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DATA HIGHLIGHT
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Medicare Fee-For-Service Beneficiaries with Opioid Use Disorder in 2018: Disparities in Prevalence by Beneficiary Characteristics

Introduction

In 2018, there were an estimated two million individuals with opioid use Disorder (OUD) in the United States (US).[i] OUD is defined as meeting Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for abuse or dependence of opioids, which can take the form of either illicit opioids (e.g., heroin) or prescription pain relievers.[1] Evidence-based guidelines for the treatment of OUD recommend the use of Food and Drug Administration (FDA)-approved medications for OUD, including methadone, buprenorphine, and naltrexone.[ii] Despite consensus among experts on effective evidence-based medications that are able to save lives,[iii] fewer than 20 percent of individuals with OUD receive medication-assisted treatment (MAT).[iv]

To most effectively tailor policies and efforts to improve access to evidence-based treatment for persons with OUD, it is important to first understand whether there are specific socio-demographic, geographic, or clinical groups who have a disproportionately high prevalence of OUD. Studies have shown geographic variation in OUD and OUD-related outcomes within the US, with higher opioid use and opioid-related overdose deaths documented in "hot spots" in the North Pacific, the Southwest, Oklahoma, Appalachia, and the Gulf Coast[v] and diagnosed OUD more prevalent in the Northeast and Appalachia.[vi,vii] In a recent study on OUD prevalence within the Medicaid population, prevalence of OUD was found to be higher among white (as compared to Black and Hispanic) males 35-44 years of age residing in rural areas.[viii] Along similar lines, a 2018 report on uninsured adults found that individuals with OUD were predominantly non-Hispanic white, male, 18-34 years of age, and low income.[ix] Among both Medicaid and uninsured adults with OUD, over two thirds had a co-occurring mental health condition, and one third had at least one chronic physical health condition.[vii]

Medicare beneficiaries represent a growing proportion of individuals with OUD;[x,xi] this is a problem compounded by chronic pain-associated conditions more common in later life, as well as the increased prevalence of multiple comorbidities and polypharmacy risks that exist among older adults.[xii,xiii,xiv] Importantly, despite the growing prevalence of OUD among the Medicare fee-for-service (FFS) population, there is a paucity of research that identifies the groups within the Medicare FFS population that are most

Key Findings:

- Overall, 2.8% of Medicare Fee-for-Service (FFS) beneficiaries had an opioid use disorder (OUD) in 2018.
- Several groups – based on socio-demographic and chronic health condition characteristics – were **overrepresented** among Medicare FFS beneficiaries with OUD compared with the overall FFS population. These included beneficiaries who:
  - Were under 65 years of age.
  - Identified as Black, American Indian or Alaska Native, or Asian/Pacific Islander.
  - Were eligible for Medicare due to disability or end stage renal disease (ESRD).
  - Were dually eligible for both Medicare and Medicaid.
  - Were diagnosed with co-occurring physical and behavioral health conditions.
  - Were diagnosed with four or more co-occurring chronic pain-related physical health conditions and/or behavioral health conditions.

heavily impacted by OUD. In response to this gap, this data highlight aims to:

1. Describe the socio-demographic, Medicare eligibility, clinical, and geographic characteristics of Medicare FFS beneficiaries with OUD. The socio-demographic, Medicare eligibility, and clinical characteristics of the overall Medicare FFS population are provided for context.
2. Identify disparities in OUD prevalence among Medicare FFS beneficiaries based on key socio-demographic and clinical characteristics.
3. Highlight opportunities for policies or interventions that target Medicare FFS groups with disproportionately high OUD prevalence who may benefit from tailored supports to ensure access to evidence-based OUD treatment.

Methods

The primary data source for this study was the 2018 Master Beneficiary Summary File (MBSF) obtained from the Centers for Medicare & Medicaid Services (CMS) Chronic Condition Data Warehouse (CCW).[xv] The study population included United States-dwelling Medicare FFS beneficiaries aged 18 years and older, continuously enrolled in Medicare Parts A, B, and D during 2018, who were not hospice patients. Beneficiaries with OUD were identified using the claims criteria for the CCW's overarching OUD indicator (Flag #1), which selects beneficiaries with an OUD diagnosis or an aberrant opioid-related event, including diagnosis codes for opioid use, abuse, and/or dependence; opioid poisonings; other adverse opioid-related events; and procedure codes for select treatments associated with OUD.[xvi,1]

