# Blacks And Hispanics Are Less Likely Than Whites To Complete Addiction Treatment, Largely Due To Socioeconomic Factors

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## Abstract

More than one-third of the approximately two million people entering publicly funded substance abuse treatment in the United States do not complete treatment. Additionally, racial and ethnic minorities with addiction disorders, who constitute approximately 40 percent of the admissions in publicly funded substance abuse treatment programs, may be particularly at risk for poor outcomes. Using national data, we found that blacks and Hispanics were 3.5–8.1 percentage points less likely than whites to complete treatment for alcohol and drugs, and Native Americans were 4.7 percentage points less likely to complete alcohol treatment. Only Asian Americans fared better than whites for both types of treatment. Completion disparities for blacks and Hispanics were largely explained by differences in socioeconomic status and, in particular, greater unemployment and housing instability. However, the alcohol treatment disparity for Native Americans was not explained by socioeconomic or treatment variables, a finding that warrants further investigation. The Affordable Care Act could reduce financial barriers to treatment for minorities, but further steps, such as increased Medicaid funding for residential treatment and better cultural training for providers, would improve the likelihood of completing treatment and increase treatment providers' cultural competence.

The publicly funded substance abuse treatment system is a critical resource for people with addiction disorders in the United States, yet services in the public system are often fragmented, underfunded, and difficult to access.[1] Overall, more than one-third of the people entering treatment do not complete it, and outcomes may be worse for racial and ethnic minorities.[2] Racial and ethnic minorities constitute approximately 40 percent of the admissions into publicly funded substance abuse treatment programs.[3]

These disparities have received renewed attention from policy makers.[4] For example, the Affordable Care Act included provisions to dramatically transform the financing and delivery of publicly funded substance abuse treatment services,[5] including the creation of a federal Office of Behavioral Health Equity to address mental health and substance abuse treatment disparities.[6]

An important first step in addressing disparities is measuring the contribution of different individual and systemic factors, then assessing what differences might be remediable through the treatment system. The Institute of Medicine report titled Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care provides a framework for measuring disparities, defining them as racial or ethnic differences in health care except those resulting from clinical need, appropriateness, or patient preferences.[7]

In this framework, racial or ethnic differences in need for care—for example, differences in the severity of addiction disorders—are "justifiable" and should not be considered a manifestation of disparity. However, treatment differences related to the operation of the health care and legal systems (such as policies determining resource use or practice patterns), discrimination, bias, and stereotyping from providers are "unjustifiable" and should be considered a manifestation of disparity.

To measure disparities using a large national data set, we adjusted for differences related to variables deemed to represent clinical need, appropriateness, and patient preferences. We included differences related to system-level factors and discrimination.[8]

One recent study that calculated disparities in access to substance abuse treatment using the Institute of Medicine's framework found that although there were no overall differences in treatment use across whites, blacks, and Hispanics, specific attributes such as greater rates of criminal history, higher Medicaid enrollment, and lower income disproportionately affected access to treatment for minorities.[9] Given that the mechanisms leading minorities and whites to enter treatment may be different—for example, the criminal justice system is one particularly important pathway into treatment for minorities—it is important to understand whether similar factors influence treatment outcomes once people have entered the treatment system.

Few studies in the literature have attempted to disentangle the contribution of factors such as socioeconomic status and treatment setting to substance abuse treatment disparities, and existing research yields mixed results on the size and importance of differences across racial and ethnic groups. Some studies, focusing primarily on black and Hispanic populations, have found lower intensity of treatment and worse outcomes for minorities,[10,11] but other studies have disagreed.[12,13] Moreover, it is unclear whether these differences in access and use extend to other minority groups, such as Asian Americans and Native Americans.

The California Treatment Outcomes Project collected detailed pre- and posttreatment outcome data on all five major racial or ethnic groups. Whites in this study used more alcohol treatment than blacks, Hispanics, and Native Americans, but drug treatment rates were equivalent. Service use was similar between Asian Americans and other groups, although on average Asian Americans entered treatment with less severe addictions.[14–16] Because this study was restricted to providers in thirteen counties in one state, it is unknown whether its findings are generalizable to other states and regions.

Our study examined substance abuse treatment completion disparities for all major racial or ethnic groups. We used a national database covering more than one million annual discharges from publicly financed treatment. Employing the Institute of Medicine's definition of disparities, we estimated differences unrelated to underlying need for treatment.

