

# Exploring the Economic Effects of the Opioid Epidemic

Hundreds of thousands of Americans have died from opioid overdoses in recent years. What has this epidemic done to the economy? And why is the crisis so much worse right here in the Third District?

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In a single weekend in July 2018, more than 170 people in Philadelphia overdosed from what investigators said was a single “bad batch” of heroin. Ten died. Bags containing this particularly harmful compound were ominously stamped *Santa Muerte* (Spanish for “Holy Death”). In the preceding year, there were more than 70,200 drug overdose deaths in the United States, over four times the number of homicide deaths.<sup>1</sup> The age-adjusted rate of drug overdose deaths tripled between 1999 and 2016 and jumped an additional 10 percent in 2017.<sup>2</sup> Nearly 70 percent of those 2017 drug overdose deaths can be attributed to opioids.<sup>3</sup>

All three states in the Federal Reserve’s Third District have been struck particularly hard by this surge in drug overdose deaths. The age-adjusted drug overdose rate for the nation was 21.7 deaths per 100,000 people in 2017, while it was 30.0 for New Jersey, 37.0 for Delaware, and 44.3 for Pennsylvania. Only West Virginia and Ohio had drug overdose death rates higher than Pennsylvania’s in 2017, at 57.8 and 46.3, respectively. However, in terms of the absolute number of drug overdose deaths, Pennsylvania was first in the country at 5,388. That was 8 percent of the nation’s drug overdose deaths, even though Pennsylvania had less than 4 percent of its population. And as is true in the rest of the United States, the majority of these Pennsylvanian deaths were opioid related.

This article examines the origins of the crisis, the nature of the crisis in the Third District, the relationship between the crisis and the labor market, the costs of the epidemic, and some policy countermeasures designed to alleviate the crisis.

## What Is an Opioid?

An opioid is a substance that acts on the opioid receptors in the nervous system. Among other effects, opioids relieve pain and, when abused, produce euphoria. The Centers for Disease Control and Prevention (CDC) groups opioids into three primary categories: natural and semisynthetic opioid analgesics that are typically available by prescription (such as morphine, codeine, oxycodone, and hydrocodone); synthetic opioid analgesics (such as tramadol and fentanyl); and heroin.

## The Origins of the Opioid Crisis in the United States

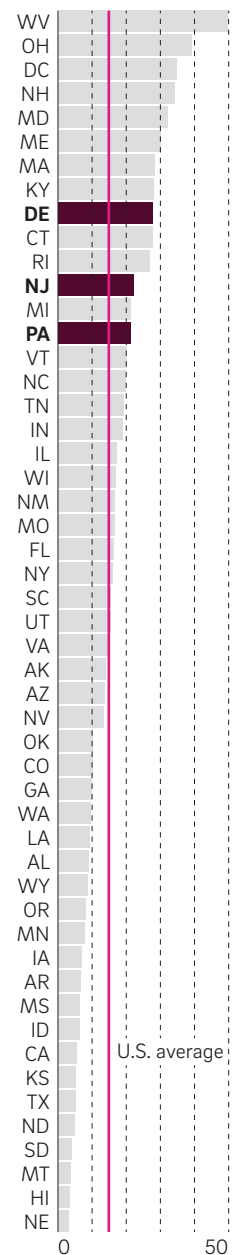
Studies suggest that a large percentage of abusers began their journey with prescription opioids. In one study, 80 percent of heroin users admitted to misusing prescription opioids before turning to heroin. Because users must obtain these prescription drugs either illicitly through diversion (the illegal transfer of opioids from the prescribed individual to others) or legally from a legitimate prescription, it is helpful to examine the rise in legitimate prescriptions for opioids.