Socio-demographic characteristics of Medicare FFS beneficiaries analyzed included age, race and ethnicity,[2] original reason for Medicare enrollment, dual eligibility status (i.e., people dually eligible for Medicare and Medicaid), and geography (i.e., residence in metropolitan/non-metropolitan area as defined by Core Based Statistical Areas (CBSAs)). Seventeen chronic and disabling medical conditions of greatest concern to CMS leadership were identified from diagnosis-based algorithms in the CCW and examined in two ways. First, chronic conditions were characterized by type, including ten physical health conditions where opioid analgesics are commonly prescribed (i.e., hypertension; rheumatoid arthritis or osteoarthritis; diabetes (type 1 or 2); chronic kidney disease (CKD); chronic obstructive pulmonary disease (COPD); asthma; heart failure; cancer; fibromyalgia, chronic pain, or fatigue; and migraine or chronic headache), and seven non-OUD behavioral health conditions (i.e., schizophrenia and other psychotic disorders; anxiety disorders; depressive disorders; bipolar disorder; post-traumatic stress disorder; alcohol use disorder; and other substance use disorders). Second, to assess the cumulative burden of multiple conditions, the 17 condition indicators were also replaced with indicators for condition counts (i.e., 0-1, 2-3, 4-5, and 6+), following CMS guidelines for reporting of multi-morbidity. SAS Enterprise Guide 7.12[xvii] was used to generate descriptive statistics for socio-demographic and clinical characteristics for the overall Medicare FFS population (both with and without OUD), and the subset of Medicare FFS beneficiaries identified with OUD. In addition, QGIS version 3.4 was used to generate a map of OUD prevalence within FFS beneficiaries across the US and employed Albers Equal-Area Conic projection. State border shapefiles were obtained from US Census' 2018 TIGER/Line files.[xviii]

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[1] *The Chronic Condition Warehouse (CCW) opioid use disorder (OUD) flag used in this study (Flag #1) encompassed a reference period of 2017 and 2018. However, this study focused on Medicare beneficiaries enrolled in fee-for-service (FFS) in 2018. This decision was motivated by the desire to retain a larger sample size, including among smaller racial and ethnic groups and other populations of interest, to support the assessment of health disparities. The study team conducted sensitivity analyses to examine sample size changes when using beneficiaries enrolled in both 2017 and 2018 versus 2018 alone, and the sensitivity analyses results revealed that using beneficiaries enrolled in both 2017 and 2018 reduced the overall sample size by 10%, relative to using beneficiaries enrolled in only 2018. This may have adversely limited the ability to identify potential disparities, particularly among smaller sub-groups. Additionally, the sensitivity analyses confirmed that there was no difference in overall OUD prevalence when using a sample enrolled in both 2017 and 2018 versus 2018 alone – thus, there was likely to be little difference in OUD-based results and conclusions. Given this, and given the important tradeoff in using a smaller 2017 and 2018 sample versus a larger 2018 only sample, the study team chose to focus on beneficiaries enrolled in FFS in 2018 alone. For brevity, the sensitivity analyses results are not included in this document. However, interested readers may contact the authors for details.*

[2] *Race and ethnicity information in the CCW is created by taking the beneficiary race code historically used by the Social Security Administration and in CMS's enrollment data base and applying an algorithm developed by the Research Triangle Institute. Race and ethnicity categories used here do not align with the Office of Management and Budget (OMB) racial and ethnic categories. Additional information can be located on the Research Data Assistance Center website (*https://www.resdac.org/cms-data/variables/research-triangle-institute-rti-race-code).

Results

Overall, 21,233,602 Medicare FFS beneficiaries were included in this analysis. Among them, **2.8% (*n*=590,845) had OUD**, representing an increase in OUD in the Medicare population since 2010xi.[xi] In addition, several Medicare FFS beneficiary groups – based on socio-demographic and chronic health condition characteristics – were found to be disproportionately impacted by OUD when compared to the overall Medicare FFS population.

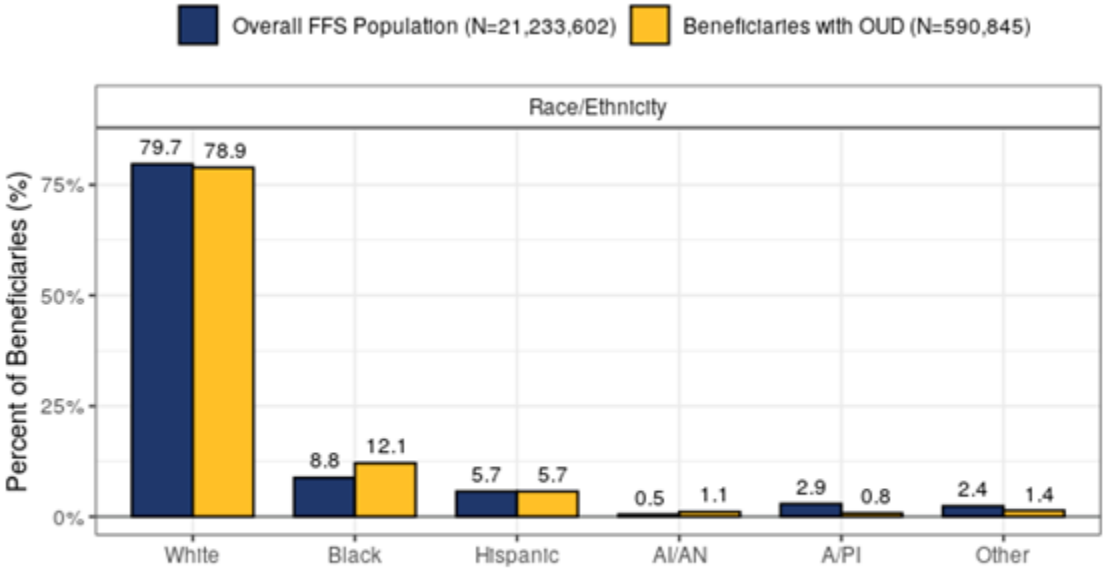
I. Socio-Demographic Characteristics of Medicare FFS Beneficiaries with OUD

