



Addressing the Opioid Crisis through Social Determinants of Health: What Are Communities Doing?

Brandeis Opioid Resource Connector

This issue brief discusses the role of social determinants of health (SDoH) in the opioid crisis and how addressing SDoH might improve health outcomes and reduce health disparities related to OUD, especially in the era of COVID-19. We focus on three central domains of SDoH: employment, housing, and education. Promising program models implemented by communities addressing these domains are highlighted.

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Brandeis Opioid Resource Connector
communities informing communities

The Brandeis Opioid Resource Connector is a product of the Opioid Policy Research Collaborative at the Institute for Behavioral Health in the Heller School for Social Policy and Management at Brandeis University





INTRODUCTION

The opioid crisis continues to have a devastating impact on families and communities in the United States, driven by a sharp increase in the number of Americans suffering from opioid use disorder (OUD).^{1,2} This public health emergency has claimed nearly 500,000 lives in the last twenty years.^{3,4} Accidental overdoses are now the leading cause of death for people under the age of 50 in the United States,⁵ significantly contributing to a decline in overall life expectancy in the US over the last three years.^{6,7} Preliminary data suggest that the COVID-19 pandemic is exacerbating the opioid crisis in terms of increased opioid use, opioid overdoses, and overdose deaths^{8,9,10}, with racial disparities in fatal and nonfatal overdoses in some urban areas.^{11,12} Policies to reduce virus transmission have severely limited access to in-person treatment and recovery programs,^{13,14} and the social isolation resulting from the pandemic is itself a risk factor for substance misuse.^{15,16}

In addition to lives lost, the societal cost of OUD and fatal opioid overdoses was estimated to be over \$1 trillion in 2017.¹⁷ The opioid crisis has created an increase of children in foster care, a rise in incarcerated populations struggling with OUD, and more grandparents raising grandchildren.

Local communities are increasingly called upon to address the opioid crisis, which may involve interventions across the continuum of care: prevention, harm reduction, treatment, and recovery. These include programs aimed at preventing new cases of OUD, identifying early cases of opioid misuse, ensuring access to effective treatment, employing harm reduction strategies, and supporting vulnerable populations. In addition, communities can prevent opioid addiction and overdose deaths, and improve the lives of those struggling with OUD, by addressing the social determinants of health (SDoH). These determinants, which include socioeconomic and environmental factors, as well as health-related behaviors, are responsible for 80-90% of health outcomes, and are especially important in behavioral health outcomes.^{18,19} It is therefore critical to pursue community-based solutions *outside* the healthcare and addiction treatment system, as well as within it, to respond effectively to the opioid crisis.

This issue brief discusses the role of SDoH in the opioid crisis and how addressing SDoH might improve health outcomes and reduce health disparities related to OUD, especially in the era of COVID-19. We focus on three central domains of SDoH: employment, housing, and



education. Promising program models implemented by communities addressing these domains are highlighted.

What are Social Determinants of Health?

Addressing SDoH is widely understood to be critical in responding to public health challenges, including the opioid crisis.²⁰ Casting a wide net, SDoH are defined by HealthyPeople2020 as:

“conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.”²¹

Stakeholders have defined SDoH as encompassing many different factors, some of which are listed by the Kaiser Family Foundation (KFF) in Figure 1.²² Some factors especially important among those with OUD include employment, housing, education, transportation, trauma, social support, stigma, criminal justice involvement, and access to technology (not all these SDoH are listed in Figure 1).

Figure 1:

Economic Stability	Neighborhood and Physical Environment	Education	Food	Community and Social Context	Health Care System
Employment	Housing	Literacy	Hunger	Social integration	Health coverage
Income	Transportation	Language	Access to healthy options	Support systems	Provider availability
Expenses	Safety	Early childhood education		Community engagement	Provider linguistic and cultural competency
Debt	Parks	Vocational training		Discrimination	Quality of care
Medical bills	Playgrounds	Higher education		Stress	
Support	Walkability				
	Zip code / geography				

Health Outcomes
Mortality, Morbidity, Life Expectancy, Health Care Expenditures, Health Status, Functional Limitations

Source: Kaiser Family Foundation (2018)

Likewise, the World Health Organization (WHO) describes SDoH as “the complex, integrated, and overlapping social structures, policies, and economic systems, including the social and physical environments, health-services structure, and societal factors that are

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responsible for most health inequities.”²³ The WHO definition highlights the wide array of factors that could function as SDoH, whether they be upstream or downstream factors (e.g. living and working conditions vs. demographics), and at the individual or community level (e.g. stable housing for the individual vs. median rent in the community).²⁴

Social determinants of health can intersect in ways that either promote the health and well-being of individuals and communities or prevent them from achieving health equity.²⁵ Health equity is defined by the Robert Wood Johnson Foundation's “Culture of Health” initiative as:

“everyone having a fair and just opportunity to be as healthy as possible...[which requires] removing obstacles to health such as poverty, discrimination, and their consequences, including powerlessness and lack of access to good jobs with fair pay, quality education and housing, safe environments, and health care.”²⁶

It has been widely documented that access to gainful employment, education, housing, and health care, all critical to achieving health equity, has been uneven within and across communities.^{27,28} This has placed a disproportionate burden on minorities, especially evident in the racial disparities in morbidity and mortality attributable to COVID-19 in the United States.^{29,30,31} This uneven distribution of SDoH has also been implicated in producing racial health disparities in the addiction treatment system.³² Thus, addressing SDoH as part of the response to the opioid crisis is likely to reduce these disparities in addition to improving overall outcomes.

