Short communication

Racial disparities in criminal legal system involvement among New York City overdose decedents: Implications for diversion programs

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A B S T R A C T

Background: Past studies have identified frequent criminal legal system (CLS) involvement among overdose decedents and highlight the need for connecting individuals at risk of overdose with effective interventions during CLS encounters. While some programs divert individuals at risk of overdose to treatment during CLS encounters, eligibility is frequently restricted to those with limited prior CLS involvement. However, differences by race/ethnicity have not been examined.

Objective: We assessed racial disparities in CLS involvement and eligibility for diversion following arrest for misdemeanor drug possession among New York City (NYC) overdose decedents.

Methods: We matched death certificates for 5018 NYC residents who died of an unintentional drug overdose between 2008 and 2015 with CLS data and compared CLS involvement by race/ethnicity. We compared prior felony involvement at the first misdemeanor drug arrest by race/ethnicity among 2719 decedents with at least one misdemeanor drug arrest.

Results: Higher proportions of Black (86 %, 95 % CI: 83.9, 87.9) and Latino (84 %, 95 % CI: 82.2, 86.0) decedents had ever been arrested than White decedents (73 %, 95 % CI: 71.5, 75.2). At the first misdemeanor drug arrest, Black and Latino decedents were twice as likely as White decedents to have a prior felony conviction, adjusted for age at arrest and gender (RR = 2.08, 95 % CI: 1.71, 2.54 and 2.14, 95 % CI: 1.77, 2.59, respectively).

Conclusions: Given racial disparities in CLS involvement among NYC overdose decedents, diversion eligibility is inequitable by race/ethnicity. Diversion programs that restrict eligibility based on prior CLS involvement will have racially disparate effects.

1. Introduction

Involvement in the criminal legal system (CLS) is a well-documented risk factor for fatal overdose, (Freudenberg and Heller, 2016) not only due to direct impacts of incarceration on disruption of medication for opioid use disorder (Freudenberg and Heller, 2016; Wakeman, 2017) and reduced drug tolerance (Binswanger et al., 2013; Merrall et al., 2010; Binswanger et al., 2012; Pizzicato et al., 2018), but also because of collateral consequences of felony drug convictions on access to employment (Pager, 2003), welfare benefits (Mauer and McCalmont, 2014), and public housing (Iguchi et al., 2002).

An emerging body of research known as "touchpoint analyses" seeks to identify critical encounters—including those with the health care system and the CLS—among people who died of an overdose (Larochelle et al., 2019; Krawczyk et al., 2020; Eisenberg et al., 2019; Winkelman et al., 2018). These studies have identified a high prevalence, recency

(Shefner et al., 2020; Hacker et al., 2018), and frequency (Eisenberg et al., 2019) of CLS encounters among overdose decedents. Further, a Massachusetts-based analysis estimated that 9% of overdose deaths could be averted if effective opioid overdose interventions were offered at CLS encounters (Larochelle et al., 2019).

Due to the high prevalence of CLS encounters and suggestion of large effect sizes, there is substantial interest in implementing interventions aimed at reducing overdose risk among CLS-involved people. One intervention is diversion programs which aim to keep people out of the CLS through connection to programs that address underlying reasons for CLS involvement (Freudenberg and Heller, 2016; Brinkley-Rubinstein et al., 2018). At least two such diversion programs for individuals at risk of overdose exist in New York City, (1) Opioid Intervention Courts (Marks, 2017; Carey, 2019), which connect individuals who screen positive for opioid use disorder to treatment and (2) the Heroin Overdose Prevention and Education (HOPE) programs (New York State

Department of Health, 2018; New York County District Attorney's Office, 2019), which divert individuals arrested for misdemeanor drug possession to treatment and overdose prevention services. Although diversion programs differ in design, one common feature is that eligibility is typically restricted to individuals who have limited CLS involvement (i.e. no prior felony arrests or convictions) (New York State Department of Health, 2018), which impacts the programs' overall reach and potentially results in racial/ethnic disparities in eligibility.

Nearly all touchpoint analyses conclude that connections to effective overdose prevention and treatment during CLS encounters are necessary to mitigate overdose risk, but no studies have contextualized these recommendations with the restrictive eligibility criteria of existing diversion programs. Furthermore, prior studies of CLS encounters among overdose decedents have not disaggregated differences by race/ethnicity. This analysis is critical as rates of drug-related arrest and incarceration are far higher among Black and Latino people than White people, (Travis et al., 2014) largely due to racialized practices such as discretionary enforcement of public drug use and concentration of policing in majority non-White neighborhoods instituted as part of the War on Drugs (Travis et al., 2014; Mitchell and Caudy, 2015; Beckett et al., 2006, 2005; Lynch, 2012; Lynch et al., 2013).