Prior to the 1990s, opioids were prescribed mainly for cancer patients (or to treat chronic malignant pain). Beginning in the early 1990s, pharmaceutical companies encouraged physicians to prescribe opioids to treat noncancer pain.<sup>4</sup> Noncancer patients tend to require longer-term administration of the drug than do cancer patients. As a result, practitioners of pain medicine as well as other medical specialties were taught to rely more on opioids for general pain treatment.<sup>5</sup> At the time, the public didn’t realize how risky this would be. Later studies would show that noncancer pain patients are more likely than cancer

FIGURE 1

### Opioids Hit Third District Hard

Opioid overdose death rates per 100,000 population (age-adjusted) in 2017



Sources: Henry J. Kaiser Family Foundation and Centers for Disease Control and Prevention.

patients to become dependent on and eventually abuse opioids.

By decade's end, 86 percent of patients using opioids were using them for non-cancer pain.<sup>6</sup> The national prescribing rate of opioid medications climbed throughout the 2000s, peaking in 2012 (see Figure 2). While the prescribing rate in Pennsylvania roughly mirrored the nation's, Delaware's rate was typically 20 percent higher than the nation's, and New Jersey's prescribing rate was 25 percent lower.<sup>7</sup> Thanks to increasing awareness and regulatory countermeasures to be discussed later in this article, by 2017 the rate of opioid prescriptions had fallen more than 25 percent from its peak in 2012.

As they become more dependent, abusers of prescription opioids often turn to heroin, which has experienced a large supply increase and thus a price decrease over the past 20 years due to major changes in its production and supply chain.<sup>8</sup> According to recent Drug Enforcement Agency (DEA) estimates, from 1980 to 2016 the average retail price per gram of pure heroin decreased by more than 70 percent,

from \$3,260 (in 2012 dollars) to between \$465 and \$1,020.<sup>9</sup>

An even more recent trend has been a spike in the availability of fentanyl in the United States. Fentanyl is a synthetic painkiller about 50-100 times more potent than morphine. The drug is commonly prescribed in the form of transdermal patches or lozenges. In the United States it is available as a Schedule II drug, meaning it is legally available only through a non-refillable prescription.<sup>10</sup> However, drug cartels began purchasing cheaply produced fentanyl from Chinese pharmaceutical labs and shipping it to Mexico to mix with the heroin supply before it enters the United States for sale.<sup>11</sup> Because small doses of fentanyl are more likely to be fatal due to its potency, users are at a much higher risk of overdosing when abusing fentanyl or fentanyl-laced heroin. This has escalated the number of overdose deaths in the United States for which fentanyl is responsible (see Figure 4).

Natural-opioid overdose deaths, which can be attributed primarily to prescription pills, have increased at a steady rate since

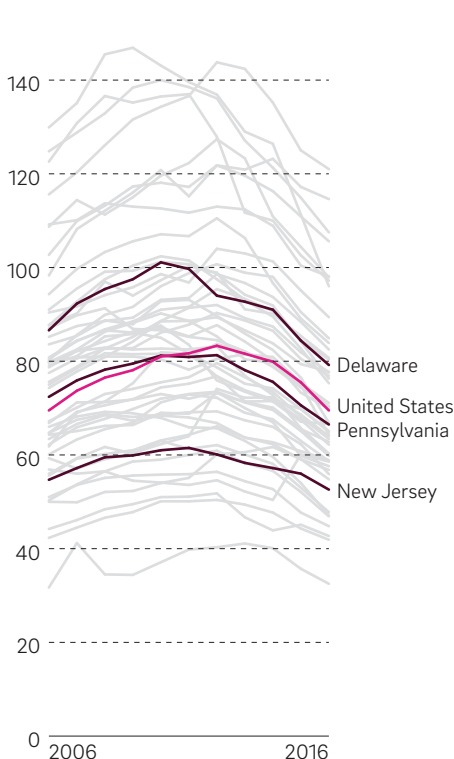
1999. But starting in 2010, heroin and synthetic opioid overdose deaths have increased much more rapidly. As seen in the synthetic opioid series in Figure 4, fentanyl has become responsible for almost as many overdose deaths as natural opioids and heroin combined and has increased nearly tenfold since 2013.