Race and ethnicity, Age, and Geography

The majority of Medicare FFS beneficiaries with OUD in 2018 were under the age of 65 years (51.1%); female (58.2%); White (78.9%); and resided in a metropolitan area (77.0%) (Figures 1, 2a, and 2b).
The Medicare FFS population with OUD differed from the overall FFS population in the following ways:

- Black beneficiaries made up 12.1% of those with OUD but accounted for 8.8% of the overall FFS population – a 1.4-fold difference.
- American Indian and Alaska Native beneficiaries made up 1.1% of those with OUD but accounted for 0.5% of the overall FFS population – a 2.2-fold difference.
- Asian and Pacific Islander beneficiaries were under-represented among those with OUD, making up 0.8% of those with OUD, though they accounted for 2.9% of the overall FFS population – a 3.6-fold difference.

Figure 1. Distribution of Race and Ethnicity Among Medicare FFS Beneficiaries in 2018.



AI/AN: American Indian/Alaska Native
A/PI: Asian/Pacific Islander

- Beneficiaries under the age of 65 made up 51.1% of those with OUD yet accounted for 16.4% of the overall Medicare FFS population – a 3.1-fold difference.
- Beneficiaries living in metropolitan and non-metropolitan areas were equally represented across the overall Medicare FFS population and the groups of those with OUD.

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Figure 2a. Distribution of Age Among Medicare FFS Beneficiaries in 2018.

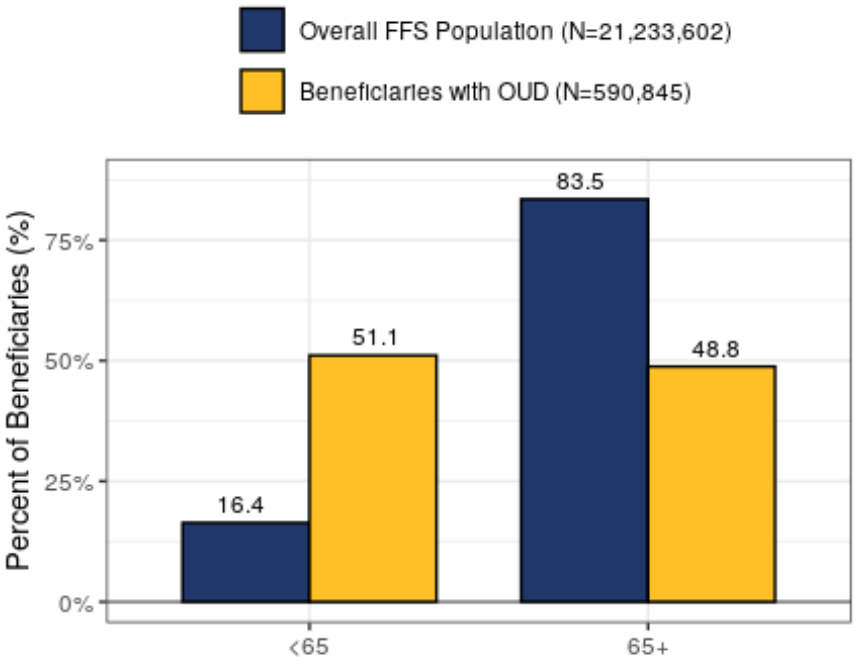
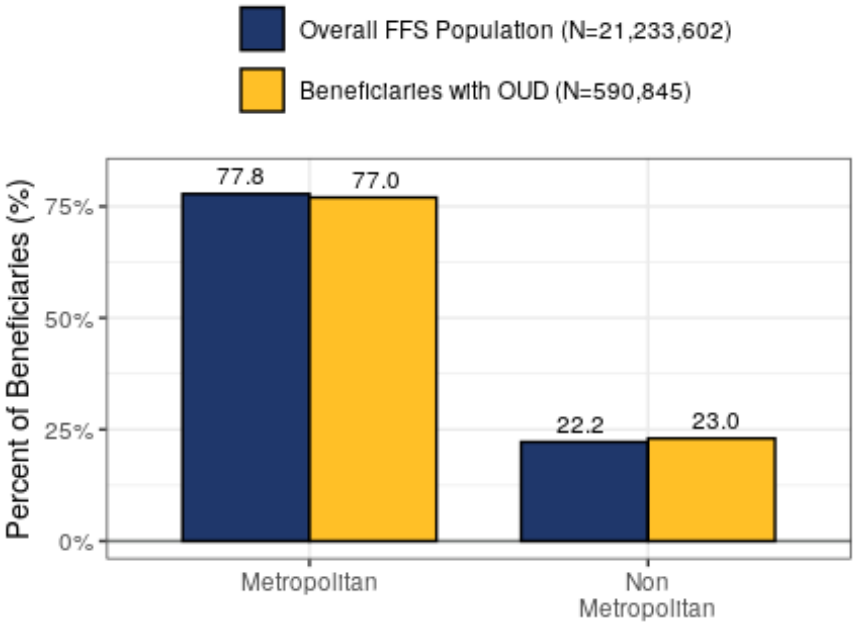


