

Mini Review Article

Open Access

# Racial disparities in opioid use disorder and its treatment: A review and commentary on the literature

Sean Lynch<sup>1,2</sup>, Faris Katkhuda<sup>2,3</sup>, Lidia Klepacz<sup>2,4</sup>, Eldene Towey<sup>2,4</sup>, Stephen J. Ferrando<sup>2,4\*</sup>

<sup>1</sup>Department of Psychiatry, Icahn School of Medicine at Mount Sinai, Mount Sinai Beth Israel, NY, USA

<sup>2</sup>Department of Psychiatry and Behavioral Sciences, New York Medical College, School of Medicine, NY, USA

<sup>3</sup>Department of Psychiatry, Boston Medical Center, Massachusetts, USA

<sup>4</sup>Department of Psychiatry, Westchester Medical Center Health Network, Behavioral Health Center, NY, USA

## Article Info

### Article Notes

Received: November 19, 2022

Accepted: February 07, 2023

### \*Correspondence:

\*Dr. Stephen J. Ferrando, M.D. Department of Psychiatry, Westchester Medical Center, New York Medical College, NY, USA. Email: [Stephen.Ferrando@wmchealth.org](mailto:Stephen.Ferrando@wmchealth.org)

©2023 Ferrando SJ. This article is distributed under the terms of the Creative Commons Attribution 4.0 International License.

### Keywords:

Opioid epidemic  
Opioid use disorder  
Public health  
Racial disparities  
Racism in healthcare  
Substance use disorders and treatment

## Abstract

Despite public interventions, the rate of opioid use disorder (OUD) continues to rise. In this focused review of the existing literature, the authors describe how increases in OUD, as well as opioid-related deaths, have occurred disproportionately among people of color. Black patients in particular are dying of overdose at an increased rate, however are less likely to receive any treatment for OUD. Additionally, Black patients are less likely to receive buprenorphine than White patients, but more likely to receive methadone. Potential causes of these disparities are discussed, as well as the impact of the COVID-19 pandemic, and the successes of several pilot programs.

## Updated History of the Opioid Epidemic

In October 2017, the United States Department of Health and Human Services officially declared the opioid crisis a national public health emergency. Despite an attempt to increase public awareness through various campaigns and initiatives, systematic approaches have largely failed, with opioid-related overdoses and the number of people suffering from opioid use disorder (OUD) continuing to rise.<sup>1</sup> In 2019, over 10 million people misused opioids, and by 2022 over 3 million people met diagnostic criteria for OUD.<sup>1,2</sup> Deaths due to opioid overdose were exacerbated by the COVID-19 pandemic, likely in part due to unemployment, social isolation, and the scaling down of treatment programs.<sup>3</sup> During the peak of the pandemic, overdose fatalities due to synthetic opioids (such as fentanyl) increased by 55% compared to the year prior.<sup>4</sup> In 2021, a total of over 100,000 people died of a drug overdose, with fatal overdoses related to opioids totaling at over 80,000, largely driven by fentanyl.<sup>5</sup>

Deaths from drug overdoses in general have lowered the overall life expectancy in the U.S., and continue to be a more prevalent cause of death than car accidents or gun-related deaths.<sup>3</sup> Aside from the devastating loss of life, the opioid epidemic has also resulted in significant financial societal costs, with the U.S. Joint Economic Committee estimating annual costs of \$1.04 trillion in 2018, \$985 billion in 2019, and nearly \$1.5 trillion in 2020.<sup>6</sup> This includes hospital expenses, associated increases in HIV and viral Hepatitis, criminal justice costs, and lost work productivity.<sup>7,8</sup>

## Racial Disparities in the Opioid Crisis

Experts have divided the opioid epidemic into three distinct waves, each with different sociodemographic characteristics

**Table 1:** Waves of the Opioid Epidemic

Wave of Opioid Epidemic	Timeline	Primary population affected	Primary opioid being used
Wave 1	1979-mid 1990's	Black Americans	Heroin
Wave 2	Mid 1990's-2010	Black and White Americans	Oral opioid analgesics
Wave 3	2011-today	All Americans	Heroin and synthetic opioids (such as fentanyl and carfentanil)