We extended this framework to shed light on potential explanatory variables. We first adjusted for need and provider characteristics and then adjusted for socioeconomic status. Although further adjustment explained a substantial part of the gap, the persistence of disparities for most groups suggests the need to focus on disparities in future policy reforms.

We also discuss practical policy levers, such as developing culturally competent care and increasing residential treatment funding in Medicaid, that could further narrow the treatment completion gap.

# Study Data And Methods

## Data Source

We analyzed the Substance Abuse and Mental Health Services Administration's 2007 Treatment Episode Data Set.[17] This source contains data on discharges from publicly funded substance abuse treatment facilities in forty-four states, the District of Columbia, and Puerto Rico. It has been estimated to cover more than 83 percent of all admissions to publicly funded substance abuse treatment facilities and 67 percent of substance abuse treatment admissions overall (public or private).[18]

We included discharges from all sources except for detoxification (because detoxification is a precursor to further treatment, and not complete treatment by itself),[19] for a total of 1,026,332 discharges. We examined treatment completion separately by primary substance targeted at admission. We first divided the sample between discharges from treatment primarily for alcohol and those from treatment primarily for illicit drugs, and we further examined differences for the most common types of drugs (cocaine, marijuana, heroin, other opiates, and methamphetamines).

## Study Outcome

Completed treatment was defined as any planned discharge from treatment, including transfers to other facilities where the individual was expected to continue further treatment. Incomplete treatment included leaving against professional advice or having treatment terminated by the facility because of non-compliance, incarceration, or death.

## Individual Variables

Our independent variable of interest was race or ethnicity. People of any race reporting Hispanic ethnicity were identified as Hispanic; others were classified by race as white, black, Asian American, and Native American.

We included the following variables associated with need for treatment: sex, age at admission, age at first substance use, number of previous treatment episodes, frequency of substance use at the time of admission, and types of substances being used at admission (whether or not they were the primary substance targeted for treatment). Variables related to socioeconomic status included living arrangement, employment status, and highest educational attainment.

## Provider Variables

We included the following variables related to provider setting: source of referral to treatment, whether the treatment episode included any medication-assisted therapy (either methadone or buprenorphine, a medication used for detoxification and maintenance for heroin and other opiate addictions), and the setting of treatment. The three settings were residential, intensive outpatient (treatment lasting more than two hours per day for at least three days per week), and nonintensive outpatient.

## State Treatment System Characteristics

We included state-level treatment system measures, using the Substance Abuse and Mental Health Services Administration's 2007 National Survey of Substance Abuse Treatment Services, a census of registered substance abuse providers.[20] For each state we calculated the percentage of publicly funded providers that accepted public or private insurance, had nonprofit status, and were licensed by the state mental health or substance abuse authorities. We also included a measure of whether providers in the state were located in areas that were

more urban or rural (based on a county's location in a metropolitan area and the size of the largest city or town), created by the National Center for Health Statistics.[21]

### Descriptive Analysis

We first examined the distribution of different covariates by race or ethnicity separately for people discharged from alcohol or drug treatment. We then calculated the percentage of people in each group completing treatment for alcohol and illicit drugs, and we further stratified the groups by types of drugs used at admission and by treatment setting. We calculated two-tailed *t* statistics for pairwise differences between whites and each of the other racial or ethnic groups and constructed 95 percent confidence intervals for stratified analyses.

### Disparities Analysis

We calculated disparities in three different ways to illustrate the contribution to disparities of differences in the need for treatment, provider setting, and socioeconomic status. Each method used coefficients from the same logistic regression model for the probability of completing alcohol (or drug) treatment. This model included all of the variables described above.

In estimating this model, we clustered standard errors at the state level and adjusted for missing data using a reweighting method. Additional information regarding disparities analyses can be found in the online Appendix.[22]

In our first approach, we calculated white-minority disparities using the Institute of Medicine's definition. Specifically, we compared treatment completion rates between the white population and a counterfactual population of people from each minority group with their own race or ethnicity and socioeconomic status but with the white distribution of need variables. This is our preferred method, and it has been extensively described elsewhere.[8]

In our second approach, we used the same Institute of Medicine framework but further adjusted for the provider-level variables (treatment setting at discharge, use of methadone treatment, and referral source into treatment).

Finally, we examined average differences that persisted after we controlled for all of the predictors in the regression model. This fully adjusted approach (the "residual direct effect")[23] is the most conservative, since it does not consider differences resulting from minorities' poorer socioeconomic status (such as higher poverty or lower education) as contributors to disparity estimation.

