we that find a much higher share – 45% of claims – included a depression screening.

10.2 CHILDREN IN FOSTER CARE

We examined patterns of behavioral health care utilization under Medicaid for children in foster care. Our metric is the share of children enrolled in Medicaid and in foster care who received Medicaid-funded treatment for a behavioral health condition in 2019 (Figure 31).

FIGURE 31: Share of Children in Foster Care and under Medicaid Treated by Condition, 2019

Condition	Share Treated
Any Mental Illness	38%
Anxiety Disorder	8%
Bipolar Disorder	2%
Depressive Episode	6%
Hyperkinetic/ADHD	18%
Other Mood Disorders	6%
PTSD/Stress	20%
Recurring depression	3%
Any Substance Use Disorder	2.7%
Alcohol Use Disorder	0.8%
Opioid Use Disorder	0.2%
Cannabis Use Disorder	1.7%

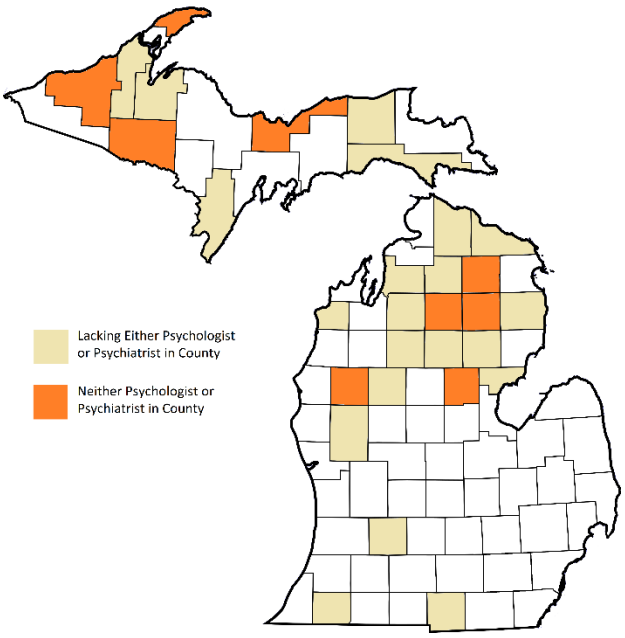
11 Behavioral Health Care Provider Supply

We present updated estimates of provider supply by county in Michigan, understanding that the presence of providers is only one type of constraint on access to behavioral health care services. Even in counties with providers, there may be difficulties finding providers accepting patients, providers who align with the types of care required, or providers who accept the patient's insurance type and coverage (or even whether any health insurance is accepted). Nevertheless, a necessary if not sufficient component of access is simply the physical presence of providers the area.

Michigan, like most of the country, has a shortage of psychiatrists and other behavioral health care providers. While there are pockets of low supply throughout the state, shortages are especially concentrated in the northern half of the lower peninsula and parts of the upper peninsula.

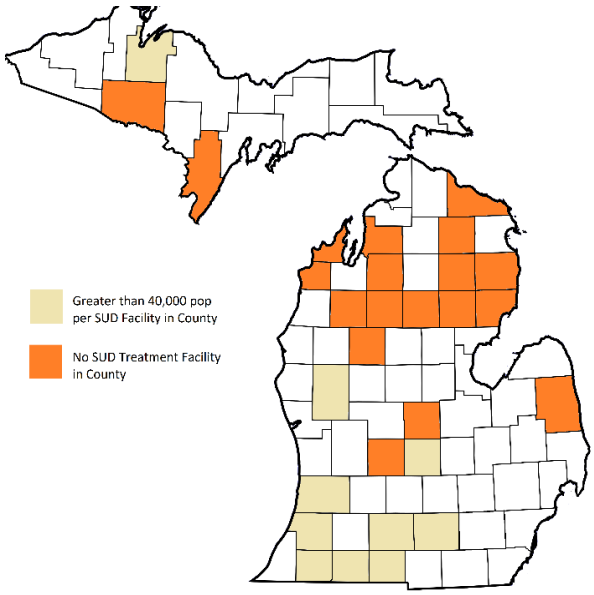
There are 22 counties in Michigan without either a psychiatrist or psychologist in 2019 (Figure 32). Nine of these counties had neither a psychiatrist nor a psychologist. With many of these counties adjoining, there are sizable geographic areas with no MD or PhD behavioral health care clinician.

FIGURE 32: Counties Lacking Behavioral Health Clinicians



Source: County Health Rankings, based on National Plan and Provider Enumeration System data

FIGURE 33: Counties Lacking SUD Treatment Facilities



Source: https://findtreatment.samhsa.gov/locator.html

According to the Substance Abuse and Mental Health Services Administration (SAMHSA) Behavioral Health Treatment Facility Locator, there are 314 mental health treatment facilities in Michigan, a slight increase from the 292 documented in our previous study. There are also 388 SUD treatment facilities in Michigan, a slight reduction from the 430 SUD facilities documented in our previous report. It is not clear whether this represents a decrease in capacity or some provider consolidation.

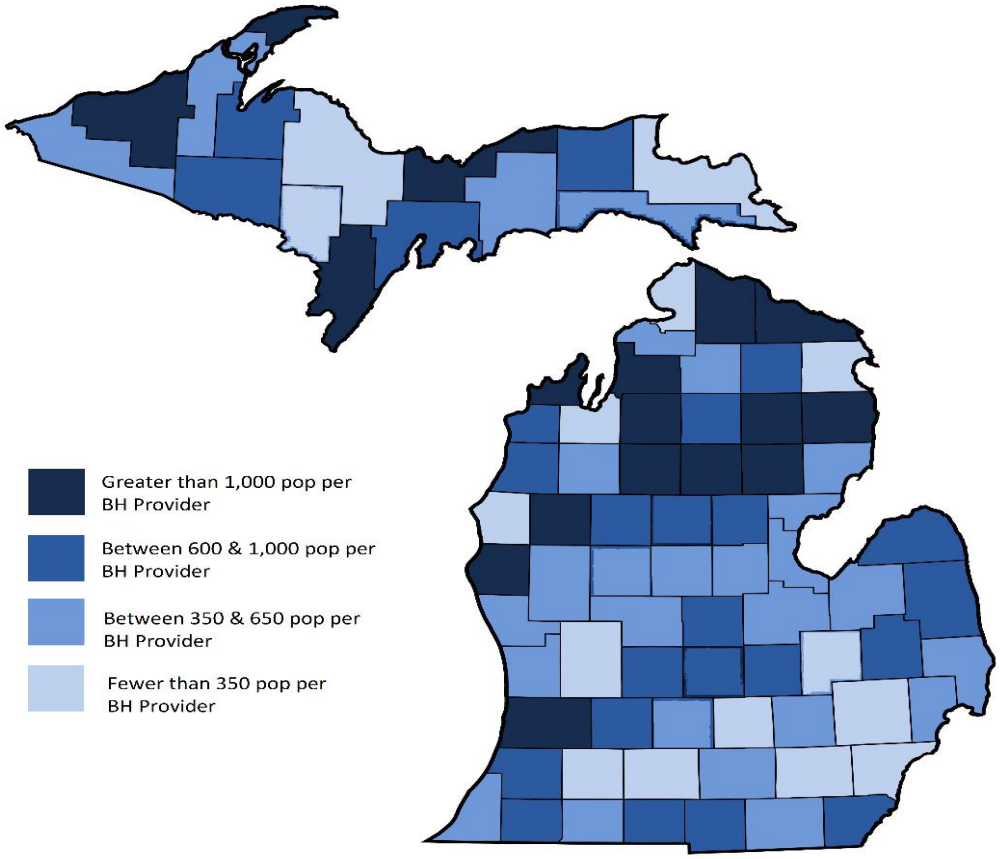
While the total number of facilities per person in the Michigan population is consistent with the national average, there is considerable geographic variation within the state. There are 20

counties in Michigan with no SUD treatment facility (Figure 33) and an additional 10 counties with high population to facility ratios. Five counties had no psychiatrist and no psychologist in 2019, and no SUD treatment facility: Iron, Keweenaw, Missaukee, Montmorency, Ontonagon, and Oscoda.

