



THE CHANGING LANDSCAPE OF THE OPIOID EPIDEMIC IN MARION COUNTY AND EVIDENCE FOR ACTION

OCTOBER 2018



IUPUI

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The Changing Landscape of the Opioid Epidemic in Marion County and Evidence for Action

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PUBLISHED:

October 2018

CONTENTS

EXECUTIVE SUMMARY.....	<i>i</i>
AN EVOLVING OPIOID CRISIS COMPELS AN EVOLVING RESPONSE.....	1
THE SCOPE OF THE OPIOID CRISIS NOW.....	3
HOW MANY LIVES ARE BEING LOST TO DRUG OVERDOSE?	5
WHAT IS KNOWN ABOUT THE CONTRIBUTION OF OPIOIDS TO OVERDOSE DEATHS?	6
ARE FEWER PEOPLE DYING FROM DRUG OVERDOSE NOW THAN IN PAST YEARS?	9
WHO ARE THE MOST VULNERABLE IN THE OPIOID CRISIS?	11
HOW MANY OVERDOSES DO NOT RESULT IN DEATH?	15
HAS THE USE OF NALOXONE INCREASED?	16
HOW MANY PEOPLE MISUSED OPIOIDS IN THE PAST YEAR?	17
ARE THE RATES OF OPIOID MISUSE STILL RISING?	18
IS TREATMENT CAPACITY SUFFICIENT TO MEET THE NEEDS OF PEOPLE WITH OUD?	21
HAVE INFECTIONS RELATED TO INJECTING DRUGS INCREASED?	25
HOW MANY INFANTS EXPERIENCE DRUG WITHDRAWAL SYMPTOMS AFTER BIRTH?	28
WHAT ARE THE ECONOMIC COSTS TO SOCIETY?	29
KEY TAKEAWAYS ABOUT SCOPE	32
THE LANDSCAPE OF STRATEGIES TO ADDRESS THE OPIOID CRISIS	35
WHAT WORKS FOR PREVENTION?	37
WHAT ARE KEY INFORMANT PERSPECTIVES ON PREVENTION?	42
WHAT WORKS FOR TREATMENT & RECOVERY SUPPORT?	45
WHAT ARE KEY INFORMANT PERSPECTIVES ON TREATMENT & RECOVERY SUPPORT?	52
WHAT WORKS FOR HARM REDUCTION?	55
WHAT ARE KEY INFORMANT PERSPECTIVES ON HARM REDUCTION?	58
WHAT ARE PERSPECTIVES OF PEOPLE LIVING WITH OPIOID USE DISORDER?	58
KEY TAKEAWAYS ABOUT STRATEGIES	60
RECOMMENDATIONS FOR ADVANCING A RESPONSE	61
WHAT CAN SECTORS OF THE COMMUNITY DO TO ADDRESS THE CRISIS?	63
WHAT ARE UNIVERSAL BEST PRACTICES?	63
WHAT ARE POLICY SOLUTIONS?	63
WHAT CAN HEALTHCARE INSTITUTIONS AND PROVIDERS DO?	64
WHAT CAN THE CRIMINAL JUSTICE SYSTEM DO?	66
WHAT CAN EMPLOYERS DO?	67
WHAT CAN K-12 SCHOOLS DO?	67
WHAT CAN COLLEGES AND UNIVERSITIES DO?	68
WHAT CAN OTHER NON-PROFIT, COMMUNITY, AND FAITH-BASED ORGANIZATIONS DO?	69
CONCLUSION	69
WORKS CITED	70
APPENDICES	87
APPENDIX A: GLOSSARY OF ACRONYMS	87
APPENDIX B: SUPPLEMENTAL DATA	89
APPENDIX C: STRATEGY DESCRIPTIONS AND EVIDENCE RATINGS	101
APPENDIX D: ORGANIZATIONS REPRESENTED BY KEY INFORMANTS	110

EXECUTIVE SUMMARY

The impact of the opioid crisis is vast, with its effects impacting individuals, families, and communities as a whole. The epidemic has evolved – what began largely as a prescription opioid problem surged into the street, where heroin and “fake” pills resembling prescription drugs are now often laced with deadly amounts of illegally produced fentanyl. The evolving epidemic has compelled an evolving response, including new and more diverse strategies, and the engagement of multiple sectors of the community beyond health care, including employers, schools, non-profit agencies, government agencies, law enforcement and policymakers.

This report updates a 2016 report by the IU Richard M. Fairbanks School of Public Health to describe the current landscape of the evolving opioid epidemic in Marion County, Indiana, and across the state. We (1) describe the current **scope** of the opioid crisis in terms of lives impacted and mounting costs to society, (2) assess the national **evidence** regarding strategies used to tackle the epidemic, (3) consider **perspectives** of key informants and people living with opioid use disorder in Marion County, and (4) offer **recommendations** to guide action among various sectors of the community to most effectively mitigate this crisis and stabilize our communities.

THE SCOPE OF THE OPIOID CRISIS

People are dying of drug overdoses at a higher rate in Marion County than in the state or the nation. The 2017 rate of drug overdose deaths in Marion County (37.4 per 100,000) is higher than the Indiana rate (25.7 per 100,000), and both are higher than the U.S. rate (22.4 per 100,000). Like the rest of the nation, drug overdose deaths have increased significantly in Indiana and Marion County in the past two decades. **However, while some parts of the country are beginning to see reductions, Indiana is not.** More than 1,700 Hoosiers died from drug overdose in 2017, reaching an all-time high. Between 2011 and 2017, there was a 75% increase in the drug overdose death rate among Indiana residents and a 123% increase in drug overdose deaths among Marion County residents. **Toxicology screens identified opioids as the most common cause of overdose death in Marion County, involved in 81% of all fatal overdoses.** While there has been a decline in the involvement of prescription opioids in overdose fatalities since 2011, **there has been a rapid rise in the presence of the synthetic narcotic, fentanyl.** Fentanyl was present in 46% of all fatal overdoses in Marion County in 2017. Opioid misuse can affect anyone; however, certain groups are more vulnerable. Among those who died of an overdose in Marion County in 2017, people who were white, male, and between the ages of 25-54 were disproportionately represented. In recent years, there has been a marked increase in fatal overdoses among black Indiana and Marion County residents, a trend also seen nationally.

