

# Patient and Community Factors Affecting Treatment Access for Opioid Use Disorder

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**OBJECTIVE:** To examine whether access to treatment for women with opioid use disorder (OUD) varied by race and ethnicity, community characteristics, and pregnancy status.

**METHODS:** We conducted a secondary data analysis of a simulated patient caller study of buprenorphine-waivered prescribers and opioid-treatment programs in 10 U.S. states. We conducted multivariable analyses, accounting for potential confounders, to evaluate factors associated with likelihood of successfully securing an appointment. Descriptive statistics and significance testing examined 1) caller characteristics and call outcome by assigned race and ethnicity and clinic type (combined, opioid-treatment programs, and buprenorphine-waivered prescribers) and 2) clinic and community characteristics and call outcome by community race and ethnicity distribution (majority White vs majority Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander) and clinic type. A multiple logistic regression model was fitted to assess the

likelihood of obtaining an appointment by callers' race and ethnicity and pregnancy status with the exposure of interest being majority Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander community distribution.

**RESULTS:** In total, 3,547 calls reached clinics to schedule appointments. Buprenorphine-waivered prescribers were more likely to be in communities that were more than 50% White (88.9% vs 77.3%,  $P<.001$ ), and opioid-treatment programs were more likely to be in communities that were less than 50% White (11.1% vs 22.7%,  $P<.001$ ). Callers were more likely to be granted appointments in majority Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander communities (adjusted odds ratio [aOR] 1.06, 95% CI 1.02–1.10 per 10% Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander community population) and at opioid-treatment programs (aOR 4.94, 95% CI 3.52–6.92) and if they were not pregnant (aOR 1.79, 95% CI 1.53–2.09).

**CONCLUSION:** Clinic distribution and likelihood of acceptance for treatment varied by community race and ethnicity distribution. Access to treatment for OUD remains challenging for pregnant people and in many historically marginalized U.S. communities.

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The opioid crisis remains a public health emergency,<sup>1</sup> with substantial growth in pregnant women diagnosed with opioid use disorder (OUD).<sup>2</sup> Medications for OUD (MOUD) are highly effective, and treating OUD is crucial for preventing adverse health outcomes.<sup>3</sup> Medications for OUD reduce relapse risk,<sup>4</sup> improve birth weights,<sup>5</sup> and obviate many other negative consequences of OUD.<sup>6–8</sup> However, 87% of individuals in the United States with OUD do not receive MOUD,<sup>9</sup> with evidence of differential patterns of access for minoritized racial and ethnic groups (Black and Hispanic women) compared



with nonminoritized groups (White women).<sup>10</sup> For example, in a retrospective study of 5,247 pregnant women in Massachusetts, minoritized women were less likely to receive MOUD compared with nonminoritized women. Furthermore, they had a lower likelihood of receiving buprenorphine compared with methadone treatment.<sup>11</sup> These patterns of differential access to MOUD require further study.

Intersectionality theory posits that differences in individuals' lived experiences, based on social and demographic identities, can generate modes of privilege and oppression that are propagated systematically.<sup>12,13</sup> Prior evidence has established the existence of racial and ethnic disparities in accessing OUD treatment.<sup>10,14</sup> These disparities are further exacerbated by pregnancy status given that there are few specialized prescribers of MOUD with combined expertise in obstetrics and substance use disorder medicine.<sup>15</sup> In addition to disparities in access to MOUD, other factors such as experiences of stigma and discrimination,<sup>16</sup> insurance access,<sup>17</sup> and lack of access to treatment facilities and prescribers have been linked to treatment inequities for both minoritized and pregnant women.<sup>18</sup> Yet, few studies have examined OUD treatment disparities through the theoretical lens of intersectionality. Furthermore, there are community contextual factors such as economic conditions and rurality that further influence access to MOUD.<sup>19</sup> This secondary analysis of data from a simulated patient caller study sought to evaluate community characteristics associated with clinic location and to determine whether simulated patient callers' likelihood of receiving an appointment was associated with their race and ethnicity, community race and ethnicity distribution, clinic type, and pregnancy status.

## METHODS

We used data from a randomized simulated patient caller parent study in which hired callers simulated patients and queried outpatient clinics that provide buprenorphine and methadone for appointments. Patrick et al<sup>17</sup> provide a full description of the parent study. Primary data were collected among 10 states (Florida, Kentucky, Massachusetts, Michigan, Missouri, North Carolina, Tennessee, Virginia, Washington, and West Virginia) in 2019. States were selected because of their broad range of opioid-related state policies (eg, Medicaid expansion under the Patient Protection and Affordable Care Act) and complications (eg, opioid-related overdose deaths). The script that simulated patients (hereafter referred to as callers) used was developed and field tested in nonsample

states in collaboration with the University of Chicago Survey Lab. This study was deemed exempt from human review by Vanderbilt University Medical Center and the University of Tennessee, Knoxville College of Nursing because the study involved secondary research for which consent was not required and clinic information was deidentified. The methods of the parent study, including script development and randomization processes, are described fully elsewhere.<sup>17</sup> In this analysis, we hypothesized that opioid-treatment programs and outpatient buprenorphine-waivered prescribers located in communities that are more than 50% Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander will be more accepting of Black and Hispanic callers.