Each of our adjustment methods could narrow estimated disparities. Compared to unadjusted differences, our first approach would narrow disparities if minorities had more severe addictions than whites. This is because a history of severe drug abuse is a risk factor for non-completion of treatment.

It is also possible, however, that even after clinical need is accounted for, minorities do not have as much access to intensive or inpatient treatment in which treatment completion rates are higher. The reason could be factors such as cost of care or proximity to treatment. We therefore would expect our adjustment for provider setting to further narrow estimated disparities if minorities are less likely to receive placement in higher-completion settings.

Finally, if factors such as homelessness and unemployment have a negative effect on treatment completion, and these factors are more common among minorities, we would expect that adjusting for socioeconomic status could narrow disparities yet again.

**Limitations**

Some study limitations should be considered. First, our study findings may not be generalizable to treatment in other settings. The Treatment Episode Data Set covers only discharges from publicly funded treatment; it does not include treatment in physician's offices (where roughly one in seven people with a substance abuse disorder received some treatment in 2007).[24]

Second, our outcome—treatment completion—is a process of care variable indicating treatment status at the time of discharge. Completing treatment does not guarantee long-term rehabilitation or recovery, but it has been shown to predict fewer readmissions and use of acute care services.[25] Future research with large population samples is needed to understand racial or ethnic differences in long-term recovery.

Third, the data did not allow us to assess differences in the use of different treatment modalities such as psychotherapy or vocational programs at the provider level, which might affect completion differences. We also lacked information about factors such as engagement with treatment or social support, which predict treatment outcomes.[26] Fully accounting for these factors would allow us to better assess the role of treatment context in explaining disparities.

Fourth, our measure of race or ethnicity was derived from administrative records and might be subject to some classification error. In general, medical records are highly concordant with self-assessed race or ethnicity for whites, blacks, and Asians, but Hispanics and Native Americans are more likely to be misclassified.[27]

Finally, measures related to substance use were self-reported and not independently validated. However, other studies have shown that self-reported drug and alcohol use behaviors are generally consistent and accurate.[28]

# Study Results

## Descriptive Results

Several patterns are worth emphasizing. First, unlike whites, a majority of Asian Americans and Hispanics in the alcohol treatment group were receiving treatment for the first time (Exhibit 1).

Second, other than alcohol, alcohol users in all racial and ethnic groups were most likely to report marijuana use, except for blacks, who were most likely to report use of cocaine. Cocaine was the second most commonly used substance for whites, Hispanics, and Asian Americans, and methamphetamines were second most common for Native Americans. Whites and blacks were more likely than the other groups to engage in daily substance use.

Third, at least half of all treatment discharges for all groups were from nonintensive outpatient settings, followed by residential treatment and then by intensive outpatient care. Compared to whites, Native Americans and blacks were less likely to use the nonintensive outpatient setting, while Hispanics and Asian Americans were more likely to do so.

Fourth, blacks, Hispanics, and Native Americans generally had higher levels of socioeconomic disadvantage than whites, and levels of disadvantage were higher for people discharged from drug treatment than for those discharged from alcohol treatment. For example, unemployment was especially high among blacks and Native Americans in drug treatment. Blacks and Hispanics were more likely than whites to be homeless in both treatment groups. Asian Americans had higher levels of socioeconomic advantage in some

areas than whites, such as lower unemployment, but were more likely not to have graduated from high school.

## Treatment Completion

Across racial and ethnic groups, treatment completion rates were generally highest for people receiving treatment that primarily targeted alcohol abuse, followed by treatment for methamphetamines, and were lowest for treatment for heroin (Exhibit 2). Except for opiates and heroin, where the differences were not significant, Asian Americans were more likely than whites to complete treatment for all substances. Conversely, blacks and Hispanics were significantly less likely than whites to complete treatment for all substances except for opiates. Native Americans had significantly lower completion rates than whites for all substances except for cocaine and methamphetamines.

Blacks and Hispanics were less likely than whites to complete treatment across all settings, and Asian Americans were more likely (Exhibit 3). The alcohol treatment completion rate was generally higher for people discharged from residential settings, followed by intensive outpatient settings. However, Asian Americans and Hispanics were just as likely to complete nonintensive as intensive outpatient alcohol treatment.

As with alcohol treatment, people discharged from drug treatment in residential settings had the highest overall completion rates, with those discharged from nonintensive outpatient settings having the lowest rates. Blacks and Hispanics were significantly less likely than whites to complete drug treatment for all settings.