Marion County also has higher rates of hospitalization and emergency department visits for non-fatal overdoses than across Indiana. This may reflect both higher rates of opioid use disorder (OUD) and greater access to emergency care and naloxone in this urban area as compared to rural areas of the state.

Doses of naloxone dispensed by Indianapolis Emergency Medical Services (EMS) have increased four-fold since 2013.

Despite a significantly higher burden of OUD in Indiana than most of the nation, the state lags behind in access to effective treatment. Compared to other states in the Midwest, Indiana has fewer providers per capita authorized to prescribe buprenorphine than every state but Illinois, yet a higher burden of unmet need. Nearly four out of ten people seeking treatment for addiction at a publicly-funded treatment program report opioid misuse at admission.

There are signs of progress toward prevention of opioid misuse with falling opioid prescription fill rates and falling rates of heroin use among 12th graders. Yet, prevalence of prescription opioid misuse among young adults age 18-25 remains higher than the national average.

There has been a significant rise in the number of infants experiencing drug withdrawal symptoms after birth who are diagnosed with Neonatal Abstinence Syndrome (NAS) in both Marion County and Indiana. These babies require longer hospital stays and ongoing care to minimize the harm of drug exposure on their health and wellbeing.

Sharing needles and other items like cookers and water to inject drugs puts people at risk for getting or transmitting a number of infectious diseases. **Both Indiana and Marion County have experienced increases in hepatitis C, acute HIV, and endocarditis infections.** These infections are potentially deadly, costly to treat, and yet preventable.

The opioid epidemic was responsible for an estimated \$4.3 billion in economic damages to the state of Indiana in 2017 alone. Of this, 24%, or just over \$1 billion, arises from direct damages, such as costs associated with acute hospitalization, incarceration, NAS, and foster care. The remaining 76% (or more than \$3 billion) results from lost productivity. **Over the past 15 years, the epidemic has been responsible for an estimated \$43 billion in economic damages statewide.** The largest share was incurred in Marion County, with total damages close to \$7.4 billion or \$7,759 per Marion County resident.

THE LANDSCAPE OF STRATEGIES TO ADDRESS THE OPIOID CRISIS

We reviewed the current literature and spoke with local experts to identify strategies being used and those that have potential to improve opioid-related prevention, treatment, or related harms. We then developed a rating system that takes into consideration both the level of **evidence** supporting each strategy's effectiveness in achieving desired outcomes and the known or potential individual- and community-level harms that might result. Based on this review, we developed several recommendations to improve efforts aimed at targeting the opioid crisis.

KEY RECOMMENDATIONS FOR ADVANCING A RESPONSE

From a review of the scope of the opioid crisis and evidence for strategies, we offer key recommendations for action by community sector to advance our response in Marion County. A more extensive list of recommendations is found in the body of the report.

Universal Best Practices

Appropriately addressing the opioid crisis in Marion County will **require collaboration with commitments to information and resource sharing among various sectors**, including organizations representing federal, state, and local governments, health care, social services, non-profits, universities, and community and faith-based organizations.

These stakeholders must also **bring people living with OUD to the table** when developing and assessing programs and policies concerning them. Involving both people in recovery from OUD and those who are currently using opioids will result in more effective strategies with fewer negative unintended consequences.

All sectors seeking to address the epidemic must also **apply sound scientific practices whenever possible**. Implementing evidence-based strategies consistent with how they were designed and found effective is critical, unless appropriate assessments support modifications to local contexts.

Policy Solutions

From a prevention perspective, state and local governments must **eliminate internal agency policies that prevent cross-sector data sharing** of key data sources/information that is difficult to access (e.g., prescription drug monitoring, arrests, child welfare involvement, etc.) and develop new centralized policies that explicitly permit sound data sharing practices.

Strengthening and clarifying Indiana's Good Samaritan protections while repealing the newly implemented overdose homicide law will eliminate barriers and save lives. This will increase the likelihood that lay responders will feel comfortable calling 911 at the scene of an overdose.

State and federal funding should be increased to address three specific gaps. First, **eliminating federal and state policies that prevent full financial support of syringe services programs (SSP)** will strengthen implementation and sustainability of these programs. Second, **providing funding to K-12 schools to implement evidence-based prevention programs** can help stop substance use disorder (SUD) before it begins. Third, **funding for medication-assisted treatment (MAT) among incarcerated populations** can provide evidence-based treatment to a population with a particularly high prevalence of SUD.

Healthcare Institutions and Providers

Increasing the availability of all forms of medication-assisted treatment in the community so providers can refer patients to the most appropriate services is critical, and expanding the number of providers offering these treatments will **increase the capacity to enroll clients into MAT** quickly and efficiently.

Healthcare institutions and providers in Marion County should strive to **expand and implement more robust harm reduction interventions** and shore up harm reduction strategies currently being utilized (e.g., syringe services programs, naloxone distribution, Good Samaritan protections, Housing First).

Healthcare providers and institutions must also strive to **guarantee that harm reduction services have the ability to connect people to treatment and recovery supports** by developing referral relationships and formal agreements between organizations.

More broadly, healthcare providers should **ensure there is a continuum of care for individuals with opioid use disorder**, spanning screening and identification of need for treatment, providing MAT and psychosocial services, and delivering ongoing support throughout treatment, including wraparound and harm reduction services.

Criminal Justice

The criminal justice system must integrate evidence-based practices into its practice standards. This would entail **ensuring justice-involved individuals have access to all three forms of MAT and implementing take-home naloxone programs** to reduce risk of fatal overdose after prison release.

MAT should also be offered as an alternative to incarceration through pre-arrest diversion programs and drug treatment courts, regardless of ability to pay fees associated with these programs.

Employers

Employers can best support employees with OUD **by implementing robust employee assistance programs and offering comprehensive health insurance benefit plans** that provide adequate coverage for treatment including MAT, do not require co-pays, and guarantee confidential substance use disorder services.

Treatment efforts will not be successful unless people have opportunities to engage in meaningful employment during their recovery. As such, employers who truly wish to assist in addressing the opioid problem in Marion County should seek to **actively recruit employees in recovery from OUD**.

