



# How Data Can Help in the Fight Against the Opioid Epidemic in the United States

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By Joshua New | November 2019

## INTRODUCTION

The United States is in the midst of an opioid epidemic 20 years in the making. From 1999 to 2017, nearly 400,000 people died from overdosing on prescription or illicit opioids.<sup>1</sup> The opioid epidemic shows little signs of slowing down: in 2018, 10.3 million people aged 12 and older have misused opioids in the United States.<sup>2</sup> And, on average, 130 Americans die every day from overdosing on opioids.<sup>3</sup> In addition to the loss of life and immeasurable social cost, the economic cost of the epidemic is severe, amounting to an estimated minimum of \$631 billion from 2015 to 2018 due to factors such as health services for people abusing opioids, family assistance programs, criminal justice activity, and lost productivity.<sup>4</sup>

One of the most pernicious obstacles in the fight against the opioid epidemic is that, until relatively recently, it was difficult to measure the epidemic in any comprehensive capacity beyond such high-level statistics. A lack of granular data and authorities' inability to use data to inform response efforts allowed the epidemic to grow to devastating proportions. The maxim "you can't manage what you can't measure" has never been so relevant, and this failure to effectively leverage data has undoubtedly cost many lives and caused severe social and economic damage to communities ravaged by opioid addiction, with authorities limited in their ability to fight back.

Many factors contributed to the opioid epidemic, including healthcare providers not fully understanding the potential ramifications of prescribing opioids, socioeconomic conditions that make addiction more likely, and drug distributors turning a blind eye to likely criminal behavior, such as

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pharmacy workers illegally selling opioids on the black market. Data will not be able to solve these problems, but it can make public health officials and other stakeholders more effective at responding to them. Fortunately, recent efforts to better leverage data in the fight against the opioid epidemic have demonstrated the potential for data to be an invaluable and effective tool to inform decision-making and guide response efforts. Policymakers should aggressively pursue more data-driven strategies to combat the opioid epidemic while learning from past mistakes that helped contribute to the epidemic to prevent similar situations in the future.

The scope of this paper is limited to opportunities to better leverage data to help address problems primarily related to the abuse of prescription opioids, rather than the abuse of illicitly manufactured opioids such as heroin and fentanyl. While these issues may overlap, such as when a person develops an opioid use disorder from prescribed opioids and then seeks heroin when they are unable to obtain more from their doctor, the opportunities to address the abuse of prescription opioids are more clear-cut.

## HOW DATA CAN HELP

Data can be an invaluable tool in the fight against the opioid epidemic. This report examines four key areas where data has the greatest potential to help: ensuring health care providers properly prescribe opioids; identifying risk factors for prescription opioid abuse; scrutinizing the prescription opioid supply chain; and improving intervention effectiveness. Fortunately, government agencies, public health officials, and other stakeholders have made headway in using data in all four areas. However, significant obstacles remain, and many opportunities are still out of reach.

### ENSURING HEALTH CARE PROVIDERS PROPERLY PRESCRIBE OPIOIDS

The opioid epidemic began in the 1990s as increases in opioid prescribing over several years resulted in a notable rise in opioid overdose deaths in 1999.<sup>5</sup> Prescription opioid overdose deaths increased mostly steadily through 2010, experiencing a minor dip for several years when a second wave of the opioid epidemic saw the beginning of a significant increase in heroin overdose deaths, and then continuing to increase until 2017.<sup>6</sup> A third wave of synthetic opioid overdose deaths, such as those from legally prescribed and illicitly manufactured tramadol and fentanyl, skyrocketed to surpass both commonly prescribed opioid and heroin overdose deaths by 2016. However, the overprescribing of common opioids was a major contributing factor to the explosive growth of the opioid epidemic.<sup>7</sup>

Though the overprescribing of opioids began in the 1990s, few states had the infrastructure and policies to meaningfully report and use this data to

