

Illicit Drug Trade and Drug Misuse: The Unintended Consequences of Well-Intentioned Polices

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Dr. Redford's research interests include Austrian economics, public choice, and comparative institutional analysis as tools to understand the ways in which markets adapt to changes in policy and institutional foundations. Her dissertation and academic journal articles largely focus on the unintended consequences of drug prohibition as well as interventionism and entrepreneurship in illicit drug markets.

Editorial Note

This report is part of a month-long awareness campaign and town hall discussion about the opioid and addiction crisis in Western North Carolina, visit go.wcu.edu/townhall to learn more.



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Executive Summary

Between 1999 and 2017, the overall rate of drug-overdose deaths in the United States more than tripled from 6.1 per 100,000 individuals to 21.7.¹ During that same period, the rate of overdose deaths involving “natural and semisynthetic opioids” (this category includes drugs such as hydrocodone and oxycodone) more than quadrupled from 1.0 to 4.4 per 100,000 individuals.² More alarmingly still, however, is the drastic increase in the rate of overdose deaths from heroin and various nonmethadone synthetic opioids (fentanyl and fentanyl-like substances, or analogs, are included in this category). The heroin-overdose death rate saw a sevenfold increase (0.7 to 4.9 per 100,000 individuals) during this eighteen-year period, and the overdose rate attributed to nonmethadone synthetic opioids increased from 0.3 in 1999 to 9.0 per 100,000 in 2017.³

During a similar period, 1999 to 2016, the opioid-overdose death rate in North Carolina increased by almost 800 percent.⁴ Prior to 2010, prescription opioids were the primary cause of these overdose deaths in North Carolina (roughly two-thirds of cases); however, since 2013, prescription opioids have been responsible for less than 45 percent. Heroin and other illicit synthetic opioids, recent research explains, are

¹ Molly Hedegaard, Arialdi M. Miniño, and Margaret Warner, “Drug Overdose Deaths in the United States, 1999–2017,” NCHS Data Brief No. 329, National Center for Health Statistics, Hyattsville, MD, 2018, <https://www.cdc.gov/nchs/data/databriefs/db329-h.pdf>.

² Ibid.

³ Ibid.

⁴ Alexander H. Gunn, Bryce Barlett, Grace Feng, Matthew Gayed, Katie Kanter, Erica Onuoha, Madeline Thornton, Andrew Muzyk, and Nicole Schramm-Sapyta, “Running the Numbers: County Level Dynamics of Heroin Mortality in North Carolina,” *North Carolina Medical Journal* 79:3, 2018, 195–200.

increasingly the cause of these overdose deaths, with a tenfold increase in heroin-overdose deaths alone in North Carolina between 2010 and 2016.⁵

These startling findings raise several important questions regarding the increase in opioid-related overdose deaths and the change in drug-use behavior during this period from primarily prescription drugs to illicit opiates and opioids such as heroin, illegal fentanyl, and fentanyl analogs. An important piece of this puzzle, but by no means the only piece, is how drug prohibition and drug regulation created the unintended consequences that inadvertently encouraged riskier drug-use behavior and contributed to the deadly toll of this opioid crisis.

Well-Intentioned Policies Can Have Harmful Consequences

A common response to the dramatic increase in opioid misuse and overdose deaths is to introduce and intensify state-level prescription-drug monitoring programs (PDMPs). The evidence on the effectiveness of PDMPs in reducing opioid misuse and opioid-related deaths is mixed. One study finds that mandatory-access provisions of PDMPs reduce prescription-drug misuse.⁶ The authors also explain that these lower rates of prescription-drug misuse following the implementation of mandatory PDMPs are associated with higher heroin-use rates. Another study finds that the presence of PDMPs in a state was not associated with lower rates of opioid

⁵ Ibid.