K-12 Schools

K-12 schools should **ensure selection and implementation of evidence-based school prevention strategies**, by utilizing a repository such as those found from Youth.gov, Blueprints, the Indiana Family and Social Services Agency's Evidence-Based Practice Guide, and/or the Indiana Prevention Resource Center's *Prevention Matters* Evidence-Based Program Guide.¹

¹ Weblinks to repositories: Youth.gov at <https://youth.gov/evidence-innovation>; Blueprints at <https://www.blueprintsprograms.org>; Indiana FSSA's Evidence-Based Practice Guide at https://www.in.gov/fssa/dmha/files/Indianas_Evidence_Based_Practice_Guide_Feb_16.pdf; Indiana Prevention Resource Center at <https://www.rmff.org/preventionmatters>.

K-12 schools should also **investigate approaches to serving both students and parents** dealing with SUD issues through family-based programs or school-based health clinic models.

Colleges and Universities

Programs should be implemented specifically to **address opioid misuse among students**. These programs should include **harm reduction strategies, such as naloxone availability and condom distribution**, to help mitigate negative consequences related to this substance misuse.

Colleges and universities must also make a **meaningful commitment to admit and train the medical and behavioral workforce** needed to staff treatment facilities by maximizing opportunities for students to receive appropriate education in addiction medicine, psychology, social work, and recovery support.

Other Non-Profit, Community, and Faith-Based Organizations

Community- and faith-based organizations can effectively **provide critical wraparound services, such as transportation and MAT-inclusive recovery housing that assist people with OUD to fully engage in MAT**, and other services, such as meals, child care, and warm clothing that address the needs of individuals. These organizations are also key to fighting stigma that exists within the community by **educating community members about MAT-based recovery and by hosting naloxone trainings**. Efforts to reach out and engage these organizations should be undertaken.

Finally, organizations can support the development of Medication Assisted Recovery Anonymous (MARA) groups by **providing space for meetings to be held**. Ideally, meeting locations would be available across Marion County to ensure adequate access.

CONCLUSION

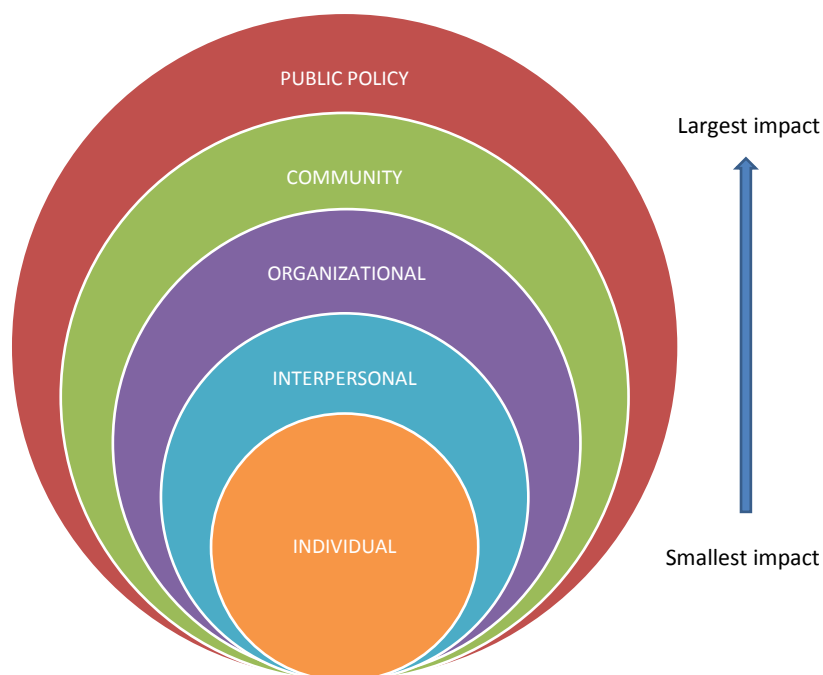
Marion County and the state of Indiana are still very much in the grips of the opioid crisis. Between 2011 and 2017, a total of 8,623 Hoosiers died from drug overdose. One out of every five of those deaths was a resident of Marion County. There are signs of progress, such as the substantial drop in opioid prescriptions filled by Indiana pharmacies and a statewide focus on increasing access to medication-assisted treatment. However, deadly new challenges, like fentanyl-laced drugs on the street, have emerged. Those working at the state and county levels to bring this epidemic under control must join forces to confront it on multiple fronts using a number of effective strategies simultaneously. The coordinated response must be sufficiently agile to adapt as the epidemic shifts. With a sustained and coordinated approach, using strategies that have proven effective across the nation, we can turn the corner on this devastating epidemic in Marion County and across the state.

AN EVOLVING OPIOID CRISIS COMPELS AN EVOLVING RESPONSE

In the Indianapolis Star's *State of Addiction* series, we learned about Hailey, a 25-year-old mother of two whose life plans were marred by heroin since her first use of it at age 14 [1]. Six-months pregnant with her second child and regularly using heroin again after more than two years in recovery, she went first to a rehab facility. When sent to a hospital for pregnancy complications, she pleaded with hospital staff to keep her and to help prevent further harm to her unborn child; she had already lost custody of her first child, a toddler-age daughter. This time, Hailey's call for help was met with a program designed to help mothers with opioid use disorder (OUD)—and their babies—that did not exist a few years ago. Hailey's story demonstrates in an individual life what we have experienced on a community level – a persistent, vexing crisis and a continuing quest to bring more and better tools to the fight. We have made progress on some fronts, but significant challenges remain.

The impact of the opioid crisis is vast, spreading outward like a ripple in a pond from individuals to families to workplaces and schools, and to the community at large. The epidemic has evolved – what began as largely a prescription drug problem has surged into the street. In tandem, the evolving epidemic has compelled an evolving response including new and more diverse strategies and the engagement of multiple sectors of the community, including employers, schools, non-profit agencies, government agencies, and policymakers in addition to healthcare providers. Strategies involving multiple sectors have proven more effective in dealing with other large-scale public health crises, such as tobacco use, particularly when public policy can be brought to bear [2] (Figure 1 [3]) .

