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Racial-ethnic disparities in sources of substance abuse treatment, their socioeconomic correlates and clinical features

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Abstract

Objective: Racial-ethnic group differences in substance abuse treatment continues to puzzle researchers and policy-makers. Contrary to most healthcare research, national treatment studies have shown racial-ethnic group parity. This study examines racial-ethnic disparities in sources of substance abuse treatment, their socioeconomic correlates and clinical features.

Methods: Sources of substance abuse treatment were examined for a nationally representative sample of adults with substance use disorder (SUD) from pooled National Survey of Drug Use and Health (NSDUH) data, 2002-2014 (N= 63,586). Using Taylor-adjusted logistic regression, I examined racial-ethnic differences in sources of substance abuse treatment, their socioeconomic correlates and clinical features.

Results: Blacks and Latinos were more likely to receive treatment through the criminal justice system and whites more likely to receive treatment at a doctor's office. Blacks were also more likely than whites to receive treatment through inpatient/outpatient rehabilitation (in non-adjusted models), and Latinos were least likely to receive care in rehabilitation facilities. While socioeconomic and clinical mechanisms explaining these differences varied across sources of treatment, significant racial-ethnic disparities remained, independent of these factors.

Conclusions: Racial-ethnic group differences in substance abuse treatment are inequitable in that Blacks and Latinos were less likely to access private medical treatment and more likely to be treated in jail or prison, a setting designed primarily for purposes of justice and not medical care. Questions about the conditions, efficacy, and therefore equity of substance abuse treatment for racial and ethnic minorities should be addressed.

KEYWORDS: racial-ethnic disparities, substance use disorder treatment, stratification theory

1. Introduction

Racial-ethnic differences in substance abuse treatment are puzzling in that, while healthcare research consistently uncovers inequities in access and utilization among racial-ethnic and resource-disadvantaged populations (AHRQ, 2019; IOM, 2003; Adepoju et al., 2015) studies of substance abuse treatment frequently show cross-population parity, and even a racial-ethnic group treatment advantage (depending on the year, population and data source). Nationally representative substance abuse treatment data from the National Survey of Drug Use and Health (NSDUH) uniformly depict treatment parity between Blacks and whites (and lower socioeconomic status groups) from year to year. As SAMHSA reports: "among persons in need of alcohol or illicit drug treatment, Blacks were more likely than persons of other racial and ethnic groups to receive treatment at a specialty facility..." (SAMHSA, 2013). [i]

Le Cook and Alegria (2011) showed that of those with a substance use disorder, 11.4% of Blacks, compared to 9.0% of whites and 8.1% of Latinos received substance abuse treatment in the past year (e.g., at a hospital (inpatient), rehabilitation facility (inpatient or outpatient), mental health center, emergency room, private doctor's office, or prison/jail) , and 9.4% of Blacks, 6.8% of whites and 5.3% of Latinos received specialty treatment (e.g., hospitals (inpatient only), rehabilitation facilities (inpatient or outpatient), or mental health centers). A recent examination of racial-ethnic SUD treatment from a pooled sample of 2015-2017 NSDUH (Pinedo, 2019) data showed parity (i.e., no significant differences) in treatment utilization between Blacks, whites and Latinos in *bivariate* models, which in multilevel models was mediated by socioeconomic and clinical factors.

A range of studies have generated similar if mixed support for racial-ethnic treatment parity. One early study (Weisner et al. 2002) found Blacks, in Northern California, were more likely than comparable groups to enter treatment, while another in the southwest (Acevido et al. 2012), showed that the same group was least likely to enter treatment. Additional research Hatzenbuehler, 2008) found that Blacks with both substance use and mental health disorders (i.e., mood or anxiety) were least likely to receive treatment for their mental health problems, equally likely to get services for their alcohol use disorder and *more likely* to receive drug treatment. In contrast, a 2001 study Wells et al. showed whites with substance use and/or mental health disorders were more likely than African-Americans and Latinos to receive alcoholism, drug abuse or mental health treatment (37.6% compared with 25.0% and 22.4% respectively).

Since most healthcare research demonstrates a persistent and robust racial-ethnic and socioeconomic disadvantage in healthcare, these puzzling results indicate that we still do not understand the socioeconomic, political and cultural factors underlying substance abuse treatment differences between Blacks, whites, and Latinos and how these become treatment disparities (see e.g., Malat, 2006; Hernandez et al 2020).

Several streams of research have begun to address the issue. The first type of study explores treatment client populations, and their referral sources. Research in this area shows that racial-ethnic and resource-disadvantaged populations are more likely to be referred to treatment from the criminal justice system than white and resource-advantaged groups (Cruza-Guet et al. 2018; Delphin-Rittmon et al., 2012; Sahker et al., 2015). The second type of study examines socioeconomic mechanisms explaining racial-ethnic differences in treatment. In these types of studies, (fewer) socioeconomic resources and (having a) criminal history predict greater likelihood of treatment receipt, mediating Black-white and Latino-white differences (e.g., Le Cook and Alegria, 2011; Pinedo, 2019).

Combined, these studies suggest that the substance abuse treatment *system*, like the US health system in general, is stratified along racial-ethnic and socioeconomic dimensions and should be incorporated in our theoretical models (see e.g., Williams, 1990). Doing so orients our study towards the question of which system-level factors impact treatment and raises the issue of institutional contexts shaping treatment disparities. One way to understand the impact of institutional contexts on racial-ethnic treatment disparities is to measure sources of SUD treatment.