Broadening the definition of behavioral health provider to include not only psychiatrists and psychologists but also licensed clinical social workers, counselors, marriage and family therapists, and advanced practice nurses specializing in mental health care, the supply of providers per capita in Michigan increased between 2016 and 2019. Michigan currently has a behavioral health population-to-provider ratio of 373:1 compared to a comparable 2016 ratio of 463:1. Note that a smaller figure represents fewer people per provider, so is more favorable, indicating an improvement in the supply.

Figure 34 shows Michigan counties by rough quartile for per capita supply; the darker the shading, the more people per provider, and thus the sparser the supply. There are three times the number of people per provider in the low supply counties compared to the counties with the most plentiful provider supply. Areas in the central and northern section of the lower peninsula tend to have the lowest supply of behavioral health providers per capita. These are also counties that tend to have a greater share of the privately insured population going untreated. Conversely, counties in the more populated areas of the state, such as southeast Michigan, have the greatest supply of providers and tend to have lower shares untreated.

FIGURE 34: Population per Behavioral Health Provider by County in Michigan



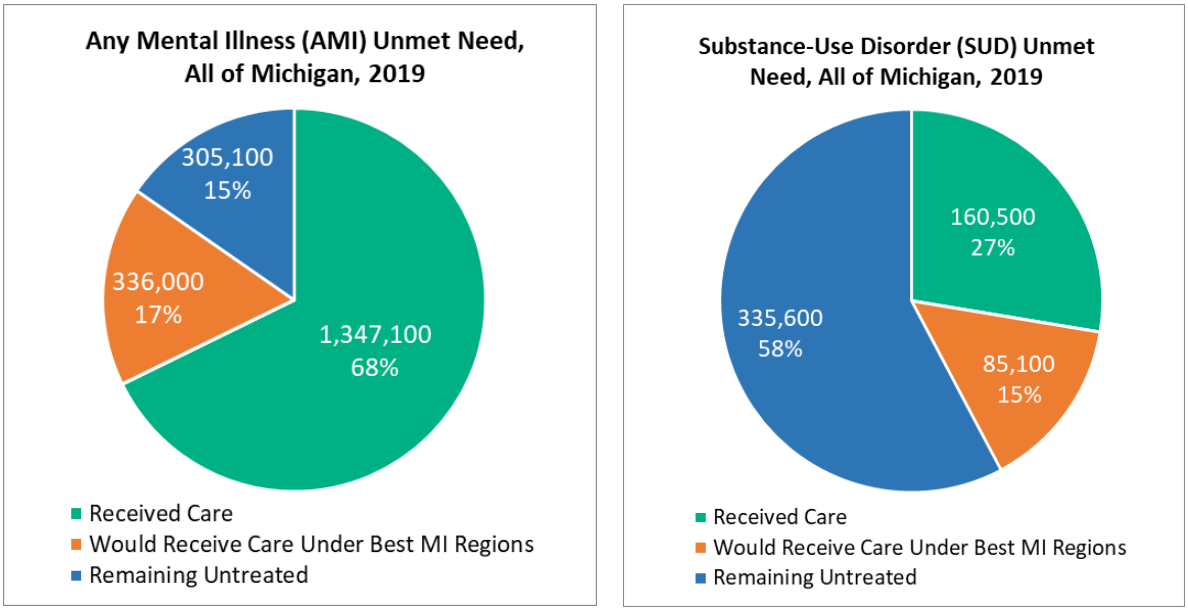
12 Initial Access Targets for Michigan

A sizable portion of Michiganders with a behavioral health condition are not receiving treatment for a variety of reasons that include provider availability and financial concerns along with cultural attitudes that lead to reluctance to seek care.

Shifting our capacity and our culture to fully meet the state's behavioral health needs is likely to be a long-term process. A more feasible near-term goal might be to strive to achieve the state's best levels of access in all parts of Michigan. We define "best access" as having the smallest share currently untreated.

We estimate that if all areas of the state achieved the current best access for Michigan, computed as the average of the top quintile of MSAs, an additional 336,000 Michiganders would receive mental health services each year, and an additional 85,100 would receive treatment for SUDs (Figure 35). Achieving this goal would increase the share of Michiganders with AMI receiving care from 68% to 85%. The share of Michiganders receiving care for SUDs would increase from 27% to 42% of those with a SUD.

FIGURE 35: Unmet Need and Remaining Untreated Under "Best MI Regions" Scenario, Any Mental Illness and Substance Use Disorder



Appendix A: Data and Methods

In this appendix, we describe the data sources, processes, and methodological decisions we applied to complete the following key analytical tasks under this study:

1. Estimating population counts and demographic characteristics;
2. Constructing the claims data research file;
3. Developing mental illness and substance use disorder prevalence estimates;
4. Estimating unmet need for behavioral health care; and
5. Measuring the behavioral health provider supply in Michigan.

A1. POPULATION COUNTS AND DEMOGRAPHIC CHARACTERISTICS

To estimate the number of residents in Michigan by sex, age group categories, health insurance status, and geographic location, we used data from American Community Survey (ACS) produced by the US Census Bureau and available through microdata downloads and the American Fact Finder website data portal. We used a mix of the most currently available "5-year" estimates (2015-2019) and "1-year" estimates from the year 2019 to estimate the population in each Michigan county by age, sex, and health insurance status.

Calculations of the Medicaid and Uninsured populations were estimated using the 2019 "1-year" estimates and the other insurance categories were estimated using the "5-year" estimates. The "5-year" estimates were required to generate estimates for the smaller Michigan counties, as only the largest counties have population counts for some of the required categories in the "1-year" estimates. To break the Medicare population into the Traditional (Fee-for-Service) and capitated Medicare Advantage Populations, we used data for the year 2019 for the State of Michigan from the Medicare Enrollment Dashboard. This approach requires the assumption that the split between Medicare Advantage and Traditional Medicare is constant in all Michigan counties. The county-level estimates by age group, sex, and insurance status are then combined into the required geographic groups of Metropolitan Statistical Areas (MSAs), Michigan PIHP Regions, and Michigan Prosperity Regions by adding up the results from each underlying county.

To avoid double-counting individuals with multiple health insurance sources (either due to switching insurance during the year or because of individuals holding multiple types of insurance at one time), an estimate is derived from the underlying microdata of the number of individuals in each category with multiple insurance types and splitting counts across the associated categories. For example, an individual with dual-coverage in Medicare and Medicaid for the entire year would count in the totals as 0.5 persons in each insurance category. This results in the sum of each underlying category adding to the total Michigan population in 2019, a total of 9,866,076 people.

We benchmarked all subsequent analyses and claims dataset utilization measurements around these Michigan population data.

A2. CLAIMS DATA PROCESSING

To estimate observed utilization of behavioral health care in Michigan, we designed and constructed unduplicated research files using commercial claims datasets from the IBM *MarketScan* data, the Michigan Medicaid claims dataset, and the Carrier claims and Outpatient Facility claims datasets from Traditional Medicare FFS data.

Enrollees by Benefit Type/Insurance Category, State of Michigan 2019

Health Insurance Category	Estimated Effective Michigan Enrollment (2019)	Number of Enrollees in Analytical Dataset (2019)
Private Insurance	5,561,636	728,157
Medicaid	1,833,837	2,891,827
Medicare Advantage	726,576	174,529
Medicare Fee-for-Service	1,011,927	Carrier & OP Claims (58,263)
Uninsured	530,083	Claims data not analyzed
Other Health Insurance (VA, MHS, IHS)	172,371	Claims data not analyzed

The general approach to these analyses is to define the potential population covered by each claims dataset by analyzing each enrollment file, then measuring the percentage of each potential population receiving behavioral health services in the claims utilization files during a specific year. For all datasets, we measured 2019 utilization. Utilization was measured by combining all relevant outpatient claims datasets, limiting the outpatient claims to those relevant to any mental health or substance use disorder condition, and finally by assessing the number of individuals receiving specific procedures for those mental health or substance use disorder diagnoses. The same set of diagnosis and procedure codes are applied to all datasets, with the only variations including some code sets that are specific to certain insurance types (for example the inclusion of HCPCs procedure codes for the Medicare claims).