In the parent study,<sup>17</sup> contact information for opioid-treatment programs and buprenorphine-waivered prescribers was obtained from the Buprenorphine Practitioner Locator<sup>20</sup> and Opioid Treatment Program Directory<sup>21</sup>; both are public lists maintained by the Substance Abuse Mental Health Services Administration. Using a standardized script, callers posed as pregnant or nonpregnant women in need of treatment for OUD but not emergently. Nine women were hired as callers representing White, Hispanic, and Black female vocal features across ages 25–30 years. Caller names were assigned from the Social Security Administration website to use the most common first names by sex, birth decade, and race and ethnicity. A permuted blocked randomized design was used to create randomization schemes for buprenorphine-waivered prescribers and opioid-treatment programs. The design balanced patient characteristics and limited the number of calls to individual clinicians. Callers were equally likely to be assigned pregnant or nonpregnant status. There were 4 patient profiles (pregnant or nonpregnant with public or private insurance) randomly assigned to buprenorphine-waivered prescribers and opioid-treatment programs. The permuted blocked randomization design was used to assign the same number of profiles to groups of clinicians, allowing no more than three calls per clinician. Parent study outcomes were 1) the ability to obtain an appointment, 2) the wait time for an appointment, and 3) out-of-pocket costs to secure an appointment.<sup>17</sup>

Given that there was no difference between wait times or out-of-pocket costs in the parent study, the primary outcome in this study was the ability of callers to obtain a treatment appointment. To assess how intersecting identities of race and ethnicity and pregnancy status influence access to treatment for OUD, individual-level variables of callers related to



race and ethnicity (Black, Hispanic, White), pregnancy status (pregnant, nonpregnant), and insurance type (private, public) were included. To account for potential confounding between community characteristics and our outcome of interest, we included the following variables: community race and ethnicity distribution, Gini income inequality index,<sup>22</sup> Area Deprivation Index,<sup>23</sup> rurality,<sup>24</sup> number of religious institutions per 10,000 population,<sup>25</sup> number of employed per 1,000 population,<sup>26</sup> and rate of infant foster care per 100,000 infants.<sup>27</sup> The Gini income inequality index was included as a measure of population income distribution. The Gini measures the extent to which income is distributed unevenly among individuals or households in a particular country or region. It was obtained from the 2019 American Community Survey 5-year estimates at the census tract level.<sup>22</sup> The Area Deprivation Index, rurality, and number of employed per 1,000 population were included to determine the extent to which communities where clinics are located experience neighborhood disadvantage. We used the 2018 Area Deprivation Index from the Neighborhood Atlas,<sup>23</sup> which was matched to the simulated patient caller data with the use of nine-digit ZIP codes. Rurality was determined with Rural-Urban Continuum Codes.<sup>24</sup> Clinics in counties that were classified by Rural-Urban Continuum Codes as adjacent or not adjacent to a metropolitan area were designated as rural, and clinics in counties classified by Rural-Urban Continuum Codes as metropolitan areas were designated as urban. County-level employment data came from the 2019 Area Health Resource Files.<sup>26</sup> Religious institution density was included as an indicator of community support because faith-based organizations often provide resources ranging from social, spiritual, and emotional support to material support with financial, food, and health needs.<sup>28,29</sup> Number of religious institutions per 10,000 population at the county level was obtained from the Northeast Regional Center for Rural Development. Finally, high infant foster care rate was included because of its association with increased neonatal opioid withdrawal syndrome.<sup>30</sup> County-level infant foster care rates were obtained from the Adoption and Foster Care Analysis and Reporting System.<sup>27</sup>

Our community-level exposure of interest was community race and ethnicity. We obtained these data from the American Community Survey, including percentages at the census tract level for each of the following: non-Hispanic White, non-Hispanic Black or African American, non-Hispanic American Indian and Alaska Native, non-Hispanic Asian, non-

Hispanic Native Hawaiian and Other Pacific Islander, non-Hispanic another race, non-Hispanic two or more races, and Hispanic or Latino of any race. We considered both continuous and categorical variables of community race and ethnicity in our analyses. For the categorical variable, we classified communities as being majority (ie, more than 50%) White or majority Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander. For the continuous version, we calculated the proportion of Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander people in the community by subtracting the percent of non-Hispanic White from 100%.

Descriptive statistics summarized 1) caller characteristics and call outcome by assigned race and ethnicity and clinic type (combined, opioid-treatment programs, and buprenorphine prescribers) and 2) clinic and community characteristics and call outcome by community race and ethnicity distribution (majority White vs majority Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander) and clinic type. Counts and percentages were presented for categorical data, and medians and interquartile ranges were presented for continuous variables. To test for differences between groups, the Pearson  $\chi^2$  test was used for categorical variables, and Kruskal-Wallis tests or Wilcoxon rank-sum tests were used for continuous variables. Appendix 1, available online at <http://links.lww.com/AOG/D185>, includes a correlation matrix of continuous community covariates and acceptance rates by quartiles of community covariates and clinic type (combined, opioid-treatment programs, and buprenorphine prescribers).