Figure 2b. Geographic Distribution of Medicare FFS Beneficiaries in 2018.



Non-metropolitan includes micropolitan and non-CBSA areas

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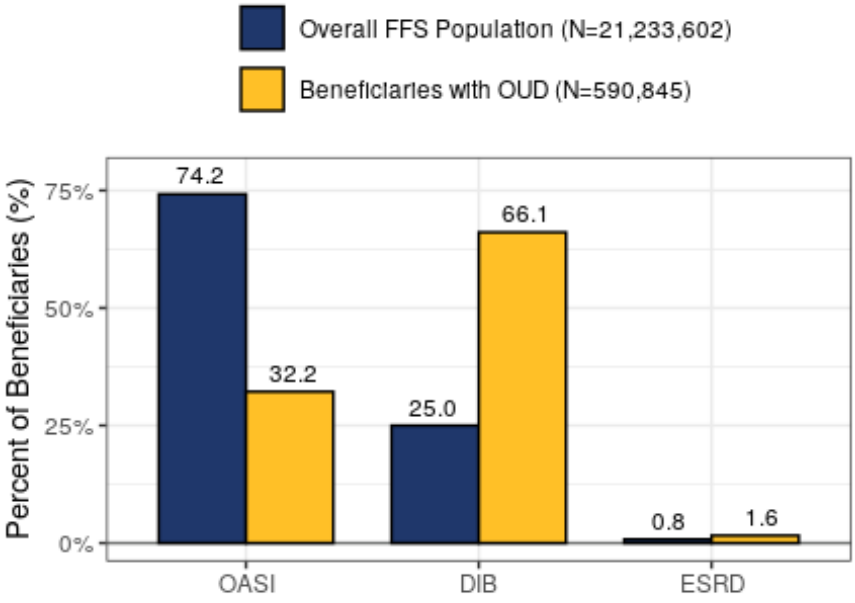
Medicare Eligibility

The majority of Medicare FFS beneficiaries with OUD in 2018 qualified for Medicare based on a disability (66.1%) and were dually eligible for Medicare and Medicaid (55.5%) (Figures 3a and 3b).
Medicare FFS beneficiaries with OUD differed from the overall Medicare FFS population in the following ways:

- Beneficiaries who qualified for Medicare due to old age and survivor's insurance (OASI) made up only 32.2% of those with OUD, though they accounted for 74.2% of the overall Medicare FFS population – a 2.3-fold difference.
- Those who qualified for Medicare due to a disability made up 66.1% of those with OUD, though they accounted for 25% in the overall Medicare FFS population – a 2.6-fold difference.
- Dually eligible beneficiaries made up 55.5% of those with OUD yet accounted for 27.2% of the overall Medicare FFS population – a 2.0-fold difference.

Figure 3a. Distribution of Original Reason for Entitlement Among Medicare FFS Beneficiaries in 2018.



Reasons for Entitlement: OASI=Old Age and Survivor's Insurance, DIB=Disability Insurance Benefits, ESRD=End Stage Renal Disease