Social Determinants of Health, COVID-19, and the Opioid Crisis

As the coronavirus pandemic has taken hold, those with substance use disorders (SUD) are more likely to be exposed to the virus and have higher hospitalization and mortality rates due to COVID-19. In one study, the odds of exposure to COVID-19 for those with SUD was 8.7 times higher than those without SUD, with those with OUD at highest risk.³³ Another study found that those with SUD were at increased risk for hospitalization, ventilation use, and mortality compared to those without SUD.³⁴ Minorities have been especially hard hit by the convergence of SUD and the pandemic; SDoH have been implicated as one reason for these differential impacts.^{35,36}



Non-minority populations are also at heightened risk for SUD due to recent changes in SDoH. A landmark study by Case and Deaton found that among Whites, mortality rates for ages 45-54 from 1999-2013 increased dramatically, largely driven by an increase in drug overdose deaths.³⁷ Interpreting these data, the researchers concluded that these were “deaths of despair” caused by the deterioration of social and economic well-being with each successive generation.³⁸ Although the causes of the opioid crisis are multifaceted and linked to social disadvantage, the overprescribing of prescription opioids played a central role.³⁹ Socio-economic factors have been implicated as risk factors in susceptibility to OUD, access to OUD treatment, sustaining OUD remission, and overdose deaths.^{40,41} In addition, the coronavirus pandemic has exacerbated the impact of OUD on all populations by disrupting in-person modes of screening, treatment, and recovery. Primary care visits, one-on-one counseling, recovery meetings, and substance-free group activities have been curtailed. Social distancing and isolation, while helpful in curbing virus transmission, are themselves risk factors for substance misuse. Although health systems have rapidly implemented telehealth programs in response to the pandemic, including phone and video counseling for OUD, access to the necessary technology (smart phones, computer terminals, broadband) and stable environments in which these are used can be marginal or lacking altogether in underserved communities and populations. This contributes to disparities in access to OUD treatment and recovery services.

PROGRAM MODELS ADDRESSING SOCIAL DETERMINANTS OF HEALTH

Given that SDoH are a main driver of health outcomes and are centrally involved in health disparities, including vulnerability to addiction, OUD, and COVID-19 transmission, addressing these determinants is a clear public health priority.^{42,43,44} Generally, there are higher rates of opioid-related mortality in counties with the highest poverty rates, highest percent unemployed, highest uninsured rates, and lowest percent with four-year college.⁴⁵ Addressing these social determinants is an upstream approach that can enhance the widely adopted public health framework of primary, secondary, and tertiary prevention, including prevention of OUD and opioid-related consequences.⁴⁶ Interventions broadly targeting SDoH have the potential to benefit individuals with OUD as they move through the continuum of



care,⁴⁷ while increasing community capacity to respond effectively to the challenges of treating OUD during the pandemic. Here we present a selection of program models that address three primary SDoH - employment, housing, and education - prefaced with evidence for how improvements in each of these domains can enhance outcomes for those with OUD.¹

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Employment

There is substantial evidence that unemployment and its consequences have a detrimental effect on OUD and opioid overdose deaths. One study showed that a 1% increase in the unemployment rate was associated with a 3.6% increase in the opioid-related death rate and a 7% increase in the opioid-related emergency department utilization rate at the county level.⁴⁸ Other studies have shown that economic downturns are associated with higher opioid overdose mortality and increases in prescription opioid use and OUD.^{49,50} According to the National Survey on Drug Use and Health, those who earn under \$20,000 per year are more than three times as likely to have used heroin in the past year compared with those who earn more than \$50,000 per year.⁵¹ Taken together, this evidence suggests that improving the overall state of the economy through gainful employment opportunities and rising incomes is likely to have a positive impact on the opioid crisis.

Employment is also essential for improving remission of OUD. Studies have shown a protective effect of employment on outcomes for a person during and after addiction treatment. For instance, employment was found to be predictive of treatment completion, and the best predictor of post-treatment recovery at six months was an increase in months employed.⁵² In a 33-year longitudinal study of those with heroin use disorder, employment was strongly associated with abstinence: 56% of the group that had five or more years of abstinence were employed compared with 15% of the group that had less than five years of abstinence.⁵³

¹ A comprehensive listing of program models that address SDoH, as well as those OUD interventions adapted in response to the pandemic, can be found at the Brandeis Opioid Resource Connector.