A multiple logistic regression model was used to fit to the data. Both individual-level and community covariates for models were established a priori. The model assessed the likelihood of obtaining an appointment by callers' race and ethnicity and pregnancy status with the exposure of interest being Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander community distribution. We calculated odds ratios for receiving treatment in communities with each incremental increase of 10% in the community Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander proportion. We also controlled for clinic type, insurance type, Gini index, Area Deprivation Index, rurality, religious institution density, employment rate per 1,000 population, and infant foster care rate. We conducted supplemental analyses including models that 1) had all community covariates and clinic type but no individual-level covariates and 2)



included all community and individual-level covariates plus an interaction between the caller's assigned race and Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander community distribution (Tables 1 and 2 in Appendix 1, <http://links.lww.com/AOG/D185>). Statistical significance was set at two-sided  $P < .05$ . Statistical analysis was conducted with R 3.6.3.

## RESULTS

The callers completed 3,547 calls; 22.8% were to clinics in communities that were more than 50% Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander. Characteristics between callers were similar among study groups except for assigned public or private insurance type (combined clinic types—public insurance: Black [54.4%], Hispanic [53.8%], White [59.0%]; private insurance: Black [45.6%], Hispanic [46.2%]; White [41.0%];  $P = .01$ ; buprenorphine-waivered prescribers—public insurance: Black [47.3%], Hispanic [48.7%], White [52.2%]; private insurance: Black [52.7%], Hispanic [51.3%], White [47.8%];  $P = .02$ ; Table 1).

Overall, there were more buprenorphine-waivered prescribers located in communities that were 50% or more White than more than 50% Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander (2,436 [88.9%] vs 624 [77.3%],  $P < .001$ ). Fewer opioid-treatment programs were located in communities that were 50% or more White compared with communities that were more than 50% Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander (304 [11.1%] vs 183 [22.7%];  $P < .001$ ). There were differences in clinic and community characteristics by the community race and ethnicity distribution for combined clinic types, buprenorphine-waivered prescribers, and opioid-treatment programs. Specifically, communities that were more than 50% Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander had consistently higher scores on the Area Deprivation Index, indicating greater neighborhood disadvantage ( $P < .001$ ). The highest deprivation score was in the subset of calls to opioid-treatment programs located in communities that were more than 50% Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander (median score 75 vs 56 for Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander and White communities, respectively;  $P < .001$ ). In addition, compared with communities that were 50% or more White, communities that were more than 50% Black,

Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander had lower medians for number of religious institutions per 10,000 population and rate of infant foster care per 100,000 infants but higher medians for number of employed per 1,000 population. There were no significant differences in the Gini Index of Income Inequality for the combined clinic types or buprenorphine-waivered prescribers by racial distribution, but there was a slightly lower median Gini index in the communities that were 50% or more White with opioid-treatment programs than the communities that were more than 50% Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander with opioid-treatment programs (Table 2).

In adjusted analysis, the likelihood of the caller obtaining an appointment was higher for opioid-treatment programs compared with buprenorphine-waivered prescribers (adjusted odds ratio [aOR] 4.94, 95% CI 3.52–6.92), assigned nonpregnant status (aOR 1.79, 95% CI 1.53–2.09), and assigned private compared with public insurance (aOR 1.26, 95% CI 1.07–1.48). The likelihood of callers obtaining an appointment was not associated with assigned race and ethnicity or any community context variables except for community race and ethnicity distribution. Independently of a caller's race and ethnicity, each 10% increase in Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander population was associated with 6% higher odds of obtaining an appointment (aOR 1.06, 95% CI 1.02–1.10; Table 3 and Fig. 1). Results of the following supplemental multivariable models were consistent with the primary analysis: 1) all community covariates and clinic type but no individual-level covariates and 2) all community and individual-level covariates plus an interaction between caller's assigned race and Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander community distribution (Tables 1 and 2 in Appendix 1, <http://links.lww.com/AOG/D185>).

## DISCUSSION

In this secondary analysis of cross-sectional data of simulated patient callers to OUD treatment clinicians in 10 states, we found that an increase in Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander community distribution; calling an opioid-treatment program; and nonpregnancy status were associated with increased likelihood of obtaining an appointment. Caller race and ethnicity did not affect the likelihood of obtaining an appointment; however, there were