⁶ Anca M. Grecu, Dhaval M. Dave, and Henry Saffer, "Mandatory Access Prescription Drug Monitoring Programs and Prescription Drug Abuse," *Journal of Policy Analysis and Management* 38:1, 2019, 181–209.

consumption, overdose, or overdose death.^{7,8} Paulozzi and coauthors find, in fact, that states with PDMPs saw significantly higher hydrocodone-use rates and nonsignificantly lower rates of Schedule II (such as oxycodone) use.⁹

This evidence suggests that doctors were responding to the PDMP rules and regulations by prescribing Schedule III opioids with greater frequency than Schedule II opioids. In fact, between 2007 and 2011, hydrocodone/acetaminophen-combination painkillers were the most frequently prescribed drug.¹⁰ As opioid misuse, opioid-related overdose, and opioid-related overdose deaths continued to climb in the 2010s, the Drug Enforcement Administration (DEA) responded by reclassifying hydrocodone and hydrocodone-combination drugs from Schedule III to Schedule II narcotics in October 2014. A study published in 2016 found that when hydrocodone and hydrocodone-combination drugs were moved to Schedule II, and thus were subject to significantly more prescribing regulations, doctors followed similar patterns of prescribing Schedule III opioids at significantly higher rates.¹¹ Overall, however, the amount of pain medication prescribed (after adjusting for potency) did not change. Seago and coauthors further explain that “although schedule III medications are considered to have a lower potential for abuse than schedule II medications,

⁷ Leonard J. Paulozzi, Edwin M. Kilbourne, and Hema A. Desai, “Prescription Drug Monitoring Programs and Death Rates from Drug Overdose,” *Pain Medicine* 12:5, 2011, 747–54.

⁸ The exceptions the authors found were in New York, Texas, and California, which require particular prescription forms. In these states, increases in overdose-death rates and prescription opioid use were significantly lower.

⁹ Note that this study used data between 1999 and 2005, when hydrocodone was categorized as a Schedule III substance.

¹⁰ Kate Traynor, “FDA Advisers Support Rescheduling of Hydrocodone Products,” *American Journal of Health-System Pharmacy* 70:5, 2013, 383–84.

¹¹ Susan Seago, Adam Hayek, Jessica Pruszyński, and Megan Greene Newman, “Change in Prescription Habits after Federal Rescheduling of Hydrocodone Combination Products,” *Baylor University Medical Center Proceedings* 29:3, 2016, 268–70.

many health care providers are less familiar with these medications and are therefore less equipped to handle potential side effects.”¹²

When federal policy makers initially misclassified drugs as safer than they truly are, doctors, health professionals, pharmaceutical producers, and users of the drugs became likely to make mistakes because they were working with bad and incomplete information. By classifying hydrocodone and hydrocodone-combination drugs as Schedule III substances, scientific consensus and the regulatory apparatus led people to believe these drugs were safer and less addictive than they actually were.

This is, unfortunately, not the only time in the history of federal drug regulation that drugs were initially misclassified in a lower schedule. Between 1970 and 2015, sixteen substances were moved into more restrictive categories than they were initially placed in.¹³ These drugs include amphetamine, methamphetamine, methaqualone (Quaalude), phencyclidine (PCP), pentobarbital (Nembutal), and secobarbital (Seconal). The scheduling mechanism that acts as the federal regulatory criterion for drugs in the United States was passed into law in 1970 as a part of the Controlled Substances Act in the broader Comprehensive Drug Abuse Prevention and Control Act of 1970.

¹² Ibid., 269.

¹³ Audrey Redford, “Don’t Eat the Brown Acid: Induced ‘Malnovation’ in Drug Markets,” *Review of Austrian Economics* 30, 2017, 215–33; Drug Enforcement Administration, Office of Division Control, *Lists of: Scheduling Actions, Controlled Substances, and Regulated Chemicals, August 2019* (2019). <https://deaddiversion.usdoj.gov/schedules/orangebook/orangebook.pdf>.