To understand how sources of treatment reflect racial-ethnic group structural inequalities in healthcare, this study adopts the analytic framework of treatment disparities research and extends it with expectations from research in social stratification, specifically fundamental cause theory. Fundamental cause theory seeks to understand how differential societal opportunities and resources produce health disparities among racial-ethnic and resource-disadvantaged groups. I argue that a stratified healthcare system in which different institutions monitor and control different populations provides not only differential access to care, but access to different (frequently unequal, if inequitable) kinds of care based on the (unequal) distribution of socioeconomic, political and cultural resources. I detail the process as it unfolds in the SUD

treatment sector where understanding these institutional-level processes has implications for interventions aimed at reducing racial-ethnic group disparities.

A stratification framework explains these socioeconomic, structural, differences by examining the distribution of societal opportunities and resource advantages/disadvantages between populations, as well as their underlying allocation mechanisms. One mechanism is based on racial-ethnic discrimination (Link and Phelan, 1995; Shim, 2010; Williams and Mohammed, 2013). Some groups may get more or different medical care because socioeconomic, political and legal institutions favor their health over that of other groups (see Le Cook et al. 2012 for discussion). In making a case for discrimination (and its correlate - stigma) as a persistent and therefore fundamental cause of health inequalities, Hatzenbuehler et al. (2013) describe sociopolitical institutional change in the U.S. over several historical periods. In the course of the 20th century, discrimination against Blacks shifted culturally from outright (legal) domination and exploitation to more nuanced, covert means of surveillance, intimidation and coercion. This sociopolitical shift entailed the criminalization of Black and Latino populations, and working- and under- class males (Alston, 2018; Webster, 2008).

For purposes of explaining disparities in SUD treatment, the criminalization of racial-ethnic and minority populations parallels two ongoing sociopolitical and cultural trends: the racialization of drug and alcohol abuse and dependence, and the burgeoning medicalization of substance use disorders (Ayer, 2019; Mendoza, 2019). Mendoza et al. (2019) argue that (at least with respect to opioid use disorders) the racialization [ii] of substance use disorders criminalizes substance use disorders for Blacks and Latinos (and other nonwhites) and medicalizes them for whites.

A stratified healthcare system in which different institutions monitor and control different populations provides differential access to care, and access to different kinds of care based on the (unequal) distribution of socioeconomic, political and cultural resources. Stratification theories of treatment predict that racial-ethnic differences in resource advantage (measured by socioeconomic status; proxies, such as gender, age and marital status, and; health resources, such as insurance), and adjusted for IOM clinical need factors, such as alcohol and/ or drug abuse and dependence, health status, will determine not only SUD treatment utilization but, significantly, for those receiving treatment, where that took place. Not all treatments for substance use disorders take place in similar circumstances nor are they likely to be the same for populations

with differential resource advantages/disadvantages. Some services are rendered in private doctors' offices, others in public detoxes, and still other services are provided through voluntary associations such as Narcotics Anonymous. Since the criminal justice system is not primarily organized to render medical treatment (instead its goals include deterrence, punishment, and social and moral rehabilitation), it provides healthcare services only as a necessary adjunct and only for those populations under its purview. On the other hand, private medical treatment is primarily organized as such and renders treatment services to those officially under its purview. These differential sources of treatment reflect the process by which the treatment system generates racial-ethnic treatment disparities. Understanding the dynamics of these institutional settings has implications for research evaluating the quality of those services and the likelihood of their success in equitable health promotion between racial-ethnic groups. The policy challenge is that while increasing access and utilization to healthcare is essential, institutional settings resist changes fundamental to their normative structures and practices (Link and Phelan, 1995).

2. Methods

2.1 Data and study population

To understand how differential sources of treatment, especially the criminal justice system, reflect racial-ethnic treatment disparities, and what individual and structural factors explain those disparities, I use data from the NSDUH (2002-2014),[iii] a nationally representative sample of behavioral health information. NSDUH data serve as a preeminent source of yearly incidence and prevalence estimates of illicit drug and alcohol use disorders, clinical and treatment features of those with substance use disorders, and socioeconomic correlates of those with substance use disorder in the U.S. Extending previous scholarship, the sample consists of respondents with a past year diagnosis of a substance use disorder, who also reported having received treatment during this thirteen-year period. Of the 63, 586 respondents with an SUD during those years, about 10 percent received any kind of treatment, and 6.8 percent got specialty treatment. I use the larger of the two groups, those receiving any SUD treatment (N=6,207) to define our sample. Following previous studies, I operationalize racial and ethnic group membership based on self-identified race-ethnicity: Latino/Hispanic, non-Latino/ non-Hispanic, and Black (non-Latino/ Non-Hispanic). Since I cannot theorize about sources of treatment for other racial-ethnic groups such as Asian Americans, Native Americans, and mixed racial-ethnic groups, and because their sample sizes diminish rapidly, these populations were excluded from analyses.

[Table 1 goes about here]

2.1 Measures

To operationalize our dependent variables: NSDUH asks respondents whether they received any substance abuse treatment during the past year, and, if affirmative, the primary site of that treatment. NSDUH posits eight central treatment sites from which respondents locate the source of their past year's treatment: hospital inpatient, inpatient rehabilitation, outpatient rehabilitation, mental health center, emergency room, private doctor's office, prison/ jail and self-help/mutual aid. In an additional query, respondents are asked in detail about treatment sites, such as "detox" and "methadone clinic," "family," and "friends," among other alternatives. To

create the dependent variables, I combined the answers to these questions into six sources of treatment services, indicating the primary site of drug and/or alcohol abuse treatment during the past year. These were: criminal justice system, private doctor's office, hospital emergency (including detox but not overnight stays), rehabilitation (e.g., hospital inpatient, inpatient/outpatient rehabilitation), self-help/mutual aid and other (including e.g., home, family, friends, church, school).