**Table 1. Simulated Patient Call Characteristics and Appointment Outcomes by Race and Ethnicity of the Caller**

| Characteristic                              | Caller Race and Ethnicity     |                  |                 |          |                         |                  |                 |
|---------------------------------------------|-------------------------------|------------------|-----------------|----------|-------------------------|------------------|-----------------|
|                                             | All Health Care Professionals |                  |                 | <i>P</i> | Buprenorphine Providers |                  |                 |
|                                             | Black (n=1,431)               | Hispanic (n=372) | White (n=2,153) |          | Black (n=1,237)         | Hispanic (n=335) | White (n=1,848) |
| Pregnancy status                            |                               |                  |                 | .417     |                         |                  |                 |
| Pregnant                                    | 51.2 (732)                    | 47.3 (176)       | 50.2 (1,081)    |          | 51.9 (642)              | 46.0 (154)       | 49.9 (922)      |
| Not pregnant                                | 48.8 (699)                    | 52.7 (196)       | 49.8 (1,072)    |          | 48.1 (595)              | 54.0 (181)       | 50.1 (926)      |
| Clinic type                                 |                               |                  |                 | .090     |                         |                  |                 |
| Buprenorphine provider                      | 86.4 (1,237)                  | 90.1 (335)       | 85.8 (1,848)    |          |                         |                  |                 |
| Opioid-treatment program                    | 13.6 (194)                    | 9.9 (37)         | 14.2 (305)      |          |                         |                  |                 |
| Insurance type                              |                               |                  |                 | .012     |                         |                  |                 |
| Public                                      | 54.4 (779)                    | 53.8 (200)       | 59.0 (1,270)    |          | 47.3 (585)              | 48.7 (163)       | 52.2 (965)      |
| Private                                     | 45.6 (652)                    | 46.2 (172)       | 41.0 (883)      |          | 52.7 (652)              | 51.3 (172)       | 47.8 (883)      |
| Obtained appointment                        |                               |                  |                 | .168     |                         |                  |                 |
| No                                          | 28.1 (402)                    | 27.7 (103)       | 30.7 (662)      |          | 30.9 (382)              | 29.6 (99)        | 33.9 (627)      |
| Yes                                         | 71.9 (1,029)                  | 72.3 (269)       | 69.3 (1,491)    |          | 69.1 (855)              | 70.4 (236)       | 66.1 (1,221)    |
| Obtained appointment with primary insurance |                               |                  |                 | .186     |                         |                  |                 |
| No                                          | 54.6 (781)                    | 57.5 (214)       | 57.6 (1,240)    |          | 56.0 (693)              | 57.9 (194)       | 60.3 (1,115)    |
| Yes                                         | 45.4 (650)                    | 42.5 (158)       | 42.4 (913)      |          | 44.0 (544)              | 42.1 (141)       | 39.7 (733)      |
| Wait time (d)                               | 3 (1–7)                       | 3 (1–7)          | 3 (1–7)         | .104     | 3 (1–7)                 | 4 (1–7.25)       | 3 (1–7)         |
| Cash payment                                |                               |                  |                 | .354     |                         |                  |                 |
| No                                          | 63.2 (650)                    | 58.7 (158)       | 61.2 (913)      |          | 63.6 (544)              | 59.7 (141)       | 60.0 (733)      |
| Yes                                         | 36.8% (379)                   | 41.3 (111)       | 38.8 (578)      |          | 36.4 (311)              | 40.3 (95)        | 40.0 (488)      |
| Out-of-pocket cost (\$)                     | 225 (125–300)                 | 230 (150–300)    | 225 (130–300)   | .497     | 250 (150–300)           | 250 (155–300)    | 250 (160–300)   |
| Community race                              |                               |                  |                 | .333     |                         |                  |                 |
| 50% or more White                           | 76.8 (969)                    | 80.4 (279)       | 77.0 (1,492)    |          | 79.0 (860)              | 82.5 (259)       | 79.4 (1,317)    |
| More than 50% non-White*                    | 23.2 (293)                    | 19.6 (68)        | 23.0 (446)      |          | 21.0 (228)              | 17.5 (55)        | 20.6 (341)      |

| Characteristic                              | Caller Race and Ethnicity |                     |               |          |
|---------------------------------------------|---------------------------|---------------------|---------------|----------|
|                                             | Opioid-Treatment Programs |                     |               | <i>P</i> |
|                                             | Black (n=194)             | Hispanic (n=37)     | White (n=305) |          |
| Pregnancy status                            |                           |                     |               | .244     |
| Pregnant                                    | 46.4 (90)                 | 59.5 (22)           | 52.1 (159)    |          |
| Not pregnant                                | 53.6 (104)                | 40.5 (15)           | 47.9 (146)    |          |
| Clinic type                                 |                           |                     |               |          |
| Buprenorphine provider                      |                           |                     |               |          |
| Opioid-treatment program                    |                           |                     |               |          |
| Insurance type                              |                           |                     |               |          |
| Public                                      | 100.0 (194)               | 100.0 (37)          | 100.0 (305)   |          |
| Private                                     | 0.0 (0)                   | 0.0 (0)             | 0.0 (0)       |          |
| Obtained appointment                        |                           |                     |               | .920     |
| No                                          | 10.3 (20)                 | 10.8 (4)            | 11.5 (35)     |          |
| Yes                                         | 89.7 (174)                | 89.2 (33)           | 88.5 (270)    |          |
| Obtained appointment with primary insurance |                           |                     |               | .255     |
| No                                          | 45.4 (88)                 | 54.1 (20)           | 41.0 (125)    |          |
| Yes                                         | 54.6 (106)                | 45.9 (17)           | 59.0 (180)    |          |
| Wait time (d)                               | 2 (1–5)                   | 3 (1–4)             | 2 (1–5)       | .790     |
| Cash payment                                |                           |                     |               | .156     |
| No                                          | 60.9 (106)                | 51.5 (17)           | 66.7 (180)    |          |
| Yes                                         | 39.1 (68)                 | 48.5 (16)           | 33.3 (90)     |          |
| Out-of-pocket cost (\$)                     | 34 (16–127.5)             | 157.5 (86.5–162.75) | 17 (15–87)    | <.001    |

