HFG RESEARCH AND POLICY IN BRIEF

The Opioid Epidemic and Homicide

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Executive Summary

The twenty-five-year epidemic of opioid misuse in the United States has taken at least 750,000 lives through overdose. We undertook to learn whether this toll might have been accompanied by an increase in violence resulting from growth in the illicit opioid market, which, like most illicit drug markets, includes a risk of violence due to conflicts among sellers and between sellers and buyers. We found that increases in activity in this market were associated with—and arguably caused—increased levels of homicide.

Using county opioid overdose rates as a measure of levels of transactions in the illicit market, we looked for an association between those rates and county homicide rates between 1999 and 2015. As the epidemic has been especially intense in the White U.S. population, we conducted separate analyses for the White and Black populations. We also compared Appalachian counties to the rest of the country, as Appalachia has been particularly hard hit by the crisis.

In the nation as a whole, White overdose rates in this period were 28 percent higher than Black rates. The growth in overdose rates differed markedly between the two groups: 34 percent for Blacks and 120 percent for Whites. Black overdose rates did not differ between Appalachian and non-Appalachian counties. The White overdose rate, however, was both considerably higher in Appalachia than elsewhere (23.5 vs. 19 per 100,000) and much higher than the Black Appalachian rate (14.5). The growth in overdose rates was much higher for both groups within Appalachia than elsewhere: 58 percent vs. 32 percent for Blacks and 146 percent vs. 115 percent for Whites.

Despite this growth in overdose rates during the period, homicide rates declined for both groups and in both Appalachian and non-Appalachian counties. This means that the aggregate effect of all the factors influencing U.S. homicide rates was a beneficial one. However, to discern the independent association (if any) between changes in activity in the illicit-opioid market and changes in homicide rates, we conducted a series of multiple regression analyses. We found a positive association between overdoses and homicides in both racial groups and both within and without Appalachia. Holding constant several other variables known to be associated with homicide rates, we found growth in overdose among Whites in this period was associated with a 9-percent increase in homicide across all counties and a 19-percent increase within Appalachia. The equivalent figures for Blacks were 3.5 and 16.

Assuming these associations reflect a causal relationship, we conclude that this growth in illicit opioid activity exerted upward pressure on rates of violence; were it not for the violence associated with the opioid market, the national drop in killings would have been greater. The finding of another harm wrought by the opioid epidemic provides another reason to pursue vigorous public-health efforts, with a strong emphasis on treatment, to stem the epidemic.

The Opioid Epidemic

By the start of 2022, at least three thousand lawsuits had been filed by states, counties, municipalities, tribes, and individuals against manufacturers and distributors of opioids for their role in the epidemic of opioid abuse that has taken nearly 750,000 lives. This figure is just the most dramatic measure of the damage—personal, social, and economic—wrought by misuse of these highly addictive drugs.¹

The onset of the opioid epidemic is generally dated to 1999. In the late 1990s, the medical community was beginning to acknowledge that the reluctance to prescribe powerful analgesics with serious addiction potential was leaving chronic pain undertreated. A change in this stance resulted in a steep increase in prescriptions for natural and semisynthetic opioids, chiefly oxycodone (e.g., Oxycontin, Percocet) and hydrocodone (e.g., Vicodin). This liberalization of prescribing practice was vigorously advocated by pharmaceutical manufacturers, most infamously by Purdue Pharma, which had introduced Oxycontin, a gradual-release form of oxycodone, in 1996. Purdue lobbied physicians to prescribe Oxycontin with a claim that its potential for addiction was minimal because, unlike the previously dominant, immediate-release varieties, Oxycontin produced no instantaneous "rush."²

Though Oxycontin held only a fraction of the oxycodone market, it eventually became the best-selling variety. The company continued to garner enormous profits from the burgeoning rate of Oxycontin prescription despite knowing that its drug was being abused and diverted in growing quantities to the illicit market.³