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Although being employed has been shown to improve OUD outcomes, a person in recovery may face significant barriers to finding a job. Most notable is having a criminal record (e.g., an arrest for illicit opioid use), which can disqualify a person from certain occupations and may otherwise result in job discrimination. For those without a criminal record, there may be difficulty in explaining gaps in their work history and reluctance to disclose their recovery status due to addiction stigma. Finally, there may be difficulties with transportation due to not having a vehicle, not having or being eligible for a driver's license, or lack of affordable and accessible public transportation. Such barriers tend to affect those with a history of OUD more than the general population, so may require specially targeted employment programs, several of which are described below.

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Program Models Addressing Employment

State-led Initiatives:

[Jobs and Hope](#) – This is a statewide initiative in West Virginia that began in 2019 to go beyond linkage to treatment for opioid use disorder and address the barriers and facilitators to sustaining recovery. These include vocational training, gainful employment, education, transportation, and expungement of criminal records. Some of the highlights of the program are a 30-day job readiness and life skills training resulting in basic certifications and high school diploma equivalency, short- and long-term vocational training, and linkage to gainful employment.

[New Hampshire's Recovery Friendly Workplace](#) – Recognizing that substance use costs New Hampshire more than \$2.3 billion with employers incurring 66% of this cost through impaired productivity and absenteeism, this state initiative was launched in 2018 and seeks to change the workplace to an environment that will prevent substance use disorder, provide early intervention and treatment, and support employees in recovery. Employers and employees

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can receive no-cost training on substance misuse and substance use disorder, stigma, workplace policies, and naloxone administration. Employers can have their businesses designated and recognized as a recovery-friendly workplace.

[Careers of Substance](#) – There is typically a shortage of the substance use and addiction workforce to meet demand, a lack of standardization in credentialing, and high turnover due to low wages. This state initiative in Massachusetts aims to establish a robust, competent, and skilled substance use and addiction workforce in the state across the continuum of care. In addition to directly impacting the workforce, this initiative will benefit people in recovery who often work in the substance use field. The website contains guidance on educational paths into this field, an information hub of training and events, and a tool for employers to post jobs and cross-collaborate.

Employer-Led Initiatives:

[Belden's Pathway to Employment](#) – Recognizing a shrinking workforce with 10% of pre-employment drug screens coming up positive, the Belden Inc. company in Indiana started a pilot program in February 2018, in collaboration with other organizations, that would offer a pathway to employment for those who had a positive urine drug screen. The company refers individuals to a substance use assessment and pays for evidence-based treatment. After individuals show progress in treatment and have negative drug screens, they start in a safety conscious role with the potential to move into machine jobs with continued progress, with the average timeline for the program lasting 18 months.

[DV8 Kitchen](#) – The importance of employment in early recovery is paramount and people in the early stages of recovery often struggle to find employers willing to take a chance on them. DV8 Kitchen is recognized as a highly successful restaurant and bakery in Lexington, Kentucky and identifies as a social enterprise business that gives second chance employment in an environment that builds social support and teaches life skills. Most employees at the business are people in recovery from opioid use disorder and other substance use disorders. In addition to having a workforce of people in recovery, DV8 Kitchen has started a workshop for businesses interested in integrating a social enterprise model into their mission.



Housing

Research suggests that unstable or poor housing is associated with a wide range of adverse health outcomes, such as asthma, lead poisoning, and mental illness.⁵⁴ Housing insecurity is a risk factor for OUD and overdose death as well, and evidence suggests that this insecurity has been increasing over time among those seeking treatment for OUD.⁵⁵ In Massachusetts, the risk of death from an opioid overdose is 30 times higher for those that have experienced homelessness compared with the rest of the population.⁵⁶

Finding housing conducive to recovery from OUD presents a particular challenge for those returning to the community from incarceration or in-patient treatment, highlighting the need for interventions targeting these transition periods.⁵⁷ In fact, the risk of opioid overdose death for those who were just released from prison or jail in North Carolina was found to be 40 times higher than the general population.⁵⁸ Studies have suggested that stable housing is beneficial to former inmates,^{59,60} that entering recovery housing after inpatient treatment improves outcomes,⁶¹ and that sober housing in college likely facilitates recovery.⁶² Taken together, these findings suggest that not only is stable housing important during these transitions, but that recovery-oriented supportive housing may enhance outcomes for individuals with OUD. Here we describe a sample of relevant program models.

“The risk of death from an opioid overdose is 30 times higher for those that have experienced homelessness.”

Program Models Addressing Housing

[Pathways to Housing PA](#) – People who experience homelessness are disproportionately affected by OUD and opioid-related overdose deaths. Pathways of Housing PA is a community-based organization in Philadelphia using a Housing First model to address chronic homelessness in addition to providing wraparound services to comprehensively serve individuals. The organization has a specific program, HousingNow, that addresses those with co-occurring chronic homelessness and OUD. In addition to providing low threshold housing, a harm reduction approach to wraparound services is used which includes medications for

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OD, naloxone access and training, and a syringe service program. The organization [reports](#) that HousingNow has housed 140 people with OD, with 90% of those retaining housing and 72% in some form of treatment.