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inform prescribing and prescription fulfillment practices until as recently as 2017, and some still fail to leverage this data effectively. Today, states rely on Prescription Drug Monitoring Programs (PDMPs), which are databases that track controlled substance prescriptions.<sup>8</sup> The functionality of PDMPs, as well as rules governing their use, can vary substantially from state to state, but their goal is to help prescribers and authorities make more informed decisions about how certain drugs are prescribed and obtained. In an ideal scenario, when doctors are prescribing opioids, they would verify their patient's prescription history in a PDMP and log the dosage and reason for the new opioid prescription. Then, when patients attempt to fill an opioid prescription, pharmacists would consult the PDMP, verify the prescription is valid, and give the patients their medication. This both ensures that opioids are being prescribed and dispensed correctly as well as prevents people seeking opioids from shopping for doctors and pharmacies, which is the practice of visiting as many as possible in hopes they will issue or fill a prescription, without detection.<sup>9</sup>

PDMPs can be administered by pharmacy boards, health departments, law enforcement, licensing groups, and other stakeholders, and most states give prescribers and pharmacies access to PDMP data, while some also grant access to law enforcement, researchers, medical examiners, and other organizations not directly involved in providing prescription opioids.<sup>10</sup>

States have had some form of PDMP since New York launched the first PDMP in 1918 to track prescriptions for opiates, including heroin and opium, as well as other dangerous drugs.<sup>11</sup> PDMPs relied exclusively on paper forms until 1989, when Oklahoma required the submission of electronic data to its PDMP.<sup>12</sup> Since then, the use of electronic PDMPs has increased substantially, with 27 states implementing electronic PDMPs between 2000 and 2010, thanks in part to a grant program launched by the Department of Justice in 2003 that provided funding for states to implement and improve PDMPs.<sup>13</sup> Today, 49 states have laws requiring the use of PDMPs. The single exception is Missouri (though St. Louis County operates a PDMP and invites other counties to participate).<sup>14</sup>

PDMPs have the potential to be highly effective tools to prevent the abuse of prescription drugs and the Centers for Disease Control and Prevention (CDC) has called them “among the most promising state-level interventions” to combat the abuse of prescription opioids.<sup>15</sup> For example, Florida implemented a series of reforms in 2010 to combat opioid abuse, including stricter regulation of pain clinics and the establishment of a PDMP, resulting in a 50 percent decrease in oxycodone overdose deaths by 2012 and a reduction in opioid prescriptions in 80 percent of counties from by 2015.<sup>16</sup> Similarly, after New York required prescribers to consult the state's PDMP before prescribing opioids in 2012, there was a 75 percent reduction in patients seeking prescriptions for the same drug from

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multiple providers.<sup>17</sup> And one 2018 study found that states with robust PDMPs experienced significant reductions in high-risk opioid prescribing.<sup>18</sup> While difficult to establish causation, logic dictates that a lack of a PDMP, or a poorly implemented one, would correlate with a state failing to combat the opioid epidemic effectively. For example, in 2017, providers in Missouri, which does not have a statewide PDMP, issued 71.8 opioid prescriptions for every 100 people, significantly higher than the national average of 58.7 prescriptions per 100 people.<sup>19</sup>

Unfortunately, most states implemented PDMPs after the opioid problem became an epidemic. Had states been more proactive about deploying and using PDMPs in the early 2000s, it is likely they could have responded more effectively to prevent the opioid epidemic. While little can be done about that now, many PDMPs still have significant shortcomings that substantially limit their potential to help fight the opioid epidemic or address future prescription drug abuse. Most notably, many states have lax requirements regarding participation in their PDMPs. Currently just 31 states require both pharmacists and prescribers to be enrolled in their PDMP, with several states requiring only pharmacist or prescriber enrollment. Twelve states do not require either pharmacists or prescribers to enroll in their PDMPs.<sup>20</sup> Furthermore, not all states require prescribers and pharmacies to actually consult their PDMP, with just 19 states requiring both parties to query this data, and 26 states requiring just prescribers to do so, as of August 2019.<sup>21</sup> Importantly, some states only recently implemented requirements for enrollment and consultation, meaning that even if a state had had a PDMP since the early 2000s, its utility in fighting opioid abuse was significantly limited. For example, Washington's requirements for prescribers to consult PDMP data before prescribing opioid only went into effect in late 2018, and Texas' requirements only went into effect in September 2019.<sup>22</sup> Even when such requirements are in place, they can be lacking in effectiveness. For example, pharmacists in Maryland must consult the PDMP only if they believe the prescription is not being filled for a legitimate medical diagnosis.<sup>23</sup>

Requiring participation in and the use of PDMPs alone is not enough to make PDMP data as useful as it could be. Only one state—Oklahoma—requires real-time reporting of PDMP data, which happens at the point of sale for opioids.<sup>24</sup> New York and Utah require reporting within 24 hours, 44 states and the District of Columbia require reporting within the next business day, Oregon requires reporting within three days, and California and Hawaii require reporting within seven days.<sup>25</sup> Such delays in reporting make it easier for people to shop doctors and pharmacies.