## Alcohol Disparity Estimates

In logistic regression models, we found that low education, unemployment, and discharge from nonintensive outpatient treatment were significantly associated with not completing treatment, independent of race or ethnicity (see Appendix Table 3 for the full regression output).[22] Compared to unadjusted rates, predicted completion rates adjusted for need were very similar for Hispanics and Native Americans (Exhibit 4). However, slightly more blacks, and slightly fewer Asian Americans, would have completed treatment if they had had the same need for treatment as whites. Overall, the largest estimated disparities using need adjustment were between whites and blacks (7.9 percentage points).

Further adjustment for treatment setting and other provider variables did not change white-Hispanic disparities. But that adjustment widened white-black and white–Native American completion disparities and increased the relative advantage of Asian Americans.

Finally, adjustment for socioeconomic status (the fully adjusted model) almost halved the gap between whites and blacks and virtually eliminated the gap between whites and Hispanics. For Native Americans, in contrast, adjustment for socioeconomic status did not widen alcohol treatment disparities. Adjusting for socioeconomic status yielded the largest relative advantage for Asian Americans over whites.

## Drug Disparities Estimates

As with alcohol treatment, the white-Hispanic need-adjusted completion disparities for drug treatment were relatively similar to unadjusted disparities (Exhibit 4). However, adjustment for need slightly increased the whites' large advantage relative to blacks (from 7.3 to 8.1 percentage points). Native Americans had slightly higher unadjusted treatment completion rates, but after rates were adjusted for need, whites were slightly more likely to complete treatment than Native Americans. Further adjustment for provider setting did not substantially change estimated disparities for any of the groups.

In contrast, adjustment for all variables, including socioeconomic status (full adjustment), reduced the white-black and white-Hispanic drug treatment completion disparities, but not the white–Native American disparity. For example, the white-black disparity was narrowed from 8.1 percentage points in the need-only method to 6.1 points using the full adjustment method. The Native American–white difference slightly widened after adjustment for socioeconomic status. Asian Americans maintained the highest completion rates of all groups.

## Discussion

We analyzed drug and alcohol treatment completion rates using a national sample of discharges from outpatient and residential treatments other than detoxification. Our analysis reveals qualitatively large and significant disparities between whites and all minority groups (except Asian Americans) in completion of alcohol treatment, and between whites and both blacks and Hispanics in completion of overall drug treatment.

Using a method concordant with the Institute of Medicine's definition of disparities, we found that disparities in treatment completion were 3.5–7.9 percentage points for alcohol treatment and 1.0–8.1 percentage points for drug treatment. Overall drug and alcohol treatment completion rates were quite low for all groups, especially for blacks and Hispanics.

We also found that completion rates varied substantially by type of substance and were lowest for heroin and other opiates. Withdrawing from opiates is a slow process,[29] and people often require medication-assisted treatment for many years, increasing the probability of failure. There were important differences in substance use history, use of medication-assisted treatment, and other individual clinical factors. However, racial or ethnic disparities persisted after adjusting for these variables.

Our analysis points to factors that may help explain disparities and guide policy. In particular, when we adjusted for both individual need and provider setting, we found that alcohol treatment disparities widened between whites and blacks and between whites and Native Americans. Blacks and Native Americans also were more likely to be treated in residential settings than were whites, suggesting that higher placement rates in residential treatment for these groups may actually help limit disparities and could compensate for other forms of disadvantage.

Further adjustment for socioeconomic status narrowed the completion gap between whites and blacks and between whites and Hispanics for both alcohol and drug treatment. This change suggests that housing instability and lower employment are important barriers to treatment completion for blacks and Hispanics. Adjusting for socioeconomic status modestly increased the relative Asian American advantage, probably because if Asian Americans had the same educational attainment as whites, they would fare even better in treatment.

Our findings linking lower socioeconomic status to worse treatment completion are important. Low socioeconomic status is a known risk factor for poor access to and quality of mental health treatment.[30] Nonetheless, some studies suggest that low socioeconomic status may, paradoxically, promote greater access to substance abuse treatment for minorities.[31] Adjusting for socioeconomic status narrowed white-minority disparities for all groups except Native Americans in alcohol treatment. This finding warrants further investigation, since Native Americans in alcohol treatment were more likely than whites to be unemployed and to have less education.