Research in social stratification as well as prior studies using NSDUH data suggest a number of independent factors that explain racial-ethnic disparities in sources of substance abuse treatment. These can be divided into two types of factors, socioeconomic or structural and clinical, as shown in Table 1. Socioeconomic or structural factors, include levels of family income, education, unemployment status, types of health insurance, age, gender, marital status and region. Clinical or so-called need factors, comprise SUD diagnosis/severity, criminal history health status, mental health co-morbidities, disability, and general health (IOM, 2003).

Our primary goal is to establish the extent to which race and ethnicity align with different sources of treatment and what socioeconomic factors explain those differences, controlling for clinical differences between racial-ethnic groups. Generally, expectations point to significant racial-ethnic differences between treatment received through the criminal justice system (i.e., resource-disadvantaged groups, Blacks and Latinos), compared with treatment in private healthcare systems, such as drug and alcohol treatment services provided in a doctor's office (i.e., resource-advantaged groups and whites). Note, prior studies using the same data source found that socioeconomic status, such as lower educational attainment and income, increased the likelihood of substance abuse treatment. Since socioeconomic status is a racial-ethnic correlate, it is hypothesized that socioeconomic status characteristics explain racial-ethnic differentials in treatment. In this study, I first examine sources of treatment as one key factor differentiating substance abuse treatment for among racial-ethnic groups and then analyze socioeconomic status as a mechanism mediating the relationship.

2.3 Analysis

I conducted several analyses in order to test our hypotheses. Initially, I replicated the data structure of prior studies in order to demonstrate that NSDUH data for selected years, 2002-

2014, did not vary appreciably from other years and samples along dimensions indicated by socioeconomic correlates and clinical features. This took place in several steps. First, I re-created and analyzed the same NSDUH data from prior studies using those studies' sample weights and design-adjusted measures (not shown).[iv] Finding no salient differences, second, I applied those techniques to our data and conducted the same descriptive analyses with our population. The latter are depicted in Table 1, and in Figure 1. [v]

In Figure 1, I examined significant differences in receipt of any substance use disorder treatment, as well as in receipt of specialty SUD treatment for Blacks, whites and Latinos. Since the patterns in these relationships are similar to those in other studies I am confident that our central analysis is both representative and comprehensive. I then assessed racial-ethnic differentials in treatment sources in Figure 2 (see Results below).

Turning to our last table, there are six dependent variables in the analyses. For each variable I ran three weight- and design- adjusted logistic regressions (see Endnotes), focusing on the direction of the relationships as indicated by odds ratios and on significance levels, based on design-adjusted standard errors. The first set of models (models 1,4,7,10,13,16) examined racial-ethnic differences in sources of SUD treatment. As Le Cook and Alegria (2011) note, these differences may not be true inequities, if they arise from clinical features of the different population sub groups.[vi] For instance, Blacks might have lesser need for treatment in private doctors' offices because of fewer co-morbidities, or less severe SUD diagnosis (e.g., drug abuse compared with drug dependence) or fewer health problems. Therefore, in the second set of models (models 2,5,8,11,14,17) for each dependent variable, I included clinical characteristics. To the extent that significant differences remain between racial-ethnic groups, some factor other than clinical need, motivates these differences. If that factor is related to groups' access to socioeconomic resources, then, by IOM (and others') definition, outcomes are inequitable. In the third set of models (models 3,6,12,15,18), I entered socioeconomic correlates. Racial-ethnic disparities are expected to arise as a consequences of resource advantages and disadvantages, indicated by socioeconomic variables. To the extent that odds ratios are diminished and/ or parameter estimates become insignificant, the effects of race and ethnicity on sources of treatment are mediated or explained by this factor (Huang et al., 2004).

[Figure 1 goes about here]

3. Results

3.1 Sample characteristics

Table 1 provides basic descriptive information about the sample. Estimates from this 2002-2014 sample of NSDUH respondents were strikingly similar to those in other studies (e.g., Le Cook and Alegria, 2011), when I re-created my samples to parallel theirs (not shown). Doing so provided evidence of robustness in this particular data source, which as noted, serves as the preeminent source of incidence, prevalence and treatment information for nationally representative behavioral disorders in the U.S. It also helped us unpack the two categorical outcomes examined in Le Cook and Alegria: "any treatment" and "specialty treatment," since these two dependent variables consist of the more detailed dependent variables in my analyses.

3.2 Studies comparability

Figure 1 provides evidence of comparability across studies: 12.3 percent of Blacks, 9.8 percent of whites and 9.2 percent of Latinos received substance use disorder treatment and 9.1 percent of Blacks, 6.8 percent of whites, and 5.0 percent of Latinos received specialty treatment.[vii]

[Figure 2 goes about here]

Figure 2 examines these differences more closely. In this analysis, race-ethnicity are expected to determine source of treatment, with racial and ethnic minorities receiving treatment in non-medical settings, while whites have access to treatment in medical settings, such as private doctors' offices. Both Blacks and Latinos were more likely than whites to receive treatment in criminal justice settings (5.6 percent, 5.1 percent and 3.2 percent, respectively) and less likely to get it in doctors' offices (1.2 percent, 6.8 percent versus 11.4 percent, respectively). As for inpatient and outpatient rehabilitation, Blacks were more likely than whites and whites more likely than Latinos to receive treatment in this setting (54.7 percent for Blacks, 48.2 percent for whites, and 40.6 percent for Latinos). Contrary to expectations, Blacks were able to access services at rehabilitation sites more readily than whites. As will become apparent in Table 2,

Black- white differences in utilization of treatment in rehabilitation settings vanish (but not white-Latino differences) when clinical features of each subgroup are considered, along with socioeconomic correlates.