All controlled substances are split into five categories, Schedules I–V, based on three criteria: (1) potential for abuse, (2) accepted medical use, and (3) accepted safety standards. Schedule I drugs are the most restrictive, have the highest potential for addiction and abuse, and do not have an accepted medical use, according to the federal government. Schedule II drugs have a high potential for abuse and addiction but have accepted medical uses, according to the federal government.¹⁴ Not only was this scheduling mechanism established as a way to categorize substances for punitive measures, but a primary goal of the Controlled Substances Act was to use the different categories to convey information to the public and health professionals about these substances' relative safety, potential for abuse, and potential for addiction. Therefore, when a drug is erroneously placed in a lower schedule, people perceive that the drug can cause less potential harm.

How does all of this help us understand the shift from prescription-drug misuse toward illicit-drug misuse? Unfortunately, in many cases, restricting access to prescription opioids does not eliminate the desire of opioid misusers. Instead, laws that make it more challenging to access prescription opioids raise the cost of acquiring prescription opioids, both legally and illegally. Therefore, as prescription opioids become more expensive in black markets, individuals that are already misusing prescription opioids will seek out cheaper alternatives. Heroin and fentanyl analogs are two such cheaper alternatives. As a result, laws that increase restrictions on prescription opioids

¹⁴ This component of acceptable medical use according to the federal government is the reason why marijuana is classified as a Schedule I substance while cocaine is a Schedule II substance: cocaine, according to the federal government, has acceptable medical uses and marijuana, at this time, does not.

in an attempt to decrease the number of future misusers also encourage current prescription-drug misusers to switch to less safe alternatives that increase the risk of overdose and death.

One study that examined the nexus between prescription-opioid abuse and heroin abuse reports that “participants also reported that they only used heroin when they were either unable to obtain prescription opioids or when the expense of obtaining prescription opioids became too great. As heroin is less expensive and can be easier to obtain than prescription opioids, it is a logical transition for prescription opioid abusers to begin using heroin when they can either no longer locate or afford prescription opioids.”¹⁵ Theodore Cicero and coauthors also describe how “those already dependent on prescription opioids were faced with a dilemma: find more money to buy harder to find and more expensive prescription opioids, or find a cheaper alternative. For many, the solution was a transition to heroin, a popular alternative given its steadily lower price, making it more widely accessible and with a high comparable, if not stronger, than prescription opioids.”¹⁶

Another study investigating the outcomes following hydrocodone’s reclassification reported hydrocodone exposures decreased by 28 percent.¹⁷ However, heroin exposures reported to Texas poison centers increased by 15 percent, and exposure to other opioids, such as codeine, oxycodone,

¹⁵ Kent R. Kerley, Megan Webb, and O. Hayden Griffin, “Examining the Nexus Between Prescription Opioid and Heroin Abuse,” *Deviant Behavior* 40:9, 2019, 1132–43, here 1140–41.

¹⁶ Theodore J. Cicero, Matthew S. Ellis, and Zachary A. Kasper, “Increased Use of Heroin as an Initiating Opioid of Abuse,” *Addictive Behaviors* 74, 2017, 63–66, here 63–64.

¹⁷ Ashley, Haynes, Kurt Kleinschmidt, Mathias B. Forrester, and Amy Young, “Trends in Analgesic Exposures Reported in Texas Poison Centers Following Increased Regulation of Hydrocodone,” *Clinical Toxicology* 54:5, 2016, 434–40.

and tramadol, also increased.¹⁸ These findings are complementary to the result of Cicero and coauthors that heroin is increasingly the first opioid used by individuals who later enter substance-abuse treatment programs.¹⁹ Those authors find that “only 8.7% of opioid initiates who began regular use in 2005 started with heroin, but its use sharply increased thereafter to the point where in 2015, heroin as an initiating opioid was at its highest point, 33.3% ... with no evidence of stabilization ... now the leading drug for new opioid initiates.”²⁰ Hydrocodone and oxycodone were at 42.4 and 42.3 percent in 2005, and they have fallen to 24.1 and 27.8 percent, respectively, in 2015.