Even if all states were to adopt best practices for PDMP participation, use, reporting, and identification, PDMPs would still only be useful for improving

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the prescribing and administering of opioids on the patient level. Though this is of course important, PDMPs are rich troves of data that could reveal invaluable insights into trends about opioid use, provided that this data is made available for research. While 46 states and the District of Columbia have the authority to provide PDMP data for educational, epidemiological, or research purposes, Minnesota, New York, and Oklahoma do not.<sup>26</sup> However, according to research from the Prescription Drug Monitoring program Training and Technical Assistance Center, a resource funded by the Department of Justice, 20 of these states and the District of Columbia do not actually share this data, despite having the authority to do so, citing resource constraints.<sup>27</sup>

Fortunately, most states have recognized that sharing PDMP data with other states would increase the utility of this data, as it would prevent people from doctor and pharmacy shopping across state lines, as well as create better longitudinal records about people who move to different states. All states, except for California, Nebraska, and Missouri, as well as St. Louis County share PDMP data with one another via participation in PMP InterConnect, a national network of state PDMPs administered by the National Association of Boards of Pharmacy and developed by a private firm called Appriss.<sup>28</sup> Participation in PMP InterConnect is free, however the federal government, recognizing the potential challenges of relying on a third party to administer a resource so impactful to public health, began encouraging states to participate in RxCheck, a similar platform funded by the U.S. Bureau of Justice Assistance (BJA) and managed by state prescription drug monitoring boards.<sup>29</sup> While some states did adopt RxCheck as well as PMP InterConnect, sizeable grants from the CDC and BJA issued in 2018 required participation in RxCheck for eligibility, eliciting significant backlash from many states. They argued that not only was PMP InterConnect a superior, proven platform with near universal participation already, but that the language of the grants required data sharing with law enforcement in ways that might violate state law.<sup>30</sup> For example, the BJA grant requires data, software, “or other intangible property ... designed, developed, acquired, or produced under this award,” to be provided upon request to law enforcement, in violation of laws establishing PDMPs in several states.<sup>31</sup> While many states grant law enforcement access to their PDMPs, they may do so only under certain conditions—for example, Nebraska requires a warrant or that law enforcement be actively investigating a specific person in order to obtain access to PDMP data.<sup>32</sup>

Though RxCheck participation is increasing—as of August 2019, 49 states and the District of Columbia either participate or are investigating participation in RxCheck—relying on two separate platforms to share PDMP data, especially when one is relatively untested, imposes unnecessary burdens on prescribers and pharmacists.

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In October 2018, President Trump signed the Substance Use-Disorder Prevention that Promotes Opioid Recovery and Treatment for Patients and Communities (SUPPORT) Act into law. The SUPPORT Act authorizes federal technical and financial support to improve PDMPs, such as data reporting requirements and interstate interoperability.<sup>33</sup> This should encourage states to address the significant obstacles limiting the utility of this data in helping authorities better understand how people obtain opioids. The SUPPORT Act also requires providers to consult PDMP data for Medicaid enrollee's prescription drug history before prescribing them a controlled substance.<sup>34</sup>

Thankfully, there is some reason for optimism. Most states have developed tools designed to leverage PDMP data to help authorities to be better informed about how opioids are prescribed and to improve oversight. Thirty-one states have implemented data dashboards that aggregate PDMP and other data, which can help inform policy recommendations, identify high prescribers of opioids, and generate other valuable insights.<sup>35</sup> Additionally, 29 states use this data to develop report cards to inform providers about their controlled substance prescribing activity.<sup>36</sup>