[Rutgers Recovery Housing](#) – This program began in 1988 as the first sober housing option for college students, offering students year-round, on-campus housing in a facility shared by other students in recovery in an environment that can be "abstinence-hostile". Some of the features of the program include access to a recovery counselor and other health services, a live-in resident assistant who has gone through the program, a vital social network of like-minded students, and sober activities. This program model has been replicated nationwide and [reports](#) a 95% abstinence rate, a 98% retention rate, and an average grade point average of 3.18.

[Recovery Kentucky](#) – Primarily serving underserved populations with OD and other substance use disorders, such as rural populations, people experiencing homelessness, and people who have been recently incarcerated, Recovery Kentucky is a network of 18 recovery centers across the state that can provide long-term supportive housing and recovery services. The program is a joint collaboration of the Kentucky Department for Local Government, the Kentucky Department of Corrections (KDOC), and the Kentucky Housing Corporation and is funded by an annual allocation of Low Income Housing Tax Credits, community block grants, the Department of Corrections, and federal and state benefits. The program [has been shown](#) to be cost-effective, reduce substance use and recidivism, and improve social determinants of health and overall quality of life of its participants.

Education

Socioeconomic status (SES), as measured by educational attainment, income level, and employment status, largely determines an individual's access to material resources and thus to better health; low SES is linked with incarceration, homelessness, and the associated risk for poor health outcomes.⁶³ Although the opioid crisis is sometimes described as an "equal opportunity" problem, this belies the fact that lower SES individuals are disproportionately vulnerable to OD and its sequelae.⁶⁴



Education is a gateway to employment opportunities associated with higher SES. In addition, education has been shown to be a protective factor in drug overdose deaths, with the highest rates among those who did not finish high school and lowest among those who finished college.⁶⁵ However, OUD itself presents barriers to education and thus for better jobs and income. Those with drug possession convictions are often barred from accessing federal student loans and have difficulties obtaining college grants and scholarships.⁶⁶ In addition, those in recovery that pursue higher education may find universities and community colleges to be challenging social environments in which to maintain abstinence.⁶⁷ This highlights the need for educational opportunities tailored to those in recovery, whatever their current SES. Re-entry programs for previously incarcerated populations that include education and vocational training are likely to reduce recidivism, recurrence of OUD symptoms, and overdose deaths. Creating supportive environments for adolescents through recovery high schools, and for young adults and non-traditional students through collegiate recovery programs, can protect against relapse as learning proceeds. The program models below illustrate these approaches.

“Education has been shown to be a protective factor in drug overdose deaths.”

Program Models Addressing Education

[P.E.A.S.E. Academy \(Peers Enjoying a Sober Education\)](#) – Bridging treatment and recovery for adolescents can pose unique challenges. The P.E.A.S.E. Academy (Peers Enjoying a Sober Education) was begun in 1989 as the first recovery high school in the United States and is a tuition-free, public high school in Minnesota for youth in recovery from substance use disorders. This small recovery high school has a low teacher-to-student ratio, provides a supportive environment based on recovery principles, and employs a restorative justice model. Most students who go on to graduate from P.E.A.S.E. Academy and pursue college degrees enroll in collegiate recovery programs to continue supporting their recovery. Recovery high schools [have been shown](#) to be cost-effective, reduce substance use, and increase high school graduation rates.

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[Center for Collegiate Recovery Communities at Texas Tech University](#) – College can be a difficult place for a young adult in recovery although, for some, higher education may be an essential component to sustaining recovery. Collegiate recovery programs (CRP) have emerged to create a supportive environment for those in recovery pursuing higher education. The Center for Collegiate Recovery Communities at Texas Tech University (TTU) was launched in 1986 as one of the first collegiate recovery programs (CRP) in the United States. It has been recognized by the Office of National Drug Control and Policy as the model for collegiate recovery programming. The program [has been shown](#) to be successful as students have an average GPA (3.18) and graduation rate (70%) that is above the university's average GPA (2.93) and graduation rate (60%), and students have an average rate of returning to substance use of 6% per semester.

[After Incarceration Support Services](#) – In Hampden County, Massachusetts, the county jail began a program in 1996 called After Incarceration Support Services (AISS) as a comprehensive reentry program, which includes education and vocational training. [At the institution](#), nearly 9 in 10 met criteria for SUD with half of those having an OUD, 73% were unemployed at time of arrest, over half were minorities, and nearly half had no high school diploma or GED and did not have stable housing. The AISS is aimed to boost SDoH among this disadvantaged population. In addition to employment assistance and housing support, the reentry program provides educational opportunities and vocational training. Educational opportunities include access to “smart classrooms” with educators particularly suited and trained for working with previously incarcerated students, including computer skills training, academic advising, a GED program, and transition to college. The AISS reentry program has [served](#) 32,645 since its inception and has been associated with a [reduction](#) of recidivism among its participants from 31% to 16%.

Programs Targeting Multiple Social Determinants of Health

The program models described below address two or more social determinants simultaneously among marginalized populations, offering a more comprehensive response to the disadvantages often faced by those with OUD.