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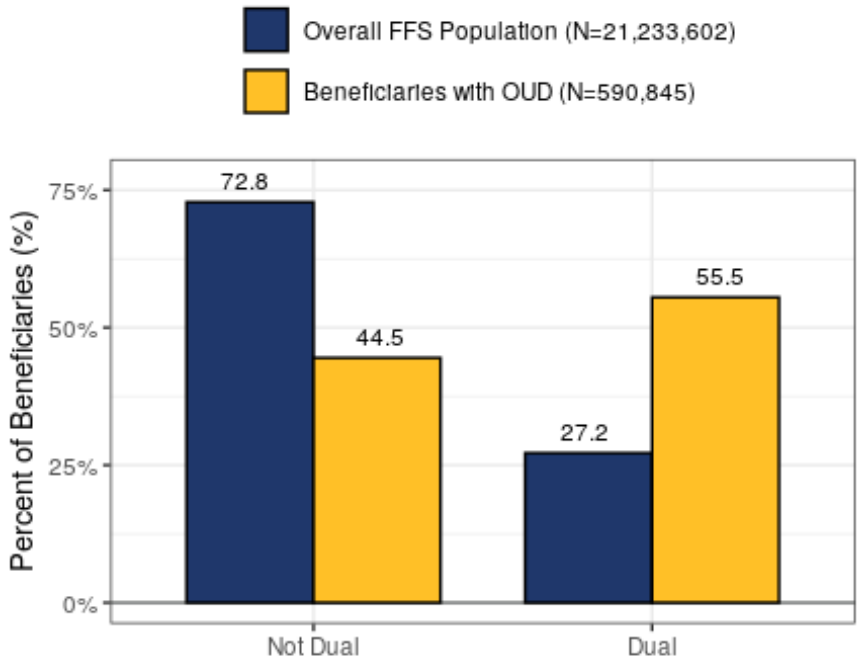
Figure 3b. Distribution of Dual Eligibility Among Medicare FFS Beneficiaries in 2018



II. Chronic Health Condition Characteristics of Medicare FFS Beneficiaries with OUD

In 2018, nearly half of Medicare FFS beneficiaries with OUD had six or more co-occurring chronic pain-related conditions (47.9%) and over two thirds had both pain-related physical conditions and non-OUD behavioral health conditions (70.9%) (Figure 4). The most prevalent chronic pain-related or disabling physical conditions among the Medicare FFS OUD population were fibromyalgia, chronic pain, and fatigue (76.1%); hypertension (68.5%), and rheumatoid or osteoarthritis (64.1%). The most prevalent non-OUD behavioral health conditions were anxiety (55.7%) and depressive disorders (52.3%).

The Medicare FFS population with OUD differed from the overall Medicare FFS population in the following ways:

- Beneficiaries with six or more chronic conditions made up 47.9% of those with OUD yet accounted for 11.6% of the overall Medicare FFS population – a 4.1-fold difference.
- Beneficiaries with both physical and non-OUD behavioral health conditions made up 70.9% of those with OUD yet, accounted for 28.5% of the overall Medicare FFS population – a 2.5-fold difference.

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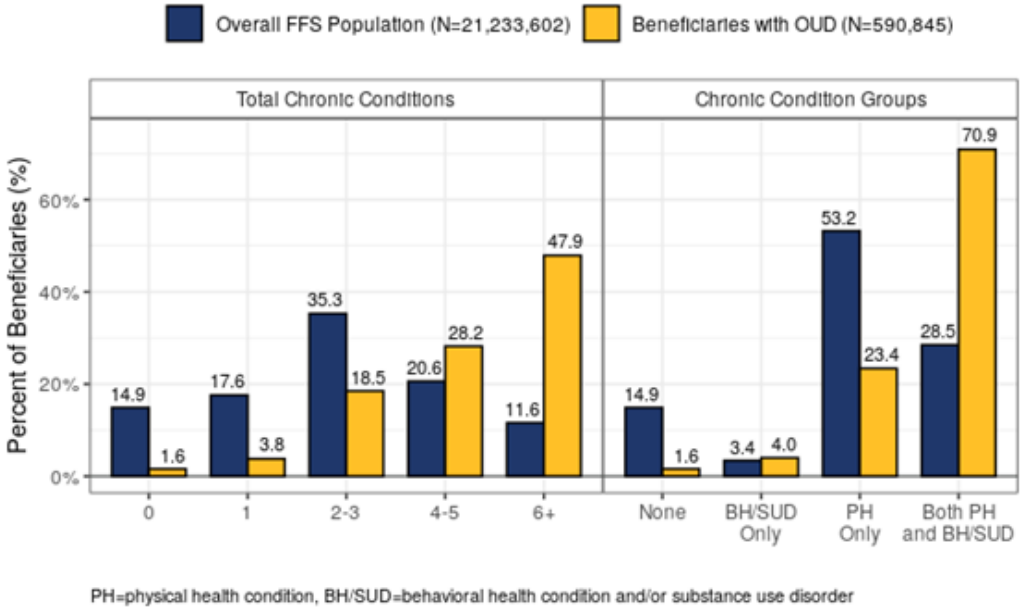
Figure 4. Distribution of Total Number and Grouping of Chronic Conditions Among Medicare FFS Beneficiaries in 2018.