### Recommendations

- All states should pass legislation requiring both prescribers and pharmacies to enroll in their PDMPs to ensure that complete data on opioid prescriptions is available.
- HHS and CDC should analyze the varying state policies requiring PDMP consultation when issuing and filling opioid prescriptions and publish a report detailing best practices regarding when providers should consult PDMP data. All states should amend their laws regarding PDMP usage to require the adoption of these best practices to optimize the value of using a PDMP.
- Missouri should pass a law requiring the development and use of a PDMP with requirements for real-time reporting and adherence to the best practices for PDMP use identified by HHS and CDC. If it does not, Congress should pass a law preventing states from receiving Medicaid funding if they do not utilize a PDMP or require prescribers and pharmacies to adhere to HHS/CDC best practices.
- All states should pass legislation mandating real-time reporting of opioid prescriptions to PDMPs at the point-of-sale.
- States that have not already done so should amend their laws about PDMP data sharing to specify they have the authority to share PDMP data with third parties for epidemiological, research, and education purposes.

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- BJA and other federal agencies should continue to support RxCheck and work to make it a viable and reliable platform for interstate PDMP data sharing. While the federal government should stipulate that eligibility for grants to improve PDMPs is contingent on interstate data sharing, it should not require states to share data with a particular platform. Some states have laws that prohibit sharing data with law enforcement, and given the uncertainty about whether using RxCheck might violate these laws, this type of requirement might cause states to avoid pursuing these grants, thus impeding progress on PDMP improvements and limiting the value of this data.
  - States that do not do so already should establish dashboards that integrate PDMP and other data to give policymakers, public health authorities, and others the information necessary to make well-informed decisions about how to best combat prescription opioid abuse.

## IDENTIFYING RISK FACTORS FOR PRESCRIPTION OPIOID ABUSE

Analyzing data about why healthcare providers prescribe patients opioids and in what amounts can generate key insights into risk factors that might make someone likely to abuse opioids and help providers make better-informed decisions about how and when to prescribe opioids. In theory, national Medicaid data, consisting of state-submitted data about beneficiary and provider enrollment, service utilization, claims, care, and other factors, should be a useful dataset for this kind of analysis. Unfortunately, national Medicaid data has historically been incomplete, inaccurate, and out of date, making it inadequate for comprehensive analysis.<sup>37</sup>

The Centers for Medicare and Medicaid Services (CMS), recognizing this obstacle, began piloting a new initiative called the Transformed Medicaid Statistical Information System (T-MSIS) in 2013 and began requiring states to submit data to the system on a monthly basis in July 2014.<sup>38</sup> The goal of T-MSIS is to become “the foundation of a robust state and national analytic data infrastructure” by modernizing and improving state reporting of operational data about beneficiaries, providers, claims, and other aspects of healthcare delivery.<sup>39</sup> However, T-MSIS has struggled to deliver on this goal, drawing criticism from the Government Accountability Office in 2017 and again in 2018 about the need for improved oversight and more expeditious reporting and use of data.<sup>40</sup> CMS issued guidance to prioritize addressing these concerns in August 2018, but it is unclear how much progress they have made.<sup>41</sup> For example, CMS stated it planned on making T-MSIS data available to researchers in 2019, but, as of October 2019, has

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yet to do so, and as of August 2019, Nevada's T-MSIS data is over six months out of date.<sup>42</sup>

A 2019 report from the HHS Office of Inspector General found significant shortcomings in T-MSIS data that prevented national-level analysis of opioid prescribing.<sup>43</sup> First, when a person enrolls in Medicaid, they are assigned a Medicaid ID that serves as a unique identifier for their interactions with services and care. However, if a person disenrolls and later re-enrolls, they are assigned a new ID. Furthermore, because Medicaid is administered at the state level, if a person moves to another state and enrolls in Medicaid, they are assigned a new ID. This means that a beneficiary could have multiple Medicaid IDs, so when states submit data to T-MSIS, they report opioid prescriptions dispensed to multiple different IDs, appearing as if the prescriptions were dispensed to multiple people, rather than a single beneficiary. As a result, T-MSIS can undercount total opioid dosages given to any particular beneficiary.<sup>44</sup> This precludes the development of reliable longitudinal records of beneficiaries' opioid use, making it impossible to identify beneficiaries at risk of opioid abuse and prevent them from obtaining unnecessary opioids as a result of poorly coordinated care.<sup>45</sup>

Another factor that increases the risk of opioid abuse is when providers are overprescribing opioids, either as a result of negligence or due to fraud or abuse. Prescribers and pharmacies also rely on a unique identifier system, called National Provider Identifiers (NPIs), to report their activity to T-MSIS. However, the HHS OIG found that, based on data from December 2018, 19 states do not report NPIs to T-MSIS.<sup>46</sup> This happens for three reasons: some states do not require the reporting of NPIs; some states collect NPI data but report it incorrectly; and some states collect NPI data but are unable to report it to T-MSIS because they rely on outdated, noninteroperable systems.<sup>47</sup> This makes it impossible for CMS to reliably identify and intervene when a provider is overprescribing opioids.