The diagnosis codes used to define potential behavioral health services are primarily the “F” category of codes in the ICD-10 diagnosis set. Because each analysis is limited to the year 2019, all diagnosis codes are in the ICD-10 format (as opposed the ICD-9 format used in some years prior). A table of each category of diagnosis codes used is included at the end of this section, with the rightmost columns showing the first 2 or 3 digits of the ICD-10 code used to define each behavioral health diagnosis category.

The procedure codes used to define behavioral health services provided were curated from a variety of sources for physicians billing for behavioral health care and through searches of the CPT and HCPCs code sets for behavioral health service types. The codes used in identifying behavioral health utilization are included at the end of this section. These procedure codes were categorized into the following categories: Mental Health (MH) / Substance Use Disorder (SUD) specific outpatient services, MH/SUD specific intensive outpatient services, MH/SUD specific residential services, and generic office visit services. “Access to care” was computed as a flag for each enrollee and defined as positive for any individual who received either: (1) a MH/SUD specific service or (2) a generic office visit, when the primary diagnosis for that office visit was one of the above MH or SUD conditions.

This definition of behavioral health services represents a middle-ground assessment of potential behavioral health utilization. Counting the “generic office visits” only when the primary reason for that visit is a mental health or behavioral health diagnosis allows the inclusion of provider visits that do not code specifically for mental health visit but do focus on addressing a behavioral health need. Requiring the “generic office visits” to have a primary diagnosis of a behavioral health condition avoids creating an overly broad definition of behavioral health care received, as many generic visits will include a mental health condition as a secondary or tertiary purpose. If an individual received only generic office visits with mental health/substance use disorder diagnosis outside the primary diagnosis throughout the year, they would not be included as receiving behavioral health care services in our access measure.

The other set of codes used in the analyses of the Commercial Claims and Medicaid claims are NDC codes for pharmaceutical drugs to treat mental illness and substance use disorders. These codes were collected from a variety of sources defining prescriptions specific to mental illness and substance use disorders and are numerous, over 8,000 codes for mental health conditions and 200 for substance use disorder conditions. A table of these codes is available upon request.

Tables of Diagnosis and Procedures Codes

Mental Health and Substance Use Disorder ICD-10 Diagnosis Code Definitions and Categories

Mental Health or SUD Cat	Disease Category Label	Disease Full Name	ICD-10 Categories Substring
MH	Oth_Organic	Mental Health Caused by Physical Disease and Organic Disorders	F04
MH	Oth_Organic	Mental Health Caused by Physical Disease and Organic Disorders	F05
MH	Oth_Organic	Mental Health Caused by Physical Disease and Organic Disorders	F06
MH	Oth_Organic	Mental Health Caused by Physical Disease and Organic Disorders	F07
MH	Oth_Organic	Mental Health Caused by Physical Disease and Organic Disorders	F08
MH	Oth_Organic	Mental Health Caused by Physical Disease and Organic Disorders	F09
SUD	Alc_UD	Alcohol Use Disorder	F10
SUD	Opioid_UD	Opioid Use Disorder	F11
SUD	Cannabis_UD	Cannabis Use Disorder	F12
SUD	Sedative_UD	Sedative Use Disorder	F13
SUD	Cocaine_UD	Cocaine Use Disorder	F14
SUD	Stimulant_UD	Stimulant Use Disorder	F15
SUD	Hallucigen_UD	Hallucigen Use Disorder	F16
SUD	Inhalent_UD	Inhalent Use Disorder	F18
SUD	OtherDrug_UD	Other Psychoactive Drug Use Disorder	F19
MH	Schiz_NonMood_Psych	Schizophrenia and Non-Mood Psychotic Disorder	F2
MH	Manic_Epi	Manic Episode	F30
MH	Bipolar_Dis	Bipolar Disorder	F31
MH	Depressive_Epi	Depressive Episode	F32
MH	Recurr_Depre	Recurrent Depressive Disorder	F33
MH	Other_Mood	Other Mood Disorders	F34
MH	Other_Mood	Other Mood Disorders	F35
MH	Other_Mood	Other Mood Disorders	F36
MH	Other_Mood	Other Mood Disorders	F37
MH	Other_Mood	Other Mood Disorders	F38
MH	Other_Mood	Other Mood Disorders	F39
MH	Phobias	Phobic Anxiety Disorders	F40
MH	Anxiety_Dis	Other Anxiety Disorders	F41
MH	OCD_Dis	Obsessive Compulsive Disorder	F42
MH	PTSD_Stress	Post-Traumatic Stress Disorder	F43
MH	Dissociative_Dis	Dissociative (Conversion) Disorders	F44

MH	Somatoform	Somatoform Disorders	F45
MH	Other_Neur	Other Neurotic Disorders	F48
MH	Eating_Dis	Eating Disorders	F50
MH	Sleep_Dis	Sleep Disorders	F51
MH	Sex_Dis	Sexual Dysfunction, not caused by Disease	F52
MH	Postpartum_Depress	Postpartum Mental Health Conditions	F53
MH	Postpartum_Depress	Postpartum Mental Health Conditions	O906
MH	Other_Diseases_Connect	Mental Health Associated with Other Diseases	F54
MH	Unspec_Dis	Unspecified Mental Health Disorders	F56
MH	Personality_Dis	Personality Disorders	F6
MH	Hyperkinetic_ADHD	Hyperkinetic and ADHD Disorders	F90
MH	Conduct_Dis	Conduct Disorders	F91
MH	Conduct_Dis	Conduct Disorders	F92
MH	Other_Child	Other Mental Health Commonly Occurring in Children	F93
MH	Other_Child	Other Mental Health Commonly Occurring in Children	F94
MH	Other_Child	Other Mental Health Commonly Occurring in Children	F95
MH	Other_Child	Other Mental Health Commonly Occurring in Children	F96
MH	Other_Child	Other Mental Health Commonly Occurring in Children	F97
MH	Other_Child	Other Mental Health Commonly Occurring in Children	F98
MH	Unspec_Dis	Unspecified Mental Health Disorders	F99

Mental Health and Substance Use Disorder Procedure Code Definitions and Categories

Generic Office Visit Codes (requires primary diagnosis of MH/SUD condition to count as service)	
99213	Office/outpatient visit est
99214	Office/outpatient visit est
99396	Prev visit est age 40-64
99215	Office/outpatient visit est
99284	Emergency dept visit
99285	Emergency dept visit
99212	Office/outpatient visit est
99395	Prev visit est age 18-39
99204	Office/outpatient visit new
99283	Emergency dept visit
99203	Office/outpatient visit new
99205	Office/outpatient visit new
99282	Emergency dept visit

Residential Care-Specific Codes	
HCPC/CPT Codes	
H0010	Sub-acute detox, residential
H0011	Alc Detox, Residential
H0017	Behavioral Health, Residential, Hospital
H0018	Behavioral Health, Residential, Non-Hospital
Revenue Codes	
1001	Residential Treatment-Psych
1002	Residential Treatment-Chemical Dependence
0190	Subacute Care General
0191	Subacute Care Level1

Intensive Outpatient-Specific Codes	
HCPC/CPT Codes	
H0015	Alcohol and/or drug services; intensive outpatient treatment
S9480	Intensive outpatient psychiatric services, per diem
Revenue Codes	
0905	Behavioral health treatment services; intensive outpatient
0906	Behavioral health treatment services; intensive outpatient, chemical dependency