The age-adjusted U.S. rate of opioid overdose death, fueled largely by Oxycontin and Vicodin (hydrocodone), grew from 1 per 100,000 in 1999 to 4.4 per 100,000 in 2016, an increase of 340% (see Figure 1). In 2010, Purdue Pharma responded to the evidence, no longer deniable, that Oxycontin pills were being crushed and insufflated (snorted) or liquified and injected to defeat the gradual effect of the time-release pill. Purdue released a reformulated version of the pill that made these modes of abuse very difficult. There is a good deal of evidence that, in addition to its beneficial effect in reducing Oxycontin abuse, this innovation engendered a shift among Oxycontin abusers to heroin.⁴ In 2011, a year after the reformulation, the rate of heroin overdose death began a sharp climb from what had been a steady rate of about .7 deaths per 100,000 to almost 5 per 100,000 as of 2016, a 600% increase. Fentanyl and its analogs (the synthetic opioids, excluding methadone), which are used medically to treat extreme pain, arrived on the street around 2013. Overdose deaths involving this extremely potent category of drugs grew from 1 per 100,000 in that year to approximately 6 per 100,000 in 2016, a spike of 500%. In sum, the prodigious growth in fatal overdoses from these several opioid drugs makes the accumulated mortality of three-quarters of a million seem a less fantastic claim than it does on a first reading.

FIGURE 1. AGE-ADJUSTED OPIOID OVERDOSE DEATHS PER 100,000, 1999-2021



Source: National Center for Health Statistics. https://www.cdc.gov/nchs/data/databriefs/db457-tables.pdf#4

The Opioid Epidemic and Violence

We wondered if, in addition to these hundreds of thousands of deaths and the vast burden of illness wrought by opioid overdose and addiction, this epidemic might have exacted an additional toll in the form of violence. The epidemic began when the loosening up of prescription resulted in addiction among patients as well as friends and family members with whom they shared their medicine or who stole the drugs from them. As these sources of supply dwindled, some users turned to the illicit market, where they could get drugs diverted from legitimate sources. Many, though, as discussed above, picked up a heroin habit, a trend stimulated by the anti-abuse reformulation of Oxycontin and maintained by addiction as well as the relatively low price of heroin—on a dose-for-dose basis, heroin is cheaper than prescription opioids on the street.⁵ A former agent of the Drug Enforcement Administration describes the process:

When people get addicted to prescription opioid-based drugs, at some point the doctor stops writing prescriptions, the pharmacist won't fill it, it becomes too expensive on the street, you can't steal out of your grandmother's medicine cabinet forever, so what do they do? They make that long dark walk down to the use of heroin.⁶

An expert panel of the National Academies of Sciences, Engineering, and Medicine echoes this reasoning: "Part and parcel of creating the supply of prescription opioids for treatment of chronic pain are increases in the supply to and demand for black markets for opioids, with all of their attendant harms, including violence..."⁷

THE ILLICIT MARKET IN OPIOIDS

Illicit drug markets are risky, "stateless" social spaces. Conflicts involving buyers and sellers over price, quantity, purity, and other terms of trade cannot be settled by the police, courts, or other formal agents of dispute resolution. When access to formal social control is cut off, violence becomes a potential means of enforcement. Growing demand entices more sellers into the market, increasing competition and potential conflict between them. If an illicit drug market entails violence, then as the market expands, so should drug-related violence.

That is the logic of past research connecting the crack-cocaine epidemic to mounting youth homicide rates during the 1980s and early 1990s (e.g., Blumstein 1995; Goldstein 1985). We believe the same logic holds for the more recent opioid markets. In short, our conjecture is that places with greater rates of illicit opioid consumption should, all else equal, see greater levels of violence.

There is, however, a significant demographic difference between these drug epidemics. Crack cocaine, at least in its early years, was concentrated in inner cities. These places were beset by high rates of violence, and the sale of crack was largely the domain of young Black men, the population segment with the highest rates of violent offending and victimization. The opioid epidemic, by contrast, is more evenly spread across age and racial groups and among big cities, suburbs, small towns, and rural areas.⁸ This more diffuse prevalence is one reason the impact of the opioid crisis on homicide rates may not be as readily apparent as the impact of the crack markets was. Nonetheless, there is a racial difference, though less pronounced, in the current drug epidemic as well, with the non-Hispanic White (hereafter "White") population being the harder-hit group. This difference might have implications for the strength of association—if any—between levels of activity in illicit opioid markets and violence in the White and non-Hispanic Black (hereafter "Black") populations. For this reason, we conducted separate analyses of this relationship in these two groups. (Small population counts and missing data in the geographic units in our studies precluded estimates of homicide and opioid death rates for Hispanics and other ethnicities and races.)