Socioeconomic barriers could operate in two related ways to prevent treatment completion. First, minorities living in poverty may be more likely to receive treatment in an environment with high social distress, weak social support, and few economic opportunities. These external factors can undermine individual engagement with treatment or create competing demands leading to higher dropout rates from treatment.[32] Second, predominantly minority communities may have fewer or lower-quality treatment options than predominantly white communities.[33]

We found that use of nonintensive outpatient services was greater for Hispanics and Asian Americans than for whites, and that treatment completion was also lower for this setting across all groups. This finding could suggest that non-intensive outpatient treatment does not meet the needs of many people. However, we caution that there are likely to be considerable differences in referral patterns to these programs and in the programs' resources and implementation. We lacked measures of services available in each program, and we were thus unable to investigate racial or ethnic differences in the availability of treatment options.

It is also possible that poor outcomes for minorities may emerge from their negative interactions with the treatment system. Recent theoretical writing on behavioral health care disparities posits an important role for factors such as implicit discrimination (for example, when providers offer fewer treatment options to minority clients).[34] Another important factor may be connecting with the culturally specific beliefs that play a role in treatment and recovery. For example, engagement with traditional spiritual practices has been shown to be an important component of substance abuse recovery for some Native American youth.[35]

## Policy Implications

To address treatment disparities within a rapidly changing delivery system, policy makers might consider complementary strategies targeted at providers and payers. Reforms could focus on areas of greatest need. We found that completion rates were especially low for blacks and Hispanics in alcohol and drug treatment and for Native Americans in alcohol treatment.

State Medicaid programs are likely to play a larger role in substance abuse treatment in the future,[5] and they are therefore an important target for reform. The Affordable Care Act provides states with expansive new funding to enroll low-income adults in Medicaid, although the Supreme Court recently ruled that states may decline to participate in the expansions without losing their existing Medicaid programs.[36]

States that do expand Medicaid may aim to shift more substance abuse treatment from residential to outpatient settings, both to control costs and to adhere to current regulations that prevent large residential facilities from receiving Medicaid funding for nonelderly adults.[5] The prospect of restricting access to residential treatment is a concern, since our findings show poorer overall completion rates in outpatient settings compared to residential settings, and in some cases greater completion disparities as well—for example, between blacks and whites in alcohol treatment.

Shifting care to outpatient treatment could reduce overall completion rates and potentially aggravate disparities. To counteract this unintended consequence, the federal Medicaid program should consider providing states with greater flexibility to reimburse for residential treatment.

Expanded funding for treatment programs may be limited in the future because states are seeking ways to trim public programs. Nonetheless, policy makers should consider that this spending may be more than offset by lower spending on corrections and emergency

department admissions.[37] Similarly, states that are on the fence about expanding Medicaid might consider that lower public expenditures may offset the spending of more Medicaid dollars on substance abuse treatment.

States could also offer providers incentives to address barriers to completion of outpatient treatment. For example, homelessness and low education are particularly prevalent among blacks and Hispanics and are contributors to lower completion rates in these groups. Future research might explore whether broadened access to resources such as supported housing and vocational training are cost-effective strategies for improving outcomes and reducing disparities. Efforts to improve the tracking of individual patients could increase retention and improve outcomes, particularly for homeless populations.

Beyond addressing economic barriers, it is important to understand the cultural context of treatment, particularly how the linguistic needs and values of subgroups influence treatment outcomes. "Culturally competent" treatment—including better training for providers and better integration of spiritual and cultural practices—is one promising approach.[38] For example, integrating concepts of family support (or *familismo*) may improve treatment engagement among Hispanics.[39] Equipping providers with the skills to communicate with patients of all backgrounds is an important priority in the evolving treatment system.

Ultimately, reducing disparities will require understanding how each stage of the treatment process can be modified to address the diverse needs of racial or ethnic minorities. Although there are few "one size fits all" approaches to reducing disparities, there are opportunities to use new funding to scale up promising interventions targeted to minority populations in the treatment system.

## Acknowledgments

## Biography



**Brendan Saloner** is a Robert Wood Johnson Foundation Health and Society Scholar at the University of Pennsylvania.

In this month's *Health Affairs*, Brendan Saloner and Benjamin Lê Cook report on their study of disparities in the completion of publicly funded substance abuse treatment, and their findings that blacks and Hispanics were substantially less likely than whites to complete alcohol and drug treatment. Native Americans were less likely than whites to complete alcohol treatment, while only Asian Americans fared better than whites for both types of treatment. Socioeconomic status, including greater unemployment and housing instability,

explained the disparity for blacks and Hispanics, leading the authors to call for such measures as increased Medicaid funding for residential treatment.