Behavioral Health Specific Outpatient Procedure Codes

CPT Codes

90785	Use the add-on code with 90791 or 90792 for interactive psychiatric diagnostic interview examination using play equipment, physical devices, language interpreter, or other mechanisms of communication
90801	Psych Diagnostic Interview
90802	Psych Diagnostic Interview
90804	(individual psychotherapy 20-30 minutes, with medical evaluation and management services.)
90805	(individual psychotherapy 20-30 minutes, with medical evaluation and management services.)
90806	(individual psychotherapy 45-50 minutes, with medical evaluation and management services.)
90807	(individual psychotherapy 45-50 minutes, with medical evaluation and management services.)
90808	(individual psychotherapy 75-80, with medical evaluation and management services.)
90809	(individual psychotherapy 75-80, with medical evaluation and management services.)
90810	(individual psychotherapy 20-30 minutes, with medical evaluation and management services.)
90811	(individual psychotherapy 20-30 minutes, with medical evaluation and management services.)
90812	(individual psychotherapy 45-50 minutes, with medical evaluation and management services.)
90813	(individual psychotherapy 45-50 minutes, with medical evaluation and management services.)
90814	(individual psychotherapy 75-80, with medical evaluation and management services.)
90815	(individual psychotherapy 75-80, with medical evaluation and management services.)
90791	PSYCHIATRIC DIAGNOSTIC EVALUATION
90792	PSYCHIATRIC DIAGNOSTIC EVALUATION WITH MEDICAL SERVICES
90832	PSYCHOTHERAPY, 30 MINUTES WITH PATIENT AND/OR FAMILY MEMBER
90833	PSYCHOTHERAPY, 30 MINUTES WITH PATIENT AND/OR FAMILY MEMBER WHEN PERFORMED WITH AN EVALUATION AND MANAGEMENT SERVICE (LIST SEPARATELY IN ADDITION TO THE CODE FOR PRIMARY PROCEDURE)
90834	PSYCHOTHERAPY, 45 MINUTES WITH PATIENT AND/OR FAMILY MEMBER
90836	PSYCHOTHERAPY, 45 MINUTES WITH PATIENT AND/OR FAMILY MEMBER WHEN PERFORMED WITH AN EVALUATION AND MANAGEMENT SERVICE (LIST SEPARATELY IN ADDITION TO THE CODE FOR PRIMARY PROCEDURE)
90837	PSYCHOTHERAPY, 60 MINUTES WITH PATIENT AND/OR FAMILY MEMBER
90838	PSYCHOTHERAPY, 60 MINUTES WITH PATIENT AND/OR FAMILY MEMBER WHEN PERFORMED WITH AN EVALUATION AND MANAGEMENT SERVICE (LIST SEPARATELY IN ADDITION TO THE CODE FOR PRIMARY PROCEDURE)
90839	PSYCHOTHERAPY FOR CRISIS; FIRST 60 MINUTES
90840	PSYCHOTHERAPY FOR CRISIS; EACH ADDITIONAL 30 MINUTES (LIST SEPARATELY IN ADDITION TO CODE FOR PRIMARY SERVICE)

90845	PSYCHOANALYSIS
90846	FAMILY PSYCHOTHERAPY (WITHOUT THE PATIENT PRESENT)
90847	FAMILY PSYCHOTHERAPY (CONJOINT PSYCHOTHERAPY) (WITH PATIENT PRESENT)
90849	MULTIPLE-FAMILY GROUP PSYCHOTHERAPY
90853	GROUP PSYCHOTHERAPY (OTHER THAN OF A MULTIPLE-FAMILY GROUP)
90862	Pharma management
90863	Pharma management
90865	NARCOSYNTHESIS FOR PSYCHIATRIC DIAGNOSTIC AND THERAPEUTIC PURPOSES (EG, SODIUM AMOBARBITAL (AMYTAL) INTERVIEW)
90867	THERAPEUTIC REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION (TMS) TREATMENT; INITIAL, INCLUDING CORTICAL MAPPING, MOTOR THRESHOLD DETERMINATION, DELIVERY AND MANAGEMENT
90868	THERAPEUTIC REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION (TMS) TREATMENT; SUBSEQUENT DELIVERY AND MANAGEMENT, PER SESSION
90869	THERAPEUTIC REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION (TMS) TREATMENT; SUBSEQUENT MOTOR THRESHOLD RE-DETERMINATION WITH DELIVERY AND MANAGEMENT
90870	ELECTROCONVULSIVE THERAPY (INCLUDES NECESSARY MONITORING)
90875	INDIVIDUAL PSYCHOPHYSIOLOGICAL THERAPY INCORPORATING BIOFEEDBACK TRAINING BY ANY MODALITY (FACE-TO-FACE WITH THE PATIENT), WITH PSYCHOTHERAPY (EG, INSIGHT ORIENTED, BEHAVIOR MODIFYING OR SUPPORTIVE PSYCHOTHERAPY); 30 MINUTES
90876	INDIVIDUAL PSYCHOPHYSIOLOGICAL THERAPY INCORPORATING BIOFEEDBACK TRAINING BY ANY MODALITY (FACE-TO-FACE WITH THE PATIENT), WITH PSYCHOTHERAPY (EG, INSIGHT ORIENTED, BEHAVIOR MODIFYING OR SUPPORTIVE PSYCHOTHERAPY); 45 MINUTES
90880	HYPNOTHERAPY
90882	Environmental intervention for medical management purposes on a psychiatric patient's behalf with agencies, employers, or institutions
90901	Biofeedback therapy
90911	Biofeedback therapy
96101	Psychological testing, interpretation and reporting per hour by a psychologist (per hour)
96102	Psychological testing per hour by a technician (per hour)
96103	Psychological testing by a computer, including time for the psychologist's interpretation and reporting (per hour)
96105	Assessment of Aphasia
96111	Developmental Testing, Extended
96116	Neurobehavioral Status Exam (per hour)
96118	Neuropsychological testing, interpretation and reporting by a psychologist (per hour)
96119	Neuropsychological testing per hour by a technician
96120	Neuropsychological testing by a computer, including time for the psychologist's interpretation and reporting
96150	Health & Behavioral Assessment – Initial (each 15 mins) Non-facility: 21.49 / Facility: 21.14
96151	Reassessment (each 15 mins) Non-facility: 20.78 / Facility: 20.42

96152	Health & Behavior Intervention – Individual (each 15 mins)
96153	Health & Behavior Intervention – Group (each 15 mins)
96154	Health & Behavior Intervention – Family with Patient (each 15 mins)
96155	Health & Behavior Intervention – Family without Patient (each 15 mins)
98968	Telehealth
99443	Telehealth
80301	Drug screen class list a
80354	Drug screening fentanyl
80349	Cannabinoids natural
80348	Drug screening buprenorphine
80320	Drug screen quantalcohols
80346	Benzodiazepines1-12
80365	Drug screening oxycodone
80324	Drug screen amphetamines 1/2
80361	Opiates 1 or more
80356	Heroin metabolite
80353	Drug screening cocaine
80336	Antidepressant tricyclic 3-5
80364	Opioid &opiate analog 5/more
80350	Cannabinoids synthetic 1-3
80357	Ketamine and norketamine
80347	Benzodiazepines 13 or more
80321	Alcohols biomarkers 1or 2
80323	Alkaloids nos
80329	Analgesics non-opioid 1 or 2
80344	Antipsychotics nos 7/more
80333	Antidepressants class 3-5
80325	Amphetamines 3or 4
80375	Drug/substance nos 1-3
80352	Cannabinoid synthetic 7/more
80335	Antidepressant tricyclic 1/2

HCPCS Codes

G0176	Activity therapy, such as music, dance, art or play therapies not for recreation, related to the care and treatment of patient's disabling mental health problems, per session (45 min. or more)
G0177	Training and educational services related to the care and treatment of patient's disabling mental health problems per session (45 min. or more)
H0001	Alcohol and/or drug assessment
H0002	Behavioral health screening to determine eligibility for admission to treatment program
H0003	Alcohol and/or drug screening; laboratory analysis of specimens for
H0004	Behavioral health counseling and therapy, per 15 min.
H0005	Alcohol and/or drug services; group counseling by a clinician