Other findings from Figure 2 complete the picture of racial-ethnic sources of SUD treatment. Blacks were least likely to utilize self-help/mutual-aid while Latinos were most likely of the three subgroups to utilize other sources of treatment (8.7 percent compared with 5.4 percent for Blacks and 5.3 percent for whites). These sources included family, friends and faith-based networks. All three groups were equally likely to have accessed the ER or a detox for SUD treatment. [viii]

[Table 2 goes about here]

The first set of models for each dependent variable in Table 2 corresponds to results presented in Figure 2; Blacks and Latinos received treatment in the criminal justice system and in rehabilitation facilities (under some circumstances) and whites in private doctors' offices and, relative to Latinos, in rehabilitation facilities, also. Whites and Latinos utilized self-help/mutual-aid, and Latinos were more likely to receive treatment in "other" settings, but only when clinical features along with socioeconomic correlates were modelled as covariates. Since some of these findings are less stable than the others, further analyses should unpack reasons for so-called suppression effects (see Endnote Watson et al. 2013).

Based on the odds ratios; Blacks and Latinos were more than one and a half times more likely than whites to receive treatment through the criminal justice system (1.79 and 1.62, respectively), and less likely to have received care in a doctor's office (.09 and .57, respectively). This relationship was robust across the two sets of covariates measuring clinical characteristics and socioeconomic resources (models 2-3). Of those covariates, some of the overall impact of race and ethnicity on treatment in the criminal justice system correlates with: having a less severe substance use diagnosis (i.e., alcohol abuse versus dependence – significant only in model 2), and no major mental health issues, significantly around depression (significant in both models 2 and 3). Naturally, criminal history was significant, however, none of the other socioeconomic

covariates were significant. In summary, race and ethnicity predict criminal justice system treatment independent of both clinical and socioeconomic characteristics.

The opposite relationships follow from the results of logistic regression of private doctor's office treatment on clinical features of the subgroups and socioeconomic resources. In this set of regressions (models 4-6) none of the clinical features were significantly related to treatment, while many of the dichotomous socioeconomic indicators were. Having a higher income and educational attainment, being younger (18-25), female and married (along with being white), predicted treatment in a doctor's office. Again, race and ethnicity, in this case, being white, predicted a greater likelihood of treatment in a private doctor's office, independent of clinical and socioeconomic resources, although, having more of those resources also increased the odds of getting treatment in that setting.

In the remainder of models, relationships depicted in the various models became more nuanced and less straightforward vis-à-vis our hypotheses. For example, while Blacks were more likely than whites to receive treatment in a rehabilitation facility, and whites more likely than Latinos (compare Figure 2 and model 10, Table 2), clinical characteristics such as drug dependence and disability reduced the impact and significance of the Black-white effect (i.e., the odds ratio for Blacks compared to whites was 1.30 in the model without clinical covariates and 1.19 in models with it), and, finally, socioeconomic correlates mediated the expected race-ethnicity effect completely (0.98 for black-white odds and 0.67 for Latino-white odds, model 12). [ix]

For hospital ER/ detox, self-help/mutual-aid and "other" sources of treatment, the results were as nuanced as those for rehabilitation. There was no independent race-ethnicity effect in hospital ER/detox (models 7,8,9); in self-help/mutual-aid models 13,14 and 15, the race-ethnicity determinates of receipt of self-help/mutual-aid treatment, were mediated by clinical characteristics, drug abuse (versus dependence) and being non-disabled, as well as residence in a large city, and having private insurance (versus Medicaid).

In the model, "other" sources of treatment, such as family, friends, and faith-based contexts, Latinos were more likely than whites to have indicated this site as the source of their SUD treatment. They were also younger, male, with a less severe drug problem (models 17 and 18).

4. Discussion

Racial-ethnic disparities in substance abuse treatment are paradoxical in that, compared with most healthcare research which demonstrates uniform barriers to access and utilization of services among racial-ethnic and resource-disadvantaged populations, studies of substance abuse treatment frequently show cross-population parity in use of services, and even a racial-ethnic minority treatment advantage. [x] Recent studies seek to understand the mechanisms underlying racial-ethnic differences in SUD treatment without pursuing the issue of parity. These studies show that socioeconomic status and, criminal history, mediate/ reverse the Black treatment advantage and (in some instances) Latino parity identified in bivariate relationships.

One technical limitation of previous studies is that the mediation process emerged only post hoc, in the form of a suppressor effect.[xi] In these studies, the suppressor-effect's surprising result is not that criminal history aligns with racial-ethnic (and socioeconomic) characteristics mediating the racial-ethnic and treatment relationship (which could have been a priori theorized, nonetheless), but that having a criminal history itself (and lower socioeconomic status) is a factor that *fosters (rather than inhibits)* substance use disorder treatment. The research benefit of a suppressor effect, which offsets its hypothesis-testing limitations, is that it provides an opportunity to further develop theory and true hypothesis-testing on the basis of its results. This was a primary aim of the present study.

What accounts for these anomalies? This study suggests that substance abuse treatment is similar to, as well as different from, other kinds of healthcare regimens. It is similar in that Blacks and Latinos are likely *not to* supersede whites in access to and utilization of SUD treatment because: First, as a number of scholars have argued, racial-ethnic status markers result in differential allocation of societal opportunities and resources; socioeconomic disadvantage inhibits access to healthcare (Williams and Mohammed, 2013; Williams 1990), including drug and alcohol treatment, and; Second, socioeconomic disadvantage not only inhibits but channels access to different sources of healthcare. [xii]

Because different institutional spheres create and control different populations' access to resources, fundamental cause theory produces the expectation that resource-advantaged populations will benefit from treatment under the auspices of medical authority and resource-disadvantaged populations will not only not have access, generally, to treatment in these settings

but will experience treatment in facilities not primarily designed for medical treatment. Note that although fundamental cause theory does not explicitly theorize disparities in healthcare provision as a fundamental cause of health disparities, it does link the resource-advantages of some populations and their health promoting behaviors, which include the utilization of prevention and treatment services aimed at ameliorating health problems. Its overarching framework is one that suggests the positive and negative ramifications of socioeconomic and political systems on health and healthcare, even as it tends to emphasize individual agency (Shim, 2010).