Saloner is a Robert Wood Johnson Foundation Health and Society Scholar at the University of Pennsylvania. He is also a senior fellow at the University of Pennsylvania's Leonard Davis Institute of Health Economics. His research focuses on the access to and quality of health care services for vulnerable populations in the United States and includes studies of access to primary care under the Affordable Care Act, treatment trajectories for children with diagnosed attention deficit hyperactivity disorder, and the health care experiences of Hispanic children.

Saloner was named an emerging scholar in 2010 and 2011 by the Department of Health and Human Services' Welfare Research and Evaluation Conference. He received the Joan P. Curhan Citizenship Award of the Harvard Program in Health Policy in 2011 and was a Buckley Scholar at the University of Manchester, as part of its graduate summer program in social change in 2010. He earned a doctorate in health policy from Harvard University.



**Benjamin Lê Cook** is an assistant professor in the Department of Psychiatry at Harvard Medical School.

Cook is a senior scientist at the Center for Multicultural Mental Health Research at the Cambridge Health Alliance and an assistant professor in the Department of Psychiatry at Harvard Medical School. His research focuses on reducing and understanding the underlying mechanisms of racial and ethnic disparities in mental health care and substance abuse treatment services. He has developed expertise in methods of measuring and understanding the underlying pathways of health care disparities. He is the principal investigator of a study that examines mechanisms driving health care disparities and of another study that is developing state-by-state report cards on mental health care disparities.

Cook is also an editorial board member of *Medical Care Research and Review*. He earned a master's degree in public health from the University of North Carolina at Chapel Hill and a doctorate in health policy from Harvard University.

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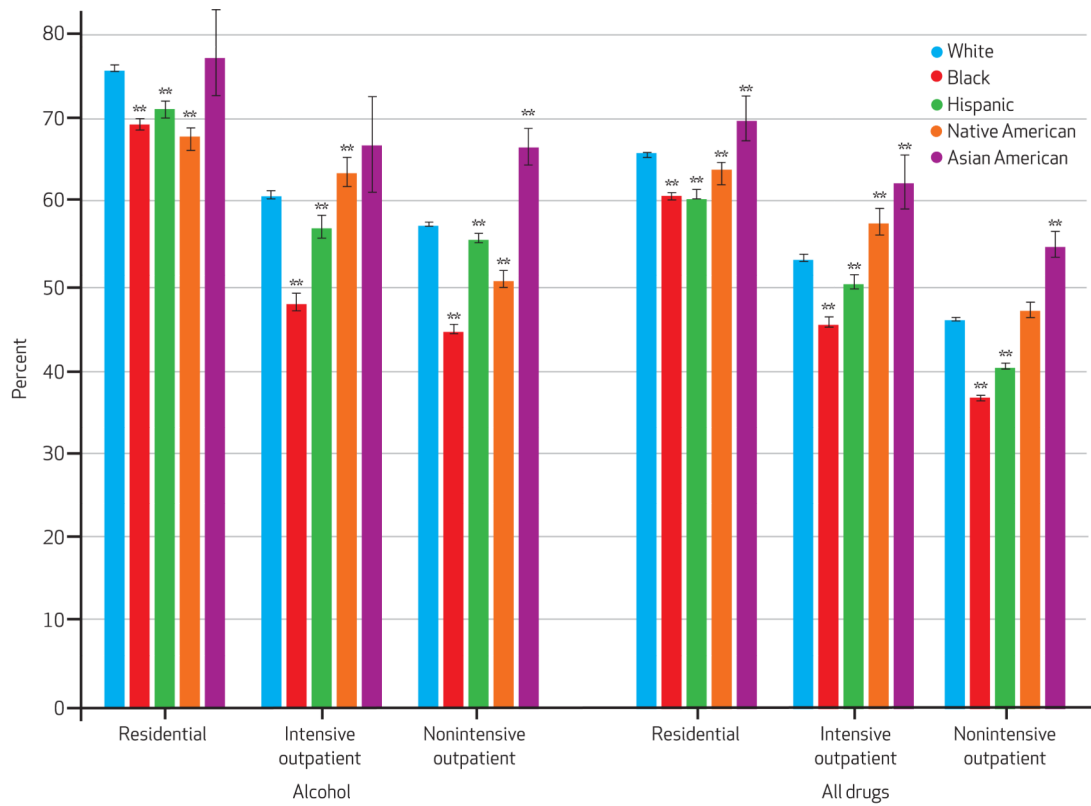
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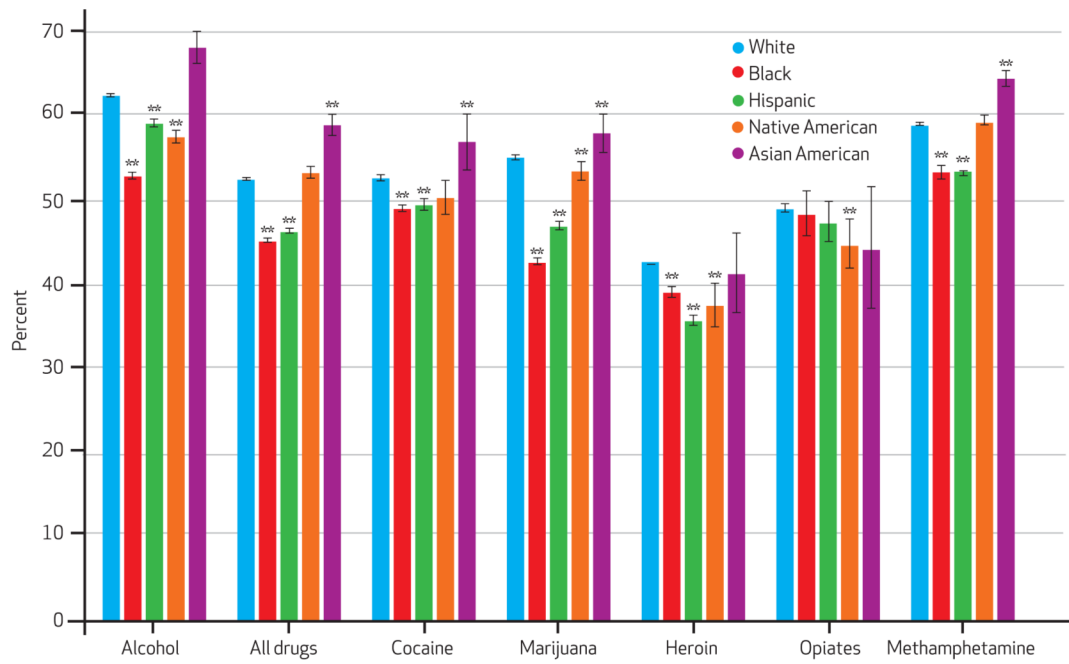
SOURCE Authors' analysis of the Substance Abuse and Mental Health Services Administration's 2007 Treatment Episode Data (Note 17 in text). NOTE Error bars indicate 95% confidence intervals. **Significant difference from whites ($p < 0.05$).