FIGURE 1: Socioecological model of health (McLeroy, et al, 1988)[3]



This report updates a 2016 report by the IU Richard M. Fairbanks School of Public Health to describe the landscape of the evolving opioid epidemic in Marion County, Indiana. A number of national developments have occurred since 2016. In October 2017, the U.S. Department of Health and Human Services (DHHS) declared a public health emergency to address the opioid crisis [4]; however, this declaration was not accompanied by any funding to support the implementation of strategies necessary to address the issue. In March 2018, the White House held a summit on the opioid crisis and unveiled a 3-pronged plan to: (1) reduce demand for opioids and over-prescribing; (2) cut off the supply of illicit drugs; and (3) help those struggling with addiction to obtain treatment and support services [5]. The most significant national development for Indiana, however, was the December 2016 passage of the 21st Century Cures Act. This act authorized the distribution of more than \$2 billion in funding among all U.S. states and territories over two years to fight the opioid crisis [6]. The Indiana Division of Mental Health and Addiction received approximately \$22 million dollars—\$10.9 million in 2017 and \$10.9 million in 2018— which is being used to fund a comprehensive response to the epidemic. This response includes efforts to address stigma, increase treatment capacity, and implement novel and promising interventions aimed at connecting people living with opioid use disorder to treatment. The Indiana State Department of Health has received \$8 million from the Centers for Disease Control and Prevention to support their overdose prevention and response activities [7, 8]. Most recently, the Indiana Family and Social Services Administration announced on September 21, 2018, that Indiana will receive an additional two-year, \$18 million federal grant to fund more evidence-based treatment and recovery services [9].

Within this changing national context, this report describes the current landscape of the opioid crisis in Marion County, Indiana, including:

- the current scope of the opioid crisis in terms of lives impacted and costs to society;
- an updated summary of the national evidence regarding what works—or holds promise—to prevent OUD as well as treat, support recovery, and reduce harm among those living with OUD;
- perspectives of key informants and people living with opioid use disorder in Marion County; and
- recommendations for what various sectors of the community can do to most effectively mitigate this crisis and stabilize our communities.

Individuals do not become addicted to opioids in a vacuum, but within the larger context of their lives and society. Effectively addressing this crisis also requires a society-wide approach.

THE SCOPE OF THE OPIOID CRISIS NOW

Life expectancy dropped in the United States in both 2015 and 2016 – the first declines observed since the 1960s [11]. The opioid epidemic is considered a main contributor to the decline, both because of rising opioid-related *deaths* and because opioids disproportionately cut short the lives of *young* adults. Unintentional injuries, which include overdose deaths, became the third leading cause of death in the U.S. in 2016, behind heart disease and cancer [11, 12].

At the time of the prior Indiana report in 2016, the opioid crisis in Indiana and across the U.S. had been building steadily for more than two decades as an epidemic rooted in prescription pain relievers. That epidemic grew in complexity, becoming intertwined with the illicit opioid, heroin; “four out of five individuals using heroin (say) that their opioid use began with prescription opioids” [13, 14]. The secondary epidemic of HIV and hepatitis C that occurred in Austin, Indiana, in 2015 among those who inject drugs brought yet a new level of urgency to state and local efforts, as well as greater public concern. More recently, illicitly manufactured fentanyl has added a third deadly dimension. Fentanyl is an extremely potent synthetic narcotic, often prescribed to manage the pain of advanced cancer [15]. However, when made and sold illegally, it is particularly dangerous. Not only is the strength of illicit fentanyl unpredictable, ranging from 50 to 100 times more potent than morphine, this unpredictably toxic drug is now found mixed into heroin and cocaine and pressed into counterfeit “prescription” pills [15], adding to the rising number of fatalities. As the tell-tale drop in U.S. life expectancy indicates, the opioid epidemic continues to leave its mark. In this section, we will share data that characterize the size and shape of the epidemic affecting Marion County today, examine how this has changed in recent years, and also consider how these data inform ongoing efforts to bring the epidemic under control.

“

At heart, the opioid epidemic, it's not really about opioids. An opioid use disorder, for most of my patients, is the final common expression of a lot of brokenness, missed opportunities and frustrations all lined up in precisely the wrong way. The pain and suffering we see in the ER [emergency room] every day is the end product of a series of breakdowns in brain biochemistry, families, healthcare systems, insurers, drug companies, employers, schools, and the many local, state and federal agencies meant to support and protect all of us – especially in times of suffering.”[7]

– **Dr. Krista Brucker**

Emergency medicine physician at Eskenazi Hospital

Founder of [Project POINT](#), which helps people who have overdosed connect to treatment

We begin by describing the current scope of the opioid crisis in Marion County and Indiana with data that address these central questions:

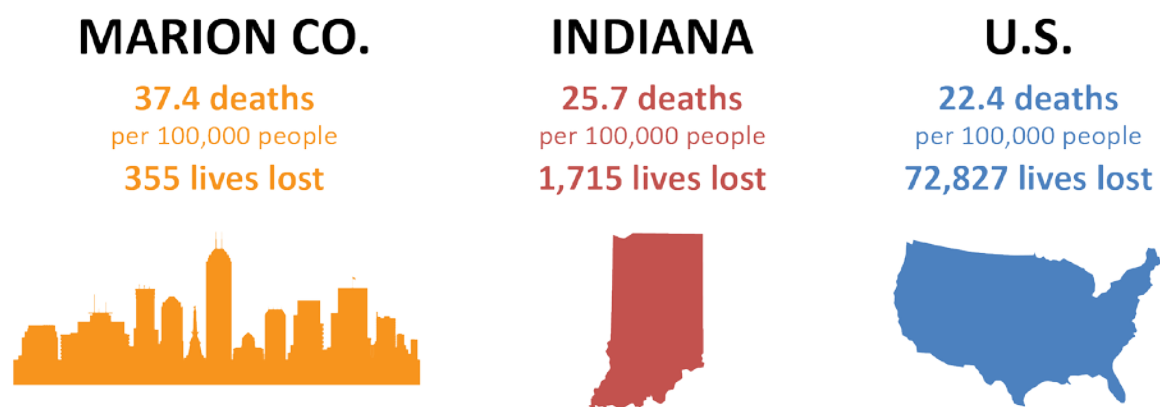
- How many lives are being lost to drug overdose?**
- What is known about the contribution of opioids to overdose deaths?**
- Are fewer people dying from drug overdose now than in past years?**
- Who are the most vulnerable in the opioid crisis?**
- How many overdoses do not result in death?**
- Has the use of naloxone increased?**
- How many people misused opioids in the past year?**
- Are the rates of opioid misuse still rising?**
- Is treatment capacity sufficient to meet the needs of people with OUD?**
- Have infections related to injecting drugs increased?**
- How many infants experience drug withdrawal symptoms after birth?**
- What are the economic costs to society?**

HOW MANY LIVES ARE BEING LOST TO DRUG OVERDOSE?