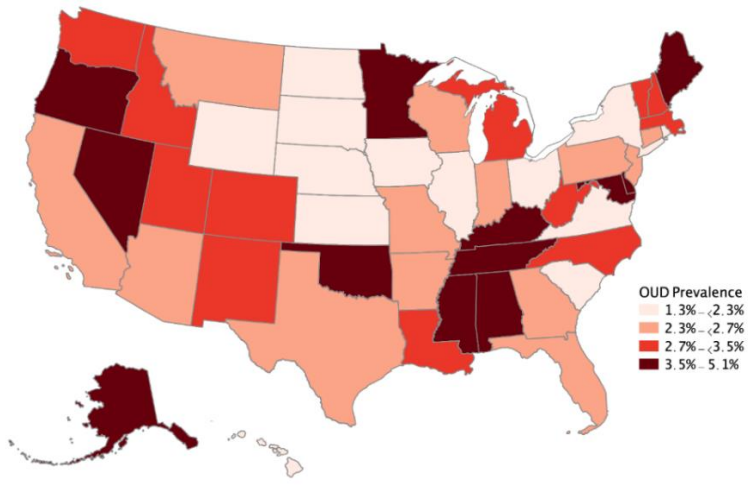


PH=physical health condition, BH/SUD=behavioral health condition and/or substance use disorder

III. Geographic Distribution of Medicare Beneficiaries with OUD

The prevalence of OUD among Medicare FFS beneficiaries varied at the state level (Figure 5). States with the highest prevalence of OUD were geographically dispersed, but states with the lowest prevalence of OUD were clustered within the Midwest and Northeast regions. Prevalence of OUD was highest among Medicare FFS beneficiaries who lived in the following 12 states (from highest to lowest prevalence): Oklahoma, Kentucky, Minnesota, Alaska, Nevada, Delaware, Maine, Mississippi, Tennessee, Oregon, Alabama, and Maryland. Prevalence of OUD was lowest among beneficiaries who lived in these 12 states (from lowest to highest): South Dakota, Nebraska, North Dakota, Hawaii, South Carolina, Illinois, Kansas, New York, Wyoming, Virginia, Ohio, and Indiana.

Figure 5. OUD Among Medicare FFS Beneficiaries, by State, 2018.



Source: CMS Virtual Research Data Centers Chronic Conditions Data Warehouse

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IV. Disparities in Prevalence of OUD by Medicare FFS Beneficiary Characteristics

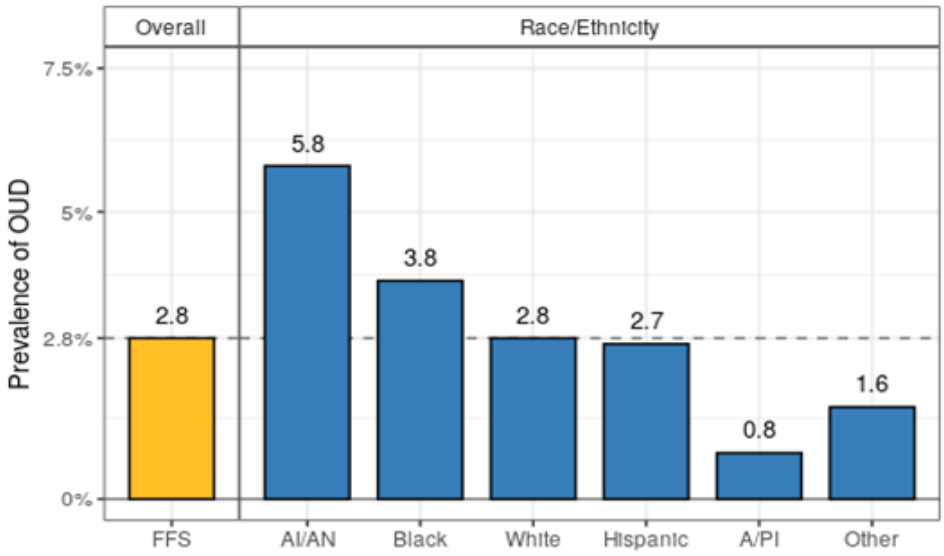
Using the prevalence of OUD among the overall 2018 Medicare FFS Beneficiary population as a benchmark (2.8%), we examined the prevalence of OUD among subgroups of beneficiaries to describe the extent to which certain populations were disproportionately represented.

Disparities in OUD Prevalence by Socio-Demographic Characteristics

Given the overall prevalence of OUD in the Medicare FFS population (2.8%), the prevalence of OUD was higher among the following socio-demographic subgroups (Figures 6 and 7):

- The prevalence of OUD among American Indian or Alaska Native beneficiaries (5.8%) was 2.1 times greater than the overall Medicare FFS beneficiary prevalence.
- The prevalence of OUD among African American/Black beneficiaries (3.8%) was 1.4 times greater than the overall Medicare FFS population.

Figure 6. Prevalence of OUD Among Medicare FFS Beneficiaries by Race and Ethnicity, 2018.