Additionally, prescribing medication requires the use of a diagnosis code, which indicate what the prescription is intended to treat, such as chronic pain. However, even though CMS requires states to report diagnosis codes to T-MSIS, 17 states simply did not include this data in their reporting, some citing a lack of awareness that CMS requires the reporting of diagnoses codes for claims involving opioids.<sup>48</sup> This similarly makes it difficult to identify when a provider is overprescribing and can substantially limit the utility of T-MSIS data for macro-level analysis about beneficiary opioid use. For example, certain conditions such as cancer diagnoses may warrant the prescribing of high doses of opioids. However, without the diagnosis code, these instances will appear no different in T-MSIS data than instances when a beneficiary receives an inappropriately high dosage of opioids for a more minor condition, putting them at risk of addiction.<sup>49</sup>

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Fortunately, in August 2018, CMS announced that it was prioritizing improving T-MSIS data quality, including diagnosis codes and NPIs.<sup>50</sup> However, the changes are not sufficient to fully address these challenges. For example, CMS stated it would flag potential data quality issues when certain factors are present, such as missing diagnosis codes or NPIs, in “unreasonable” amounts.<sup>51</sup> While this could be useful to help states improve reporting practices, it does little to actually enforce compliance.

States have the opportunity to better leverage the data they report to T-MSIS as well. For example, Texas’ Health and Human Services Commission’s (HHSC) Office of the Inspector General (OIG) developed an algorithm that analyzes Medicaid data about pharmacy claims for opioid prescriptions that are disproportionately prescribed by non-pain providers.<sup>52</sup> The algorithm allows the HHS OIG to identify outliers and report them to Medicate for investigative review.<sup>53</sup>

### Recommendations

- Congress should pass legislation requiring HHS and CMS to implement unique patient identifiers and require their use for patient records. Medicaid IDs may still be used for billing purposes. In 1997, HHS cited an “urgent and critical” need to create a standardized system of unique patient identifiers for health care.<sup>54</sup> Indeed, the original language of HIPAA called for the creation of a national universal patient-identifier system, but subsequent legislation blocked funding for implementing such a program.<sup>55</sup> CMS acknowledged the HHS OIG’s findings regarding the challenges related to Medicaid IDs and announced it will issue guidance to states to ensure IDs can be linked across state lines, as well as the use of unique identifiers. While this would be an improvement, this is a challenge throughout the entire healthcare system that Congress should address and resolve once and for all.
- Congress should appropriate funds for CMS to issue grants to states to improve their IT infrastructure to ensure they can reliably report NPI data to T-MSIS. CMS should also provide guidance about how to submit NPI data to prevent the mistakes many states make in doing so.
- Congress should pass a law preventing CMS from processing Medicaid claims involving opioids submitted to T-MSIS that are missing diagnosis codes or NPIs. CMS should also issue guidance clearly stating when providers are required to report diagnosis codes.
- CMS should prioritize making T-MSIS data available to researchers to study opioid usage. CMS announced in 2018 that it intends to make research-ready T-MSIS data available in 2019, but it is unclear if the agency will be able to adhere to that timeline.<sup>56</sup>

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- HHS should develop model analytics tools to study opioid prescribing in Medicaid data, such as the algorithm used by the HHSC OIG, and make them freely available to states and provide best practices about how to implement them.

## SCRUTINIZING THE PRESCRIPTION OPIOID SUPPLY CHAIN

Another key part of the healthcare supply chain that would benefit from the increased availability and use of data is prescription opioid distribution. Even with the best data about how providers prescribe and administer opioids, it can be difficult to identify key trends in the opioid epidemic beyond the provider and patient relationship, particularly where manufacturers, distributors, and pharmacies distribute prescription opioids and in what quantities.