(continued)



**Table 1. Simulated Patient Call Characteristics and Appointment Outcomes by Race and Ethnicity of the Caller (continued)**

| Characteristic           | Caller Race and Ethnicity |                 |               | P    |
|--------------------------|---------------------------|-----------------|---------------|------|
|                          | Opioid-Treatment Programs |                 |               |      |
|                          | Black (n=194)             | Hispanic (n=37) | White (n=305) |      |
| Community race           |                           |                 |               | .975 |
| 50% or more White        | 62.6 (109)                | 60.6 (20)       | 62.5 (175)    |      |
| More than 50% non-White* | 37.4 (65)                 | 39.4 (13)       | 37.5 (105)    |      |

Data are proportion (frequency) or median (interquartile range) unless otherwise specified.

\* Non-White encompasses Census tract level for each of the following: non-Hispanic White, non-Hispanic Black or African American, non-Hispanic American Indian and Alaska Native, non-Hispanic Asian, non-Hispanic Native Hawaiian and other Pacific Islander, non-Hispanic another race, non-Hispanic two or more races, and Hispanic or Latino of any race.

substantial differences in geographic distribution by clinic type. For example, opioid-treatment programs had higher geographic distribution in predominantly Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander communities, and buprenorphine-waivered prescribers were more concentrated in predominantly White communities.

Our study illuminated contextual factors related to race and ethnicity that may influence equitable access to MOUD. For instance, in the clinics studied in this 10-state sample, buprenorphine-waiver prescribers were more concentrated in predominantly White communities with lower median area deprivation scores, indicating less neighborhood socioeconomic disadvantage, compared with opioid-treatment programs for which the opposite was true. Despite opioid-treatment programs being in neighborhoods with more socioeconomic disadvantage, as the Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander population in these communities increased, the probability of obtaining an appointment also increased. Results of our study can be understood within the historical context of inequitable distribution of resources to treat OUD and gatekeeping of buprenorphine treatment in affluent, well-resourced communities. Another noteworthy finding was that obtaining an appointment was more likely when simulated patients called clinics located in predominantly Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander communities. This access pattern is not typically observed in the United States; predominantly White communities with high socioeconomic status have previously been reported to have greater access to OUD care. However, it is important to note that prior studies used methods distinct from simu-

lated patient callers, including using retrospective county-level data to examine treatment access by race or ethnicity cross-sectionally or longitudinally.<sup>31,32</sup>

Overall, our findings mirror the history of structural racism surrounding access to MOUD. Both buprenorphine and methadone are approved by the U.S. Food and Drug Administration (FDA) and are effective in reducing risk of opioid overdose, and neither has been identified as a preferred first-line treatment.<sup>33</sup> It is important to note that both drugs are equally effective at treating OUD, and the patient's history and needs should determine treatment options. However, the development and regulation of these drugs continue to affect access to MOUD today. Opioid-treatment programs primarily prescribe methadone, a full mu-opioid receptor agonist, which was approved by the FDA in 1972 and initially prioritized for Black American communities with the specific goal of reducing crime.<sup>34</sup> For example, the Nixon administration used methadone as a part of a "law-and-order" platform focused partially on the perceived rise in heroin-related crimes.<sup>34,35</sup> Methadone is often considered the most stigmatized MOUD<sup>36</sup> and continues to be highly regulated.<sup>37</sup> Treatment with methadone typically requires daily outpatient opioid-treatment program visits to receive medication, limiting autonomy and interfering with daily activities.<sup>38</sup>

In contrast, buprenorphine, a partial mu-opioid receptor agonist and kappa opioid receptor antagonist, was approved by the FDA in 2002, 2 years after the Drug Addiction Treatment Act. The Drug Addiction Treatment Act was established with the goal of improving access to MOUD and allowed clinicians to receive a waiver to prescribe scheduled drugs for use in the treatment of OUD. This flexibility increased access to buprenorphine in office-based settings that