Within a cohort of overdose decedents, we aimed to describe CLS histories by race/ethnicity and identify whether decedents would have been eligible at the time of their first misdemeanor drug arrest for one form of CLS diversion that has been developed in response to the overdose epidemic—programs which connect individuals arrested for misdemeanor drug possession with little prior CLS involvement to treatment.

2. Methods

2.1. Data sources

We linked three data sources: (1) de-identified criminal history data provided by New York State's Department of Criminal Justice Services (DCJS), (2) death certificate data provided by NYC's Bureau of Vital Statistics, and (3) post-mortem toxicology information abstracted from the Office of the Chief Medical Examiner reports.

2.2. Study population

Our study population consisted of 5018 NYC residents who died of an unintentional drug overdose from 2008 to 2015. Unintentional drug overdose deaths are those in which the manner of death was determined by the medical examiner to be accidental with the underlying or multiple cause *International Classification of Diseases, Tenth Revision* (ICD-10) codes of X40-44 or F11-19.

2.3. Measures

2.3.1. Race/Ethnicity
Race/ethnicity of individuals was derived from death certificates. Statistical analyses were limited to Non-Latino Black, Non-Latino White, and Latino decedents; Non-Latino decedents of other races were included in descriptive tables but excluded from further analyses due to small numbers.

2.3.2. CLS involvement
Measures of lifetime CLS involvement were derived from the Computerized Criminal History maintained by DCJS, which contains arrest and disposition records for all fingerprintable misdemeanor and felony arrests. Arrest, disposition, and sentencing information for the highest-level (top) charge of each CLS event occurring after 1970, including sealed charges, was acquired for all overdose decedents in NYC who died between 2008 and 2015.

1. *Lifetime arrest and conviction history:* We created eight binary variables indicating the presence of at least one arrest and at least one conviction (any class, misdemeanor, felony, and violent felony).
2. *Prior CLS involvement at the first misdemeanor drug possession arrest:* We created eight binary variables to indicate the presence of at least one prior arrest and at least one prior conviction (any class, misdemeanor, felony, and violent felony) at the time of the first misdemeanor drug possession arrest. Misdemeanor drug possession arrests were those where the top charge at arrest was for controlled substance possession (PL220.03).
3. *Other demographic characteristics:* We obtained gender and age at death from death certificates and age at arrest from DCJS.

No observations were missing data for the variables included in this analysis.

2.4. Statistical analysis

We determined the proportion of individuals who had any misdemeanor, felony, and violent felony arrests and convictions and calculated the median number of lifetime arrests and convictions among individuals who had been arrested at least once for the total study population and by race/ethnicity. 95 % confidence intervals are presented for all proportions and interquartile ranges are presented for median lifetime arrest and conviction counts.

We repeated this procedure among the subset of individuals who had been arrested at least once for misdemeanor drug possession to determine the prevalence and frequency of prior CLS involvement at the first misdemeanor drug possession arrest, overall and by race/ethnicity. A misdemeanor drug possession arrest might be considered an expedient identification of individuals who could potentially benefit from diversion treatment, and several such programs have been implemented in NYC. We focused on the *first* misdemeanor drug possession arrest because the purpose was to assess diversion eligibility based on prior CLS involvement; decedents who were ineligible due to their prior CLS involvement at the first misdemeanor drug possession arrest would likely remain ineligible at subsequent arrests.

Finally, we conducted eight separate relative risk regression models among the subset of individuals with at least one misdemeanor drug possession arrest to assess the risk of prior CLS involvement at the first misdemeanor drug possession arrest among Black and Latino New Yorkers compared to White New Yorkers, adjusted for gender and age at arrest, using Poisson regression with a robust error variance (Zou, 2004). As this study was exploratory, we did not adjust for multiple testing.

2.5. Institutional review board

This study was determined by the NYC Department of Health and Mental Hygiene Institutional Review Board to be not human subjects research and exempt from institutional board review.