### The 'Synthetic Problem' in the Third District

An October 2018 *New York Times* feature article about the local and social effects of the crisis focused on the Philadelphia neighborhood of Kensington, which has long been recognized as the highly visible regional epicenter of the opioid epidemic due to its open-air drug markets, encampments of drug-addicted homeless users, and hyper-localized poverty. To address the crisis, Philadelphia Mayor Jim Kenney established an opioid task force upon his inauguration in 2016, and Governor Tom Wolf signed a statewide disaster declaration in 2018, an unprecedented public-health emergency measure in

**FIGURE 2**  
**Opioid Prescriptions Peak in Early 2010s...**

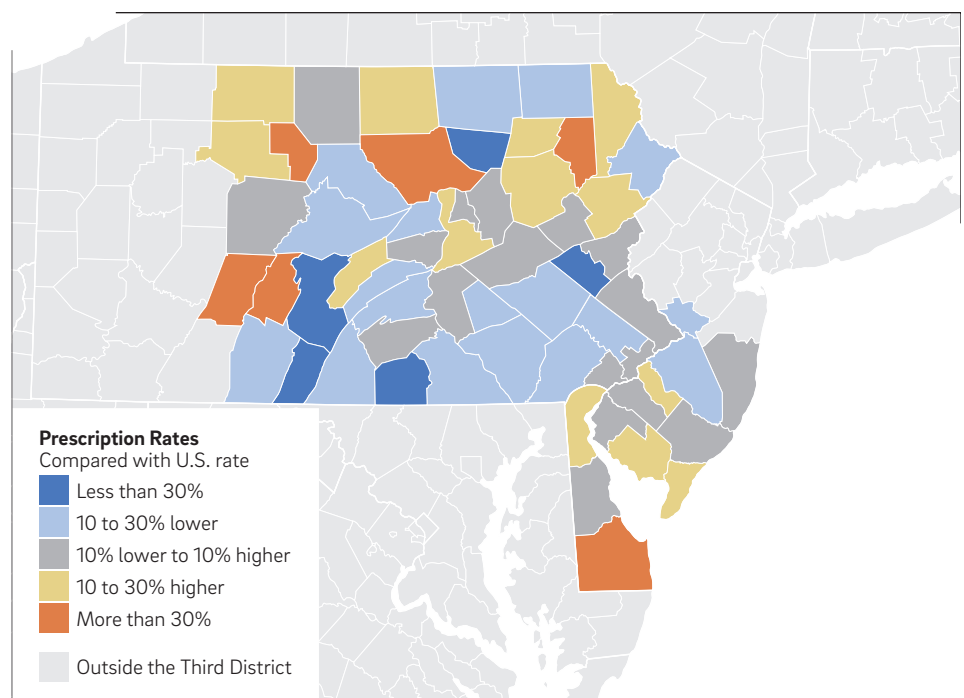
Prescriptions per 100 people, by state



Source: Centers for Disease Control and Prevention.

**FIGURE 3**  
**...but Vary by County at Their Peak**

Third District county-level behavior compared with the nation over peak years, averaged over 2010 through 2012



Source: Henry J. Kaiser Family Foundation.

Pennsylvania. We will take a closer look at public policy responses in a later section, but it is helpful to examine the data on our District to see how the local crisis became so deadly in the past few years.