**Table 2. Clinic and Community Characteristics and Simulated Patient Call Outcomes by Community Race Distribution**

| Community Race Distribution                  | All Health Care Professionals    |                             |       | Buprenorphine Providers          |                             |       | Opioid-Treatment programs        |                           |       |
|----------------------------------------------|----------------------------------|-----------------------------|-------|----------------------------------|-----------------------------|-------|----------------------------------|---------------------------|-------|
|                                              | More Than 50% Non-White* (n=807) | 50% or More White (n=2,740) | P     | More Than 50% Non-White* (n=624) | 50% or More White (n=2,436) | P     | More Than 50% Non-White* (n=183) | 50% or More White (n=304) | P     |
| Clinic type                                  |                                  |                             | <.001 |                                  |                             |       |                                  |                           |       |
| Buprenorphine provider                       | 77.3 (624)                       | 88.9 (2,436)                |       |                                  |                             |       |                                  |                           |       |
| Opioid-treatment program                     | 22.7 (183)                       | 11.1 (304)                  |       |                                  |                             |       |                                  |                           |       |
| Community race and ethnicity (%)             |                                  |                             |       |                                  |                             |       |                                  |                           |       |
| Non-Hispanic Black                           | 33.2 (14.0–55.8)                 | 5.2 (1.6–11.8)              | <.001 | 32.1 (14.3–54.6)                 | 5.0 (1.6–11.7)              | <.001 | 39.0 (13.9–59.0)                 | 7.3 (2.4–13.6)            | <.001 |
| Non-Hispanic White                           | 33.5 (18.8–43.0)                 | 79.5 (67.3–89.1)            | <.001 | 34.9 (19.1–43.5)                 | 79.9 (67.9–89.3)            | <.001 | 29.1 (17.0–40.9)                 | 76.5 (63.7–87.7)          | <.001 |
| Non-Hispanic Asian                           | 2.2 (0.4–5.9)                    | 1.9 (0.5–4.8)               | .016  | 2.5 (0.4–7.3)                    | 1.9 (0.5–5.0)               | <.002 | 1.7 (0.3–4.0)                    | 1.3 (0.3–3.9)             | <.66  |
| Hispanic or Latino                           | 14.5 (5.5–30.1)                  | 4.7 (2.1–9.2)               | <.001 | 14.5 (5.3–28.4)                  | 4.5 (2.1–9.0)               | <.001 | 15.0 (7.3–35.9)                  | 6.4 (3.4–12.0)            | <.001 |
| Non-White*                                   | 66.5 (57.0–81.2)                 | 20.6 (10.9–32.7)            | <.001 | 65.1 (56.5–81.0)                 | 20.1 (10.7–32.1)            | <.001 | 70.9 (59.1–83.1)                 | 23.6 (12.3–36.3)          | <.001 |
| Gini Index of income inequality              | 0.44 (0.40–0.49)                 | 0.44 (0.40–0.49)            | .295  | 0.44 (0.39–0.49)                 | 0.44 (0.40–0.49)            | .087  | 0.44 (0.40–0.48)                 | 0.42 (0.40–0.47)          | .031  |
| Area Deprivation Index                       | 65 (41–86)                       | 52 (32–72)                  | <.001 | 62.5 (39–84)                     | 51 (31–72)                  | <.001 | 75 (54–90)                       | 56 (34–77)                | <.001 |
| Rurality                                     |                                  |                             | <.001 |                                  |                             | <.001 |                                  |                           | <.001 |
| Rural adjacent                               | 3.8 (31)                         | 10.6 (291)                  |       | 4.2 (26)                         | 11.1 (271)                  |       | 2.7 (5)                          | 6.6 (20)                  |       |
| Rural remote                                 | 0.4 (3)                          | 7.9 (216)                   |       | 0.5 (3)                          | 7.9 (193)                   |       | 0.0 (0)                          | 7.6 (23)                  |       |
| Urban                                        | 95.8 (773)                       | 81.5 (2,233)                |       | 95.4 (595)                       | 81.0 (1,972)                |       | 97.3 (178)                       | 85.9 (261)                |       |
| Religious institutions/10,000 population (n) | 5.70 (4.24–7.20)                 | 6.27 (4.53–8.56)            | <.001 | 5.70 (4.24–7.14)                 | 6.29 (4.53–8.57)            | <.001 | 5.70 (4.21–7.57)                 | 6.23 (4.54–8.56)          | <.001 |
| Employed/1,000 population (n)                | 502.5 (473.4–531.5)              | 489.4 (438.7–522.5)         | <.001 | 503.3 (473.8–544.0)              | 489.4 (438.5–522.5)         | <.001 | 497.2 (464.7–526.2)              | 491.9 (448.0–522.4)       | .015  |
| Rate of infant foster care/100,000 infants   | 860.0 (529.8–1,400.9)            | 1,273.1 (723.3–2,089.8)     | <.001 | 860.0 (527.9–1,273.1)            | 1,273.1 (723.3–2,089.8)     | <.001 | 1,126.2 (644.9–1,652.8)          | 1,575.0 (706.1–2,240.9)   | <.001 |
| Obtained appointment                         |                                  |                             | .004  |                                  |                             | .059  |                                  |                           | .354  |
| No                                           | 25.8 (208)                       | 31.0 (849)                  |       | 29.6 (185)                       | 33.6 (819)                  |       | 12.6 (23)                        | 9.9 (30)                  |       |
| Yes                                          | 74.2 (599)                       | 69.0 (1,891)                |       | 70.4 (439)                       | 66.4 (1,617)                |       | 87.4 (160)                       | 90.1 (274)                |       |
| Obtained appointment with primary insurance  |                                  |                             | .004  |                                  |                             | .018  |                                  |                           | .675  |
| No                                           | 52.3 (422)                       | 58.0 (1,589)                |       | 54.8 (342)                       | 60.0 (1,462)                |       | 43.7 (80)                        | 41.8 (127)                |       |
| Yes                                          | 47.7 (385)                       | 42.0 (1,151)                |       | 45.2 (282)                       | 40.0 (974)                  |       | 56.3 (103)                       | 58.2 (177)                |       |
| Wait time (d)                                | 3 (1–7)                          | 3 (1–7)                     | .320  | 3 (1–8)                          | 3 (1–7)                     | .864  | 2 (1–4)                          | 2 (1–5)                   | .945  |
| Cash payment                                 |                                  |                             | .135  |                                  |                             | .127  |                                  |                           | .963  |
| No                                           | 64.3 (385)                       | 60.9 (1,151)                |       | 64.2 (282)                       | 60.2 (974)                  |       | 64.4 (103)                       | 64.6 (177)                |       |
| Yes                                          | 35.7 (214)                       | 39.1 (740)                  |       | 35.8 (157)                       | 39.8 (643)                  |       | 35.6 (57)                        | 35.4 (97)                 |       |
| Out-of-pocket cost (\$)                      | 200 (118–300)                    | 225 (136.25–300)            | .031  | 250 (192.50–300)                 | 250 (150–300)               | .792  | 28 (15.25–123.25)                | 27 (15–125)               | .824  |