H0006	Alcohol and/or drug services; case management
H0007	Alcohol and/or drug services; crisis intervention (outpatient)
H0010	Sub-acute detox, residential
H0011	Alc Detox, Residential
H0012	Alcohol and/or drug services; sub-acute Residential OP)
H0013	Alcohol and/or drug services (Residential Addiction Program OP)
H0014	Alcohol and/or drug services; ambulatory detoxification
H0015	Alcohol and/or drug services; intensive outpatient treatment
H0016	ALCOHOL AND/OR DRUG SERVICES; MEDICAL/SOMATIC (MEDICAL INTERVENTION IN AMBULATORY SETTING)
H0017	Behavioral Health, Residential, Hospital
H0018	Behavioral Health, Residential, Non-Hospital
H0022	ALCOHOL AND/OR DRUG INTERVENTION SERVICE (PLANNED FACILITATION)
H0031	MENTAL HEALTH ASSESSMENT, BY NON-PHYSICIAN
H0036	COMMUNITY PSYCHIATRIC SUPPORTIVE TREATMENT, FACE-TO-FACE, PER 15 MINUTES
H0037	COMMUNITY PSYCHIATRIC SUPPORTIVE TREATMENT PROGRAM, PER DIEM
H0038	SELF-HELP/PEER SERVICES, PER 15 MINUTES
H0046	MENTAL HEALTH SERVICES, NOT OTHERWISE SPECIFIED
H0047	ALCOHOL AND/OR OTHER DRUG ABUSE SERVICES, NOT OTHERWISE SPECIFIED
H0048	ALCOHOL AND/OR OTHER DRUG TESTING: COLLECTION AND HANDLING ONLY, SPECIMENS OTHER THAN BLOOD
H0049	ALCOHOL AND/OR DRUG SCREENING
H0050	ALCOHOL AND/OR DRUG SERVICES, BRIEF INTERVENTION, PER 15 MINUTES
H2001	REHABILITATION PROGRAM, PER 1/2 DAY
H2010	COMPREHENSIVE MEDICATION SERVICES, PER 15 MINUTES
H2011	CRISIS INTERVENTION SERVICE, PER 15 MINUTES
H2012	BEHAVIORAL HEALTH DAY TREATMENT, PER HOUR
H2013	PSYCHIATRIC HEALTH FACILITY SERVICE, PER DIEM
H2017	PSYCHOSOCIAL REHABILITATION SERVICES, PER 15 MINUTES
H2018	PSYCHOSOCIAL REHABILITATION SERVICES, PER DIEM
H2019	THERAPEUTIC BEHAVIORAL SERVICES, PER 15 MINUTES
H2020	THERAPEUTIC BEHAVIORAL SERVICES, PER DIEM
H2030	MENTAL HEALTH CLUBHOUSE SERVICES, PER 15 MINUTES
H2031	MENTAL HEALTH CLUBHOUSE SERVICES, PER DIEM
H2034	ALCOHOL AND/OR DRUG ABUSE HALFWAY HOUSE SERVICES, PER DIEM
H2035	ALCOHOL AND/OR OTHER DRUG TREATMENT PROGRAM, PER HOUR
H2036	ALCOHOL AND/OR OTHER DRUG TREATMENT PROGRAM, PER DIEM
0064	Brief office visit for the sole purpose of monitoring or changing drug prescriptions used in the treatment of mental psychoneurotic and personality disorders
S9475	Ambulatory setting substance abuse treatment or detoxification services, per diem
S9480	Intensive outpatient psychiatric services, per diem
S9484	Crisis intervention mental health services, per hour

S9485	Crisis intervention, mental health services,
T1006	ALCOHOL AND/OR SUBSTANCE ABUSE SERVICES, FAMILY/COUPLE COUNSELING
T1007	ALCOHOL AND/OR SUBSTANCE ABUSE SERVICES, TREATMENT PLAN DEVELOPMENT AND/OR MODIFICATION
T1010	MEALS FOR INDIVIDUALS RECEIVING ALCOHOL AND/OR SUBSTANCE ABUSE SERVICES (WHEN MEALS NOT INCLUDED IN THE PROGRAM)
T1012	ALCOHOL AND/OR SUBSTANCE ABUSE SERVICES, SKILLS DEVELOPMENT
T1025	INTENSIVE, EXTENDED MULTIDISCIPLINARY SERVICES IN A CLINIC SETTING TO CHILDREN WITH COMPLEX MEDICAL, PHYSICAL, MENTAL AND PSYCHOSOCIAL IMPAIRMENTS, PER DIEM
T1026	INTENSIVE, EXTENDED MULTIDISCIPLINARY SERVICES IN A CLINIC SETTING TO CHILDREN W/ COMPLEX MEDICAL, PHYSICAL, MENTAL AND PSYCHOSOCIAL IMPAIRMENTS, PER HOUR
G0480	Drug test def 1-7 classes
H0025	Alcohol and/or drug prevention
J2315	Naltrexone, depot form
H0018	Alcohol and/or drug services
G0463	Hospital outpt clinic visit
G0478	Drug test presump opt inst
Revenue Codes	
0513	Psych Clinic
0900	Behavioral Health Treatment Services, general classification
0901	Behavioral health treatment services; electroshock
0902	Behavioral health treatment services; milieu treatment
0903	Behavioral health treatment services; play therapy
0904	Behavioral health treatment services; active therapy
0905	Behavioral health treatment services; intensive outpatient
0906	Behavioral health treatment services; intensive outpatient, chemical dependency
0907	behavioral health treatment services; community behavioral health
0909	Behavioral health treatment services; other behavioral health treatment
0914	Individual Therapy
0915	Group Therapy
0916	Family Therapy
0944	Drug Rehab
0945	Alcohol Rehab
1001	Residential Treatment-Psych
1002	Residential Treatment-Chemical Dependence
0190	Subacute Care General
0191	Subacute Care Level1

A3. ADDITIONAL INFORMATION ON CLAIMS DATA RESEARCH FILES

The following paragraphs define the steps taken for each claims dataset to ensure the correct population is defined to compare with the prevalence data by insurance category and demographic subpopulation.

Privately-Insured Population (IBM Commercial Claims)

The IBM *MarketScan* dataset is provided in two pieces, claims for the commercially-insured and Medicare-eligible populations. The privately-insured population is defined as those individuals for which it is expected that private insurance is the enrollee's primary payer. We include all individuals under the age of 65, as well as all individuals over the age of 65 who are currently working full-time, as most of those individuals, while eligible for Medicare, will have their group plan as the primary payer. Within the *MarketScan* datasets, we limit the potential population to those without the flag for "identifies whether or not mental health/substance abuse claims for covered individuals are included for the current year of data" marked as "not covered/claims not present". This eliminates less than 10% of the potential population but removes the possibility we undercount the percentage of individuals receiving behavioral health care services.

The *MarketScan* data include geographic information for only Metropolitan Statistical Areas, defined by the primary address of the enrollee. All enrollees in MSAs not in the state of Michigan are eliminated from the analysis, and all enrollees marked as "Non-MSA", indicating they live in a rural area, are combined in a single "Non-MSA" category. To compute utilization measures for the Michigan Prosperity regions and PIHP regions, we generate a weighted average of the utilization from each underlying MSA that is included in each region, weighted by the percentage of the privately-insured population each region covered by the underlying MSA/Non-MSA areas. These populations are estimated from the health insurance counts from the ACS data.

The health plan definitions are taken from the IBM data categories. Consumer-directed health plans (CDHPs) are combined with High-deductible health plans (HDHPs), and unmarked plans are combined with Exclusive Provider Organizations (EPO) and Point of Service (POS) plans in a mixed category.