(Table 1).<sup>9</sup> The first wave, starting in 1979 and lasting until the mid-1990's, was largely driven by heroin use and was characterized by a higher mortality rate for Black Americans.<sup>9</sup> It was during this time that President Reagan re-dedicated the U.S. to the "War on Drugs", which included increasing anti-drug law enforcement budgets, creating a federal drug task force, and aiding in the development of a culture which demonizes those that use drugs.<sup>10</sup> These initiatives unfortunately escalated racial disparities in arrests for substance-related charges. In 1992, Black Americans accounted for 40% of all drug-related arrests, despite largely equivalent rates of drug usage between Black and White Americans and Black Americans only comprising about 12% of the total population.<sup>10,11</sup> Additionally, the policies enacted by the War on Drugs encouraged a style of policing that led to increases in police violence in Black communities, as well as increases in racial profiling and racialized mass incarceration.<sup>11</sup>

During the second wave of the opioid epidemic, from the late 1990's until 2010, the mortality rate remained stable among Black Americans but steadily increased for White Americans, with overdose deaths largely related to prescribed opioid analgesics.<sup>9</sup> This may have been due to racism amongst prescribers, who have been found to be less likely to prescribe opioids, more likely to use urine drug screening, and to restrict early refills for Black patients.<sup>12</sup> White medical providers may also incorrectly believe that there are biologic differences between Black and White patients, such as Black people feeling less pain, which can also contribute to undertreating pain in Black patients.<sup>13</sup> During this time, the War on Drugs continued, with funding for law enforcement continuing to increase as well as the number of police officers patrolling the streets.<sup>10</sup>

The United States is currently in the midst of the third wave of the epidemic, which is distinguished by substantial increases in mortality rates for all populations. This increase in mortality is in part due to heroin, and even more so synthetic opioids, such as fentanyl, which is 50 times more potent than heroin, and carfentanil, which is 50-100 times more potent than fentanyl.<sup>1,14</sup>

The manner in which the current wave of the opioid crisis has been treated has differed in comparison to prior drug epidemics in the U.S., likely due to variable racial compositions.<sup>15</sup> In 2018, 79% of all people who died from an opioid-related overdose were Non-Hispanic Whites, while 10% were non-Hispanic Blacks and 8% identified as Hispanic.<sup>15</sup> This pattern has changed, however, as

recent studies report that in 2020, drug-related deaths among Black people were higher than those among White people for the first time since 1999.<sup>16</sup> The Center for Disease Control and Prevention reported that number of overdose deaths increased 44% among Black people in 2020 compared to the year prior, and that among Black people between ages 15 and 24, this rate was staggeringly higher (86%).<sup>17</sup> These were largely driven by opioid-related overdoses, with data from the CDC showing that rates of opioid overdose were higher among Black and Native American people compared to White people, even in areas with higher availability of treatment programs.<sup>18</sup> This increase in mortality is likely in part due to the COVID-19 pandemic, which disproportionately worsened health and social outcomes in marginalized communities.<sup>16</sup>

### Disparities in the Treatment of Opioid Use Disorder

Although experts unanimously agree that the treatment of opioid use with medications, such as buprenorphine or methadone, reduces overall mortality and other adverse effects of OUD, the vast majority of patients with OUD do not receive treatment.<sup>19</sup> Unfortunately, this fact is especially true for people of color.<sup>19</sup> A study of National Surveys on Drug Use and Health data shows that only 19.44% of all patients with diagnosed OUD received medications for OUD (MOUD) in 2013.<sup>19</sup> Only 20.7% of White patients, 17.2% of Hispanic patients, and 15.7% of Black patients received OUD-related services. Asian-Americans and Pacific Islanders with OUD had the lowest rate of opioid-specific treatment at 1.2%.<sup>19</sup> Recent reports from the CDC found that only one in twelve Black people who died of an opioid-related overdose had been engaged in substance use treatment, with White people being nearly twice as likely to receive treatment.<sup>17</sup> A potential contributing factor to the decreased engagement in treatment is lower trust in the healthcare system by Black Americans due to systemic and interpersonal racism, potentially leading to fewer Black patients seeking care.<sup>20</sup>

Statistics showed that not only are White patients more likely to receive MOUD than Black patients, they also are more likely to receive buprenorphine compared to methadone.<sup>21</sup> Prescribing patterns reflect patterns of geographic segregation, with literature showing that methadone prescribing was more common in areas where Black and Hispanic/Latino residents were unlikely to interact with White residents, with buprenorphine prescribing being more common in counties where