The results of our study showed that racial-ethnic disparities in SUD treatment encompass not only different sources of treatment but sources of treatment of differential capacities: criminal justice settings are not medical practices. Blacks were more likely to receive treatment than whites and Latinos because they were more likely to be processed by the criminal justice system and therefore more likely to received treatment in nonmedical settings.

Yet, there remain gaps in research related to treatment in criminal justice settings (Finlay et al. 2020). First, to understand racial-ethnic disparities in treatment in criminal justice settings it is essential to define those settings more precisely than I have done here. For example, is criminal justice "treatment" produced by staff while offenders are under diversion, in jail or prison, or under parole or probation, or, is it out-sourced to contractors? Second, what are treatment protocols and how effective are they in criminal justice settings? That also raises the issue of staffing and professionalization. The same two issues arise with respect to medical settings such as doctors' offices and inpatient- outpatient rehabilitation. Our study showed that whites were more likely to receive SUD treatment in doctor's offices than Blacks and Latinos. The questions I ask of the criminal justice system about context and protocol should be pursued with respect to these sites. Moreover, our findings showing racial-ethnic differences in treatment sources such as rehabilitation facilities, hospital ERs/detoxes, self-help/mutual-aid and other settings, underscores the complexity of analyses of differential racial-ethnic sources of treatment, and warrants more detailed analyses.

5. Conclusions

The significance of these results for theory and policy should not be underestimated. First, our study unpacks anomalies found in previous studies. SAMHSA's racial-ethnic and SES treatment studies can be misleading, since we now know that the Black and (occasional) Latino

treatment advantage is really a difference in sources of treatment; one that takes place in a setting in which addiction treatment is not the primary organizational goal. Whites, and those with resources are able to take advantage of treatment in settings in which the primary goal is medical care: private doctors' offices. Even in those settings in which SUD treatment is a priority, such as specialty rehabilitation (model 12, Table 2), it is unclear which of the combined "rehabilitation" settings produced which kinds of disparities. For example, one limitation of these data is that we are unable to discern whether the bi-variate Black rehabilitation advantage pertained to inpatient or outpatient settings; what protocols were in place in those settings and how effectively they provide SUD treatment. Future research would be more theoretically robust if it differentiated settings. It would also provide a better foundation for policy interventions since we cannot know who benefits from those interventions as long as we believe that Black-white treatment party is normative.

Hence, second, with regard to policy, understanding the dynamics of these institutional settings has implications for evaluating the quality of treatment services under diverse organization regimes, and will help determine the likelihood of their success in equitable health promotion between racial-ethnic groups. While examining broad policy effects such as the implementation (and limitations) of the ACA, for instance, is important for improving treatment access, sector analyses will reveal ongoing gaps in the system where intervention might be most effective.

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Endnote

[i] See SAMHSA Data Tables through 2018. Although the unweighted percentages vary from year to year, the pattern of black parity or occasional advantage is clear (e.g., 2014 NSDUH Releases: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health).

[ii] Basically, the application of racial categories to explain social practices.

[iii] In 2015, the RTI altered NSDUH alcohol and drug use/abuse/dependence survey questions, in effect, severing the longitudinal design.

[iv] Because the NSDUH employs a multistage (stratified cluster) sample design both weights, to assure representativeness for various sub populations (such as Blacks), and adjusted standard errors, to assure unbiased estimates of population parameters, are used in the following analyses. See http://samhda-faqs.blogspot.com/ retrieved July 2020.

[v] For comparison, see Le Cook and Alegria 2011

[vi] However, by definition, I am arguing that the greater odds of treatment by one group in the criminal justice system compared with private treatment, shows inequities between groups, unless these are explained by clinical-needs.

[vii] In Le Cook and Alegria 2011 the percentages are: any treatment - 11.4% for Blacks, 9.0% for whites, 8.1% for Latinos; specialty treatment – 9.4% for Blacks, 6.8% for whites and 5.3% for Latinos. See also, Pinedo's recent NSDUH sample, 2015-2017.

[viii] Note anomalous significance contrasts in criminal justice and self-help/mutual arise from calculation of the F adjusted for sample design with varying degrees of freedom. The difference between whites and

Blacks (23.6 versus 18.1) uses 163 degrees of freedom, whereas Latinos versus Blacks (24.0 versus 18.1) uses 136 degrees of freedom.

[ix] Note that the full rehabilitation model (model 12) appears to be similar to the private doctor's office model insofar as whites have higher odds of treatment in this setting when socioeconomic resources are taken into account, except that, whereas in the doctor's office model treatment was dependent on resource advantages such as higher income and education, in the rehabilitation model, it is resource disadvantage, such a lower income and education, and public (or no) insurance, including having a criminal history, that seems to improve whites' (versus Blacks' and Latinos') odds of treatment receipt (although fewer of the individual covariates were significant when all socioeconomic and clinical factors were modelled). In addition, clinical covariates, drug dependence and disability, enhanced the odds of rehabilitation treatment but not getting treatment in a doctor's office. Importantly, the reversal of the Black-white-Latino relationship in model 12 resembles Le Cook and Alegria's (2011) findings for "specialty treatment," in which rehabilitation treatment settings predominate.

[x] See SAMHSA Data Tables through 2018. Although the unweighted percentages vary from year to year, the pattern of black parity or occasional advantage is clear (e.g., 2014 NSDUH Releases: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health).