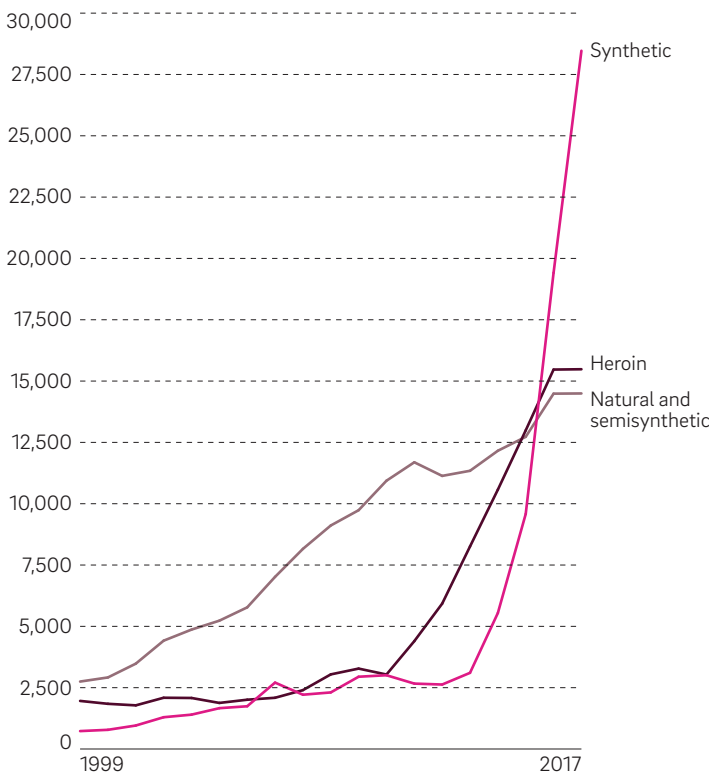
Looking at opioid overdose death rates specifically, we see how quickly the opioid crisis worsened in our region. Figure 5 depicts opioid overdose death rates in the United States and the Third District states. Although Pennsylvania's and New Jersey's opioid overdose death rates were similar to the nation's in 1999, by 2017 their rates had more than doubled, rising twice as fast as the national rate in two years. Meanwhile, in Delaware the opioid overdose death rate stood at nearly double the national rate in 2017.

Figure 6 breaks down these 2017 overdose death rates by type of opioid. Nationally, synthetic opioids (e.g., fentanyl) caused overdose deaths at a higher rate than other types of opioids. In the Third District, the overdose death rate from synthetic opioids was even higher.

Although the overdose death rates from natural opioids (e.g., prescription pills) in the Third District states are roughly in line with the national rate, the rate of overdose deaths for synthetic opioids is roughly double or more in each of our three states. Fentanyl has been a recent problem in the heroin supply of East Coast cities,<sup>12</sup> which could contribute to the higher overdose death rates in the Third District—perhaps because East Coast heroin is sold as a powder and is thus easier to cut with an adulterant like fentanyl,<sup>13</sup> whereas West Coast heroin is often sold as a dark brown paste.<sup>14</sup>

**FIGURE 4**  
**Fentanyl-Related Deaths Spike After 2013**

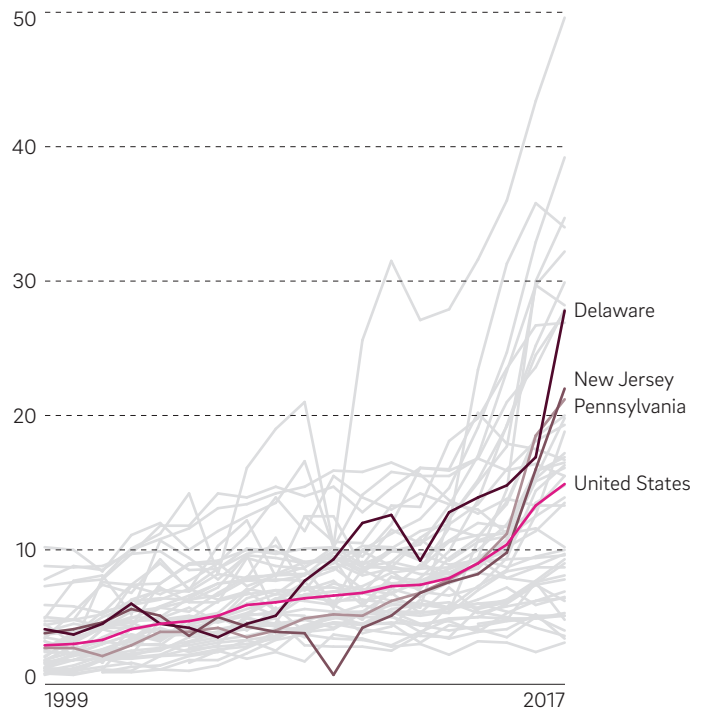
Opioid overdose deaths by type for U.S.