Dashed line drawn at prevalence of OUD among all FFS beneficiaries (2.8%)
AI/AN: American Indian/Alaska Native, A/PI: Asian/Pacific Islander

- The prevalence of OUD among beneficiaries under 65 years of age (8.6%) was 3.1 times greater than the overall Medicare FFS population.
- The prevalence of OUD among beneficiaries qualifying for Medicare due to disability (7.4%) was 2.6 times greater than the overall Medicare FFS population.
- The prevalence of OUD among beneficiaries qualifying for Medicare due to end stage renal disease (5.7%) was 2 times greater than the overall Medicare FFS population prevalence.
- The prevalence of OUD among beneficiaries dually enrolled in Medicare and Medicaid (5.7%) was 2 times greater than the overall Medicare FFS population.

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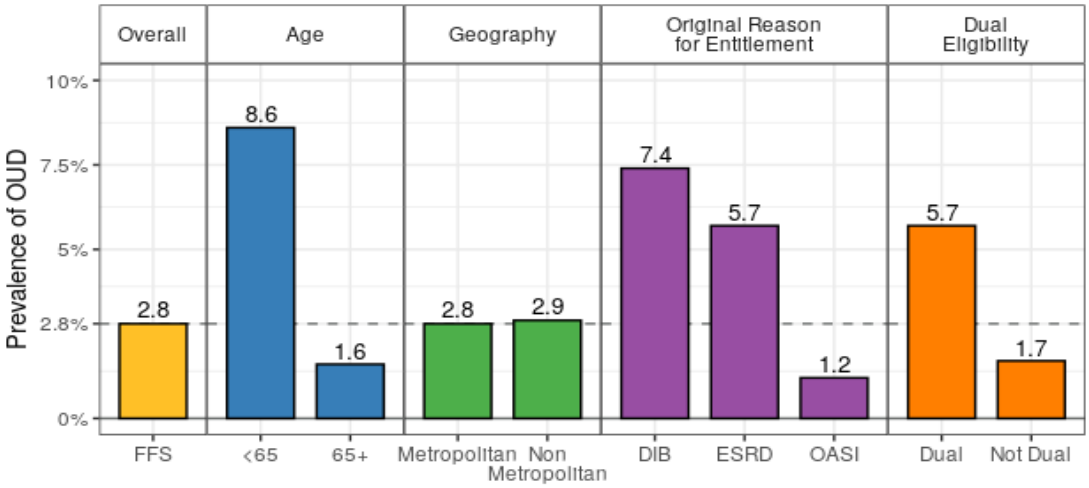
Figure 7. Prevalence of OUD Among Medicare FFS Beneficiaries by Age, Geography, Original Reason for Medicare Entitlement, and Dual Eligibility Status in 2018.



Dashed line drawn at prevalence of OUD among all FFS beneficiaries (2.8%)
Reasons for Entitlement: OASI=Old Age and Survivor's Insurance,
DIB=Disability Insurance Benefits, ESRD=End Stage Renal Disease
Non-metropolitan includes micropolitan and non-CBSA areas

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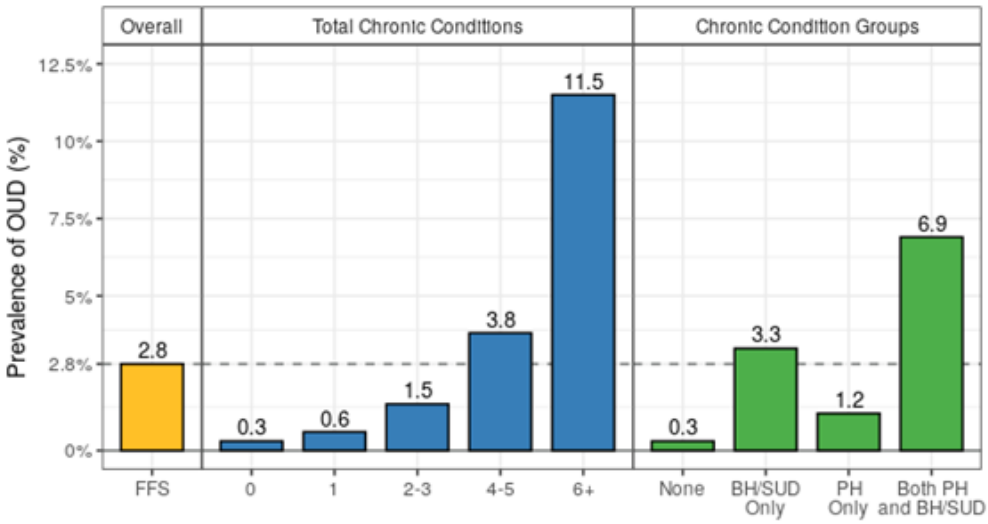
Disparities in OUD Prevalence by Chronic Health Condition Characteristics

Figure 8 below highlights differences in the prevalence of OUD by clinical characteristics among Medicare FFS beneficiaries in 2018.