**Exhibit 2.**
Treatment Completion Rates For Alcohol And Major Drug Categories, By Race Or Ethnicity

**Exhibit 3.**
Treatment Completion Rates For Alcohol And Drugs, By Treatment Setting And Race Or Ethnicity

**EXHIBIT 1**

Selected Descriptive Statistics For Alcohol And Drug Treatment, By Race Or Ethnicity

| Statistic | Whites | Blacks | Hispanics | Native Americans | Asian Americans |
|---|---|---|---|---|---|
| **ALCOHOL TREATMENT SAMPLE** | | | | | |
| $N$ | 260,364 | 59,800 | 41,583 | 12,322 | 2,292 |
| Need for treatment | | | | | |
| Cocaine use | 16.2% | 41.2%[a] | 19.2%[a] | 10.4%[a] | 7.7%[a] |
| Marijuana use | 29.0 | 32.7[a] | 24.7[a] | 38.7[a] | 21.5[a] |
| Methamphetamine use | 5.1 | 0.8[a] | 6.6[a] | 12.3[a] | 6.7 |
| Used substance daily | 23.1 | 30.9[a] | 16.6[a] | 18.6[a] | 11.6[a] |
| No prior treatment | 46.4 | 40.7[a] | 59.9[a] | 46.7 | 70.2[a] |
| Treatment setting | | | | | |
| Residential | 24.5 | 30.7[a] | 20.4[a] | 26.9[a] | 11.7[a] |
| Intensive outpatient | 11.9 | 12.5[a] | 9.1[a] | 15.4[a] | 9.1[a] |
| Nonintensive outpatient | 63.6 | 56.8[a] | 70.5[a] | 57.7[a] | 79.2[a] |
| Socioeconomic characteristics | | | | | |
| Unemployed | 25.3 | 29.1[a] | 20.1[a] | 32.8[a] | 18.8[a] |
| Homeless | 7.3 | 16.0[a] | 9.3[a] | 7.8 | 4.5[a] |
| **DRUG TREATMENT SAMPLE** | | | | | |
| $N$ | 357,185 | 166,249 | 107,884 | 13,039 | 5,614 |
| Need for treatment | | | | | |
| Additional alcohol use | 36.5% | 40.4%[a] | 33.2%[a] | 44.9%[a] | 30.8%[a] |
| Cocaine use | 36.2 | 57.4[a] | 33.4[a] | 22.2[a] | 22.3[a] |
| Marijuana use | 49.8 | 53.0[a] | 48.0[a] | 59.2[a] | 45.4[a] |
| Methamphetamine use | 25.7 | 3.2[a] | 28.8[a] | 43.2[a] | 48.5[a] |
| Used substance daily | 30.7 | 31.7[a] | 24.6[a] | 25.9[a] | 15.9[a] |
| No prior treatment | 42.4 | 40.0[a] | 47.1[a] | 47.1 | 54.2[a] |