Sources: Henry J. Kaiser Family Foundation and Centers for Disease Control and Prevention.

**FIGURE 5**  
**Third District Overdose Rate Surges Past the Nation's**

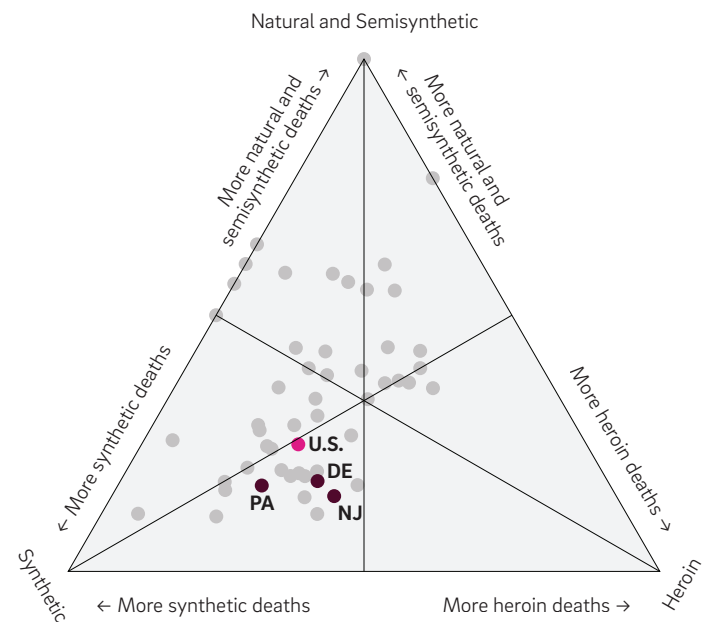
Opioid overdose death rates per 100,000 population (age-adjusted), by state



Source: Centers for Disease Control and Prevention.

**FIGURE 6**  
**Death Rate from Synthetics Higher in Third District**

Overdose deaths by type and by state (2017)



Sources: Henry J. Kaiser Family Foundation and Centers for Disease Control and Prevention.

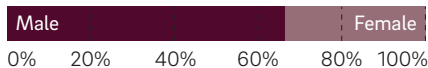
FIGURE 7

## Non-Hispanic White Men of Working Age More Likely to Die from Drugs

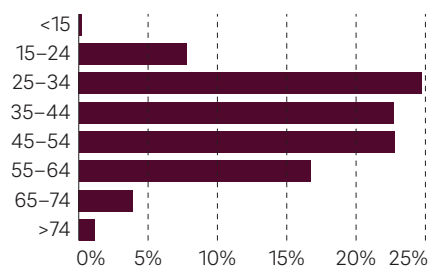
Drug poisoning mortality in the U.S., 1999–2016, by sex, age, and race/ethnicity

Total Deaths, 2017  
**70,237**

By sex.