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[Jobs, Friends, and Houses](#) – The transition from incarceration to reentry into society for those in recovery from substance use disorder is a crucial period. The Jobs, Friends, and Houses (JFH) program in the United Kingdom recognizes that long-term outcomes are improved when these individuals can access supportive recovery housing, gainful employment, and positive social networks. The program is a social enterprise model that provides vocational training and access to apprenticeships as pathways to gainful employment, in addition to recovery housing and life skills training. JFH [has been shown](#) to substantially reduce recidivism, as indicated by a 94.1% reduction in the annual recorded criminal offense rate among those who completed the program.

[Access to Recovery](#) – Early recovery and reentry from incarceration are vulnerable times for individuals with opioid use disorder. Access to Recovery (ATR), a statewide program in Massachusetts that is funded by a State Opioid Response (SOR) grant, supports these individuals, utilizing a wide range of recovery support services that target the SDoH. Some of these services include career building initiatives, financial help with recovery housing, ensuring food security and access to transportation, and recovery coaching. ATR [appears to be](#) cost-effective, costing an average of \$1865 per participant while decreasing emergency department utilization by 60% and reliance on public assistance by 37%, and [reports](#) improving SDoH, such as increasing employment by 408% and stable housing by 126%, while substantially reducing recidivism and substance use.

[Detroit Recovery Project](#) – Primarily serving the Black community in Detroit, this program is a peer-led, peer-run, and peer-driven community-based organization that supports individuals in identifying and resolving barriers to achieving a healthy and productive lifestyle in recovery. In addition to providing social support, family support, and recovery coaching, recovery support services are delivered to those in early recovery that address SDoH such as housing and employment. Informational support is provided through employment and housing referrals, and instrumental support is provided through job readiness training and educational assistance. Detroit Recovery Project (DRP) also has a peer-led recovery program for individuals re-entering the community from jail or prison. The program [reports](#) that more than half of its participants are currently employed or attending school and have permanent housing.

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Programs like DRP are vital in addressing the uneven distribution of SDoH and reducing racial disparities among minorities with OUD.

Recommendations

Understanding the connection between SDoH and OUD, and now COVID-19, underscores the need to improve the material and social environment for those at risk for, struggling with, or in recovery from OUD, both at the individual and community level. Similar to other public health crises such as the HIV epidemic, the root causes of the opioid crisis are both structural and social, and interconnected with genetic, behavioral, and individual factors.⁶⁸ Addressing SDOH across the continuum of care will likely lead to a decrease in the prevalence of opioid misuse and OUD, better access to quality OUD treatment, a reduction in overdose deaths, and increased quality of life for those recovering from OUD. Since OUD and socio-economic disparities are also implicated in higher rates of virus transmission, addressing SDoH should strengthen community capacity to respond to the pandemic and lower an individual's risk of contracting COVID-19.

Given the complexities inherent in addressing OUD within any local environment, it is critical that communities have access to promising programs and policies adopted by similar jurisdictions. We recommend that community stakeholders design interventions targeting SDoH, tailored to their communities and informed by existing program models. The programs described above address just three of social determinants – employment, housing, and education – but transportation, trauma, social support, stigma, criminal justice involvement, and access to technology also impact OUD, among others. Program models that address the full range of SDoH, as well as those adapted in response to COVID-19, are described at the [Brandeis Opioid Resource Connector](#), a website informing stakeholders of community responses to the opioid crisis to help them choose, design, and implement interventions of their own.