[xi] This is a statistical artifact associated with multicollinear data. Suppressor effects yield post hoc explanations of fortuitous and surprising results arising from empirical analyses and are therefore not subject to the usual rigors of hypothesis testing and falsification (Ludlow and Klein, 2014; Watson et al. 2013). In the case of Le Cook and Alegria, it is unclear which type of suppressor effect is represented by their models: reciprocal or cross-over.

[xii] Importantly, substance abuse and substance abuse treatment, although similar to other behavioral health problems, is markedly different from cancer or diabetes or cardiovascular disease. The pathology remains bio medically undefined and while the behavioral components are well-known, there is no consensus on course of treatment (IOM, 1998). As a result, the degree to which institutional spheres other than medicine, such as religion and the legal system, maintain authority to create and control social identities and resources related to the disorder exert a powerful force in determining the social conditions and settings, including salient populations and their socioeconomic characteristics, relevant to SUD treatment. Yet, research has failed to ask how differential sources of treatment channel salient populations into which settings and, what individual and structural factors explain who receives treatment and where that takes place.

Table 1
Descriptive statistics National Survey of Drug Use and Health adult respondents 2002-2014[a]

	Substance use disorder with past year SUD treatment (n=6,207)	
	Percentage	SE
Dependent Variables		
Criminal justice system	3.8	0.33
Doctor's office	9.2	0.73
Hospital	1.3	0.21
Rehabilitation facility	48.1	1.04
Self-help/mutual-aid	22.8	0.94
Other – not specified	5.8	0.50
Socioeconomic Correlates		
Black (=1)	14.8	0.82
Latino/a (=1)	14.0	0.72
Family income <$20,000	35.6	0.90
$20,000 – 49,999	34.5	1.08
$50,000 – 74,999	12.7	0.73
$75,000 plus	17.3	0.99
Education < High school	24.7	0.94
High school grad	35.4	1.06
Some college	28.4	0.90
College grad	11.4	0.75
Unemployed (=1)	20.1	0.75
Private insurance	41.8	1.09
Medicare	7.9	0.61
Medicaid	21.0	0.81
Other public insurance	8.3	0.54
No insurance	29.0	1.00
Age 18-25	28.4	0.68
Age 26-35	23.0	0.93
Age 36 and older	48.6	1.11
Male (=1)	68.7	1.04
Married (=1)	21.4	1.01
Large metro area	55.1	0.94
Small metro area	30.3	0.86
Non metro	14.6	0.57
Clinical Characteristics		
Alcohol abuse past year	22.6	0.76
Alcohol dependence past year	51.7	0.91
Illicit drug abuse past year	8.6	0.56
Illicit drug dependence past year	42.6	0.92
Criminal history lifetime arrest or probation, parole past year	51.9	0.84
Severe mental illness past year	14.3	0.80
Major depressive episode	16.3	0.77
Functional limitations - disability	13.4	0.75
Poor health	4.0	0.46
Fair health	16.2	0.79
Good health	34.5	0.91
Very good health	32.0	1.04
Excellent health	13.3	0.69

[a] Samples weight- and design- adjusted: see 2014 NSDUH releases: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health

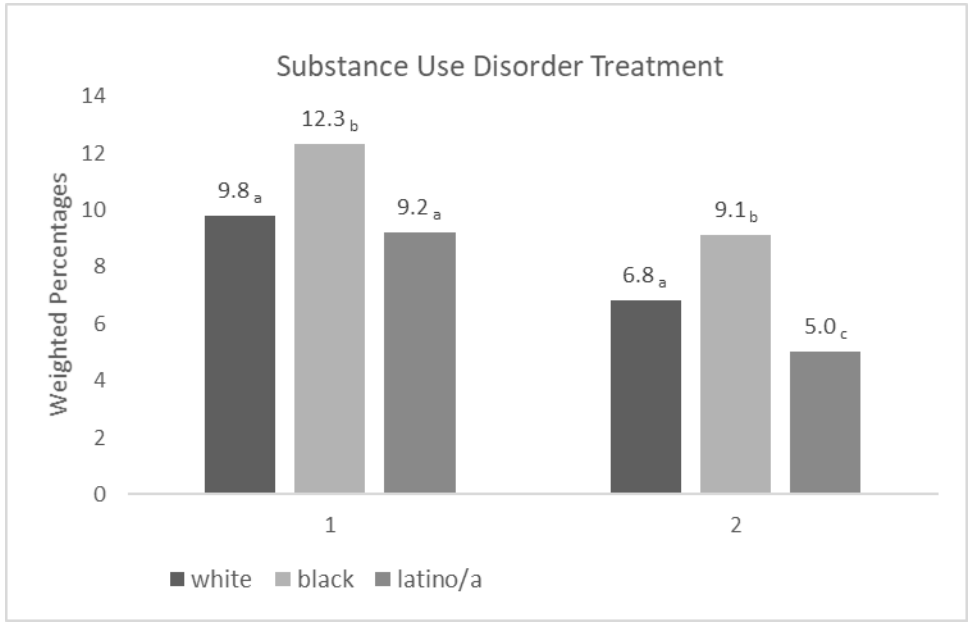

Figure 1: Substance Use Disorder Treatment for those with an SUD diagnosis(N=63,586): 1) Any SUD treatment 2) Specialty SUD treatment Percentages are based on weight-adjusted samples. Subscripts are based on weight- and design – adjusted contrasts, using APA guidelines. Different letters indicate significant differences at the 95% confidence level. For example, “a” and “b” are significantly different; “a” and “a” are not.