The death toll from opioid overdose is a sentinel marker of the scope and severity of the epidemic and is also a reflection of the number of people with OUD for whom strategies across the spectrum have failed. Where prevention fails, effective harm reduction strategies aim to prevent death and mitigate other harms. When people are ready for treatment, treatment and recovery support should be accessible. Where all strategies fail, lives are lost.

We begin by looking at the 2017 death rate due to drug overdose for Marion County, Indiana, and the U.S.² It is important to note that this rate includes *all fatal overdoses, not just those attributed to opioids*. This is the standard metric, as opioids account for the majority of overdoses, and yet these deaths are often undercounted because many death certificates in Indiana do not identify the specific drugs responsible for overdose deaths. A review of all death certificates for opioid- and heroin-involved fatalities occurring among U.S. residents in 2014 (n= 47,055) concluded that *opioid* mortality rates in the U.S. were more than 20% percent higher than had been previously reported, and “considerably understated” in certain states including Indiana where the corrected opioid-related fatality rate was more than double the reported rate [16].

FIGURE 2: Deaths due to drug overdose in 2017, National Center for Health Statistics and ISDH* [17, 18]



**2017 provisional data, subject to change; crude rates*

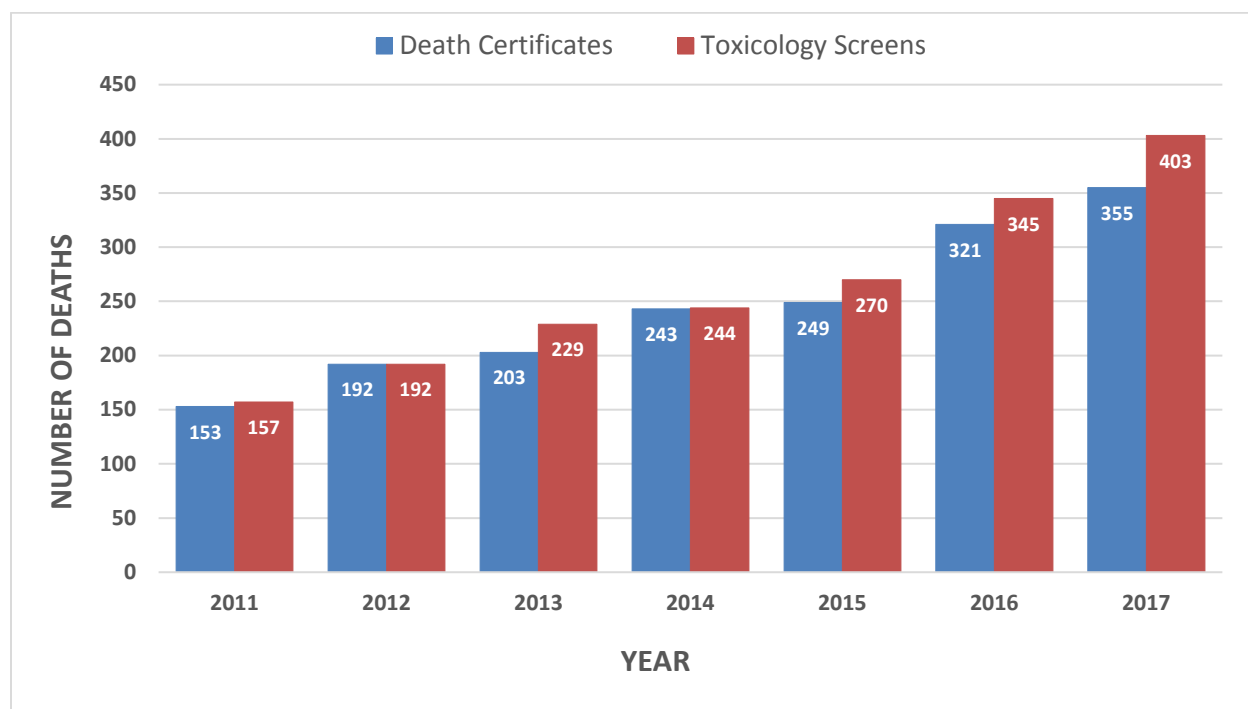
While the opioid epidemic has touched every state in the U.S., some states are faring worse than others. Indiana’s overdose death rate ranks 15th highest in the nation, and Marion County has an overdose death rate that ranks among the highest in the state (14th out of 92), exceeding the state rate by 50%.

² Note: Data on overdose deaths and other key indicators represent the most current data available as of the writing of this report. For the most up-to-date data, please visit the Richard M. Fairbanks Foundation data page at <http://www.rmff.org/insights/data> or the ISDH Stats Explorer at gis.in.gov/apps/isdh/meta/stats_layers.htm.

WHAT IS KNOWN ABOUT THE CONTRIBUTION OF OPIOIDS TO OVERDOSE DEATHS?

Since 2013, IUPUI researchers have partnered with the Marion County Coroner's Office (MCCO) to more accurately identify overdose deaths and the substances involved. The Marion County Coroner's office (MCCO) has routinely conducted toxicology screens during its investigation of suspected overdose deaths, though the state of Indiana just passed legislation in 2018 to mandate toxicology screens in suspected overdose fatalities statewide. Toxicology screens conducted by the MCCO between 2011 and 2017 were compared to information reported on death certificates for individuals suspected of dying from drug overdose [19]. The total number of all drug overdose deaths in Marion County identified using toxicology screens was higher than those reported on death certificates every year but one, highlighting the chronic underreporting of drug overdose deaths on death certificates (Figure 3).