Data are proportion (frequency) or median (interquartile range) unless otherwise specified.

\* Non-White encompasses Census tract level for each of the following: non-Hispanic White, non-Hispanic Black or African American, non-Hispanic American Indian and Alaska Native, non-Hispanic Asian, non-Hispanic Native Hawaiian and Other Pacific Islander, non-Hispanic another race, non-Hispanic two or more races, and Hispanic or Latino of any race.



**Table 3. Multivariable Model of Obtaining an Appointment for Opioid Use Disorder\***

| Variable                                                                                                                                                                               | Adjusted OR<br>(95% CI) | Unadjusted OR<br>(95% CI) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------|
| Clinic type                                                                                                                                                                            |                         |                           |
| Buprenorphine provider <sup>†</sup>                                                                                                                                                    | 1.00                    | 1.00                      |
| Opioid-treatment program                                                                                                                                                               | 4.94 (3.52–6.92)        | 3.87 (2.93–5.13)          |
| Pregnancy status                                                                                                                                                                       |                         |                           |
| Pregnant <sup>†</sup>                                                                                                                                                                  | 1.00                    | 1.00                      |
| Not pregnant                                                                                                                                                                           | 1.79 (1.53–2.09)        | 1.69 (1.47–1.94)          |
| Insurance type                                                                                                                                                                         |                         |                           |
| Public <sup>†</sup>                                                                                                                                                                    | 1.00                    | 1.00                      |
| Private                                                                                                                                                                                | 1.26 (1.07–1.48)        | 0.93 (0.81–1.07)          |
| Assigned race and ethnicity of the simulated caller                                                                                                                                    |                         |                           |
| Black                                                                                                                                                                                  | 1.15 (0.97–1.35)        | 1.14 (0.98–1.32)          |
| Hispanic                                                                                                                                                                               | 1.11 (0.85–1.45)        | 1.16 (0.91–1.48)          |
| White <sup>†</sup>                                                                                                                                                                     | 1.00                    | 1.00                      |
| Incremental 10% increase of Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander proportion in the community population surrounding the clinic | 1.06 (1.02–1.10)        | 1.07 (1.03–1.10)          |
| Gini Index of income inequality                                                                                                                                                        | 0.98 (0.30–3.21)        | 0.91 (0.32–2.56)          |
| Area Deprivation Index                                                                                                                                                                 | 1.00 (1.00–1.00)        | 1.00 (1.00–1.00)          |
| Rurality                                                                                                                                                                               |                         |                           |
| Rural <sup>†</sup>                                                                                                                                                                     | 1.00                    | 1.00                      |
| Urban                                                                                                                                                                                  | 0.86 (0.66–1.11)        | 0.93 (0.78–1.12)          |
| Increase of 1 religious institution/10,000 population                                                                                                                                  | 1.03 (1.00–1.06)        | 1.02 (1.00–1.05)          |
| Increase of 1 employed person/1,000 population                                                                                                                                         | 1.00 (1.00–1.00)        | 1.00 (1.00–1.00)          |
| Increase of 1 infant in foster care/100,000 infants                                                                                                                                    | 1.00 (1.00–1.00)        | 1.00 (1.00–1.00)          |

OR, odds ratio.

\* Variables included in the final model: clinic type, pregnancy status, insurance type, assigned race, proportion of non-White per 10 population, Gini index of income inequality, Area Deprivation Index, rurality, number of religious institutions per 10,000 population, number of employed per 1,000 population, and rate of infant foster care per 100,000 infants.