In the 2016 administration of an annual residential survey of drug use in the U.S., 6% of those who reported misuse of a prescription pain reliever in the past year said that their most recent source was

a "drug dealer or other stranger." Though this is a very small portion, the large number of Americans reporting misuse—an estimated 11.5 million based on the 2016 survey—means that nearly 700,000 people turned at least once to street markets for prescription opioids.⁹ And it is highly likely that those who reported using this source for their most recent acquisition had done so more than once during that past year. In the U.S., heroin must always be sourced from illegal sellers. A RAND study estimated the number of chronic heroin users in 2016 to be somewhere between 2.3 and 4.6 million.¹⁰ Even if the likelihood of violent conflict in a single illicit exchange is low, therefore, the volume of activity in the illicit markets for opioids comprises hundreds of thousands of encounters with a potential for violence.

Street markets are not the only potential source of interpersonal violence associated with the opioid epidemic.¹¹ Per the 2016 survey, an estimated 425,000 abusers acquired their most recent opioid dose by taking it from a friend or relative without asking. It is reasonable to assume that where illicit use of opioids is common, so too will be conflicts between family members and acquaintances over their possession and about the consequences of their use.

HYPOTHESIS

To be clear, we did not predict that overall rates of violence during the period our studies cover—1999–2015—would increase in areas with the greatest consumption of illicit opioids. This period was one in which violence rates were flat or declining throughout the U.S. Numerous factors influence violence rates, and if the most influential of them in a given area were at levels tending to keep violence flat or decrease it, then even if the opioid epidemic *were* having a positive effect on violence in that area (that is, tending to increase it), the rate of violence might still be flat or declining—as it was in most places. The proper technique for determining whether the epidemic was indeed putting *upward pressure* on rates of violence—our hypothesis—is multivariate regression analysis, which makes it possible to measure the independent effect of each of a number of influences.

We carried out two such studies of the relationship between estimated rates of illicit opioid consumption and rates of violence.¹² The first was intended to find out whether such a relationship existed at a cross-sectional level: Did areas with higher levels of the first tend to have higher levels of the second? Controlling for other variables that might be correlated with both illicit opioid consumption and homicide and thus lead to misinterpretation of the relationship between opioids and homicide, we found the correlation we predicted. We then carried out a longitudinal analysis, testing whether changes over time in an area's level of illicit opioid use are associated with changes in violence. Longitudinal studies provide a stronger basis for inferring causal relationships, and we will therefore focus our discussion on that analysis.

Data

We chose to use rates of homicide as our measure of violence. Homicide is, of course, the most serious form of violence, but it is also the most reliably registered and tallied. To measure rates of illicit opioid use and—by inference—rates of transactions in the illicit market—we used rates of opioid-related overdose death. In other words, we used overdose death rates as a *proxy* for transaction rates in the illicit market (Figure 2). This choice requires some justification.

FIGURE 2. CAUSAL RELATIONSHIP BETWEEN ILLICIT MARKET ACTIVITY AND HOMICIDE

Illicit opioid transactions (measured by overdose rate)

 \rightarrow

Homicide rate

Aggregate rates of opioid overdose are a function not only of the number of people using illicit opioids but also of the inherent lethality of the drugs being consumed. A typical dose of heroin, for example, is more powerful in effect than a typical dose of any of the prescription opioids.¹³ Fentanyl, in turn, is many times as powerful and dangerous as heroin and also considerably cheaper to produce, making it attractive to sellers and to some consumers of opioids.¹⁴ Fentanyl and its analogs currently account for more opioid-related deaths than any other drug.¹⁵ Both the spike in fentanyl overdoses beginning in 2014 and the ongoing yearly increase in overdose death from heroin—which is now commonly mixed with some variant of fentanyl—are to an unknown extent attributable to the inherent danger of these drugs as well as the number of people consuming them.

Nevertheless, it would not be tenable to ascribe the twenty-year rise in opioid-related deaths solely to an increase in opioid potency, with no growth in the number of people using opioids. The near trebling in opioid prescriptions in the ten years preceding the 2011 spike in heroin deaths — well before the arrival of fentanyl on the street around 2014 — was accompanied by a commensurate growth in overdose deaths. Moreover, there was a clear geographic concordance between prescription rates and overdose deaths, as shown in Figure 3.¹⁶ In addition, a diverse set of indicators strongly suggests growth in the number of people consuming opioids. Rates of heroin use gleaned from in-person residential surveys, of opioid-use disorder among pregnant women, of opioid-withdrawal syndrome in newborns, and of admissions to state-sponsored treatment for opioid addiction all showed striking increases over the seventeen-year period of our studies. In light of these indicators, we are confident that area differences in opioid-related death rates are at least partly a function of area differences in the prevalence of opioid use.