Medicare Advantage Population (IBM Medicare Claims)

The IBM claims include commercial claims submitted for the Medicare eligible population from health plans and commercial employers for the purposes of coordination of benefits (COB) and supplemental insurance. These claims include both the Medicare submitted claims and commercial claims. To limit the population to the likely Medicare Advantage plans within this dataset, we include those in the Medicare Advantage analysis dataset who are retired (for which Medicare is likely the primary payer) and those plans not labeled as "Comprehensive", which are likely supplemental plans for the Medicare Fee-for-Service Population. This was determined by analyzing the percentage of claims for which Medicare vs. the employer was the primary payer.The same process to compute geographic categories from the MSA data variables for the privately-insured population is applied to the Medicare Advantage data.

Medicare Fee-for-Service Population

The following claims datasets are using the measurement of the Medicare Fee-for-Service population utilization, the Medicare Master Beneficiary Summary File (MBSF), the 5% Medicare Carrier Claims dataset and the 100% Medicare Outpatient Facility Claims. We limit each of these files to enrollees with primary addresses in the state of Michigan. The MBSF is the enrollment file, used to compute the total number of enrollees potentially receiving behavioral health services, and the two claims files are combined to produce a comprehensive picture of behavioral health service utilization during the year 2019 for those enrollees. To match up the 5% sample of carrier claims to the 100% sample of outpatient claims, we use the MBSF to identify the Medicare beneficiaries in the 5% sample by enrollee id. To ensure the 5% sample of outpatient claims is representative, we compared the utilization findings from the total 100% outpatient set to the generated 5% subset of facility claims and find no appreciable difference in the results.

Unlike the *MarketScan* data, we have county-level data for the Medicare enrollees, allowing a simple summing of the county-level findings to produce the larger geographic category estimates. Also included in the Medicare data are race/ethnicity data, which are used to estimate utilization by race. All categories not "White" or "Black/African-American" are combined into a single "Other/Not Listed" race definition as there are too few of the other individual categories to produce a reliable estimate.

A4. PREVALENCE OF MENTAL ILLNESS AND SUBSTANCE USE DISORDER

We estimated the prevalence of specific behavioral health needs by applying data from population-based surveys of mental health and substance use disorder conditions. We used this method, rather than estimating condition prevalence directly from the claims datasets, because population-based surveys best capture all individuals with particular behavioral health conditions compared to what is reported on claims. For example, estimates made directly from claims data undercount the population demand, such as for those who may need care but may not receive it thus no healthcare claim is generated. Given the purpose of this study was to measure access to care, it was necessary to use population-based surveys to provide a measurement definition of total need. We used three primary surveys to complete these estimates. To estimate the prevalence of Any Mental Illness, Any Substance Use Disorder, and specific types of substance use disorders for adults (ages 18 and older), we used the National Survey on Drug Use and Health (NSDUH). To estimate the prevalence of specific mental illness categories, we used the National Co-Morbidity Survey. For children (under the age of 18), we used a single survey, the National Survey on Children's Health. To compute aggregate estimates, the prevalence results from these surveys are mixed with the ACS population data for population counts.

We analyzed the NSDUH for 2019, using the available microdata dataset to estimate the prevalence of any mental illness, any substance use disorder and specific substance use disorder categories for the entire United States by age group, sex, and insurance category. Specific survey questions ask if an individual has "any mental illness" and "any substance use disorder." The survey also includes insurance status, age and race for each respondent. Individuals are included in an insurance category if they responded "yes" to that insurance category question; for those who selected multiple insurance types, their population prevalence was included simultaneously in both categories. To ensure prevalence estimates are representative, respondent weights were used in the estimate computations.

These analyses resulted in population prevalence for conditions as a percentage of the total population, which are multiplied by the estimates of each population's total size in the ACS results to compute the number of individuals with each condition in the State of Michigan for each subgroup. Differences between the expected population counts of condition prevalence and observed utilization are then measured as gaps in access.

State and Sub-State Regions, Adults

To create a national-level prevalence by subpopulation category for adults, we used the NSDUH. However, the NSDUH microdata do not include geographic detail to protect respondent privacy. To adjust the national-level prevalence data in this survey to a Michigan-specific estimate we used the Substance Abuse and Mental Health Services Administration (SAMHSA) aggregated estimates for geographic regions from publicly-available tables of averages of state and sub-state data. These tables are produced by averaging the results of multiple years of the NSDUH survey—we use the most current versions of these publicly-available tables.

To compute statewide estimates, each of the required national statistics by age group, sex, and insurance status were adjusted using the ratio of the State of Michigan to National average for the combined 2018-2019 results for "any mental illness" or "substance-use disorder"

prevalence. For the sub-state estimates of each condition, the ratio of the Michigan specific estimates were further refined using the ratio of the sub-state region to the Michigan average from the 2018-2020 NSDUH tables. Overall, these adjustments from national data to Michigan specific-results were minor, as Michigan's prevalence of mental health and substance use disorder conditions is near the US average.

Further, there is only limited variation across the Michigan sub-state regions. The sub-state region estimates in the NSDUH results are for the Michigan Prepaid Inpatient Health Plan (PIHP) regions, meaning that for other region definitions (the prosperity regions and MSA regions), it is required that the NSDUH region results are remapped onto the alternative region definitions, by remapping each PIHP region's data that has the largest intersection of each required alternative sub-state category.

State and Sub-State Regions, Children

To create a national-level prevalence by subpopulation category for children under the age of 18, we used data from the National Survey on Children's Health (NSCH). Survey questions asked of the parent, if a selected child respondent "had ever been told they had" a particular behavioral health condition and "if they currently had that condition". Any mental illness was defined as responding yes to the "Anxiety", "Depression", "Behavioral Problems", or "Attention-Deficit/Hyperactivity Disorder (ADHD)". Substance use disorders were defined by a parallel question on any substance use disorder. Insurance categories were used, with "insurance provided by employer" and "insurance provided by insurance company". While the NSCH includes state flags, the results by insurance category result in populations too small for a single-state to produce stable estimates. Thus, to create the state level estimates we instead used a similar approach to the NSDUH computations for estimating national-level prevalence by subpopulation category and adjusted based on the ratio of the Michigan averages to national averages. Respondent weights were used to ensure prevalence estimates were representative of the average population.

A5. UNMET NEED FOR BEHAVIORAL HEALTH CARE

We define unmet need for behavioral health care by comparing the expected need for care with the observed utilization. We measure unmet need separately for each benefit type/insurance category and then combined these to produce aggregate estimates for the state. Using the claims analyses to estimate the percentage of each insurance group population that received a behavioral health service in 2019, we computed the share untreated for each insurance and demographic subpopulation by comparing the condition prevalence (as a percentage of the total) for that population with the percentage of the claims data population that received a behavioral health service (defined above). We define the unmet need as the difference between these two percentages. For some of the findings, we denoted when an individual received only a single instance of a behavioral health service during the year, which could be alternatively defined as "limited access to care." When specific geographic groupings were able to be produced directly in the claims data (such as the *MarketScan* data MSA categories), the available geographic categories were mixed using the population data from the ACS results to produce aggregate estimates. Finally, when necessary, we "rescaled" these weighted results for some categories to ensure that the total gap and prevalence data were equal to the sum of each underlying category. This was done by multiplying the weighted results by the ratio of the population total to the weighted total and has very minor impacts on each regions' results, but was necessary to ensure each geographic, sex, and age group subpopulation categories could be combined to produce aggregate estimates that match the Michigan population totals.

For the less common health insurance subtype populations where claims data were not available to us to compute utilization estimates of behavioral health services, we relied on estimates from national surveys, which ask if individuals got access to care alongside the

condition prevalence questions. For example, the Uninsured and Other Health Insurance (VA, MHS, and IHS) population estimates are derived by computing access directly in NSDUH, using results of the percentage of individuals who "received outpatient treatment for mental health in the past year" for any mental illness and who "received Alcohol or Drug Treatment in the past 12 months" for substance use disorder care. These findings are computed for the relevant subpopulations of individuals to allow for complete totals of condition prevalence, utilization, and gaps for the entire Michigan population.