3. Results

3.1. Description of study population

There were 5018 NYC residents who died of an unintentional drug overdose from 2008 to 2015. The majority of decedents were male (72.1 %), 43.7 % of decedents were White, and 34.0 % were between the ages of 45 and 54. Heroin (50.9 %), followed by cocaine (48.1 %), were the most common substances involved in overdose deaths among the study population (Supplemental Table 1).

3.2. Lifetime CLS involvement

Most of the study population (79.4 %) had been arrested at least once

Table 1

Criminal legal involvement of New York City residents who died of a drug overdose, New York City, 2008–2015.

	All		Race/ethnicity					
			Non-Latino White		Non-Latino Black		Latino	
Lifetime criminal legal history								
Total number	**n = 5018**		**n = 2194**		**n = 1193**		**n = 1474**	
Lifetime arrest history								
Number of lifetime arrests, median (IQR)	5	(1–13)	3	(0–8)	9	(2–20)	7	(1–15)
Lifetime arrest, % (95 % CI)	79.4	(78.2, 80.5)	73.4	(71.5, 75.2)	86.0	(83.9, 87.9)	84.1	(82.2, 86.0)
Lifetime misdemeanor arrest, % (95 % CI)	74.2	(73.0, 75.4)	67.9	(65.9, 69.8)	81.5	(79.2, 83.6)	78.8	(76.7, 80.9)
Lifetime felony arrest, % (95 % CI)	63.2	(61.8, 64.5)	52.5	(50.4, 54.6)	73.6	(71.0, 76.1)	71.6	(69.3, 73.9)
Lifetime violent felony arrest, % (95 % CI)	38.0	(36.6, 39.3)	28.0	(26.1, 29.9)	49.8	(46.9, 52.7)	44.0	(41.5, 46.6)
Lifetime conviction history								
Number of lifetime convictions, median (IQR)	2	(0–8)	1	(0–5)	5	(1–14)	4	(0–10)
Lifetime conviction, % (95 % CI)	68.5	(67.2, 69.8)	59.9	(57.8, 61.9)	78.0	(75.6, 80.4)	74.5	(72.2, 76.7)
Lifetime misdemeanor conviction, % (95 % CI)	47.0	(45.6, 48.4)	38.1	(36.0, 40.1)	59.2	(56.3, 62.0)	51.7	(49.1, 54.3)
Lifetime felony conviction, % (95 % CI)	32.3	(31.0, 33.6)	19.5	(17.8, 21.2)	43.9	(41.1, 46.8)	42.9	(40.4, 45.5)
Lifetime violent felony conviction, % (95 % CI)	11.4	(10.5, 12.3)	6.6	(5.6, 7.7)	16.3	(14.2, 18.5)	14.5	(12.8, 16.4)
Prior criminal legal history at first misdemeanor drug arrest								
Total number	**n = 2719**		**n = 972**		**n = 785**		**n = 885**	
Prior arrest history								
Number of prior arrests, median (IQR)	2	(0–5)	1	(0–4)	2	(0–7)	2	(0–5)
Prior arrest, % (95 % CI)	65.4	(63.6, 67.2)	57.3	(54.1, 60.4)	71.2	(67.9, 74.4)	70.2	(67.0, 73.2)
Prior misdemeanor arrest, % (95 % CI)	48.9	(47.0, 50.8)	43.6	(40.5, 46.8)	55.9	(52.4, 59.4)	49.3	(45.9, 52.6)
Prior felony arrest, % (95 % CI)	55.1	(53.2, 56.9)	45.0	(41.8, 48.1)	61.9	(58.4, 65.3)	61.1	(57.8, 64.4)
Prior violent felony arrest, % (95 % CI)	32.6	(30.9, 34.4)	23.8	(21.1, 26.6)	42.3	(38.8, 45.8)	34.8	(31.7, 38.0)
Prior conviction history								
Number of prior convictions, median (IQR)	0	(0–2)	0	(0–1)	0	(0–2)	0	(0–2)
Prior conviction, % (95 % CI)	40.3	(38.4, 42.1)	32.6	(29.7, 35.7)	47.8	(44.2, 51.3)	43.4	(40.1, 46.7)
Prior misdemeanor conviction, % (95 % CI)	32.3	(30.5, 34.1)	28.3	(25.5, 31.2)	37.3	(33.9, 40.8)	33.6	(30.5, 36.8)
Prior felony conviction, % (95 % CI)	23.1	(21.6, 24.8)	13.0	(10.9, 15.2)	29.0	(25.9, 32.4)	29.6	(26.6, 32.7)
Prior violent felony conviction, % (95 % CI)	9.2	(8.1, 10.3)	5.3	(4.0, 7.0)	11.7	(9.6, 14.2)	11.1	(9.1, 13.3)

All data are percentages, except for total number, median number of lifetime arrests, and median number of convictions.