<sup>†</sup> Reference group.

do not require daily visits to a prescribers.<sup>35</sup> During Congressional hearings before Drug Addiction Treatment Act approval, expert testimony indicated that

methadone was not appropriate for the “suburban spread of narcotic addiction.”<sup>35,39</sup> It was made even more inaccessible through the use of a web-based

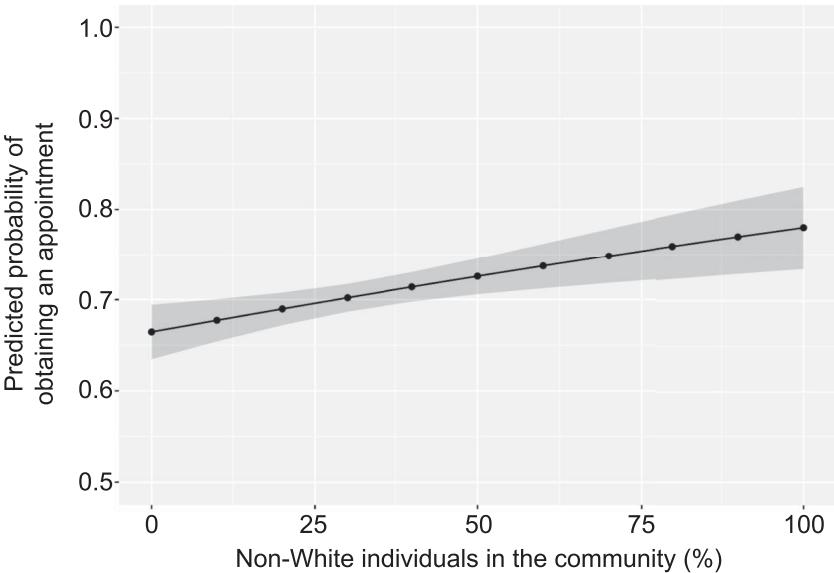


**Fig. 1.** Predicted probabilities from a multivariable model of obtaining an appointment for opioid use disorder. *Bulgin. Factors Affecting Treatment Access for OUD. Obstet Gynecol 2023.*



system to find treatment at the turn of the century when access to computers was limited.<sup>39</sup>

We found that opioid-treatment programs, despite being in neighborhoods with more socioeconomic disadvantage, are more generous with appointment availability. Although nationwide there are more buprenorphine-waivered prescribers than opioid-treatment programs,<sup>20,21</sup> this did not translate into increased access to treatment for OUD for all populations. For instance, a 2020 cross-sectional study of 3,142 counties found that highly segregated Black American and Hispanic or Latino communities had more access to methadone per capita, whereas highly segregated White communities had more access to buprenorphine per capita.<sup>31</sup> Therefore, it is possible that appointments are more available in Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander communities because of an abundance of methadone-based treatment options.

Policies that inform OUD treatment options can be tailored to the needs of the individual rather than based on perceptions of the needs of specific communities. Hansen et al<sup>32</sup> examined the differences in uptake of buprenorphine compared with methadone treatment between 2004 and 2013 in neighborhoods in New York City, characterized by income and race and ethnicity. Similar to our findings, they found that although buprenorphine treatment access had increased in all New York City neighborhoods over time, the highest increase in access occurred in high-income areas, and the lowest was seen in Black and Hispanic low-income neighborhoods. Findings from this study demonstrate how intersecting minoritized racial and ethnic identities combine with pregnancy to further impede access to MOUD for minoritized women. We were unable to ascertain whether the race and ethnicity and resource disparities in access to MOUD in our sample were attributable to lower demand for MOUD in Black, Hispanic, Asian, American Indian, Alaska Native, Native Hawaiian, or Pacific Islander communities; greater preference for buprenorphine; or other unidentified factors. However, callers commonly experienced the sentiment that buprenorphine treatment is reserved for privileged patients in their dialog with clinic staff. For example, one caller, who was simulating a nonpregnant caller with private insurance noted, “I think I reached the doctor’s personal [phone] line ...He asked if I was working, what drugs I took and how often, and said that the program catered to the ‘working professional.’” Further research is needed to examine how racial and ethnic disparities may combine with pregnancy status and geography to impede access to bu-

prenorphine, thus preventing pregnant women from using the MOUD that are most suited to their needs.

Our study has several limitations. First, the parent study focused on the experience of women seeking treatment in 10 selected states between the ages of 25 and 30. These age, sex, and geographic characteristics limit the generalizability of the results; findings may not be applicable to other groups seeking treatment such as pediatric populations, men, and individuals living in other states. Second, the simulated patient format of the primary study may not be suited to exploring the intersectional identity of race and pregnancy status. Future studies may consider enrolling participants who are seeking OUD treatment to capture the lived experiences of people seeking care. In addition, we were unable to assess the logistics of the clinics and potential resulting barriers to appointments for MOUD. Future studies should explore clinic-level barriers. Last, we were unable to verify whether the actual race of callers matched the assigned race. However, the callers represented a spectrum of race and ethnicity vocal features, and culturally congruent names were assigned for each call.

Our study suggests that there are community-related barriers to access care for OUD. The National Academy of Medicine,<sup>40</sup> the U.S. Surgeon General,<sup>41</sup> and The White House<sup>42</sup> have identified improving access to medications to treat OUD for pregnant people as a public health priority. Policy makers may achieve greater benefits for patients seeking OUD care if they consider health equity when crafting policies to reduce disparities in access to care, including creating pathways to increase the number of prescribers with combined obstetrics and substance use disorder expertise and making buprenorphine treatment accessible among public-sector prescribers and opioid-treatment programs.

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