| Statistic | Whites | Blacks | Hispanics | Native Americans | Asian Americans |
|---|---|---|---|---|---|
| Treatment setting | | | | | |
| Residential | 26.8 | 28.6[a] | 23.3[a] | 24.6 | 19.8[a] |
| Intensive outpatient | 12.3 | 14.2[a] | 9.9[a] | 16.7[a] | 13.1 |
| Nonintensive outpatient | 61.0 | 57.3[a] | 66.8[a] | 58.6[a] | 67.1[a] |
| Socioeconomic characteristics | | | | | |
| Unemployed | 30.7 | 33.1[a] | 26.1[a] | 30.6 | 28.6 |
| Homeless | 8.7 | 14.6[a] | 10.4[a] | 8.9 | 8.9 |

**SOURCE** Authors' analysis of the Substance Abuse and Mental Health Services Administration's 2007 Treatment Episode Data (Note 17 in text). **NOTES** Treatment settings are explained in the text. Percentages may not sum to 100 because of rounding.

[a]Difference from whites highly significant ($p < 0.0001$).

**EXHIBIT 4**

Estimated Disparities For Alcohol And Drug Treatment Completion, By Race Or Ethnicity

| | White | | Black | | Hispanic | | Native American | | Asian American | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Predicted treatment completion rates** | | | | | | | | | | |
| | Rate | SE | Rate | SE | Rate | SE | Rate | SE | Rate | SE |
| **ALCOHOL** | | | | | | | | | | |
| Unadjusted | 62.4 | 0.1 | 52.8[a] | 0.2 | 59.1[a] | 0.2 | 57.5[a] | 0.4 | 68.1[a] | 0.8 |
| Need adjusted | 62.4 | 0.2 | 54.5[a] | 0.2 | 58.9[a] | 0.4 | 57.7[a] | 0.8 | 66.8[a] | 0.9 |
| Need and provider adjusted | 62.4 | 0.2 | 53.8[a] | 0.2 | 59.2[a] | 0.4 | 56.0[a] | 0.8 | 68.7[a] | 0.9 |
| Fully adjusted | 62.4 | 0.1 | 58.0[a] | 0.2 | 63.0 | 0.3 | 56.6[a] | 0.4 | 69.5[a] | 0.7 |
| **DRUG** | | | | | | | | | | |
| Unadjusted | 52.4 | 0.1 | 45.1[a] | 0.1 | 46.2[a] | 0.1 | 53.2 | 0.4 | 58.9[a] | 0.6 |
| Need adjusted | 52.4 | 0.1 | 44.3[a] | 0.2 | 46.1[a] | 0.2 | 51.4[a] | 0.4 | 56.9[a] | 0.7 |
| Need and provider adjusted | 52.4 | 0.1 | 43.6[a] | 0.2 | 46.5[a] | 0.2 | 51.1[a] | 0.4 | 57.4[a] | 0.7 |
| Fully adjusted | 52.4 | 0.1 | 46.3[a] | 0.1 | 48.5[a] | 0.2 | 50.4[a] | 0.4 | 56.2[a] | 0.7 |

**SOURCE** Authors' analysis of the Substance Abuse and Mental Health Services Administration's 2007 Treatment Episode Data (Note 17 in text). **NOTES** Need-adjusted estimates were calculated by using regression coefficients to simulate the likely treatment completion rates for minorities if they had the same need for treatment as whites. Need- and provider-adjusted estimates were calculated using the same approach but were also adjusted for differences in provider setting. Fully adjusted estimates were predicted differences after socioeconomic status and all other variables were controlled for. Unadjusted standard errors (SE) were model based; other standard errors were calculated using the bootstrap method.

[a] Difference from whites highly significant ($p < 0.0001$).