CI = Confidence interval.

IQR = Interquartile range.

during their lifetime (Table 1). Misdemeanor arrests were present among 74.2 % of the study population; an additional 63.2 % of individuals had been arrested at least once on a felony charge, and 38.0 % had at least one violent felony arrest. CLS involvement was both more prevalent and more frequent among non-Latino Black and Latino overdose decedents than among non-Latino White overdose decedents (Table 1).

3.3. Prior CLS involvement at the first misdemeanor drug possession arrest

At the time of their first misdemeanor drug possession arrest, 55.1 % of individuals had at least one prior felony arrest and 32.6 % had at least one prior violent felony arrest. Prior CLS involvement at the first misdemeanor drug possession arrest was also significantly higher among Black and Latino individuals than among White individuals (Table 1).

3.4. Prevalence of prior CLS involvement at the first misdemeanor drug possession arrest among Black and Latino overdose decedents compared to White overdose decedents

The prevalence of prior CLS involvement at the first misdemeanor drug possession arrest was significantly higher among Black and Latino overdose decedents than among White overdose decedents, with this discrepancy increasing with the severity of prior arrest and conviction charges (Table 2). Adjusted for age at arrest and gender, Black and Latino individuals had 1.36 and 1.34 times the prevalence of prior felony arrests and 1.79 and 1.42 times the prevalence of prior violent felony arrests compared to White individuals, respectively. At the first misdemeanor drug arrest, the prevalence of prior felony and violent felony convictions among Black and Latino individuals was approximately twice that among White individuals.

4. Discussion

This study was the first to disaggregate analyses of CLS involvement among overdose decedents by race/ethnicity to identify wide racial disparities in potential diversion program eligibility based on prior CLS involvement at the first misdemeanor drug possession arrest. Whereas prior studies have demonstrated the extent of CLS involvement among overdose decedents and have called for the implementation of overdose prevention interventions during CLS encounters, we specifically examined decedents' CLS histories and differences by race/ethnicity to assess potential eligibility for diversion programs like NYC HOPE, which connect individuals arrested for misdemeanor drug possession with little prior CLS involvement to treatment.

Our study raises concerns about the reach of programs aimed at diverting individuals charged with misdemeanor drug possession to treatment or other services. Among decedents who had been arrested at least once for misdemeanor drug possession, half would have been ineligible for programs that excluded those with prior felony arrests, and one-fifth ineligible for programs that excluded those with prior felony convictions. Similar findings were reported in a Philadelphia-based study, which found that most decedents were ineligible for felony drug court at their last arrest prior to death due to prior CLS histories or charge at arrest (Shefner et al., 2020). As evaluations of court-based interventions are unavailable, these findings demonstrate the need for more expansive diversion eligibility criteria to increase the scope and impact of diversion programs.

Critically, our study found significant discrepancies by race/ethnicity in the prevalence and accumulation of prior CLS histories at the time many experienced their first misdemeanor drug possession arrest. Adjusted for age at arrest and gender, Black and Latino individuals had approximately twice the risk of having a prior felony conviction or prior violent felony conviction at the first misdemeanor drug possession arrest as White individuals, suggesting that eligibility

Table 2

Prevalence ratio of criminal legal involvement by race/ethnicity among New York City residents who died of a drug overdose, New York City, 2008–2015.