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- ¹ U.S. Department of Health and Human Services (HHS), Office of the Surgeon General, Facing Addiction in America: The Surgeon General’s Spotlight on Opioids. Washington, DC: HHS, September 2018.
 - ² Kolodny, A., Courtwright, D., Hwang, C., Kreiner, P., Eadie, J., Alexander, C., Clark, T. (2015). The prescription opioid and heroin crisis: a public health approach to an epidemic of addiction. *Annual Review of Public Health*, 18(36), 559-574.
 - ³ Centers for Disease Control and Prevention (March 2020). *Understanding the Epidemic*. Retrieved from <https://www.cdc.gov/drugoverdose/epidemic/index.html>
 - ⁴ Centers for Disease Control and Prevention (November 2020). *12 Month-ending Provisional Number of Drug Overdose Deaths*. Retrieved from <https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm>
 - ⁵ Ho, J.Y. (2013). Mortality under age 50 accounts for much of the fact that US life expectancy lags that of other high-income countries. *Health Affairs (Millwood)*, 32(3), 459-67.
 - ⁶ Hall, O.T., Hall, O.E., Kolodny, A., Teater, J., McGrath, R.P. (2020). Assessment of Excess Mortality Associated with Drug Overdose in Ohio from 2009 to 2018. *JAMA Network Open*, 3(4), e202183.
 - ⁷ Woolf, S.H., Schoomaker, H. (2019). Life Expectancy and Mortality Rates in the United States, 1959-2017. *JAMA*, 322(20), 1996–2016.
 - ⁸ Slavova, S., Rock, P., Bush, H.M., Quesinberry, D., Walsh, S.L. (2020). Signal of increased opioid overdose during COVID-19 from emergency medical services data. *Drug and Alcohol Dependence*, 214, 1-5.
 - ⁹ Wainwright, J.J., Mikre, M., Whitley, P., Dawson, E., Huskey, A., Lukowiak, A., Giroir, B.P. (2020). Analysis of Drug Test Results Before and After the US Declaration of a National Emergency Concerning the COVID-19 Outbreak. *JAMA*, 324(16), 1674–1677.
 - ¹⁰ Glober, N., Mohler, G., Huynh, P., Arkins, T., O'Donnell, D., Carter, J., Ray, B. (2020). Impact of COVID-19 Pandemic on Drug Overdoses in Indianapolis. *Journal of Urban Health*. Epub ahead of print. doi: 10.1007/s11524-020-00484-0
 - ¹¹ Ochalek, T.A., Cumpston, K.L., Wills, B.K., Gal, T.S., Moeller, F.G. (2020). Nonfatal Opioid Overdoses at an Urban Emergency Department During the COVID-19 Pandemic. *JAMA*, 324(16), 1673–1674.
 - ¹² Khatri, U.G., Pizzicato, L.N., Viner, K., et al. (2021). Racial/Ethnic Disparities in Unintentional Fatal and Nonfatal Emergency Medical Services–Attended Opioid Overdoses During the COVID-19 Pandemic in Philadelphia. *JAMA Network Open*, 4(1), e2034878.
 - ¹³ Mellis, A.M., Potenza, M.N., Hulse, J.N. (2020). COVID-19-related treatment service disruptions among people with single- and polysubstance use concerns. *Journal of Substance Abuse Treatment*. Epub ahead of print. doi: 10.1016/j.jsat.2020.108180
 - ¹⁴ Bergman, B.G., Kelly, J.F., Fava, M., Eden Evins, A. (2020). Online recovery support meetings can help mitigate the public health consequences of COVID-19 for individuals with substance use disorder. *Addictive Behaviors*, 113, 106661.
 - ¹⁵ Horigian, V.E., Schmidt, R.D., Feaster, D.J. (2020). Loneliness, Mental Health, and Substance Use among US Young Adults during COVID-19. *Journal of Psychoactive Drugs*. Epub ahead of print. doi: 10.1080/02791072.2020.1836435
 - ¹⁶ Wainwright, J.J., Mikre, M., Whitley, P., Dawson, E., Huskey, A., Lukowiak, A., Giroir, B.P. (2020). Analysis of Drug Test Results Before and After the US Declaration of a National Emergency Concerning the COVID-19 Outbreak. *JAMA*, 324(16), 1674–7.
 - ¹⁷ Florence, C., Luo, F., Rice, K. (2020). The economic burden of opioid use disorder and fatal opioid overdose in the United States, 2017. *Drug and Alcohol Dependence*, 108350. Epub ahead of print. doi: 10.1016/j.drugalcdep.2020.108350
 - ¹⁸ Magnan, S. (2017). Social Determinants of Health 101 for Health Care: Five Plus Five. *NAM Perspectives*. Discussion Paper, National Academy of Medicine, Washington, DC.
 - ¹⁹ Alegría, M., NeMoyer, A., Falgàs Bagué, I., Wang, Y., Alvarez, K. (2018). Social Determinants of Mental Health: Where We Are and Where We Need to Go. *Current Psychiatry Reports*, 20(11), 95.
 - ²⁰ World Health Organization (2010). A Conceptual Framework for Action on the Social Determinants of Health. Retrieved from https://www.who.int/sdhconference/resources/ConceptualframeworkforactiononSDH_eng.pdf
 - ²¹ Office of Disease Prevention and Health Promotion. Healthy People 2020. Social determinants of health. Available from: <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health>
 - ²² Artiga, S., Hinton, E. (2018). Beyond Health Care: The Role of Social Determinants in Promoting Health and Health Equity. Kaiser Family Foundation. Retrieved from <https://www.kff.org/racial-equity-and-health-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/>