White residents were unlikely to interact with people of color.<sup>21</sup> One recent study from the University of Michigan found similar patterns of structural racism, where White patients were 3-4x more likely as Black patients to receive buprenorphine, with Black patients being more commonly referred for methadone treatment.<sup>22</sup>

While both of the above-mentioned FDA-approved MOUD have been proven to reduce cravings/withdrawal symptoms, increase treatment retention, and reduce opioid use and relapse rates, there are important differences between modalities.<sup>23</sup> Buprenorphine is a partial mu-opioid receptor agonist, which can be prescribed by providers with special licenses from the DEA, and can be filled at ordinary pharmacies like any other prescription.<sup>23,24</sup> Methadone, a full mu-opioid receptor agonist, is monitored at the federal level, and is only able to be dispensed at certified clinics.<sup>25</sup> Though some reports indicate that methadone may have a higher success rate than buprenorphine at maintaining patients in treatment, significant drawbacks include geographic limitations in finding a clinic, waitlists and the requirement that patients must return every day to the clinic, at least early in treatment, to receive their daily dose.<sup>25,26</sup>

Many patients prefer treatment with buprenorphine over methadone, especially in the early treatment of OUD.<sup>27</sup> This may be due to the less severe side effect profile of buprenorphine, including lower levels of sedation, the increased safety of buprenorphine and the fact that buprenorphine can be taken at home, increasing privacy and autonomy.<sup>23</sup> This is especially true due to recent legislative changes during the COVID-19 pandemic, as in March 2020 the Substance Abuse and Mental Health Services Administration (SAMHSA) announced that in-person exams to initiate buprenorphine treatment were no longer required, while providers still need to conduct an in-person exam before starting methadone treatment.<sup>28</sup> In April 2021, the Department of Health and Human Services also lifted the waiver requirement for prescribers treating 30 or fewer patients.<sup>29</sup> Despite this intervention, a majority of non-waivered prescribers are unaware of this option and/or remain resistant to prescribing.<sup>30</sup> To accommodate social distancing, patients at methadone clinics are able to take home larger quantities, but they still are required to return in person to the clinic on a regular basis.<sup>31</sup>

While racial disparities between treatments have been clearly documented, the reasons for such disparities are less evident, and likely involve many factors, such as public policy, physician biases, and resource allocation. Of note, the FDA's approval of buprenorphine coincided with the sharp increase in opioid use in predominantly White, suburban areas. This population became opioid-dependent due to prescription pharmaceuticals and was part of the earlier referenced second wave of the opioid epidemic.<sup>9</sup>

Mounting political pressure from these communities influenced Congress to enact legislation promoting office-based buprenorphine treatment, which is easier than commuting long distances daily to a methadone clinic and more palatable to patients living in suburban areas.<sup>32</sup>

The fact that methadone rates have remained relatively constant while buprenorphine rates continue to increase, along with the fact that methadone patients tend to be older, may indicate that buprenorphine is primarily being used for patients newly diagnosed with OUD. For example, the New York City borough of Staten Island has the highest percentage of White residents compared to the other boroughs, and also had the highest increase in opioid overdoses, at 261% between 2005 and 2011. Accordingly, Staten Island had the highest increase in buprenorphine prescriptions between 2004 and 2013, however, the borough also has the lowest rates of methadone treatment in the city.<sup>32,33</sup>

An additional factor (prior to COVID-19) may be that there simply are not enough buprenorphine-prescribing physicians to meet the demand. In 2011, almost a decade after FDA approval, 43% of U.S. counties had no physicians who were certified to prescribe buprenorphine.<sup>34</sup> In 2014, 48 states and the District of Columbia had rates of opioid dependence that were higher than their buprenorphine treatment capacity.<sup>35</sup> Even if a patient is able to locate a buprenorphine prescriber, the medication itself may be too expensive to access. Although MOUD with buprenorphine is covered under Medicaid, less than 10% of buprenorphine prescribers accepted Medicaid in New York City in 2012, and in some states like Ohio, almost half of buprenorphine prescribers accept cash payments only.<sup>22,36</sup> According to data from the National Ambulatory Medical Care Survey, 39.6% of visits involving buprenorphine were by self-pay patients, 33.9% of visits were paid by private insurance, while only 18.9% of buprenorphine visits were paid by Medicaid or Medicare.<sup>22</sup>