	Model 1: Arrest, PR (95 % CI)	Model 2: Misdemeanor arrest, PR (95 % CI)	Model 3: Felony arrest, PR (95 % CI)	Model 4: Violent felony arrest, PR (95 % CI)	Model 5: Conviction, PR (95 % CI)	Model 6: Misdemeanor conviction, PR (95 % CI)	Model 7: Felony conviction, PR (95 % CI)	Model 8: Violent felony conviction, PR (95 % CI)
Lifetime criminal legal history[1]								
Gender								
Male	REF	REF	REF	REF	REF	REF	REF	REF
Female	0.81 (0.78, 0.84)	0.78 (0.75, 0.82)	0.71 (0.67, 0.75)	0.52 (0.47, 0.57)	0.74 (0.71, 0.78)	0.66 (0.61, 0.71)	0.53 (0.48, 0.59)	0.19 (0.14, 0.26)
Race/ethnicity								
Black	1.17 (1.13, 1.22)	1.20 (1.15, 1.25)	1.38 (1.31, 1.45)	1.75 (1.61, 1.92)	1.28 (1.22, 1.34)	1.46 (1.36, 1.57)	2.09 (1.88, 2.33)	2.37 (1.93, 2.91)
Latino	1.13 (1.09, 1.17)	1.14 (1.10, 1.19)	1.33 (1.26, 1.39)	1.50 (1.38, 1.64)	1.21 (1.16, 1.26)	1.29 (1.20, 1.38)	2.05 (1.86, 2.27)	2.00 (1.64, 2.44)
White	REF	REF	REF	REF	REF	REF	REF	REF
Age (years)								
15–34	REF	REF	REF	REF	REF	REF	REF	REF
35–54	1.12 (1.07, 1.16)	1.15 (1.09, 1.20)	1.32 (1.24, 1.41)	1.54 (1.38, 1.72)	1.32 (1.24, 1.39)	1.76 (1.59, 1.94)	2.39 (2.06, 2.76)	3.08 (2.30, 4.14)
55–84	1.07 (1.02, 1.13)	1.10 (1.04, 1.16)	1.25 (1.17, 1.35)	1.39 (1.23, 1.57)	1.24 (1.16, 1.32)	1.69 (1.51, 1.88)	2.06 (1.75, 2.42)	2.38 (1.72, 3.31)
Prior criminal legal history at first misdemeanor drug arrest[2]								
Gender								
Male	REF	REF	REF	REF	REF	REF	REF	REF
Female	0.89 (0.83, 0.96)	0.91 (0.82, 1.00)	0.83 (0.75, 0.90)	0.60 (0.51, 0.70)	0.85 (0.76, 0.96)	0.91 (0.79, 1.04)	0.63 (0.52, 0.76)	0.26 (0.16, 0.41)
Race/ethnicity								
Black	1.23 (1.15, 1.32)	1.24 (1.13, 1.37)	1.36 (1.24, 1.49)	1.79 (1.55, 2.06)	1.38 (1.23, 1.56)	1.23 (1.07, 1.40)	2.08 (1.71, 2.54)	2.14 (1.53, 2.98)
Latino	1.21 (1.13, 1.30)	1.11 (1.00, 1.22)	1.34 (1.22, 1.46)	1.42 (1.23, 1.64)	1.28 (1.14, 1.44)	1.14 (0.99, 1.30)	2.14 (1.77, 2.59)	1.92 (1.39, 2.65)
White	REF	REF	REF	REF	REF	REF	REF	REF
Age (years)								
15–34	REF	REF	REF	REF	REF	REF	REF	REF
35–54	1.16 (1.10, 1.22)	1.29 (1.19, 1.39)	1.21 (1.13, 1.30)	1.31 (1.18, 1.47)	1.53 (1.40, 1.68)	1.62 (1.46, 1.81)	1.94 (1.69, 2.23)	2.05 (1.61, 2.60)
55–84	1.02 (0.83, 1.26)	1.12 (0.84, 1.50)	1.13 (0.89, 1.42)	0.99 (0.64, 1.52)	1.43 (1.07, 1.91)	1.53 (1.07, 2.18)	1.66 (1.07, 2.56)	0.87 (0.28, 2.71)

[1] Results are from relative risk regressions assessing the risk of lifetime criminal justice involvement among Black and Latino New York City residents compared to White New York City residents who died of an unintentional drug overdose, adjusted for age at death and gender. 95 % confidence intervals calculated using a modified Poisson regression approach with robust error variance.

[2] Results are from relative risk regressions assessing the risk of prior criminal justice involvement at the first misdemeanor drug possession arrest among Black and Latino New York City residents compared to White New York City residents who died of an unintentional drug overdose, adjusted for age at arrest and gender. 95 % confidence intervals calculated using a modified Poisson regression approach with robust error variance.

for diversion programs is also unequally distributed by race/ethnicity.