FIGURE 3. PER CAPITA OPIOID PRESCRIPTION RATES (LEFT) AND OPIOID DEATH RATES (RIGHT), 2006-2014



(Darker colors = higher rates) Source: The Washington Post, January 17, 2020 https://www.washingtonpost.com/graphics/2019/investigations/dea-pain-pill-database; used under license

The other determinant of overdose rates — the inherent lethality of the drugs being consumed — cannot be dismissed as insignificant, though. Fentanyl and its similarly dangerous chemical analogs present the greatest challenge here. However, the sharp uptick in overdose deaths involving the synthetic opioids did not occur until 2014, so that only the last two years of our 1999–2015 study period could be "tainted" by the introduction of a much more dangerous drug.¹⁷ But as a check against this potential confounding variable, we replicated our analysis with the last years of our study period omitted, as discussed below.

Our predictive variable of interest is an area's number of drug-involved deaths per 100,000 population, which is mainly a function of the rate of *opioid*-overdose death.¹⁸ Our outcome variable is that area's number of homicide victimizations per 100,000. (Race-specific versions of these variables were used in the separate Black and White analyses.)

We included as covariates a large set of social, economic, and demographic variables that have been shown in previous studies to be associated with homicide rates.¹⁹ Failure to control for their influence could lead to mismeasurement of any association between opioid overdose rates and homicide.

The geographic units of analysis are 1,421 counties and county clusters. The latter combine smaller adjacent counties into single units with populations of at least 50,000.²⁰ (This provides for more reliable estimates of variables in low-population areas, where rates of low-frequency events, such as

homicide, undergo a good deal of yearly fluctuation due to the "law" of small numbers.) For brevity, we will use "county" in reference to both single counties and these clusters of small counties.

Our studies cover, again, the period from 1999 through 2015. For our first, cross-sectional study, we derived a single value of each variable for each geographic unit by averaging across all seventeen years. For our longitudinal study, data sparseness at the county level precluded using yearly measures for the homicide and overdose variables. We therefore created three subperiods, averaging the variable values from the component years of each: 1999–2004, 2005–2010, and 2011–2015. The total number of observations for the White sample is 4,263 (1,421 counties × 3 subperiods). In the Black sample, missing values and low counts for the homicide and drug death rates across the 1,421 counties reduce measurement reliability. We therefore limited the Black sample to counties in which at least 5% of the population is Black, which yields 1,873 observations (617 units in the first subperiod and 628 units in the second and third subperiods).

Finally, we include controls for unmeasured attributes of each geographic unit that were consistent over time and could have influenced either the predictive variables in our regression models (such as opioid overdose rates), the outcome variable (homicide rates), or both and thus muddy the true relationship between the predictors and the outcome. Similarly, in our longitudinal study we include controls for our three time periods to statistically remove potential influences of the time period on the variables of interest.

Descriptive Statistics

In our cross-sectional analysis, we found a great deal of variation across counties in overdose death rates for both the Black and White populations. Seventy-four percent of the White distribution ranged between 6.2 and 19 per 100,000 (one standard deviation below and above the mean). In our regression models, these rates correspond to predicted homicide rates, net of the influence of other variables, of 2.5 and 3.2 per 100,000, a difference of about 28%. In the Black distribution of overdose rates, 85% of the rates fall between 1.8 and 15 per 100,000 (one SD below and above the mean). The regression model predicts homicide rates at those values of 18 and 24.4, a difference of 37%. We found, in short, a substantial association between these two ills.

Motivated by this association between rates of opioid death and homicide in our cross-sectional study (as well as by a similar finding in a paper covering a much briefer period), we undertook a

longitudinal analysis.²¹ While regression analysis alone can never prove a causal relationship, demonstrating an association between changes in the levels of one variable with changes in those of another provides, as mentioned, more compelling evidence of a causal relationship.

The opioid epidemic has been particularly severe in rural regions, especially in the earlier years, when prescription pills were the main opioid of abuse.²² No area exemplifies this trend quite as dramatically as Appalachia, a region of some 420 counties in a north-south band through thirteen states in the eastern portion of the country. While overdose rates in 1999 were similar there to elsewhere, the increase in rates over the next twenty years was larger than in the rest of the country.²³ For this reason, we devoted special attention to the counties in this region.