Substance Abuse Treatment (SAT) facilities, somewhat counterintuitively, often do not provide MOUD for their patients. In 2016 only 36.1% of SAT facilities offered any MOUD, which included buprenorphine, methadone, or extended-release naltrexone.<sup>37</sup> Of those that do offer MOUD, a 2016 study found that SAT facilities offering charity care or a sliding-fee scale were found to have lower odds of offering buprenorphine compared to SAT facilities that did not offer payment assistance. This is a significant problem, as the number of privately owned SAT facilities continues to expand, and comprised 29% of all SAT facilities in 2009.<sup>38</sup> SAT facilities which accepted Medicaid had double the odds of offering methadone in comparison to SAT facilities which did not accept Medicaid.<sup>39</sup> This difference is likely racially driven, given that people of color make up a disproportionately high percentage of the Medicaid/

public insurance population.<sup>40</sup> Many states have still not expanded Medicaid through the Affordable Care Act, and in these states, the demand for buprenorphine may continue to surpass the availability of prescribers.<sup>41</sup> Ultimately, although buprenorphine is widely covered by insurance, there are still many barriers to access for low-income populations, which may contribute to racial inequities.

A final potential and disturbing factor is that buprenorphine might be offered to White patients at disproportionate rates to Black patients due to institutional and/or individual racism, although this is difficult to measure. Just as Black Americans are subjected to higher restrictions and safety monitoring when prescribed pain medication, Black patients may be funneled into methadone treatment because of its stricter supervision, like daily dosing and regular urine toxicology screening.<sup>15,42</sup>

### Steps Towards Change

Although the origins of racial disparities in OUD and treatment options are multifaceted, there have been many pilot programs throughout the U.S. to increase usage of buprenorphine in non-White populations which have demonstrated success. One such program developed in Baltimore involved funding an initiative to train outpatient physicians on buprenorphine-prescribing, and funneled stabilized buprenorphine patients to community health centers.<sup>43</sup> Over the course of 3 years, the number of patients treated with buprenorphine sharply rose from 1795 to 7479 (over a 300% increase), and if adjusting for heroin purity and the number of methadone patients, there was a statistically significant inverse relationship between the increase in buprenorphine patients and the decrease in heroin overdose deaths throughout the city.<sup>43</sup>

Similarly, the San Francisco Department of Public Health developed a “Buprenorphine Pilot Program” at a centralized buprenorphine induction clinic, two primary care clinics, and three community-based treatment sites to target patients with OUD who were experiencing poverty, homelessness, unemployment, and coexisting mental health disorders. This resulted in a one-year retention rate of 61% and a dramatic decline in opioid use among many of the city’s most vulnerable patients with OUD.<sup>44</sup>

A pilot program in New York City had similar results and involved a training program for physicians in prescribing buprenorphine at a federally-qualified health center in the South Bronx, a predominately non-White area with a high rate of poverty, drug use, and HIV.<sup>42</sup> The program demonstrated over a 70% retention rate for its patients, who were mostly Hispanic (58.8%) or Black (31.7%), had public health insurance (78.1%), and were unemployed (57.5%).<sup>42</sup>

There have also been programs targeted towards medical providers to attempt to address implicit racial

bias, with many states passing legislation to mandate such training.<sup>45</sup> As Cooper et al. reported in 2022, mandating these programs sends an important message to non-White communities: that equity in healthcare is important, people that are negatively affected by bias in the healthcare setting deserve respect, care, and dignity, and that healthcare organizations and individual healthcare providers are accountable for ensuring equitable care.<sup>45</sup>

### Conclusions

Although mortality rates from opioid-related overdoses are rising for all populations in the current wave of the opioid epidemic, the increase is much more profound among Black patients. Despite this, White patients with OUD are more likely to receive MOUD, especially when the modality is buprenorphine. Racial disparities have likely worsened due to the COVID-19 pandemic and the gap may continue to widen if not addressed by the medical community as well as governmental bodies. This review has significant limitations, given that it is retrospective, and is not a systematic review of all available literature on this topic. Articles that oppose these viewpoints may exist that were not discussed above. However, the articles cited in this review are congruent with the majority of the literature and with expert consensus on this topic. Further research is indicated in this field, including examining the effect of regulatory changes in buprenorphine-prescribing due to the pandemic. Institutions should continue to develop implicit bias training in an attempt to address interpersonal racism, and should frequently re-examine institutional policies and procedures to ensure healthcare parity within individual institutions. Psychiatrists, addiction specialists, and all other medical providers should be aware of the disparities that exist due to individual and structural/institutional racism and continue to advocate for improved access to treatment for patients with OUD. Finally, targeted community-based programs aimed at increasing buprenorphine and other MOUD education and access to communities of color, modeled after successful pilot programs cited above, should be widely implemented.

### Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Funding

No funding was obtained in the support of this manuscript.

### References

1. D. C. D. “What Is the U.S. Opioid Epidemic?”. HHS.gov. Retrieved March 4, 2022, from <https://www.hhs.gov/opioids/about-the-epidemic/opioid-crisis-statistics/index.html>
2. Azadfar M, Huecker MR, Leaming JM. Opioid Addiction. In StatPearls. StatPearls Publishing. 2022.

3. Katz J, Goodnough A, Sanger-Katz M. In Shadow of Pandemic, U.S. Drug Overdose Deaths Resurge to Record. *The New York Times*. 2020.
4. Office of the Assistant Secretary for Health (OASH). (2021, December 29). HHS expands access to treatment for opioid use disorder. HHS.gov. Retrieved March 4, 2022, from <https://www.hhs.gov/about/news/2021/01/14/hhs-expands-access-to-treatment-for-opioid-use-disorder.html>
5. Centers for Disease Control and Prevention. (2022, May 11). U.S. overdose deaths in 2021 increased half as much as in 2020 - but are still up 15%. Centers for Disease Control and Prevention. Retrieved November 19, 2022, from [https://www.cdc.gov/nchs/pressroom/nchs\\_press\\_releases/2022/202205.htm](https://www.cdc.gov/nchs/pressroom/nchs_press_releases/2022/202205.htm)
6. Committee, U. S. J. E. (2022, September 28). THE ECONOMIC TOLL OF THE OPIOID CRISIS REACHED NEARLY \$1.5 TRILLION IN 2020. United States Joint Economic Committee. Retrieved November 19, 2022, from <https://www.jec.senate.gov/public/index.cfm/democrats/issue-briefs?ID=CE55E977-B473-414F-8B88-53EB55EB7C7C>
7. Chen Q, Larochelle MR, Weaver DT, et al. Prevention of prescription opioid misuse and projected overdose deaths in the United States. *JAMA Network Open*. 2019. <https://doi.org/10.1001/jamanetworkopen.2018.7621>
8. Centers for Disease Control and Prevention. (2021, December 17). Prescription Drug Overdose in the United States: Fact Sheet. Centers for Disease Control and Prevention. Retrieved March 4, 2022, from <https://www.cdc.gov/drugoverdose/index.html>
9. Alexander MJ, Kiang MV, Barbieri M. Trends in black and white opioid mortality in the United States, 1979–2015. *Epidemiology*. 2018; 29(5): 707-715. <https://doi.org/10.1097/ede.0000000000000858>
10. Cooper HL. War on Drugs Policing and Police Brutality. *Substance Use & Misuse*. 2015; 50(8-9): 1188-94. <https://doi.org/10.3109/10826084.2015.1007669>
11. Rosino ML, Hughey MW. The war on drugs, racial meanings, and structural racism: A holistic and reproductive approach. *American Journal of Economics and Sociology*. 2018; 77(3-4): 849-892. <https://doi.org/10.1111/ajes.12228>
12. Becker WC, Starrels JL, Heo M, et al. Racial differences in primary care opioid risk reduction strategies. *The Annals of Family Medicine*. 2011; 9(3): 219-225. <https://doi.org/10.1370/afm.1242>
13. Strand NH, Mariano ER, Goree JH, et al. Racism in pain medicine: We can and should do more. *Mayo Clinic Proceedings*. 2021; 96(6): 1394-1400. <https://doi.org/10.1016/j.mayocp.2021.02.030>
14. Swanson DM, Hair LS, Strauch Rivers SR, et al. Fatalities involving Carfentanil and furanyl fentanyl: Two case reports. *Journal of Analytical Toxicology*. 2017; 41(6): 498-502. <https://doi.org/10.1093/jat/bkx037>
15. Salmond S, Allread V. A population health approach to america's opioid epidemic. *Orthopaedic Nursing*. 2019; 38(2): 109-110. <https://doi.org/10.1097/nor.0000000000000546>
16. Friedman JR, Hansen H. Evaluation of Increases in Drug Overdose Mortality Rates in the US by Race and Ethnicity Before and During the COVID-19 Pandemic. *JAMA Psychiatry*. 2022; 79(4): 379-381. doi:10.1001/jamapsychiatry.2022.0004
17. Kariisa M, Davis NL, Kumar S, et al. Vital Signs: drug overdose deaths, by selected sociodemographic and Social Determinants of health characteristics — 25 states and the District of Columbia, 2019–2020. *MMWR. Morbidity and Mortality Weekly Report*. 2022; 71(29): 940-947. <https://doi.org/10.15585/mmwr.mm7129e2>