Drug manufacturers, distributors, and pharmacies are required to report their activity with controlled substances to the Drug Enforcement Administration (DEA). DEA developed the Automated Reports and Consolidated Orders System (ARCOS) to manage this data, which houses data about hundreds of millions of transactions and the path of every opioid sold in the United States. State and county-level ARCOS data about opioid distribution became public for the first time thanks to a lengthy legal battle between *The Washington Post* and HD Media, the publisher of the *Charleston Gazette-Mail* in West Virginia, which pushed to publicize this data and the DEA, which resisted doing so.<sup>57</sup> This data revealed where and how 76 billion oxycodone and hydrocodone pills were distributed across the United States from 2006 to 2012, revealing some alarming statistics.<sup>58</sup> For example, over this period, pharmacies in Mingo County, West Virginia, received and distributed 38,269,630 prescription pain pills, which amounts to 203 pills per person, per year.<sup>59</sup> Additionally, lawsuits brought against manufacturers, distributors, and pharmacies involved in dispensing these opioids allege that this data shows that companies knowingly distributed opioids to areas “despite persistent red flags that those pills were being sold in apparent violation of federal law and diverted to the black market.”<sup>60</sup> Had this data been publicly available since the early stages of the opioid epidemic in the 2000s, health officials, journalists, activists, and state and local governments could have been much more aware of the scope of the problem and potentially have made more informed interventions before the epidemic reached such a large scale.

Not only did the lack of public access to ARCOS data hinder efforts to contain the opioid epidemic, but in September 2019, the Department of Justice OIG found key flaws in DEA’s administering of the system, limiting the utility of the data to the agency itself.<sup>61</sup> First, some registrants report data to ARCOS on a monthly or quarterly basis, causing the agency to wait months or even up to a year to obtain enough data to conduct meaningful trend analyses.<sup>62</sup> Second, ARCOS does not track certain kinds of controlled

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substances such as some Schedule III and all Schedule IV and V opioids, as well as drugs such as benzodiazepines, which are often used in conjunction with opioids.<sup>63</sup> This led the OIG to state DEA is “is ill-equipped to effectively monitor ordering patterns for all pharmaceutical opioids, which could enable the diversion of these prescription drugs and compromise public safety.”<sup>64</sup>

In 2008, DEA developed the Suspicious Order Reporting System (SORS) to manage data reported by manufacturers and distributors and suspicious orders of controlled substances, such as unusually large or atypical orders.<sup>65</sup> While this data should have enabled the agency to make more informed decisions about potentially illicit distribution and sale of prescription opioids, the DOJ OIG found that this database too was flawed. The OIG determined that DEA field divisions, which receive most suspicious order reports, never actually upload this data into SORS.<sup>66</sup> The SORS database contained suspicious reports from just 8 of the approximately 1,400 manufacturers and distributors required to report suspicious orders to DEA, and all of these reports were submitted to DEA headquarters by manufacturers and distributors directly.<sup>67</sup> Furthermore, when the OIG requested these reports from DEA field divisions, DEA was unable to locate them.<sup>68</sup>

The flaws in DEA’s administration of the ARCOS and SORS databases caused the OIG to conclude that “DEA was slow to respond to the significant increase in the use and diversion of opioids since 2000. We also found that DEA did not use its available resources, including its data systems and strongest administrative enforcement tools, to detect and regulate diversion effectively... DEA does not capture sufficient data to detect the diversion of opioids or emerging drug trends in a timely manner.”<sup>69</sup>

The SUPPORT Act of 2018 attempts to address some of these flaws, including by requiring DEA to share ARCOS data about opioids with drug manufacturers and distributors and establishing reporting standards for suspicious orders of controlled substances.<sup>70</sup>

## Recommendations

- Congress should direct DEA to make county-level ARCOS data about opioids publicly available. While the *Washington Post* and HD Media were successful in their effort to publicize six years of this data, much more of this data is still inaccessible to the public. DEA should treat this data as open by default and publish it in a timely manner and in machine readable formats. DOJ opposed the publication of this data on the grounds that it could hinder ongoing DEA investigations, and industry opposed its publication on the grounds that it could give competitors an unfair advantage.<sup>71</sup> Neither of these arguments withstand much scrutiny: publishing

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this data on a county level could only have a chilling effect on bad actors distributing opioids in unnecessarily high amounts, and since everyone would have access to this data, no firm would have an unfair advantage over the other. Even if these concerns were valid, the benefits of the publication of this data would outweigh any such downsides.