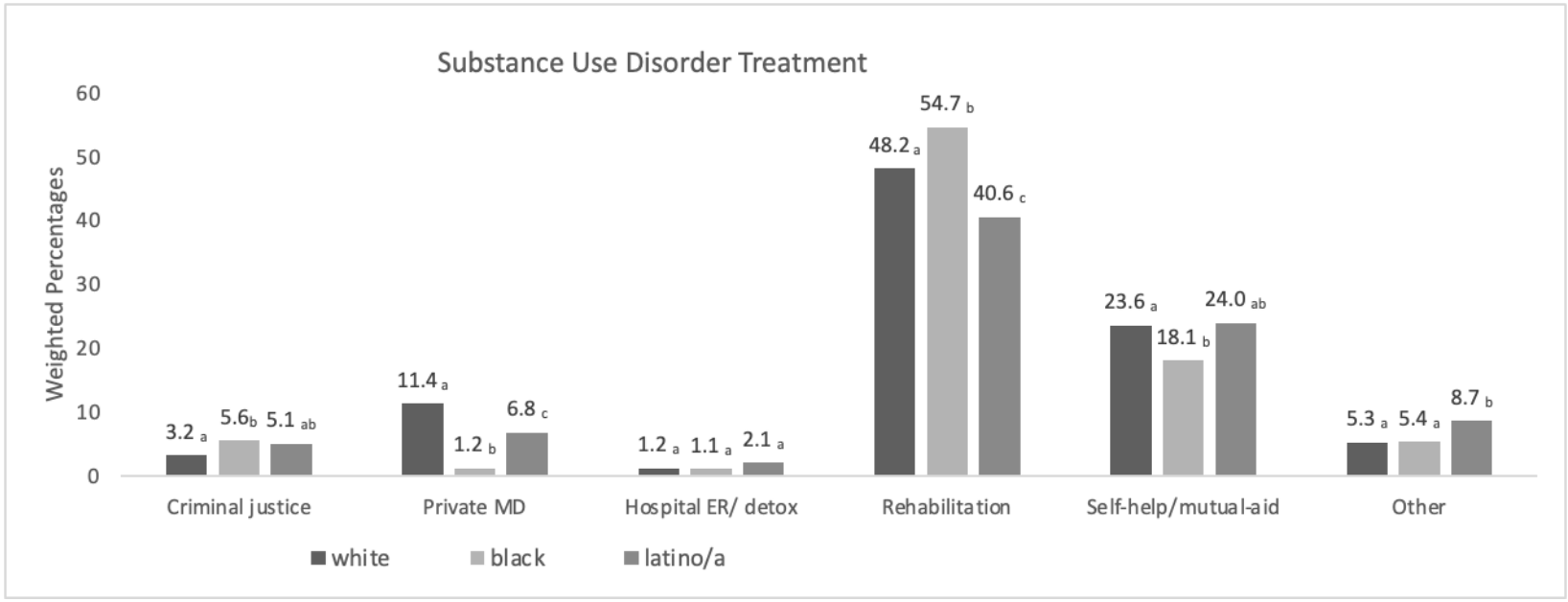

Figure 2: Sources of Substance Use Disorder Treatment for those with an SUD diagnosis who received and substance abuse treatment(N=6,207). Percentages are weight-adjusted. Subscripts are based on weight- and design – adjusted contrasts, using APA guidelines. Different letters indicate significant differences at the 95% confidence level. For example, “a” and “b” are significantly different; “a” and “a” are not.

Table 2

Logistic regression models of sources of substance abuse treatment [a]

	Model 1 Criminal justice	Model 2 Criminal justice	Model 3 Criminal justice	Model 4 Private MD	Model 5 Private MD	Model 6 Private MD	Model 7 Hospital ER/Detox	Model 8 Hospital ER/Detox	Model 9 Hospital ER/Detox
	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)
Socioeconomic correlates									
Black (=1)	1.79(0.25)*	1.73(0.25)*	1.91(0.28)*	0.09(0.29)*	0.10(0.28)*	0.16(0.30)*	0.89(0.54)	0.93(0.52)	0.87(0.57)
Latino/a (=1)	1.62(0.31)*	1.50(0.31)	1.27(0.30)	0.57(0.24)*	0.60(0.25)*	0.95(0.26)	1.75(0.44)	1.73(0.45)	1.69(0.42)
Family income (reference: <$20,000)									
$20,000 – 49,999			0.97(0.22)			1.15(0.17)			0.81(0.43)
$50,000 – 74,999			0.71(0.37)			1.83(0.24)*			1.95(0.65)
$75,000 plus			0.64(0.31)			2.15(0.22)*			0.86(0.57)
Education (reference: < High school)									
High school grad			0.89(0.25)			1.59(0.24)*			2.25(0.40)*
Some college			0.68(0.26)			2.05(0.23)*			1.67(0.45)
College grad			0.98(0.35)			2.12(0.27)*			0.53(0.88)
Unemployed (=1)			0.74(0.21)			0.86(0.19)			3.22(0.39)*
Age (reference: 18-25)									
26-35			1.32(0.23)			0.69(0.20)			1.55(0.38)
36 and older			0.64(0.28)			0.68(0.24)			0.89(0.47)
Male (=1)			1.18(0.23)			0.71(0.16)*			0.77(0.37)
Married (=1)			0.79(0.37)			1.61(0.23)*			1.20(0.54)
Residence (reference: non metro)									
Large metro area			0.62(0.28)			0.94(0.20)			1.99(0.43)
Small metro			0.73(0.28)			0.84(0.18)			1.81(0.44)
Criminal history (=1)			4.79(0.33)*			0.40(0.17)*			0.55(0.34)
Insurance (reference: private)									
Medicare			1.35(0.53)			1.11(0.33)			1.20(0.65)
Medicaid			0.84(0.34)			0.55(0.23)			1.43(0.50)
Other public insurance			0.43(0.54)			0.38(0.34)*			3.05(0.56)*
No insurance			1.22(0.27)			0.45(0.20)*			1.86(0.48)
Clinical Characteristics									
Alcohol dependence (reference: alc abuse)		0.55(0.23)*	0.63(0.23)		1.06(0.13)	0.95(0.15)		1.35(0.44)	1.31(0.44)
Illicit drug dependence (reference: drug abuse)		0.82(0.21)	0.86(0.20)		0.91(0.15)	0.98(0.16)		0.64(0.37)	0.55(0.40)
Severe mental illness past year (reference: absent)		0.60(0.32)	0.55(0.35)		1.14(0.28)	1.26(0.28)		1.14(0.42)	0.98(0.41)
Major depressive episode (reference: absent)		0.47(0.24)*	0.57(0.25)*		1.31(0.28)	1.16(0.27)		0.81(0.42)	0.76(0.44)
Functional limitations – disability (=1)		0.56(0.46)	0.64(0.47)		0.99(0.26)	1.35(0.32)		1.04(0.53)	1.51(0.50)
Health (reference: excellent)									
Poor health		0.51(0.79)	0.64(0.83)		0.87(0.38)	1.29(0.40)		2.20(0.64)	2.32(0.61)
Fair health		0.99(0.37)	1.17(0.37)		0.62(0.26)	0.74(0.26)		0.74(0.59)	0.75(0.55)
Good health		0.54(0.31)	0.60(0.32)		1.00(0.23)	1.05(0.22)		1.06(0.59)	1.05(0.51)
Very good health		0.77(0.25)	0.89(0.26)		1.07(0.22)	1.03(0.21)		0.78(0.50)	0.75(0.47)