18. Centers for Disease Control and Prevention. (2022, July 18). Overdose death rates increased significantly for black, American Indian/Alaska native people in 2020. Centers for Disease Control and Prevention. Retrieved December 31, 2022, from <https://www.cdc.gov/media/releases/2022/s0719-overdose-rates-vs.html>
19. Wu LT, Zhu H, Swartz MS. Treatment utilization among persons with opioid use disorder in the United States. *Drug and Alcohol Dependence*. 2016; 169: 117-127. <https://doi.org/10.1016/j.drugalcdep.2016.10.015>
20. Adegbenbo AO, Tomar SL, Logan HL. Perception of Racism Explains the Difference Between Blacks' and Whites' Level of Healthcare Trust. *Ethnicity & Disease*. 2006; 16: 792-798.
21. Goedel WC, Shapiro A, Cerdá M, et al. Association of Racial/Ethnic Segregation With Treatment Capacity for Opioid Use Disorder in Counties in the United States. *JAMA Netw Open*. 2020; 3(4): e203711. <https://doi.org/10.1001/jamanetworkopen.2020.3711>
22. Lagisetty PA, Ross R, Bohnert A, et al. Buprenorphine treatment divide by race/ethnicity and payment. *JAMA Psychiatry*. 2019; 76(9): 979. <https://doi.org/10.1001/jamapsychiatry.2019.0876>
23. Tsui JI, Burt R, Thiede H, et al. Utilization of buprenorphine and methadone among opioid users who inject drugs. *Substance Abuse*. 2017; 39(1): 83-88. <https://doi.org/10.1080/08897077.2017.1363844>
24. Fiscella K, Wakeman SE, Beletsky L. Buprenorphine Deregulation and Mainstreaming Treatment for Opioid Use Disorder: X the X Waiver. *JAMA Psychiatry*. 2019; 76(3): 229-230. doi:10.1001/jamapsychiatry.2018.3685
25. Mattick RP, Breen C, Kimber J, et al. Buprenorphine maintenance versus placebo or methadone maintenance for opioid dependence. *Cochrane Database of Systematic Reviews*. 2014. <https://doi-org.eresources.mssm.edu/10.1002/14651858.CD002207.pub4>
26. Huhn AS, Dunn KE. Why aren't physicians prescribing more buprenorphine? *Journal of Substance Abuse Treatment*. 2017; 78: 1-7. <https://doi.org/10.1016/j.jsat.2017.04.005>
27. Gryczynski J, Mitchell SG, Jaffe JH, et al. Retention in methadone and buprenorphine treatment among African Americans. *Journal of Substance Abuse Treatment*. 2013; 45(3): 287-292. <https://doi.org/10.1016/j.jsat.2013.02.008>
28. Shahar S, Lynch ST, Klepacz L, et al. Case report: Relapsing opioid use disorder in the context of COVID-19. *Annals of Case Reports*. 2020; 5: 557. <https://doi.org/10.29011/2574-7754.100557>
29. Practice Guidelines for the Administration of Buprenorphine for Treating Opioid Use Disorder. Federal Register. (2021, April 28). Retrieved January 2, 2023, from <https://www.federalregister.gov/documents/2021/04/28/2021-08961/practice-guidelines-for-the-administration-of-buprenorphine-for-treating-opioid-use-disorder>
30. Lai B, Croghan I, Ebbert JO. Buprenorphine waiver attitudes among primary care providers. *Journal of Primary Care & Community Health*. 2022; 13: 215013192211122. <https://doi.org/10.1177/21501319221112272>
31. Leppla IE, Gross MS. Optimizing medication treatment of opioid use disorder during COVID-19 (SARS-COV-2). *Journal of Addiction Medicine*. 2020; 14(4): e1-e3. <https://doi.org/10.1097/adm.0000000000000678>
32. Hansen H, Siegel C, Wanderling J, et al. Buprenorphine and methadone treatment for opioid dependence by income, ethnicity and race of neighborhoods in New York City. *Drug and Alcohol Dependence*. 2016; 164: 14-21. <https://doi.org/10.1016/j.drugalcdep.2016.03.028>
33. Buprenorphine and methadone treatment in New York City. NYC Gov. (n.d.). Retrieved March 5, 2022, from <https://www1.nyc.gov/assets/doh/downloads/pdf/epi/databrief96.pdf>
34. Stein BD, Dick AW, Sorbero M, et al. A population-based examination of trends and disparities in medication treatment for opioid use disorders among Medicaid enrollees. *Substance Abuse*. 2018; 39(4): 419-425. <https://doi.org/10.1080/08897077.2018.1449166>