Given the overall prevalence of OUD in the Medicare FFS population (2.8%), several subgroups of beneficiaries with chronic conditions had markedly higher prevalence of OUD worth noting:

- The prevalence of OUD among beneficiaries with six or more chronic pain-related conditions (11.5%) was 4.1 times greater than the overall Medicare FFS population prevalence.
- The prevalence of OUD among beneficiaries with both physical and behavioral health conditions (6.9%) was nearly 2.5-fold greater than the prevalence of OUD in the overall Medicare FFS population.

Figure 8. Prevalence of OUD Among Medicare FFS Beneficiaries by Total Number and Grouping of Chronic Conditions in 2018.



Dashed line drawn at prevalence of OUD among all FFS beneficiaries (2.8%)
PH=physical health condition, BH/SUD=behavioral health condition and/or substance use disorder

Discussion

This study demonstrates that the prevalence of OUD among Medicare FFS beneficiaries in the US appears to have increased over the past decade.[xi] Additionally, we observed that several Medicare FFS beneficiary groups may be disproportionately impacted by OUD. These groups include:

- Under 65 years of age.
- Who identify as American Indian/Alaskan Native or African American/Black.
- Who qualify for Medicare due to disability or end stage renal disease.
- Who are dually eligible for both Medicare and Medicaid.
- With co-occurring physical and behavioral health conditions.
- With four or more co-occurring chronic pain-related physical health conditions and behavioral health conditions.

In response to the opioid epidemic, several federal policies and efforts to improve access to evidence-based medications for individuals with OUD have been implemented, including the 2018 Substance Use-Disorder Prevention That Promotes Opioid Recovery and Treatment (SUPPORT) for Patients and Communities Act.[xix,xx,xxi,xxii] This study demonstrates that the abovementioned groups of Medicare FFS beneficiaries represent a disproportionate share of those with an OUD diagnosis or an aberrant opioid-related event. As CMS begins to assess the impact of federal efforts to combat OUD through improved access to evidence-based treatments, these findings provide baseline prevalence estimates to use in evaluation of program or policy effectiveness. Additionally, these findings may help target policies, resources, and interventions to groups of Medicare FFS beneficiaries who are disproportionately burdened by the domestic opioid epidemic.

In light of the current COVID-19 pandemic, this report may also be helpful when considering policies related to treatment access and continuity for higher-risk populations who may be experiencing a disproportionate share of both OUD and COVID-19. Recent data suggests that certain racial and ethnic groups are disproportionately impacted by COVID-19.[xxiii] Nationwide, African American/Black individuals are dying from COVID-19 at 2.5 times the rate of white individuals (77 and 31 deaths per 100,000 people, respectively) and both Latinx and American Indian/Alaska Native populations are dying at 1.4 times the rate of white individuals (42, 41, and 31 deaths per 100.000 people, respectively).[xxiv] Recent data from the Centers for Disease Control and Prevention (CDC) suggest that, among reported COVID-19 cases where race and ethnicity is specified, African American/Black individuals represent 22 percent of COVID-19 deaths, despite accounting for 13 percent of the U.S. population.[xxv] Given that Black, Latinx, and American Indian/Alaska Native populations shoulder a disproportionate share of COVID-19 deaths, chronic disease burden,[xxvi,xxvii,xxviii,xxix] and OUD, it is critical that strategies, interventions, and policies be positioned to safely reach these populations, support access to and continuity of OUD treatment, and mitigate widening inequities.

Limitations

There are four key limitations to this study to consider when interpreting the findings of this study. First, the study focuses on describing OUD prevalence only among the Medicare FFS population. Second, OUD is a highly stigmatized health condition that is likely underdiagnosed and treated, as it relies on a willingness for both a provider and a beneficiary to address the condition. Therefore, it is likely that a reliance on claims data alone, as we have done in this study, undercounts the number of beneficiaries that have OUD. In this report, this may have been mitigated by using the broadest indicator of OUD in the CCW, which includes beneficiaries with an OUD diagnosis or an aberrant opioid-related event—including diagnosis codes for opioid use, abuse, and/or dependence, opioid poisonings and other adverse opioid-related events, and procedure codes for select treatments associated with OUD. Third, the geographic analysis was conducted at the state level, due to lack of county-level data, and thus, important variations that may be present at the county level are not captured. Finally, the 17 chronic conditions used in this analysis were of greatest interest to CMS leadership and used in other related work because they are pain-related or disabling conditions that disproportionately impact beneficiaries with OUD. However, beneficiaries may experience other chronic conditions and it is possible other conditions may play a role in OUD risk or access to medication treatment. Despite these limitations, this study provides important baseline information for understanding the impact of evolving policies being implemented to improve care for those who are at greatest risk for poor outcomes due to OUD and COVID-19.

Keywords

Chronic Conditions Warehouse (CCW), Medicare Fee-for-Service (FFS), Opioid Use Disorder (OUD), Socio-demographic conditions, chronic conditions, disparities

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