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- ²³ World Health Organization (2008). Closing the gap in a generation: Health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health. Retrieved from https://www.who.int/social_determinants/final_report/csdh_finalreport_2008.pdf
- ²⁴ Krieger, N. (2008). Proximal, distal, and the politics of causation: what's level got to do with it? *American Journal of Public Health*, 98(2), 221–230.
- ²⁵ Opioid Response Network (n.d.). The Opioid Epidemic and COVID-19: How Social Determinants of Health Create Differential Impacts. Retrieved from https://opioidresponsenetwork.org/documents/SDH_OUD-COVID-19.pdf
- ²⁶ Braveman, P. (2017). A New Definition of Health Equity to Guide Future Efforts and Measure Progress. *Health Affairs Blog*. Retrieved from <https://www.healthaffairs.org/doi/10.1377/hblog20170622.060710/full/>
- ²⁷ Woolf, S.H., Braveman, P. (2011). Where health disparities begin: the role of social and economic determinants--and why current policies may make matters worse. *Health Affairs (Millwood)*, 30(10), 1852-9.
- ²⁸ Pérez-Stable, E.J., Rodriguez, E.J. (2020). Social Determinants and Differences in Mortality by Race/Ethnicity. *JAMA Network Open*, 3(2), e1921392.
- ²⁹ Webb Hooper, M., Nápoles, A.M., Pérez-Stable, E.J. (2020). COVID-19 and Racial/Ethnic Disparities. *JAMA*, 323(24), 2466–2467.
- ³⁰ Muñoz-Price, L.S., Nattinger, A.B., Rivera, F., et al. (2020). Racial Disparities in Incidence and Outcomes Among Patients With COVID-19. *JAMA Network Open*, 3(9), e2021892.
- ³¹ Price-Haywood, E.G., Burton, J., Fort, D., Seoane, L. (2020). Hospitalization and Mortality among Black Patients and White Patients with Covid-19. *New England Journal of Medicine*, 382(26), 2534-2543.
- ³² Saloner, B., Lê Cook, B. (2013). Blacks and Hispanics are less likely than whites to complete addiction treatment, largely due to socioeconomic factors. *Health Affairs (Millwood)*, 32(1), 135-45.
- ³³ Wang, Q.Q., Kaelber, D.C., Xu, R., Volkow, N.D. (2020). COVID-19 risk and outcomes in patients with substance use disorders: analyses from electronic health records in the United States. *Molecular Psychiatry*, 1–10.
- ³⁴ Baillargeon, J., Polychronopoulou, E., Kuo, Y.F., Raji, M.A. (2020). The Impact of Substance Use Disorder on COVID-19 Outcomes. *Psychiatric Services*. Epub ahead of print. doi: 10.1176/appi.ps.202000534
- ³⁵ Melamed, O.C., Hauck, T.S., Buckley, L., Selby, P., Mulsant, B.H. (2020). COVID-19 and persons with substance use disorders: Inequities and mitigation strategies. *Substance Abuse*, 41(3), 286-291.
- ³⁶ Jenkins, W.D., Bolinski, R., Bresett, J., et al. (2020). COVID-19 During the Opioid Epidemic - Exacerbation of Stigma and Vulnerabilities. *Journal of Rural Health*. Epub ahead of print. doi: 10.1111/jrh.12442
- ³⁷ Case, A., Deaton, A. (2015). Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proceedings of the National Academy of Sciences*. 112(49), 15078-15083.
- ³⁸ Case, A., Deaton, A. (2017). Mortality and morbidity in the 21st century. *Brookings Papers on Economic Activity*, 2017, 397-476.
- ³⁹ National Academies of Sciences, Engineering, and Medicine (2017). Pain Management and the Opioid Epidemic: Balancing Societal and Individual Benefits and Risks of Prescription Opioid Use. Washington, DC: National Academies Press.
- ⁴⁰ Dasgupta, N., Beletsky, L., Ciccarone, D. (2018). Opioid Crisis: No Easy Fix to Its Social and Economic Determinants. *American Journal of Public Health*, 108(2), 182–186.
- ⁴¹ Park, J.N., Rouhani, S., Beletsky, L., Vincent, L., Saloner, B., Sherman, S.G. (2020). Situating the Continuum of Overdose Risk in the Social Determinants of Health: A New Conceptual Framework. *The Milbank Quarterly*, 98(3), 700-746.
- ⁴² Dasgupta, N., Beletsky, L., Ciccarone, D. (2018). Opioid Crisis: No Easy Fix to Its Social and Economic Determinants. *American Journal of Public Health*, 108(2), 182–186.
- ⁴³ Park, J.N., Rouhani, S., Beletsky, L., Vincent, L., Saloner, B., Sherman, S.G. (2020). Situating the Continuum of Overdose Risk in the Social Determinants of Health: A New Conceptual Framework. *The Milbank Quarterly*, 98(3), 700-746.
- ⁴⁴ Vasylyeva, T.I., Smyrnov, P., Strathdee, S., Friedman, S.R. (2020). Challenges posed by COVID-19 to people who inject drugs and lessons from other outbreaks. *Journal of the International AIDS Society*, 23(7), e25583.
- ⁴⁵ Monnat, S. (2019). The contributions of socioeconomic and opioid supply factors to U.S. drug mortality rates: Urban-rural and within-rural differences. *Journal of Rural Studies*. 68, 319-335.
- ⁴⁶ Jones, C.P., Jones, C.Y., Perry, G.S., Barclay, G., Jones, C.A. (2009). Addressing the social determinants of children's health: a cliff analogy. *Journal of Health Care for the Poor and Underserved*, 20(4 Suppl), 1-12.
- ⁴⁷ Cantu, R., Fields-Johnson, D., Savannah, S. (2020). Applying a Social Determinants of Health Approach to the Opioid Epidemic. *Health Promotion Practice*. Epub ahead of print. doi: 10.1177/1524839920943207