Across the full set of counties in our analyses (a constant 1,421 for the White population and a three-subperiod average of 624 for the Black population, based on the 5% criterion), the average Black homicide rate for the seventeen-year period was 20.3 per 100,000, more than six times the White average of 3.3. Black homicide declined by 6.2% over the period, and the White rate dropped by 6.5% (see Table 1). But the White drug-related death rate of 18.7 was 28% higher than the Black rate of 14.6. The *growth* in overdose death also differed markedly between the two groups: 34% for Blacks but 120% for Whites. These statistics square with both the long-standing Black-White homicide difference and the evidence from numerous sources that the opioid crisis has been especially intense in White populations.

	Overdose Rate	Overdose Change	Homicide Rate	Homicide Change
White	18.7	120%	3.3	-6.5%
Black	14.6	34%	20.3	-6.2%

TABLE 1. AVERAGE OVERDOSE AND HOMICIDE RATES AND CHANGES, 1999-2015: ALL COUNTIES

Comparing Appalachian counties to the rest of the country, we found essentially no difference in homicide rates for the Black populations: 19.2 in Appalachia and 20.4 elsewhere (see Table 2).

The Appalachian White homicide rate of 4 was 24% higher than the White rate elsewhere. The drug death rates among Blacks, like the Black homicide rates, did not differ between Appalachia (14.5) and elsewhere (14.6). The White overdose rate, however, was both considerably higher in Appalachia than elsewhere—23.5 versus 19—and much higher than the Black overdose rate. The White rate grew by

146% in Appalachia versus 115% elsewhere. The Black overdose rate was lower within than outside of Appalachia in the first years of the period. However, because the rate grew by 58% (in comparison to 32% elsewhere), the Appalachian and non-Appalachian averages for the full period were essentially identical.

	Overdose Rate		Overdose Change		Homicide Rate		Homicide Change	
	Арр	Non	Арр	Non	Арр	Non	Арр	Non
White	23.5	19	146%	115%	4	3.2	-10%	-6%
Black	14.5	14.6	58%	32%	19.2	20.4	-12%	-1%

TABLE 2. AVERAGE OVERDOSE AND HOMICIDE RATES AND CHANGES,1999-2015: APPALACHIA (APP) VS NON-APPALACHIA (NON)

On the other hand, homicide rates in both the White and Black Appalachian populations declined, and the drop was *greater*, at 10% and 12% respectively, than the drop in non-Appalachian counties (6% and 1%) and the drop in White and Black rates for all counties, i.e., the nation as a whole (6.5% and 6.2%).

Regression Results

An increase in activity in the street market in opioids, which we infer from the growth of overdose deaths both within and outside of Appalachia, coupled with a national *decrease* in homicide, would seem to argue against the hypothesis that increased transactions in the illicit market boosted homicide rates. As discussed earlier, however, only the controlled correlational analysis provided by regression modeling can reveal whether homicide changes were associated, net of other influences, with changes in the level of consumption of opioids.

In the Black regression model, the overdose rate was, in fact, the only one of 18 variables showing a statistically significant positive association with homicide. In the White model, too, the overdose rate was a significant predictor of homicide.²⁴ In other words, homicide rates increased more (or decreased less) where growth in overdose rates was greater, controlling for the effects of the other variables.

The association between rates of fatal opioid overdoses and homicide is statistically significant for both the Black and White populations, but modest. Given the increase in Black overdose death of 34% between the first and last subperiod, the regression model predicts a 3.5% increase in the rate of homicides (see Table 3). The White growth in opioid deaths, 120%, corresponds to a model prediction of a 9.1% homicide rise. But, again, both Black and White homicide actually declined over the years between 1999 and 2015. Our analysis suggests, though, that this growth in consumption of illicit opioids has exerted upward pressure on rates of violence: were it not for the violence associated with the opioid epidemic, the drop in killings would have been greater.

	All Counties	Appalachia		
White	9.1%	19%		
Black	3.5%	15.9%		

TABLE 3. ESTIMATED HOMICIDE INCREASE ASSOCIATED WITH GROWTH IN OPIOID USE, 1999-2015

We wondered if in Appalachia, which saw exceptionally large growth in use of illicit opioids, the magnitude of the *association* between opioid use and homicide might also differ, in either direction, from that found for the country as a whole, despite the fact that the homicide drop was greater in Appalachia. We conducted a separate regression analysis for that region and found that the association was stronger there for both races, with a predicted elevation of homicide rates by 15.9% for Blacks and 19% for Whites. It appears that the greater malign influence of opioids on violence in Appalachia was more than negated by a benign trend, greater than in the rest of the nation, in one or more of the other causes of violence.