Our results align with prior research demonstrating the contribution of racial disparities in lifetime accumulation of CLS involvement to the inequitable impact of CLS diversion programs (Wooldredge et al., 2015; Omori and Petersen, 2020; Kurlychek and Johnson, 2019; Schlesinger, 2007; Kutateladze et al., 2014). For instance, initiatives to mandate diversion to drug treatment and reclassify felony drug arrests as misdemeanors in California disproportionately benefited White Californians over Black Californians due to existing disparities in prior CLS histories (MacDonald et al., 2014; Mooney et al., 2018; Nicosia et al., 2013). Thus, diversion programs that premise eligibility on past CLS histories, despite demonstrably higher risks of CLS exposure among Black and Latino individuals (Travis et al., 2014; Mitchell and Caudy, 2015), must be reimagined. By ignoring the policing, charging, and enforcement practices that drive the differential accrual of CLS histories by race/ethnicity (Beckett et al., 2006, 2005; Lynch, 2012), diversion programs are at risk of perpetuating racial disparities in drug-related incarceration.

4.1. Limitations

We matched data using a probabilistic algorithm; it is possible that a

decedent might not have matched to an existing criminal history. Furthermore, we measured *potential* eligibility for diversion to treatment based on prior CLS involvement at the first misdemeanor drug possession arrest and were not able to assess whether decedents were offered or diverted to treatment. Prospective evaluations of these programs are needed to determine racial disparities in implementation and impact.

4.2. Conclusions

We found that a substantial proportion of overdose decedents had CLS histories at the time of their first misdemeanor drug arrest, with significantly higher proportions among Black and Latino decedents compared with White decedents. Diversion programs which intend to reduce overdose mortality should extend eligibility to people with prior CLS histories to expand program scope and mitigate racially disparate outcomes in CLS involvement.

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Contributors

SM analyzed the data, drafted the manuscript, and revised the manuscript. MLN designed the study, validated and replicated the results, and critically reviewed and revised the manuscript. AH assisted with data interpretation and critically reviewed and revised the manuscript. DP supervised the study and critically reviewed and revised the manuscript.

Declaration of Competing Interest

The authors report no declarations of interest.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at https://doi.org/10.1016/j.drugalcdep.2021.108867.

References

Beckett, K., Nyrop, K., Pfingst, L., Bowen, M., 2005. Drug use, drug possession arrests, and the question of race: lessons from Seattle. Soc. Probl. 52 (3), 419–441.

Beckett, K., Nyrop, K., Pfingst, L., 2006. Race, drugs, and policing: understanding disparities in drug delivery arrests. Criminology 44 (1), 105–137.

Binswanger, I.A., Redmond, N., Steiner, J.F., Hicks, L.S., 2012. Health disparities and the criminal justice system: an agenda for further research and action. J. Urban Health 89 (1), 98–107.

Binswanger, I.A., Blatchford, P.J., Mueller, S.R., Stern, M.F., 2013. Mortality after prison release: opioid overdose and other causes of death, risk factors, and time trends from 1999 to 2009. Ann. Intern. Med. 159 (9), 592–600.

Brinkley-Rubinstein, L., Zaller, N., Martino, S., et al., 2018. Criminal justice continuum for opioid users at risk of overdose. Addict. Behav. 86, 104–110.

Carey, P.M., 2019. Massachusetts trial court: facilitating a community response to the opioid crisis. Trends St Cts. 2.

Eisenberg, M.D., Saloner, B., Krawczyk, N., et al., 2019. Use of opioid overdose deaths reported in one state's criminal justice, hospital, and prescription databases to identify risk of opioid fatalities. JAMA Intern. Med. 179 (7), 980–982.

Freudenberg, N., Heller, D., 2016. A review of opportunities to improve the health of people involved in the criminal justice system in the United States. Annu. Rev. Public Health 37, 313–333.

Hacker, K., Jones, L.D., Brink, L., et al., 2018. Linking opioid-overdose data to human services and criminal justice data: opportunities for intervention. Public Health Rep. 133 (6), 658–666.

Iguchi, M.Y., London, J.A., Forge, N.G., Hickman, L., Fain, T., Riehman, K., 2002. Elements of well-being affected by criminalizing the drug user. Public Health Rep. (Washington, DC: 1974) 117 (Suppl 1), S146–S150.

Krawczyk, N., Schneider, K.E., Eisenberg, M.D., et al., 2020. Opioid overdose death following criminal justice involvement: linking statewide corrections and hospital databases to detect individuals at highest risk. Drug Alcohol Depend. 213, 107997.

Kurlychek, M.C., Johnson, B.D., 2019. Cumulative disadvantage in the American criminal justice system. Annu. Rev. Criminol. 2 (1), 291–319.