Further evidence shows how sales of prescription opioids through online illicit markets increased significantly following hydrocodone’s rescheduling.²¹ This same pattern was not found in other drug categories (such as sedatives or steroids) or in other countries. Martin and coauthors also find that opioid customers in online illicit markets began seeking out more potent forms of opioids: “Fentanyl was the least purchased product during July to September 2014, then the second most frequently purchased by July 2016.”²² These findings suggest that not only did making prescription opioids harder to acquire legally encourage opioid misusers to enter black markets to find their drugs, but these laws also encouraged the consumption of more potent alternatives. This

¹⁸ Ibid.

¹⁹ Cicero et al., “Increased Use of Heroin as an Initiating Opioid of Abuse.”

²⁰ Cicero et al., “Increased Use of Heroin as an Initiating Opioid of Abuse,” p. 64.

²¹ James Martin, Jack Cunliffe, David Décary-Hétu, and Judith Aldridge, “Effect of Restricting the Legal Supply of Prescription Opioids on Buying through Online Illicit Marketplaces: Interrupted Time Series Analysis,” *BMJ* 361:k2270, 2018, 1–7.

²² Martin et al., “Effect of Restricting the Legal Supply of Prescription Opioids on Buying through Online Illicit Marketplaces,” p. 1.

phenomenon of potency increases in response to heightened levels of prohibition is well documented in the economics literature on drug and alcohol prohibition.

Similar trends were observed during alcohol prohibition when producers and consumers shifted into spirits and away from beer and wine.²³ In the early twentieth century, users that previously smoked opium opted for heroin when smoking opium was outlawed, and when a 1919 Supreme Court decision mandated that doctors could no longer prescribe morphine to users for maintenance, these former morphine addicts began purchasing heroin to control their withdrawal symptoms themselves without medical supervision.²⁴

Time and time again, this same pattern plays out. When safer alternatives become much more costly to drug misusers, they will seek out alternatives that are far less safe. This is far from coincidence. Because illicit-drug markets operate outside of the legal framework, many of the incentive structures that we rely on in traditional markets to keep us safe are absent. Recourse options for illicit drug users are extremely limited. If a drug user is sold a bad batch of a drug, refunds or suing for harm and damages are simply not options. However, in markets for legal products, we see refunds, recalls, and civil suits in the event that a harmful product is sold. Even the possibility of a future lawsuit is a strong incentive for legally operating companies to expend resources to verify

²³ Mark Thornton, *The Economics of Prohibition* (Salt Lake City: University of Utah Press, 1991); Alice Louise Kassens, *Intemperate Spirits: Economic Adaptation During Prohibition* (London: Palgrave Pivot, 2019).

²⁴ Audrey Redford and Benjamin Powell, "Dynamics of Intervention in the War on Drugs: The Buildup to the Harrison Act of 1914," *Independent Review*, 20:4, 2016, 509–30; David T. Courtwright, *Dark Paradise: A History of Opiate Addiction in America* (Cambridge, MA: Harvard University Press, [1982] 2001).

product quality and safety. Since these repercussions are absent in illegal markets, incentives for producers of these drugs to verify safety and quality are lessened.

These markets also have the potential for greater levels of violence. Because market actors operating in illegal industries cannot rely on legal mechanisms of contract and property rights enforcement, they have to provide that enforcement and threat of enforcement themselves. Illicit-drug entrepreneurs face a trade-off when they have to allocate time, effort, and resources into the various aspects of keeping their illegal business in operation. As resources are spent on strengthening enforcement agreements in an illegal setting and evading law enforcement, these are resources not spent on innovating these drugs in ways that could promote safety.²⁵

Consider the alcohol industry by comparison. Breweries and distilleries are able to spend significant amounts of time, money, and resources on testing product safety and innovating products to better meet the needs of consumers precisely because they do not have to also play the role of contract enforcer and law enforcement avoider. They can outsource those tasks to formal law enforcement, the judicial system, and lawyers that have a comparative advantage in providing those services in a less violent manner. Because these outsourcing options are limited in illegal markets, producers and consumers of illicit drugs are constantly working with incomplete

²⁵ See Audrey Redford, "This Is Your Entrepreneurial Alertness on Drugs: Prohibition and the Market Process," in Peter J. Boettke, Christopher J. Coyne, and Virgil H. Storr (eds.), *Interdisciplinary Studies of the Market Order: New Applications of Market Process Theory* (London: Rowman & Littlefield, 2017), 241–61.

information about the relative safety of the drugs being bought and sold. The significant increase in fatalities as a result of fentanyl-related overdoses clearly shows this.