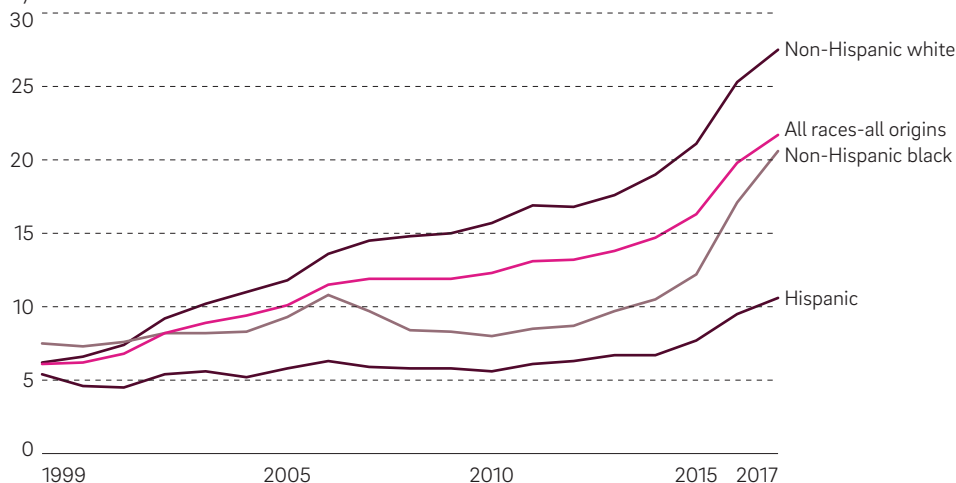


By age.



### Age-Adjusted Death Rate

By race.



Source: Centers for Disease Control and Prevention (<https://www.cdc.gov/nchs/data-visualization/drug-poisoning-mortality/>).

## The Opioid Epidemic’s Relationship with the Labor Market

On July 13, 2017, in her semiannual testimony before the Senate Banking Committee, then-Federal Reserve Chair Janet Yellen noted the intertwined but complex nature of the opioid crisis’s relationship with the labor market and the broader state of the economy: “I don’t know if [the crisis is] causal or symptomatic of long-running economic maladies that have affected these communities and particularly affected workers who have seen their job opportunities decline.”<sup>15</sup>

Theoretically, the opioid crisis makes some workers less likely to search for and find suitable positions, causing problems with the labor supply. However, these same individuals could have been driven to use drugs as a result of poor health (e.g., chronic pain due to osteoarthritis or diabetes)<sup>16</sup> or because they were discouraged due to a long-term decline in the U.S. demand for low-skilled workers (e.g., manufacturing jobs), a trend that is particularly noteworthy for males.<sup>17</sup> (See Figure 7.) These labor market symptoms are difficult to discern in large urban areas such as Philadelphia or New York, but they become more apparent in less heavily urbanized regions affected by the epidemic.<sup>18</sup>

A 2017 paper<sup>19</sup> by Alan Krueger explores the relationship between a declining labor

force participation rate and the opioid crisis. Krueger notes that “labor force participation is lower and fell more in the 2000s in areas of the United States that have a higher volume of opioid medication prescribed per capita than in other areas.” He goes on to suggest that 43 percent of the observed decline in the male labor force participation rate between 1999 and 2015 could be attributed to the increase in opioid prescriptions during that time. However, Krueger notes that it is unclear whether other factors that result in low labor force participation (e.g., poor health, discouraged workers) could have also resulted in high prescription rates of opioids in certain counties.

Exploring the relationship further, a

2018 NBER paper<sup>20</sup> investigated the effect of opioid prescription rates on employment-to-population ratios at the county level. Its authors found that the effect is positive but small for women (suggesting that higher opioid use in specific counties allows more women to enter the labor force), and that there is no relationship for men. The case for causality is not strong enough to suggest that opioid prescriptions lead directly to poor employment outcomes in the above studies.

However, there have been reports of channels in which this link occurs. One of those channels is drug testing. A May 2018 Federal Reserve Bank of Cleveland report noted that, after soliciting input on how the opioid epidemic was affecting the

TABLE 1

### Accounting for Nonfatal Opioid Costs

Nonfatal costs flow through four main channels.