35. Jones CM, Campopiano M, Baldwin G, et al. National and state treatment need and capacity for opioid agonist medication-assisted treatment. *American Journal of Public Health*. 2015; 105(8): e55-63. <https://doi.org/10.2105/ajph.2015.302664>
36. Hansen HB, Siegel CE, Case BG, et al. Variation in use of buprenorphine and methadone treatment by racial, ethnic, and income characteristics of residential social areas in New York City. *The Journal of Behavioral Health Services & Research*. 2013; 40(3): 367-377. <https://doi.org/10.1007/s11414-013-9341-3>
37. Mojtabei R, Mauro C, Wall MM, et al. Medication treatment for opioid use disorders in substance use treatment facilities. *Health Affairs*. 2019; 38(1): 14-23. <https://doi.org/10.1377/hlthaff.2018.05162>
38. Miller SM, Moulton S. Publicness in policy environments: A multilevel analysis of Substance Abuse Treatment Services. *Journal of Public Administration Research and Theory*. 2013; 24(3): 553-589. <https://doi.org/10.1093/jopart/mus065>
39. Yang JC, Roman-Urrestarazu A, Brayne C. Responses among substance abuse treatment providers to the opioid epidemic in the USA: Variations in buprenorphine and methadone treatment by geography, operational, and payment characteristics, 2007-16. *PLOS ONE*. 2020; 15(3): e0229787. <https://doi.org/10.1371/journal.pone.0229787>
40. Hill, L. F. & Artiga, S. (2022, December 20). Health coverage by Race and ethnicity, 2010-2021. Kaiser Family Foundation (KFF). Retrieved January 2, 2023, from <https://www.kff.org/racial-equity-and-health-policy/issue-brief/health-coverage-by-race-and-ethnicity/>
41. Stein BD, Gordon AJ, Dick AW, et al. Supply of Buprenorphine waived physicians: The Influence of State Policies. *Journal of Substance Abuse Treatment*. 2015; 48(1): 104-111. <https://doi.org/10.1016/j.jsat.2014.07.010>
42. Cunningham C, Giovanniello A, Sacajiu G, et al. Buprenorphine Treatment in an Urban Community Health Center: What to Expect. *Family Medicine*. 2008; 40(7): 500-506.
43. Schwartz RP, Gryczynski J, O'Grady KE, et al. Opioid agonist treatments and heroin overdose deaths in Baltimore, Maryland, 1995-2009. *American Journal of Public Health*. 2013; 103(5): 917-922. <https://doi.org/10.2105/ajph.2012.301049>
44. Hersh D, Little SL, Gleghorn A. Integrating buprenorphine treatment into a public healthcare system: The San Francisco Department of Public Health's Office-based Buprenorphine Pilot Program. *Journal of Psychoactive Drugs*. 2011; 43(2): 136-145. <https://doi.org/10.1080/02791072.2011.587704>
45. Cooper LA, Saha S, van Ryn M. Mandated implicit bias training for health professionals—a step toward equity in Health Care. *JAMA Health Forum*. 2022; 3(8):e223250. <https://doi.org/10.1001/jamahealthforum.2022.3250>