As of June 2019, the DEA has placed seventeen fentanyl-like substances (also known as fentanyl analogs) on the emergency schedule (which temporarily adds drugs to Schedule I without going through the traditional procedures) since March 2011.²⁶ This is in addition to the over twenty fentanyl analogs that were permanently added to Schedule I following the fentanyl-overdose panic in the mid-1980s.²⁷ Although these fentanyl analogs are similar to heroin in that they are central-nervous-system depressants that create similar neurotransmitter responses in the brain, they are different in that fentanyl and its analogs are synthetic opioids. Heroin is an opiate derived from opium, and synthetic opioids are significantly cheaper to manufacture because they do not require cultivating large amounts of the opium plant.

Furthermore, these fentanyl analogs vary significantly in their potency. Despite the fact that they are all often sold under the name “fentanyl” in illegal markets and are referred to in the data and the media as “fentanyl laced” or “fentanyl related,” we are talking about many chemically different substances that vary from one-fourth as potent as heroin to five thousand times as potent. Consumers, therefore, do not have clear information about how potent the fentanyl is that they are

²⁶ Amanda Liskamm and Greg Cherundolo, “Statement of the U.S. Department of Justice,” at *The Countdown: Fentanyl Analogues and the Expiring Emergency Scheduling Order*, a hearing before the US Senate Committee on the Judiciary on June 4, 2019, https://dea.gov/sites/default/files/2019-06/DOJ%20DEA%20Fentanyl%20Expiration%20of%20Temp%20Order_SJC_4June19_final.pdf.

²⁷ Drug Enforcement Administration, *Lists of: Scheduling Actions, Controlled Substances, and Regulated Chemicals, August 2019*.

consuming, and in many cases, their dealers do not have that information either. If these potencies were clearly known by consumers, they could make the necessary adjustments to modify their doses and could avoid many overdose outcomes. However, when the accessibility to and consistency of the heroin, fentanyl-laced heroin, and fentanyl that these individuals are buying and selling are in constant flux, dosage mistakes result in life-ending consequences.

It is worth considering why there are so many fentanyl variants as we look toward possible ways to reverse this deadly trend. When an illicit drug producer, trafficker, or seller is charged with a drug-related crime, the schedule category of the drugs involved in the crime plays a role in the punishment they will receive. Violations that involve Schedule I substances, for example, carry heftier punishments and fines than violations involving Schedule III substances. Furthermore, in order to be charged with a controlled-substance violation, the drug in question has to be listed as a controlled substance. A major unintended consequence of the Controlled Substances Act is that it encourages illicit-drug entrepreneurs to chemically modify scheduled substances, such as fentanyl, to create new substances that are technically not on the list.²⁸ In doing so, sellers of these new analogs (also called designer drugs) are technically not violating the law.

This was a contributing factor to the fentanyl panic in the 1980s that brought on the passage of new federal laws trying to discourage the production of these analogs. However, the new laws only encouraged illicit-drug entrepreneurs to make these modifications more extreme so that the

²⁸ See Redford, “Don’t Eat the Brown Acid.”

new substances were dissimilar enough in chemical structure that they would no longer be legally considered analogs. As a result, many different chemicals of varying degrees of similarity to fentanyl are all being sold under the name fentanyl despite the fact that their potencies vary dramatically. As long as these drug-prohibition laws are in place and continue to issue more punitive measures, illicit drugs will continue to significantly risk the safety of users. In addition, as more-punitive measures are attached to misusing prescription drugs, the laws will continue to incentivize misusers to enter illicit markets and unintentionally, but systematically, encourage those individuals to engage in riskier, less safe alternatives.