Health-care sector	Criminal-justice system	Nonfatal lost worker productivity	Strains on community services
Emergency room visits from overdoses	Police protection	Fewer productive hours as a result of opioid abuse and/or dependence	Childcare services due to parental abuse of opioids
Ambulance rides	Legal hearings and adjudication	Productivity lost due to incarceration	
Naloxone administration	Construction, expansion, and maintenance of correctional facilities		
Disease-related indirect costs (hepatitis, AIDS, tuberculosis, etc.)	Property lost due to crimes		

business community, several contacts cited candidates' inability to pass drug tests as being a hindrance to finding qualified employees.<sup>21</sup> Thus, while there is not a clear enough causal link between opioid abuse and poor employment outcomes, the correlation is sufficient to warrant further study of the link and optimal policy for assuaging both problems.

## Accounting for the Costs of the Opioid Epidemic

The exact costs of this ongoing problem are difficult to measure precisely, but a number of studies have made an attempt to reflect the societal costs across a variety of categories. A cost estimate of the opioid epidemic by the Council of Economic Advisors (CEA) placed the total cost in 2015 at \$504 billion for the nation, with an expectation for that figure to grow if the crisis worsened.

In an attempt to quantify the costs of the opioid epidemic at a more local level, Alex Brill and Scott Ganz used the CEA estimates along with local variations of health-care costs, criminal justice services, and worker productivity to arrive at county- and state-level estimates.<sup>22</sup> They found that the total per capita costs of the opioid epidemic varied from a high of \$4,378 in West Virginia to a low of \$394 in Nebraska in 2015, with a median of \$1,672. For the Third District, the per capita costs of the opioid epidemic in 2015 were \$1,907 in New Jersey, \$1,945 in Pennsylvania, and \$2,530 in Delaware, all above the median. The total cost of the opioid epidemic across the Third District states in 2015 was nearly \$45 billion.

Who bears these costs? How are these costs, fatal and nonfatal, distributed throughout society? Studies disagree, so rather than try to estimate the specific numerical costs, we will examine the channels through which these costs flow.

For fatalities, there are the health-care costs of treating overdosed patients and the losses in future productivity. Much of the lost productivity is borne by the deceased's family and the private sector. Given that the average age for an overdose fatality is 41, which is considered prime working age,<sup>23</sup> the losses in future productivity are quite high. However, these losses also show up in federal, state, and local tax receipts.

Aside from these monetized costs, there are numerous unquantifiable effects on families and communities as a result of the opioid crisis. Opioid-dependent individuals suffer a substantial decrease in their quality of life. Their families experience pain and suffering as a result of this dependence and certainly as a result of any overdoses or overdose fatalities that may occur. Local communities may suffer any number of problems, including decreased property values and a loss of community well-being and safety.

## Policy Countermeasures

Since 2010, when opioid prescriptions peaked in the United States, there have been a number of coordinated policy responses at the federal, state, and local levels aiming to counteract the opioid crisis. In 2011, the U.S. Office of National Drug Control Policy recommended that states have active prescription drug monitoring programs (PDMPs) to counteract overprescribing. A PDMP is

an electronic database that tracks controlled-substance prescriptions in a state.<sup>25</sup> These state-level databases track individuals who obtain prescriptions, informing doctors of patients' histories in order to mitigate overprescribing. However, PDMPs are most effective in preventing overprescribing if the state requires clinicians to check the state's PDMP before prescribing a controlled substance. States that have implemented such laws since 2011 have reduced oxycodone prescriptions and oxycodone deaths.<sup>26</sup> Within a year of passing a 2012 law requiring prescribers to check the state's PDMP before prescribing opioids, New York State saw a 75 percent drop in patients seeing multiple prescribers for the same drugs.