Finally, as a check against the possibility that the growth in opioid deaths was largely due not to an increase in the prevalence of opioid use but to the introduction of fentanyl into the illegal opioid supply, we replicated our analysis with the last years of our study period omitted—the third sub-period, when overdose deaths due to fentanyl and its analogs came to be a substantial and eventually predominant fraction of all drug deaths. We found that in the earlier period, spanning 1999 to 2010, the size of the association between White overdose and homicide was greater and that for Blacks was smaller than in the full-period analysis, though both associations remained statistically significant. The connection between homicide and drug death rates predates the rise of fentanyl.

Conclusions

We believe our analyses provide evidence favoring the hypothesis that motivated them: the growth of street markets in opioids produced increases in violence related to transactions in these markets and possibly to opioid-related conflicts outside of market contexts. There are limitations to our studies, of course. Although we included a large set of covariates that might affect homicide rates, some of which did prove to be correlated with them, it is possible that we omitted one or more variables that were influencing homicide and were also correlated with opioid death rates, resulting in mistakenly attributing to opioids the causal effect of those omitted variables. Our use of overdose rates as a stand-in for opioid use prevalence and interpretation of the latter as a measure of frequency of illicit market transactions would stand on firmer ground if bolstered by ethnographic evidence on the operation of opioid markets.²⁵ Such studies, uncommon to date, would shed light on conflicts among sellers over territory, customers, and sources of supply; preemptive and retaliatory violence; and predatory violence by street robbers.

The violence associated with the opioid epidemic has been neither as geographically circumscribed nor as abundant as what occurred in the crack-cocaine epidemic of the mid-eighties and early nineties. This may be one reason opioid-related violence has gone largely unrecognized. As well, the policy response to the opioid crisis, unlike the response to crack cocaine, has not equated opioid use with criminality, at least at the level of the end user, but has instead framed the crisis as a public-health emergency. This relatively benign approach to opioid policy may derive from the shared racial identity of the typical opioid abuser and those crafting and carrying out the approach, many of whom have seen the ravages of opioid addiction in friends and family. ²⁶ It may also represent a commendable rethinking of the "war on drugs" mentality of previous decades, with its collateral damage to individuals and communities. And this comparatively enlightened response may be explicable in part because policymakers believed they could *afford* to elevate treatment over punishment, unlike their counterparts during the crack era, who were confronted with drug-related violence of appalling proportion and demands from every quarter to extinguish it.

We endorse the public health approach, with its strong emphasis on treatment, as the best way to stem the tide of opioid demand and associated violence. But substantially reducing the demand for opioids and other harmful drugs will ultimately require a greatly broadened public health strategy, one that addresses the sources of the rise in "deaths of despair" from suicide and substance abuse, which during the decades of the opioid epidemic have reached levels high enough to reverse the long-standing decline in mortality rates of middle-aged White Americans.²⁷

The decriminalization of fentanyl testing strips, currently illegal in most states, would reduce the risks from illicit opioid consumption. At a minimum, the availability of treatment for opioid use disorder, with methadone and buprenorphine, should be vastly expanded. Only a small minority of those abusing drugs receive treatment, yet it is well established that treatment for substance abuse reduces both drug abuse and criminal involvement of those receiving treatment.²⁸ County-level studies find that increases in the prevalence of substance abuse treatment, whether measured by the number of patients accessing treatment at existing facilities or the number of treatment facilities, are associated with reductions in county crime rates, including homicide.²⁹ These studies document the crime-reduction effects of treatment not only in those receiving treatment but also in the communities in which they live.

The rate of opioid overdoses turned sharply upward in 2020 and 2021, the worst years of the coronavirus pandemic.³⁰ U.S. homicide also increased sharply in these years, at an unprecedented rate. Several factors unrelated to the opioid epidemic, including a drop in proactive policing and declining police legitimacy in the eyes of the public, probably contributed to the homicide rise.³¹ But analysis of the geographic distribution and case circumstances of the killings that have produced this homicide spike would provide the evidence needed to answer a question raised by our studies: Is there a link? **Joel Wallman** is Director of Research at The Harry Frank Guggenheim Foundation. He oversees HFG-sponsored research, with special interest in violent crime in the U.S. and Latin America and political violence worldwide.