- DEA should require ARCOS registrants to submit reports in real time as they process transactions.
- DEA should require all suspicious order reports be sent directly to DEA headquarters to ensure their inclusion in the SORS database.

## IMPROVING INTERVENTION EFFECTIVENESS

Federal, state, and local governments have a variety of different strategies at their disposal to fight the opioid epidemic, including ones outlined in this report, such as the use of robust PDMPs and stricter reporting requirements for T-MSIS data, as well as making naloxone, which counteracts the effects of opioid overdose, available over the counter, providing educational materials to providers about the addictiveness of opioids, establishing and funding opioid addiction treatment centers, and many others. While such strategies are all promising, authorities will be unable to maximize their effectiveness without data to inform their decision-making about where and how to best utilize them.

Combining disparate data sources about many factors related to the opioid crises, including crime data, health data, and data from statistical agencies such as economic and employment data, can lead to powerful insights about intervention effectiveness. For example, in west Ohio, the primary driver of opioid overdoses is illicit fentanyl, while in east Ohio, the primary driver is over-prescribing of opioids.<sup>72</sup> Making this data readily available for officials to integrate it with other crime data and PDMP and T-MSIS data for analysis could substantially improve intervention efforts. This could, for example, enable law enforcement agencies to prioritize drug enforcement activity in western Ohio, while the Ohio Department of Health investigates high prescribers of opioids in the eastern part of the state.

Data from statistical agencies can be very valuable in this context as well. For example, states could study relationships between economic conditions, such as factory closings or declining home values, and rates of opioid abuse, to better forecast where and how certain areas might require additional resources to combat opioid use. Similarly, states could use geospatial data to identify regions without access to nearby opioid addiction treatment facilities, as well as regional shortages in health workers qualified to treat opioid abuse, to prioritize where to develop new facilities and provide worker training.

Some places have already adopted these strategies. For example, the City of Cincinnati developed a dashboard that incorporates geospatial and other data from emergency medical services to identify hotspots where heroin overdoses are the most common.<sup>73</sup> Emergency responders and

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public health authorities can use this dashboard to more strategically deploy resources to areas that need it most.

Just as data can guide interventions, it can also help evaluate them. For example, a state could identify if increasing funding for opioid treatment facilities in a particular region correlates to a reduction in opioid usage in surrounding areas after a certain period of time and modify its approach accordingly.

The CDC has provided useful guidance about effective, evidence-based intervention strategies, such as how providing law enforcement officers with naloxone leads to increases in opioid overdose survival rates in surrounding areas.<sup>74</sup> However state and local governments need the capability to generate these insights on a much more granular basis.<sup>75</sup>

Unlike the other opportunities identified in this report, the policy barriers to using data to improve intervention effectiveness are less clear and can vary significantly from state to state. It is important to highlight the opportunity regardless, and there are several key actions policymakers can take to better take advantage of this opportunity.

## RECOMMENDATIONS

- State and local governments should facilitate data sharing among public health and law enforcement agencies and qualified third parties to conduct analysis of the effectiveness of interventions. This may include resolving legal barriers to data sharing between agencies, providing model data sharing agreements, as well as encouraging and providing funding for these agencies to make data more usable, interoperable, and accessible.
- The CDC should establish a clearing house for best practices around data-driven opioid interventions that enables states to share case studies about how they are leveraging data to combat the opioid epidemic.

## CONCLUSION

The opioid epidemic is complex, widespread, and incredibly dangerous, and policymakers, public health officials, and other authorities should wield every tool at their disposal to fight it. Of all these tools, data promises to be the most impactful, allowing officials at every stage of the health care supply chain to make more informed and effective decisions about how to combat this crisis. While there is an element of “too little, too late,” as the opioid epidemic has already caused so much damage, if stakeholders develop the ability to successfully leverage data, not only will it save lives, but it could help ensure the United States is substantially better prepared to deal with future drug-related public health crises.

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