Last, after we measured "absolute" gaps in access to care by subtracting the expected population prevalence by the observed percentage of enrollees receiving care, we computed "relative" gaps in access by creating a threshold of the best access areas in Michigan for each condition category. We set the benchmark to the top quintile (top 20%) of all regions for each subgroup and relative access is computed against this benchmark. We computed the number of individuals who would receive care if the entire state resembles the top quintile by setting all the gaps to that top quintile's average and then compared the findings to the absolute gap results to estimate how many individuals would have received care if the state uniformly looked like the best quintile.

A6. BEHAVIORAL HEALTH PROVIDER SUPPLY

We used data for behavioral health providers (physicians, counsellors, and related medical professions) to compare the availability of certain provider types with estimated gaps in access. These results help define the potential impacts limited provider availability has on the gaps in use in behavioral health services and allow us to identify and create maps of provider "deserts", or areas with notable lack of specific behavioral health medical providers. We assembled data on mental health practitioners by county and as population-to-provider ratio by county from the County Health Rankings program of the University of Wisconsin. We used data from the 2020 County Health Rankings dataset which contained 2019 provider data. To create a comparable dataset to compare to 2016 access, we used data from the 2018 County Health Rankings dataset which contained 2016 provider data. The County Health Rankings data are derived from the National Plan and Provider Enumeration System (NPPES) data on providers with an active national provider identifier (NPI). It is possible the NPPES data overstate the number of actual providers available in a specific county, because not all providers with an active NPI number may be practicing, therefore, the estimates of provider shortages are likely conservative and represents the minimum possible number of provider shortage areas.

We also computed assessments of available behavioral health facilities for substance abuse disorder treatment. These assessments were made using the underlying data from the SAMHSA National Survey of Substance Abuse Treatment Services (N-SSATS) facility survey. Counts of population per facilities use data from ACS for total population per county.

A7. ADDITIONAL ANALYSES

Place of Service

All analyses regarding place of service were carried out using codes supplied in claims data following the table below, supplied by the Centers for Medicare & Medicaid Services:

Place of Service Codes with Descriptions		
01	Pharmacy	A facility or location where drugs and other medically related items and services are sold, dispensed, or otherwise provided directly to patients. (Effective October 1, 2003)

02	Telehealth Provided Other than in Patient's Home	The location where health services and health related services are provided or received, through telecommunication technology. Patient is not located in their home when receiving health services or health related services through telecommunication technology. (Effective January 1, 2017) (Description change effective January 1, 2022, and applicable for Medicare April 1, 2022.)
03	School	A facility whose primary purpose is education. (Effective January 1, 2003)
04	Homeless Shelter	A facility or location whose primary purpose is to provide temporary housing to homeless individuals (e.g., emergency shelters, individual or family shelters). (Effective January 1, 2003)
05	Indian Health Service Free-standing Facility	A facility or location, owned and operated by the Indian Health Service, which provides diagnostic, therapeutic (surgical and non-surgical), and rehabilitation services to American Indians and Alaska Natives who do not require hospitalization. (Effective January 1, 2003)
06	Indian Health Service Provider-based Facility	A facility or location, owned and operated by the Indian Health Service, which provides diagnostic, therapeutic (surgical and non-surgical), and rehabilitation services rendered by, or under the supervision of, physicians to American Indians and Alaska Natives admitted as inpatients or outpatients. (Effective January 1, 2003)
07	Tribal 638 Free-standing Facility	A facility or location owned and operated by a federally recognized American Indian or Alaska Native tribe or tribal organization under a 638 agreement, which provides diagnostic, therapeutic (surgical and non-surgical), and rehabilitation services to tribal members who do not require hospitalization. (Effective January 1, 2003)
08	Tribal 638 Provider-based Facility	A facility or location owned and operated by a federally recognized American Indian or Alaska Native tribe or tribal organization under a 638 agreement, which provides diagnostic, therapeutic (surgical and non-surgical), and rehabilitation services to tribal members admitted as inpatients or outpatients. (Effective January 1, 2003)
09	Prison/ Correctional Facility	A prison, jail, reformatory, work farm, detention center, or any other similar facility maintained by either Federal, State or local authorities for the purpose of confinement or rehabilitation of adult or juvenile criminal offenders. (Effective July 1, 2006)
10	Telehealth Provided in Patient's Home	The location where health services and health related services are provided or received, through telecommunication technology. Patient is located in their home (which is a location other than a hospital or other facility where the patient receives

		care in a private residence) when receiving health services or health related services through telecommunication technology. (This code is effective January 1, 2022, and available to Medicare April 1, 2022.)
11	Office	Location, other than a hospital, skilled nursing facility (SNF), military treatment facility, community health center, State or local public health clinic, or intermediate care facility (ICF), where the health professional routinely provides health examinations, diagnosis, and treatment of illness or injury on an ambulatory basis.
12	Home	Location, other than a hospital or other facility, where the patient receives care in a private residence.
13	Assisted Living Facility	Congregate residential facility with self-contained living units providing assessment of each resident's needs and on-site support 24 hours a day, 7 days a week, with the capacity to deliver or arrange for services including some health care and other services. (Effective October 1, 2003)
14	Group Home	A residence, with shared living areas, where clients receive supervision and other services such as social and/or behavioral services, custodial service, and minimal services (e.g., medication administration). (Effective October 1, 2003)
15	Mobile Unit	A facility/unit that moves from place-to-place equipped to provide preventive, screening, diagnostic, and/or treatment services. (Effective January 1, 2003)
16	Temporary Lodging	A short term accommodation such as a hotel, camp ground, hostel, cruise ship or resort where the patient receives care, and which is not identified by any other POS code. (Effective January 1, 2008)
17	Walk-in Retail Health Clinic	A walk-in health clinic, other than an office, urgent care facility, pharmacy or independent clinic and not described by any other Place of Service code, that is located within a retail operation and provides, on an ambulatory basis, preventive and primary care services. (This code is available for use immediately with a final effective date of May 1, 2010)
18	Place of Employment-Worksite	A location, not described by any other POS code, owned or operated by a public or private entity where the patient is employed, and where a health professional provides on-going or episodic occupational medical, therapeutic or rehabilitative services to the individual. (This code is available for use effective January 1, 2013 but no later than May 1, 2013)
19	Off Campus-Outpatient Hospital	A portion of an off-campus hospital provider based department which provides diagnostic, therapeutic (both surgical and nonsurgical), and rehabilitation services to sick or injured persons who do not require hospitalization or institutionalization. (Effective January 1, 2016)

20	Urgent Care Facility	Location, distinct from a hospital emergency room, an office, or a clinic, whose purpose is to diagnose and treat illness or injury for unscheduled, ambulatory patients seeking immediate medical attention. (Effective January 1, 2003)
21	Inpatient Hospital	A facility, other than psychiatric, which primarily provides diagnostic, therapeutic (both surgical and nonsurgical), and rehabilitation services by, or under, the supervision of physicians to patients admitted for a variety of medical conditions.
22	On Campus-Outpatient Hospital	A portion of a hospital's main campus which provides diagnostic, therapeutic (both surgical and nonsurgical), and rehabilitation services to sick or injured persons who do not require hospitalization or institutionalization. (Description change effective January 1, 2016)
23	Emergency Room – Hospital	A portion of a hospital where emergency diagnosis and treatment of illness or injury is provided.
24	Ambulatory Surgical Center	A freestanding facility, other than a physician's office, where surgical and diagnostic services are provided on an ambulatory basis.
25	Birthing Center	A facility, other than a hospital's maternity facilities or a physician's office, which provides a setting for labor, delivery, and immediate post-partum care as well as immediate care of new born infants.
26	Military Treatment Facility	A medical facility operated by one or more of the Uniformed Services. Military Treatment Facility (MTF) also refers to certain former U.S. Public Health Service (USPHS) facilities now designated as Uniformed Service Treatment Facilities (USTF).
27-30	Unassigned	N/A
31	Skilled Nursing Facility	A facility which primarily provides inpatient skilled nursing care and related services to patients who require medical, nursing, or rehabilitative services but does not provide the level of care or treatment available in a hospital.
32	Nursing Facility	A facility which primarily provides to residents skilled nursing care and related services for the rehabilitation of injured, disabled, or sick persons, or, on a regular basis, health-related care services above the level of custodial care to other than individuals with intellectual disabilities.
33	Custodial Care Facility	A facility which provides room, board and other personal assistance services, generally on a long-term basis, and which does not include a medical component.
34	Hospice	A facility, other than a patient's home, in which palliative and supportive care for terminally ill patients and their families are provided.
35-40	Unassigned	N/A