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Notes

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- 9 National Survey on Drug Use and Health, 2016, <u>https://www.samhsa.gov/data/sites/default/files/NS-DUH-FFR1-2016/NSDUH-FFR1-2016.pdf</u>.
- 10 Gregory Midgette et al., *What America's Users Spend on Illegal Drugs*, 2006-2016 (Santa Monica, CA: RAND Corporation, 2019), <u>https://www.rand.org/pubs/research_reports/RR3140.html</u>.

- 11 The selling of illegal drugs may take place on actual streets, of course-that is, out of doors-but it may also occur within residences or commercial buildings and may also entail arrangements made by phone, the internet, or post. We use the term "street market," singular or plural, to encompass all illegal opioid transactions that entail in-person contact at some point in the exchange and thus a potential for violence.
- 12 Richard Rosenfeld, Joel Wallman, and Randolph Roth, "The Opioid Epidemic and Homicide in the United States," Journal of Research in Crime and Delinquency 58 (2021): 545–590; Richard Rosenfeld, Randolph Roth, and Joel Wallman, "Homicide and the Opioid Epidemic: A Longitudinal Analysis," Homicide Studies, 2021, <u>https://doi.org/10.1177/10887679211054418</u>.
- 13 New Jersey Drug Utilization Review Board Newsletter 28(12), July 2018, "Morphine Milligram Equivalents (MMEs)," <u>https://www.state.nj.us/humanservices/dmahs/boards/durb/newsletters/durb_news_07_2018.pdf</u>.
- 14 Heroin users' desire for fentanyl or heroin mixed with it ranges from "abhorrence and avoidance through acceptance to enthusiasm." See Daniel Ciccarone, 2019. "The Triple Wave Epidemic: Supply and Demand Drivers of the U.S. Opioid Overdose Crisis," *International Journal of Drug Policy* 71 (2109): 183-88.
- 15 See note 1.
- 16 National Institute on Drug Abuse, *Prescription Opioids and Heroin Research Report*, January 2018, https://nida.nih.gov/download/19774/prescription-opioids-heroin-research-report.pdf?v=fc86d9fdda38d0f275b23cd969da1a1f.
- 17 It should be noted as well that if any increases in overdose rates in those years were caused not by increases in the prevalence of opioid abuse (and thus of illicit transactions) but rather by shifts to consumption of much more dangerous drugs, this would dilute the statistical association between overdose rates and homicide, that is, result in an *underestimate* of the true association between levels of drug market transactions and of homicide.
- 18 Both variables were obtained from the Compressed Mortality Files of the National Center for Health Statistics. The NCHS files contain a category comprising overdose deaths due to "narcotics and hallucinogens." This category is dominated by opioid overdoses, as deaths due to hallucinogen overdose are extremely rare. There is reason to believe that this classification substantially undercounts the number of opioid overdose deaths, however, as many death certificates for drug overdose do not specify a drug. To increase the number of cases available for analysis, therefore, we combined the overdose death rates for all drugs (excluding alcohol) as our measure of opioid use prevalence. That this polydrug measure consists mainly of opioid overdoses is evident in the high correlation (r > .97) between it and the NCHS narcotics and hallucinogen measure in both the White and Black populations. We therefore use the terms "opioid overdose," "drug overdose," "drug-related deaths" and similar terms to refer to opioid overdose deaths.