Conclusion

As we look for possible resolutions to this multifaceted issue, it is incumbent upon policy makers to reexamine how current policies manifest unintended consequences that make individuals using and misusing opioids less safe. Simply making prescription opioids harder to legally access will not solve the problem. Adding more drugs to Schedule I will also not solve the problem. Instead, if the goal is to minimize opioid misuse, we should reconsider how current policies limit non-opioid alternatives for pain management so that fewer prescription opioids will be used and as a result, the likelihood of future misuse will fall.

One significant hindrance is the manner in which the Food and Drug Administration (FDA) regulates the approval process of pharmaceutical drugs. This process played a role in this present

crisis. Prescription opioids, such as oxycodone, OxyContin, and hydrocodone, that we now know to have significantly higher potential for addiction than we initially thought made it through the approval process that was designed to avoid this very outcome. Relevant questions were not asked, and faulty scientific consensus was not questioned but instead rubber-stamped. Additionally, the lengthy and costly FDA approval process for pharmaceuticals makes this industry very anticompetitive. As a result, the alternatives available to consumers are not only expensive but limited in number, thus leaving many individuals with only the option to take prescription opioids to manage their pain.

Another change that could make a considerable impact would be to reevaluate the illegal standing of marijuana in North Carolina and to reconsider the federal standing of marijuana as a Schedule I drug with “no accepted medical use.” A growing academic literature that extends across many disciplines finds that access to medical marijuana is associated with lower rates of prescription-opioid use, lower rates of prescription-opioid misuse, lower rates of illegal-opioid use, fewer opioid overdoses, and lower rates of opioid-overdose death.²⁹ When given the option, many

²⁹ See Marcus A. Bachhuber, Brendan Saloner, Chinazo O. Cunningham, and Colleen L. Barry, “Medical Cannabis Laws and Opioid Analgesic Overdose Mortality in the United States, 1999–2010,” *JAMA Internal Medicine* 174:10, 2014, pp. 1668–73; Ashley C. Bradford and W. David Bradford, “Medical Marijuana Laws Reduce Prescription Medication Use in Medicare Part D,” *Health Affairs* 35:7, 2016, pp. 1230–36; Ashley C. Bradford and W. David Bradford, “Medical Marijuana Laws May Be Associated with a Decline in the Number of Prescriptions for Medicaid Enrollees,” *Health Affairs* 36:5, 2017, 945–51; Kanna, Hayashi, M.-J. Milloy, Mark Lysyshyn, Kora DeBeck, Ekaterina Nosova, Evan Wood, and Thomas Kerr, “Substance Use Patterns Associated with Recent Exposure to Fentanyl Among People Who Inject Drugs in Vancouver, Canada: A Cross-Sectional Urine Toxicology Screening Study,” *Drug and Alcohol Dependence* 183:1, 2018, 1–6; and David Powell, Rosalie Liccardo Pacula, and Mireille Jacobson, “Do Medical Marijuana Laws Reduce Addictions and Deaths Related to Pain Killers?,” *Journal of Health Economics* 58, 2018, 29–42.

who would otherwise be users of prescription opioids choose the less addictive alternative, medical marijuana, instead for pain management.

However, as David Powell and coauthors summarize it, “the key feature of a medical marijuana law that facilitates a reduction in overdose death rates is a relatively liberal allowance for dispensaries. As states have become more stringent in their regulation of dispensaries, the protective value generally has fallen.”³⁰ Allowing doctors and patients to choose from more, not fewer, treatment alternatives has the potential to decrease powerful prescription opioid use when a less potent alternative will suffice. The advantage of policies that extend the number of treatment options rather than limiting treatment options is that they do not force individuals suffering from chronic, debilitating pain to take treatments that are insufficient for their needs. When individuals are in pain and cannot access legitimate and effective prescription alternatives, they too are incentivized to look elsewhere for substances that will rid them of pain. Policies that sacrifice patient care in this manner will suffer from the same unintended consequences outlined above. Prohibitionist policies exacerbated the opioid crisis, and now it is time to reconsider and reverse that approach moving forward.

³⁰ Powell et al., “Do Medical Marijuana Laws Reduce Addictions and Deaths Related to Pain Killers?,” p. 29.

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