[a] Samples weight- and design- adjusted: see 2014 NSDUH .Releases: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health.
* $p < .05$

Table 2 (continued)

Logistic regression models of sources of substance abuse treatment [a]

	Model 10 Rehab Facility	Model 11 Rehab Facility	Model 12 Rehab Facility	Model 13 Sh/Ma	Model 14 Sh/Ma	Model 15 Sh/Ma	Model 16 Other	Model 17 Other	Model18 Other
	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)	Odds ratio(S.E.)
Socioeconomic correlates									
Black (=1)	1.30(0.12)*	1.19(0.13)	0.98(0.13)	0.72(0.15)*	0.80(0.16)	0.80(0.17)	1.02(0.25)	1.08(0.26)	1.15(0.28)
Latino/a (=1)	0.73(0.15)*	0.73(0.14)*	0.67(0.14)*	1.02(0.17)	1.05(0.16)	1.08(0.18)	1.72(0.19)	1.66(0.18)*	1.65(0.18)*
Family income (reference: <$20,000)									
$20,000 – 49,999			1.08(0.11)			0.99(0.13)			0.76(0.20)
$50,000 – 74,999			0.79(0.16)			0.95(0.18)			0.71(0.25)
$75,000 plus			0.86(0.13)			0.93(0.16)			0.61(0.25)
Education (reference: < High school)									
High school grad			0.94(0.11)			1.16(0.16)			1.23(0.23)
Some college			0.97(0.13)			1.22(0.16)			0.77(0.22)
College grad			0.76(0.19)			1.33(0.22)			1.35(0.39)
Unemployed (=1)			0.98(0.09)*			1.11(0.12)			0.76(0.16)
Age (reference: 18-25)									
26-35			1.12(0.09)			1.31(0.13)*			0.47(0.22)*
36 and older			1.43(0.11)*			1.25(0.13)			0.49(0.24)*
Male (=1)			0.93(0.11)			1.01(0.12)			1.36(0.20)
Married (=1)			0.82(0.14)			1.05(0.13)			1.05(0.25)
Residence (reference: non metro)									
Large metro area			0.80(0.11)			1.42(0.14)*			0.85(0.23)
Small metro			0.93(0.13)*			1.02(0.14)			1.34(0.24)
Criminal history (=1)			1.22(0.10)*			1.17(0.10)			0.73(0.21)
Insurance (reference: private)									
Medicare			1.06(0.20)			0.63(0.30)			0.53(0.56)
Medicaid			1.59(0.13)*			0.64(0.19)*			1.03(0.25)
Other public insurance			1.67(0.17)*			0.78(0.24)			0.99(0.36)
No insurance			1.49(0.10)*			0.83(0.13)			0.75(0.22)
Clinical Characteristics									
Alcohol dependence (reference: alc abuse)		1.03(0.09)	1.05(0.09)		1.19(0.10)	1.16(0.10)		1.03(0.22)	1.09(0.20)
Illicit drug dependence (reference: drug abuse)		1.67(0.10)*	1.67(0.10)*		0.77(0.12)*	0.81(0.13)		0.63(0.20)*	0.60(0.21)*
Severe mental illness past year (reference: absent)		1.05(0.19)	0.98(0.20)		0.96(0.26)	0.93(0.27)		1.05(0.43)	1.24(0.42)
Major depressive episode (reference: absent)		0.95(0.19)	0.99(0.19)		1.26(0.24)	1.24(0.24)		0.69(0.40)	0.65(0.41)
Functional limitations - disability (=1)		1.91(0.12)*	1.47(0.13)*		0.47(0.17)*	0.59(0.18)*		0.48(0.36)*	0.52(0.43)
Health (reference: excellent)									
Poor health		1.33(0.29)	1.07(0.29)		0.59(0.40)	0.70(0.41)		0.74(0.65)	0.85(0.68)
Fair health		1.08(0.18)	0.93(0.18)		0.81(0.20)	0.89(0.20)		1.43(0.35)	1.60(0.34)
Good health		1.15(0.16)	1.08(0.16)		0.95(0.17)	0.99(0.16)		1.01(0.25)	1.07(0.25)
Very good health		1.03(0.15)	1.01(0.14)		1.06(0.17)	1.06(0.17)		1.05(0.25)	1.10(0.25)

[a] Samples weight- and design- adjusted: see 2014 NSDUH .Releases: https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health

* p< .05