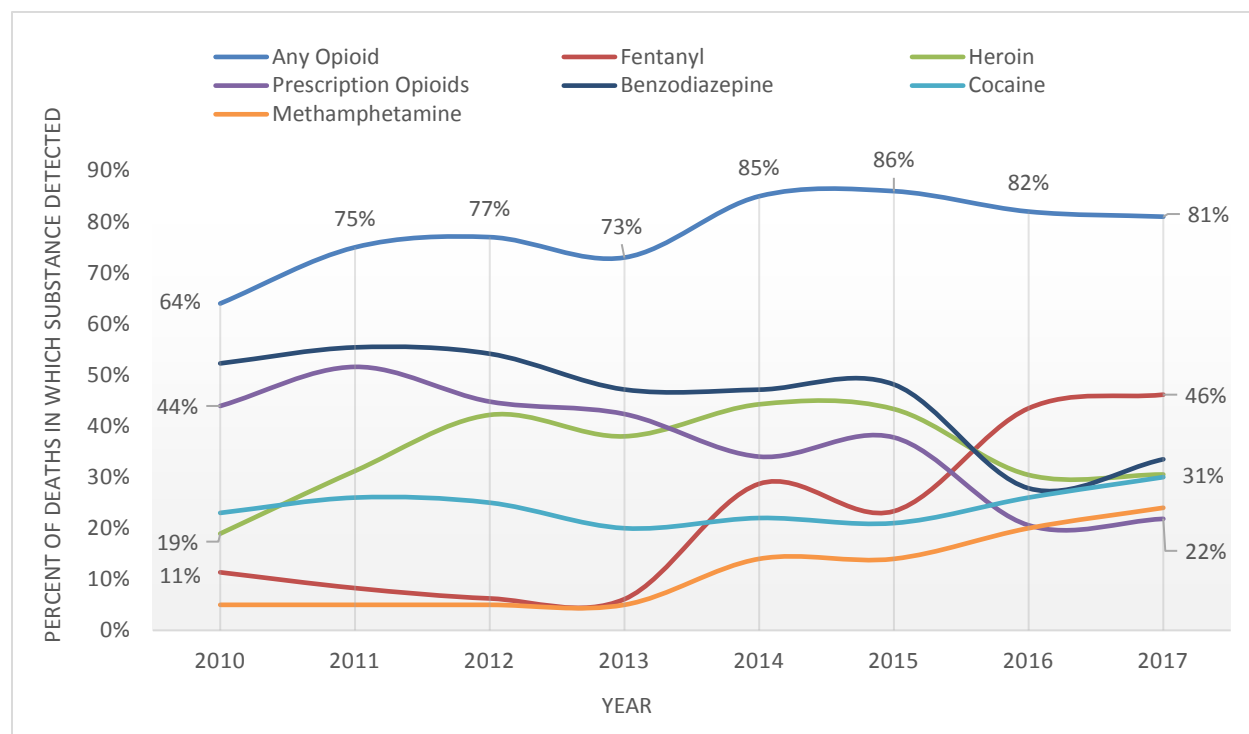
FIGURE 3: Comparison of Marion County overdose deaths identified by death certificates (ISDH) and by toxicology results (Marion County Coroner's Office), 2011-2017*



**2017 ISDH numbers are provisional and subject to change.*

The study also looked at specific drugs or drug combinations identified on toxicology tests performed during overdose death investigations and found changes in the patterns of drugs identified over time. Between 2010 and 2017, the number of deaths in Marion County attributable wholly or partially to opioids increased by nearly 20% (see Figure 4). Rarely does fatal overdose involve a single substance, and the substances reflected in Figure 4 are not mutually exclusive [19, 20].

FIGURE 4: Percentage of fatal overdoses involving each substance per toxicology testing by Marion County Coroner's Office, 2010-2017* [20]



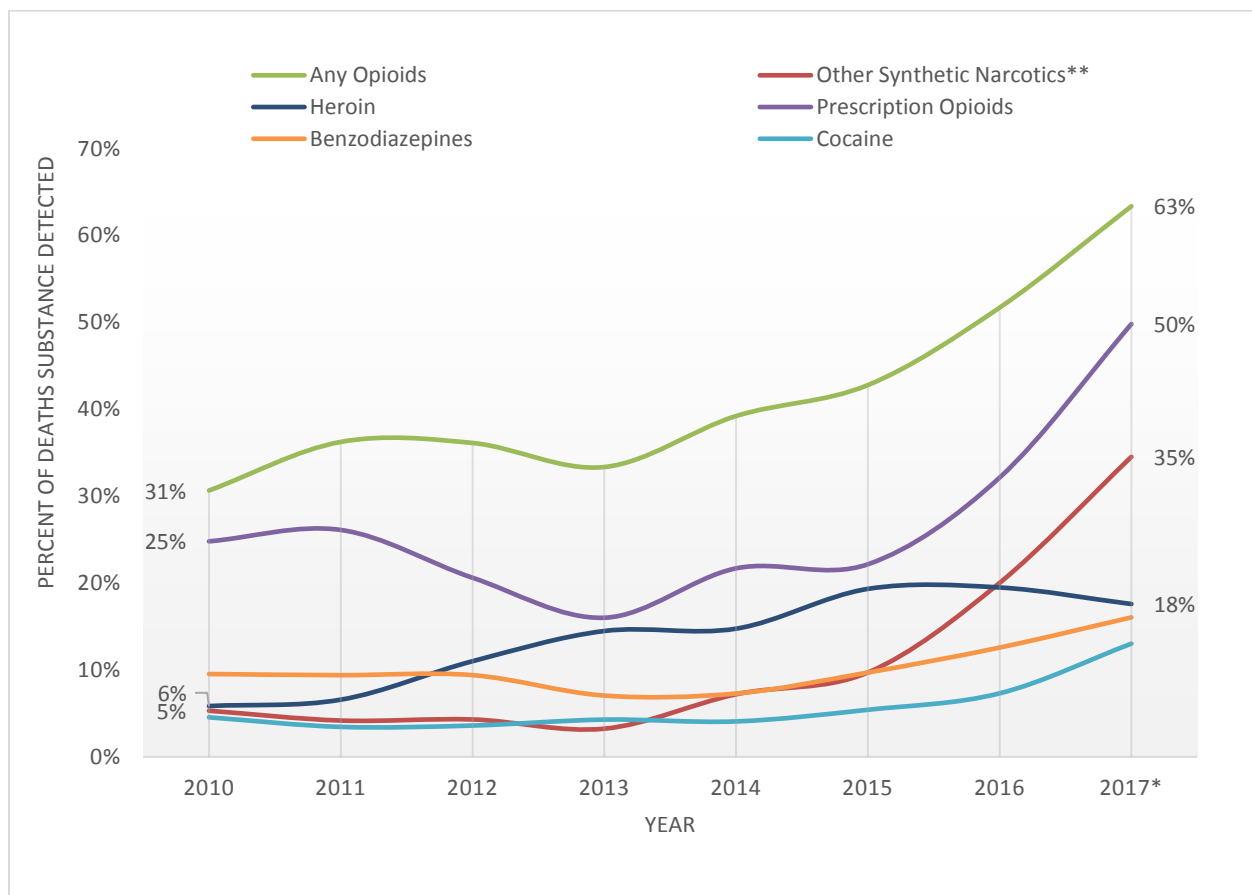
*Multiple substances can contribute to an overdose death; therefore, the substances found are not mutually exclusive.