Kutateladze, B.L., Andiloro, N.R., Johnson, B.D., Spohn, C.C., 2014. Cumulative disadvantage: examining racial and ethnic disparity in prosecution and sentencing. Criminology 52 (3), 514–551.

Larochelle, M.R., Bernstein, R., Bernson, D., et al., 2019. Touchpoints–opportunities to predict and prevent opioid overdose: a cohort study. Drug Alcohol Depend. 204, 107537.

Lynch, M., 2012. Theorizing the role of the 'war on drugs' in US punishment. Theor. Criminol. 16 (2), 175–199.

Lynch, M., Omori, M., Roussell, A., Valasik, M., 2013. Policing the 'progressive'city: the racialized geography of drug law enforcement. Theor. Criminol. 17 (3), 335–357.

MacDonald, J., Arkes, J., Nicosia, N., Pacula, R.L., 2014. Decomposing racial disparities in prison and drug treatment commitments for criminal offenders in California. J. Legal Stud. 43 (1), 155–187.

Marks, L.K., 2017. The unified court system's response to the opioid epidemic in New York. Alb Gov't L Rev. 11, 28.

Mauer, M., McCalmont, V., 2014. A Lifetime of Punishment: the Impact of the Felony Drug Ban on Welfare Benefits. Sentencing Project, Washington, DC.

Merrall, E.L., Kariminia, A., Binswanger, I.A., et al., 2010. Meta-analysis of drug-related deaths soon after release from prison. Addiction 105 (9), 1545–1554.

Mitchell, O., Caudy, M.S., 2015. Examining racial disparities in drug arrests. Justice Q. 32 (2), 288–313.

Mooney, A.C., Giannella, E., Glymour, M.M., et al., 2018. Racial/Ethnic disparities in arrests for drug possession after California proposition 47, 2011–2016. Am. J. Public Health (0), e1–e7.

Nicosia, N., MacDonald, J.M., Arkes, J., 2013. Disparities in criminal court referrals to drug treatment and prison for minority men. Am. J. Public Health 103 (6), e77–e84.

New York State Department of Health, Criminal Justice Knowledge Bank. Heroin Overdose Prevention and Education (HOPE) Program, Richmond County. https://knowledgebank.criminaljustice.ny.gov/heroin-overdose-prevention-and-education-hope-program. Published 2018. Accessed April 29, 2019.

New York County District Attorney's Office. Confronting the Opioid Epidemic. https://www.manhattanda.org/our-work/community-partnerships/confronting-the-opioid-epidemic/. Published 2019. Accessed April 29, 2019.

Omori, M., Petersen, N., 2020. Institutionalizing inequality in the courts: decomposing racial and ethnic disparities in detention, conviction, and sentencing. Criminology.

Pager, D., 2003. The mark of a criminal record. Am. J. Sociol. 108 (5), 937–975.

Pizzicato, L.N., Drake, R., Domer-Shank, R., Johnson, C.C., Viner, K.M., 2018. Beyond the walls: risk factors for overdose mortality following release from the Philadelphia Department of Prisons. Drug Alcohol Depend. 189, 108–115.

Schlesinger, T., 2007. The cumulative effects of racial disparities in criminal processing. JIJIS 7, 261.

Shefner, R.T., Sloan, J.S., Sandler, K.R., Anderson, E.D., 2020. Missed opportunities: arrest and court touchpoints for individuals who fatally overdosed in Philadelphia in 2016. Int. J. Drug Policy 78, 102724.

Travis, J., Western, B., Redburn, F.S., 2014. The Growth of Incarceration in the United States: Exploring Causes and Consequences.

Wakeman, S.E., 2017. Why it's inappropriate not to treat incarcerated patients with opioid agonist therapy. AMA J. Ethics 19 (9), 922–930.

Winkelman, T.A., Chang, V.W., Binswanger, I.A., 2018. Health, polysubstance use, and criminal justice involvement among adults with varying levels of opioid use. JAMA Network Open. 1 (3), e180558.

Wooldredge, J., Frank, J., Goulette, N., Travis III, L., 2015. Is the impact of cumulative disadvantage on sentencing greater for Black defendants? Criminol. Public Policy 14 (2), 187–223.

Zou, G., 2004. A modified poisson regression approach to prospective studies with binary data. Am. J. Epidemiol. 159 (7), 702–706.