Another major public health response to the proliferation in opioid overdoses over the past 10 years has been the growing administration and supply of naloxone. Sold under the brand name Narcan, naloxone is an opioid antagonist used to temporarily reverse the effects of an opioid overdose.<sup>27</sup> State and local governments have combated overdoses by increasing the supply of naloxone and training first responders on how to use it. In 2014 the New York Office of the Attorney General provided \$1.2 million to supply 20,000 kits to police officers in the state.<sup>28</sup> And in December 2018 the Pennsylvania Department of Health instituted a program for any Pennsylvania resident to receive naloxone free from any of 80 locations across the state.<sup>29</sup> Although it is difficult to measure the exact number of overdose deaths that have been prevented with the drug, in 2017 alone more than 4,000 individuals were administered naloxone by Philadelphia Emergency Medical Services.<sup>30</sup>

Improving access to addiction treatment is one of the most powerful tools for fighting the opioid epidemic, in that it offers a way out of the cycle of dependence. A number of public programs treat opioid addiction, including medication-assisted treatment (MAT), which is a combination of medication, counseling, and behavioral therapy. State and local governments can set up point-of-contact centers to counsel those seeking recovery on how to access various treatment options. (Pennsylvania refers to these as Centers of Excellence.<sup>31</sup>) States fund these centers and treatments with Medicaid, a state government insurance program for limited-income individuals and families, but their availability varies by state.<sup>32</sup>

## Final Thoughts

As the opioid crisis intensifies in the nation and particularly in our region, it becomes ever more important to understand its impact on society. With the rise in the supply and abuse of highly potent synthetic opioids such as fentanyl, the crisis has entered its deadliest stage yet. Its costs to society are measured not only in terms of a diminished labor force and lost productivity but also in its impact on the health-care sector, the criminal justice system, and families and communities. Much of the research on the economic effects of the opioid crisis is still preliminary and has not captured the last two years' worth of data, so there is still much to learn about its continuing effects on society and the economy. ■

## Notes

- 1 See Federal Bureau of Investigation (2018).
- 2 The age-adjusted mortality rate standardizes the data by adjusting for age groups in the population. The age-adjusted rate of drug overdose deaths rose from 19.8 per 100,000 in 2016 to 21.7 per 100,000 in 2017.
- 3 Many drug overdose deaths occur from mixing nonopioid drugs with opioids. For example, the National Institute on Drug Abuse breaks down overdoses from cocaine and benzodiazepines with and without opioid involvement. The overdose death rates of these two drugs without opioid involvement are virtually flat, meaning that opioids, particularly synthetic opioids, are driving this uptick in overall drug overdose deaths. See Figures 7 and 8 at <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>.
- 4 See Lin et al. (2017).
- 5 See Jones et al. (2018).
- 6 See Liu et al. (2018).
- 7 Opioid prescribing peaked in 2012 for Pennsylvania, 2011 for New Jersey, and 2010 for Delaware.
- 8 Prior to the mid-1990s, the heroin market in the United States was mainly supplied by Asia, via production and transport through countries such as Afghanistan, Myanmar, and Thailand. In the mid-1990s, traffickers from Colombia and Mexico flooded the U.S. market with large amounts of cheap, pure heroin. The supply of heroin from this new source was large enough to reduce the price per gram of pure heroin throughout the country.
- 9 See Congressional Research Service (2019).
- 10 See O'Connor (2017).
- 11 See Ciccarone (2017).
- 12 See Mars et al. (2017).
- 13 See Vestal (2019).
- 14 See O'Brien (2018).
- 15 See Lovelace (2017).
- 16 See Semuels (2017).
- 17 See Michaels (2017).
- 18 Because the Centers for Disease Control and Prevention does not break out opioid data by sex or race, this relationship must remain theoretical for now.
- 19 See Krueger (2018).
- 20 See Currie et al. (2018).

- 21 See Fee (2018).
- 22 See Brill and Ganz (2018).
- 23 See Rhyan (2017).
- 24 See Florence et al. (2016).
- 25 See Centers for Disease Control and Prevention (2017b).
- 26 See Centers for Disease Control and Prevention (2017a).
- 27 See U.S. Department of Health & Human Services (2018).
- 28 See Durando (2014).
- 29 See Office of the Governor of the Commonwealth of Pennsylvania (2018).
- 30 See City of Philadelphia (2018).
- 31 See Pennsylvania Department of Human Services (2019).
- 32 See Grogan et al. (2016).

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