- Eighty-one percent (81%) of all overdose deaths in Marion County in 2017 involved an opioid. This appears to be trending down from the 2015 peak of 86%.
- The presence of prescription opioids has dropped substantially from a peak of 52% in 2011 to 22% in 2017.
- The presence of heroin in overdose deaths peaked in 2015 at 43%, and has fallen to 31% in 2017.
- In 2017, nearly half of all overdoses included fentanyl. The presence of fentanyl increased substantially between 2013 and 2017 from 6% to 46%.
- Non-opioids often present in overdose deaths include: methamphetamine (increasing), cocaine (stable), and benzodiazepines³ (decreasing). (Additional drug information in Appendix B2.)
- Notably, the changes in drugs found on toxicology testing during the investigation of drug overdose deaths in Marion County mirror the three phases of the opioid epidemic identified in the national trends: first prescription opioids, then heroin, and now fentanyl [22].

³ Benzodiazepines are non-narcotic, prescription drugs primarily used to treat anxiety. When taken in combination with opioids, there is increased risk of coma and death [21].

Specific substances involved in fatal overdoses throughout Indiana are shown in Figure 5. However, these data rely upon limited information provided on death certificates filed with the Indiana State Department of Health, which often lack specific detail about drugs found during autopsy. Although comparisons between substances involved in Marion County overdose fatalities and Indiana overdose deaths cannot be made due to the inconsistent use of toxicology data during death investigation across Indiana counties, it is worth noting the increase in the presence of synthetic narcotics, primarily fentanyl, since 2013. Indiana data also demonstrate the ongoing significant contribution of prescription opioids and heroin to drug overdose deaths in the state throughout the phases of the epidemic.

FIGURE 5: Percentage of fatal overdoses involving each substance per death certificates of Indiana residents, 2010-2017* (Indiana State Department of Health, 2017)



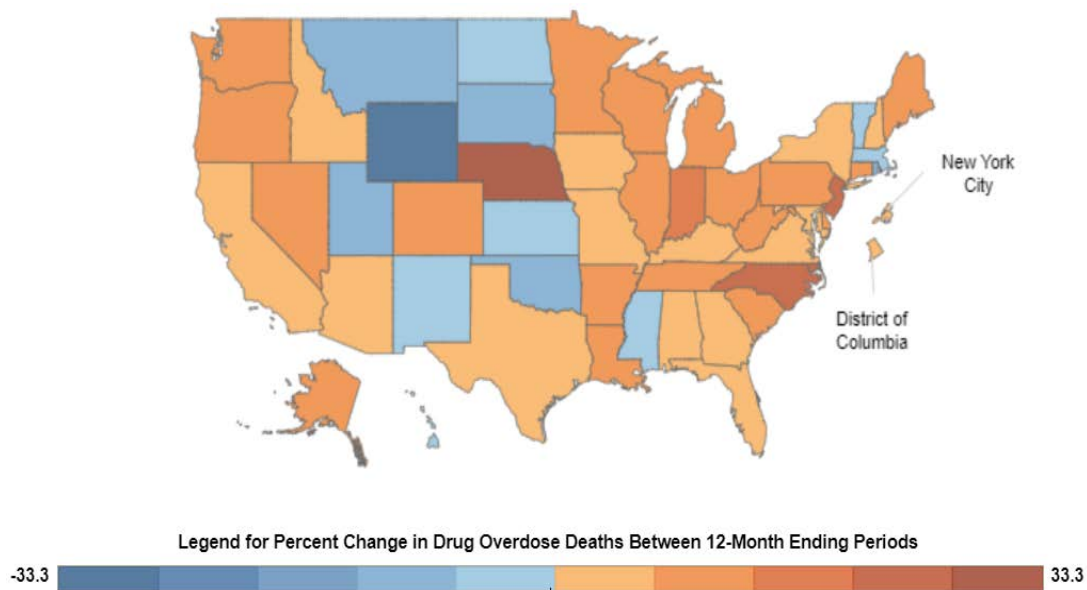
*2017 ISDH numbers are provisional and subject to change.

**Other synthetic narcotics includes fentanyl.

ARE FEWER PEOPLE DYING FROM DRUG OVERDOSE NOW THAN IN PAST YEARS?