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- ⁴⁸ Hollingsworth, A., Ruhm, C., Simon, K. (2017). Macroeconomic Conditions and Opioid Abuse. *Journal of Health Economics*, 56, 222-233.
- ⁴⁹ Venkataramani, A.S., Bair, E.F., O'Brien, R.L., Tsai, A.C. (2020). Association Between Automotive Assembly Plant Closures and Opioid Overdose Mortality in the United States: A Difference-in-Differences Analysis. *JAMA Internal Medicine*, 180(2), 254-262.
- ⁵⁰ Carpenter, C.S., McClellan, C.B., Rees, D.I. (2017). Economic conditions, illicit drug use, and substance use disorders in the United States. *Journal of Health Economics*, 52, 63-73.
- ⁵¹ Substance Abuse and Mental Health Services Administration (2018). Key substance use and mental health indicators in the United States: Results from the 2017 National Survey on Drug Use and Health (HHS Publication No. SMA 18-5068, NSDUH Series H-53). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>
- ⁵² Sahker, E., Ali, S.R., Arndt, S. (2019). Employment recovery capital in the treatment of substance use disorders: six-month follow-up observations. *Drug and Alcohol Dependence*, 205, 107624.
- ⁵³ Hser, Y., Hoffman, V., Grella, C.E., Anglin, M.D. (2001). A 33-year follow-up of narcotic addicts. *Archives of General Psychiatry*, 58, 503-508.
- ⁵⁴ Krieger, J., & Higgins, D. L. (2002). Housing and health: time again for public health action. *American journal of public health*, 92(5), 758-768. doi:10.2105/ajph.92.5.758
- ⁵⁵ Sulley, S., Ndanga, M. (2020). Inpatient Opioid Use Disorder and Social Determinants of Health: A Nationwide Analysis of the National Inpatient Sample (2012-2014 and 2016-2017). *Cureus*, 12(11), e11311.
- ⁵⁶ Massachusetts Department of Public Health (August 2017). *Chapter 55 Legislative Report*. Retrieved from <https://www.mass.gov/files/documents/2017/08/31/legislative-report-chapter-55-aug-2017.pdf>
- ⁵⁷ Sugarman, O.K., Bachhuber, M.A., Wennerstrom, A., Bruno, T., Springgate, B.F. (2020). Interventions for incarcerated adults with opioid use disorder in the United States: A systematic review with a focus on social determinants of health. *PLoS One*, 15(1), e0227968.
- ⁵⁸ Ranapurwala, S.I., Shanahan, M.E., Alexandridis, A.M...Marshall, S.W. (2018). Opioid overdose mortality among former North Carolina inmates: 2000-2015. *American Journal of Public Health*, 108(9), 1207-1213.
- ⁵⁹ Gray, P., Fraser, P. (2005). Housing and Heroin Use: The Role of Floating Support. *Drugs*, 12, 269-278.
- ⁶⁰ Chavira, D., Jason, L. (2017). The Impact of Limited Housing Opportunities on Formerly Incarcerated People in the Context of Addiction Recovery. *Journal of Addictive Behaviors and Therapy*, 1(1), 02.
- ⁶¹ Reif, S., George, P., Braude, L, Dougherty, R.H., Daniels, A.S., Ghose, S.S., Delphin-Rittmon, M.E. (2014). Recovery Housing: assessing the evidence. *Psychiatric Services*, 65(3), 295-300.
- ⁶² Laudet, A., Harris, K., Kimball, T., Winters, K.C., Moberg, D.P. (2014). Collegiate recovery programs: what do we know and what do we need to know. *Journal of Social Work Practice in the Addictions*, 14(1), 84-100.
- ⁶³ Galea, S., Vlahov, D. (2002). Social determinants and the health of drug users: socioeconomic status, homelessness, and incarceration. *Public Health Reports*. 117(Suppl 1), S135-45.
- ⁶⁴ Volkow, N. (2017). Addressing the Opioid Crisis Means Confronting Socioeconomic Disparities. *National Institute on Drug Abuse*. Retrieved from <https://www.drugabuse.gov/about-nida/noras-blog/2017/10/addressing-opioid-crisis-means-confronting-socioeconomic-disparities>
- ⁶⁵ Ho, J.Y. (2017). The Contribution of Drug Overdose to Educational Gradients in Life Expectancy in the United States, 1992-2011. *Demography*, 54(3), 1175-1202.
- ⁶⁶ Park, J.N., Rouhani, S., Beletsky, L., Vincent, L., Saloner, B., Sherman, S.G. (2020). Situating the Continuum of Overdose Risk in the Social Determinants of Health: A New Conceptual Framework. *The Milbank Quarterly*, 98(3), 700-746.
- ⁶⁷ Cleveland, H.H., Harris, K.S., Baker, A.K., Herbert, R., Dean, L.R. (2007). Characteristics of a collegiate recovery community: maintaining recovery in an abstinence-hostile environment. *Journal of Substance Abuse Treatment*, 33(1), 13-23.
- ⁶⁸ Dasgupta, N., Beletsky, L., Ciccarone, D. (2018). Opioid Crisis: No Easy Fix to Its Social and Economic Determinants. *American Journal of Public Health*, 108(2), 182-186.