41	Ambulance - Land	A land vehicle specifically designed, equipped and staffed for lifesaving and transporting the sick or injured.
42	Ambulance – Air or Water	An air or water vehicle specifically designed, equipped and staffed for lifesaving and transporting the sick or injured.
43-48	Unassigned	N/A
49	Independent Clinic	A location, not part of a hospital and not described by any other Place of Service code, that is organized and operated to provide preventive, diagnostic, therapeutic, rehabilitative, or palliative services to outpatients only. (Effective October 1, 2003)
50	Federally Qualified Health Center	A facility located in a medically underserved area that provides Medicare beneficiaries preventive primary medical care under the general direction of a physician.
51	Inpatient Psychiatric Facility	A facility that provides inpatient psychiatric services for the diagnosis and treatment of mental illness on a 24-hour basis, by or under the supervision of a physician.
52	Psychiatric Facility-Partial Hospitalization	A facility for the diagnosis and treatment of mental illness that provides a planned therapeutic program for patients who do not require full time hospitalization, but who need broader programs than are possible from outpatient visits to a hospital-based or hospital-affiliated facility.
53	Community Mental Health Center	A facility that provides the following services: outpatient services, including specialized outpatient services for children, the elderly, individuals who are chronically ill, and residents of the CMHC's mental health services area who have been discharged from inpatient treatment at a mental health facility; 24 hour a day emergency care services; day treatment, other partial hospitalization services, or psychosocial rehabilitation services; screening for patients being considered for admission to State mental health facilities to determine the appropriateness of such admission; and consultation and education services.
54	Intermediate Care Facility/ Individuals with Intellectual Disabilities	A facility which primarily provides health-related care and services above the level of custodial care to individuals but does not provide the level of care or treatment available in a hospital or SNF.
55	Residential Substance Abuse Treatment Facility	A facility which provides treatment for substance (alcohol and drug) abuse to live-in residents who do not require acute medical care. Services include individual and group therapy and counseling, family counseling, laboratory tests, drugs and supplies, psychological testing, and room and board.
56	Psychiatric Residential Treatment Center	A facility or distinct part of a facility for psychiatric care which provides a total 24-hour therapeutically planned and professionally staffed group living and learning environment.
57	Non-residential Substance Abuse Treatment Facility	A location which provides treatment for substance (alcohol and drug) abuse on an ambulatory basis. Services include individual and group therapy and counseling, family counseling, laboratory tests, drugs and supplies, and psychological testing.

		(Effective October 1, 2003)
58	Non-residential Opioid Treatment Facility	A location that provides treatment for opioid use disorder on an ambulatory basis. Services include methadone and other forms of Medication Assisted Treatment (MAT). (Effective January 1, 2020)
59	Unassigned	N/A
60	Mass Immunization Center	A location where providers administer pneumococcal pneumonia and influenza virus vaccinations and submit these services as electronic media claims, paper claims, or using the roster billing method. This generally takes place in a mass immunization setting, such as, a public health center, pharmacy, or mall but may include a physician office setting.
61	Comprehensive Inpatient Rehabilitation Facility	A facility that provides comprehensive rehabilitation services under the supervision of a physician to inpatients with physical disabilities. Services include physical therapy, occupational therapy, speech pathology, social or psychological services, and orthotics and prosthetics services.
62	Comprehensive Outpatient Rehabilitation Facility	A facility that provides comprehensive rehabilitation services under the supervision of a physician to outpatients with physical disabilities. Services include physical therapy, occupational therapy, and speech pathology services.
63-64	Unassigned	N/A
65	End-Stage Renal Disease Treatment Facility	A facility other than a hospital, which provides dialysis treatment, maintenance, and/or training to patients or caregivers on an ambulatory or home-care basis.
66-70	Unassigned	N/A
71	Public Health Clinic	A facility maintained by either State or local health departments that provides ambulatory primary medical care under the general direction of a physician.
72	Rural Health Clinic	A certified facility which is located in a rural medically underserved area that provides ambulatory primary medical care under the general direction of a physician.
73-80	Unassigned	N/A
81	Independent Laboratory	A laboratory certified to perform diagnostic and/or clinical tests independent of an institution or a physician's office.
82-98	Unassigned	N/A
99	Other Place of Service	Other place of service not identified above.

Telehealth

For each dataset we identified telehealth claims using an applicable place of service code from the table given in the place of service section above (codes 02 and 10). In addition, some claims that might not necessarily have had such a place of service code had procedure code modifiers

that nevertheless indicate a telehealth claim. These modifiers are:

GT – Real-time audio/video interactive telecommunications

95 – Similar to GT, used over a limited set of procedure codes

FQ – Similar to GT, but audio communication only.

GQ - Asynchronous telemedicine: medical care that was provided by video or images, not in real-time

Foster Care

The Medicaid data included a flag variable indicating whether the member was residing in foster care or not. All counts pertaining to foster care status were determined using this flag.

Medication-assisted Treatment (MAT)

Analyses based on the occurrence of Medication-assisted Treatment (MAT) were based on the presence of certain procedure codes found in the claims data:

MAT Code	Description
G2067	Methadone
G2068	Buprenorphine oral
G2069	Buprenorphine injectable
G2070	Buprenorphine implants insertion
G2071	Buprenorphine implants removal
G2072	Buprenorphine implants insertion/removal
G2073	Extended-release, injectable naltrexone
G2074	Non-drug bundle
G2075	Medication not otherwise specified
G2078	Take-home supplies of methadone
G2079	Take-home supplies of oral buprenorphine
G2080	Additional counseling furnished
H0020	Alcohol and/or drug services; methadone administration and/or service
H0033	Oral medication administration, with extended direct observation up to 2.5 hours
J0571	Buprenorphine, oral, 1 mg
J0572	Buprenorphine/naloxone, oral, less than or equal to 3 mg; max of one unit per day
J0573	Buprenorphine/naloxone, oral, 3.1-6 mg; max 1 unit (film or pill) per day
J0574	Buprenorphine/naloxone, oral, 6.1-10 mg; max 4 units (film or pill) per day
J0575	Buprenorphine/naloxone, oral, greater than 10 mg; max 2 units (film or pill) per day
J1230	Injection, methadone HCL; up to 10 mg
J2315	Injection, naltrexone, depot form, 1 mg (max 380 mg per month)

J3490	Unclassified drugs (Naltrexone, oral); 50 mg tablet
S0109	Methadone, oral, 5 mg

Acronyms

ADHD	Attention-Deficit Hyperactivity Disorder
AMI	Any Mental Illness
CDHP	Consumer Driven Health Plan
FFS	Fee-for-Service
GME	Graduate Medical Education
HDHP	High Deductive Health Plan
HMO	Health Maintenance Organization
IHS	Indian Health Service
MA	Medicare Advantage
MAT	Medication Assisted Treatment
MCO	Managed Care Organization
MHS	Military Health Service
MI	Michigan
MSA	Metropolitan Statistical Area
NEMT	Non-Emergency Medical Transportation
NSDUH	National Survey on Drug Use and Health
PIHP	Prepaid Inpatient Health Plan
PPO	Preferred Provider Organization
PTSD	Post-Traumatic Stress Disorder
SAMHSA	Substance Abuse and Mental Health Services Administration
SNF	Skilled Nursing Facility
SUD	Substance Use Disorder
UD	Use Disorder
UME	Undergraduate Medical Education
VA	Veterans Administration