- 19 These include rates of educational attainment, poverty, median income, unemployment, family disruption, alcohol-related death, vacancy, and immigration, as well as level of racial segregation, the race-ethnic composition of the population, and total population size. Because working-class Whites have been hit hard by both economic and social dislocations and especially high rates of opioid abuse in many regions, we included a measure of blue-collar workers employed in manufacturing, production, and mining occupations. Alcohol-related death, poverty, and median income are race-specific measures; the other control variables apply to the total population of each geographic unit. The social and economic data are from the 2000 decennial census and the 2005-2009, 2008-2012, and 2012-2016 American Community Surveys, while the demographic data are from the SEER program of the National Cancer Institute.
- 20 These county clusters were defined jointly by the Census Bureau's Equal Economic Opportunity Office and the SEER program, both to prevent potential identification of individuals in data from very small counties and to increase the reliability of measurement of variables in the analysis.
- S. Gaston, J. P. Cunningham, and R. Gillezeau, "A Ferguson Effect, the Drug Epidemic, Both, or Neither?
 Explaining the 2015 and 2016 U.S. Homicide Rises by Race and Ethnicity," *Homicide Studies* 23 (2019): 285-313.
- 22 Katherine M. Keyes et al., "Understanding the Rural-Urban Differences in Nonmedical Prescription Opioid Use and Abuse in the United States," *American Journal of Public Health* 104 (2014):e52-e59.
- 23 M. Meit et al., *Appalachian diseases of despair: Final report*. Appalachian Regional Commission, 2020, https://www.arc.gov/wp-content/uploads/2020/11/Appalachian-Diseases-of-Despair-October-2020. pdf.
- 24 In the regression analysis for the White population we also found significant positive associations for percentage of high-school dropouts, unemployment level, and, contrary to intuition, median income. Negative associations were found for college-graduation rate and the foreign-born percentage of county population.
- 25 Philippe Bourgois et al., "The Political and Emotional Economy of Violence in US Inner City Narcotics Markets," in *Ritual, Emotion, Violence: Studies on the Micro-Sociology of Randall Collins*, eds. Elliot Weininger, Annette Lareau, and Omar Lizardo. (London: Routledge, 2019), 46-77; Joseph Friedman et al., "Structural Vulnerability to Narcotics-Driven Firearm Violence: An Ethnographic and Epidemiological Study of Philadelphia's Puerto Rican Inner-City," PLoS ONE 14(11): e0225376. <u>https://doi.org/10.1371/journal.pone.0225376</u>; Lee Hoffer, "The Space between Community and Self-Interest: Conflict and the Experience of Exchange in Heroin Markets," in *The Economics of Ecology, Exchange, and Adaptation: Anthropological Explorations Research in Economic Anthropology*, ed. Donald C. Wood. (United Kingdom: Emerald Publishing, 2016), 167-96.
- 26 A dramatic indication of this shift in legislators' attitude toward drug addiction between the crack and opioid eras is the contrast between the positions of the Republican Party platform at its 1992 and 2016

presidential conventions: "Drug users must face punishment, including fines and imprisonment, for contributing to the demand that makes the drug trade profitable" (1992) versus "the opioid crisis is ravaging communities all over the country, often hitting rural areas harder than urban" (2016) and endorsement of the bill, eventually signed into law by President Obama, for the Comprehensive Addiction and Recovery Act (2016). This contrast and these quotations are from Jim Woo Kim, Evan Morgan, and Brendan Nyhan, "Treatment versus Punishment: Understanding Racial Inequalities in Drug Policy," *Journal of Health Politics, Policy and Law* 45 (2020): 177-209. doi:10.1215/03616878-8004850. Kim et al. analyzed the relationship between rates of overdose deaths due to various drugs in congressional districts and the likelihood that representatives for those districts sponsored treatment-oriented legislation. Looking at the period spanning both the crack and opioid epidemics, they found that overdose deaths from opioids and methamphetamine—both of which take a higher toll among Whites than among Blacks—were positively related to such legislation, but that cocaine deaths, which have a higher rate among Blacks, were not. See also German Lopez, "When a Drug Epidemic's Victims Are White," April 4, 2017, www.vox.com/identities/2017/4/4/15098746/opioid-heroin-epidemic-race.

- 27 Anne Case and Angus Deaton, "Mortality and Morbidity in the 21st Century," Brookings Papers on Economic Activity, Spring 2017, <u>https://www.brookings.edu/bpea-articles/mortality-and-morbidi-ty-in-the-21st-century</u>.
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- 29 Hefei Wen, Jason M. Hockenberry, and Janet R. Cummings, 2014, "The Effect of Substance Use Disorder Treatment Use on Crime: Evidence from Public Insurance Expansions and Health Insurance Parity Mandates." National Bureau of Economic Research Working Paper 20537. <u>http://www.nber.org/papers/w20537</u>; Samuel R. Bondurant, Jason M. Lindo, and Isaac D. Swensen, 2018, "Substance Abuse Treatment Centers and Local Crime," *Journal of Urban Economics* 104: 124-133. <u>https://doi.org/10.1016/j.jue.2018.01.007</u>.
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- 31 Richard Rosenfeld and Ernesto Lopez, Pandemic, Social Unrest, and Crime in U.S. Cities: Year-End 2021 Update. Washington, D.C.: Council on Criminal Justice, January 2022, <u>https://secure.counciloncj.org/np/viewDocument?orgId=counciloncj&id=4028888b7e8af38e017e935f8822013a</u>.

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