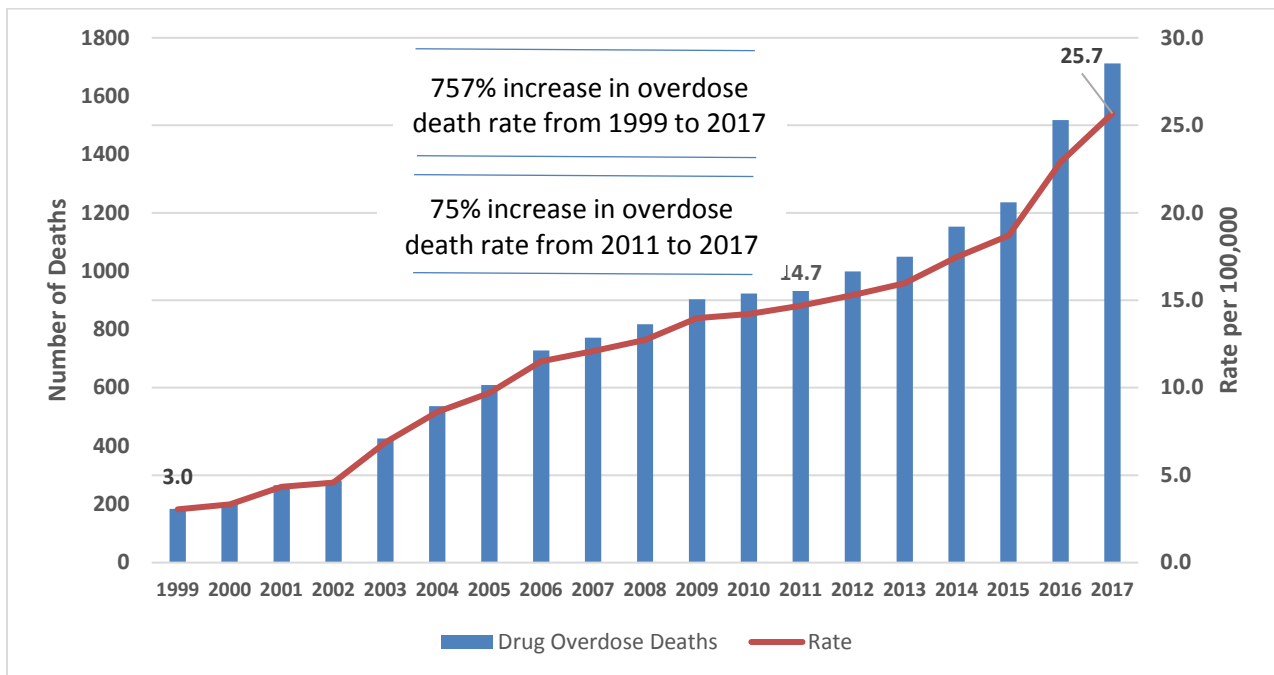
More people in the U.S. died from a drug overdose in 2017 than ever before. Over 72,000 Americans lost their lives to this epidemic that year [23]. While some states reported a drop in the number of overdose deaths from 2016 to 2017, Indiana continued its upward trajectory (Figure 6). Over that time period, the number of Hoosiers who died from drug overdose increased by more than 15%, more than twice as high as the increase overall in the U.S. of 6.6% [17].

FIGURE 6: Percent change in predicted 12 month-ending count of drug overdose deaths, U.S. 2017. Reprinted from CDC/National Center for Health Statistics, August 27, 2018, retrieved from <https://www.cdc.gov/nchs/nvss/vsrr/drug-overdose-data.htm> [17]



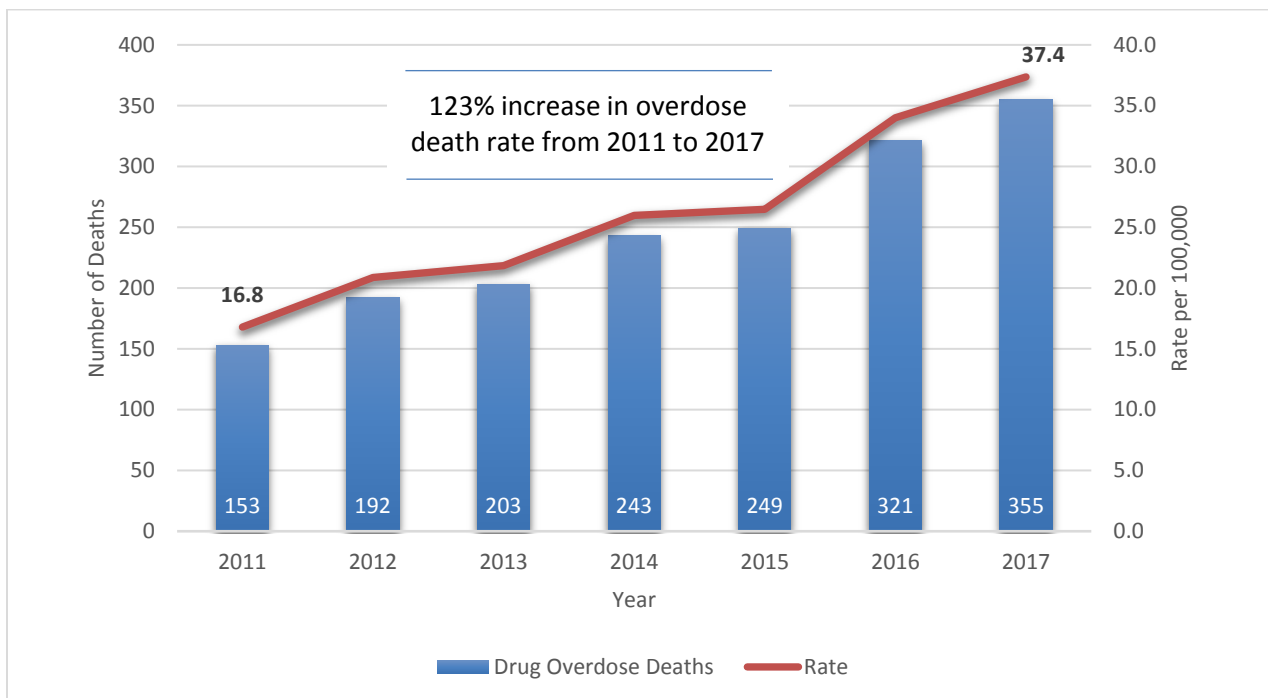
There is no sign that the epidemic has peaked in Indiana or Marion County. Indiana's drug overdose death rate has increased by more than 700% since 1999, rising by 75% since 2011 [24]. The death toll rose from 184 Hoosiers in 1999 to 1,712 in 2017 (Figure 6) [25]. Similarly, the overdose death rate in Marion County increased by 123% (more than doubling) between 2011 and 2017, with the number of Marion County residents dying from drug overdose increasing from 153 to 355 in that timespan (Figure 7).

FIGURE 7: Number and rate of drug overdose deaths per year, Indiana 1999-2017* (ISDH) [26]



**2017 ISDH numbers are provisional and subject to change.*

FIGURE 8: Number and rate of drug overdose deaths per year, Marion County, IN (ISDH, 2011-2017*) [27]



**2017 ISDH numbers are provisional and subject to change.*

WHO ARE THE MOST VULNERABLE IN THE OPIOID CRISIS?

Findings from the IUPUI study of Marion County fatal overdoses showed that most deaths in 2017 occurred among males, people of white race, and people between the ages of 25-54 years (Table 1). Level of education and employment status among those who died were often unknown (32% missing level of education and 21% missing employment status). Among those for whom this information was available, people who died of a drug overdose were more likely to have less than a high school education and be unemployed (Table 1). Other factors not reported in the Marion County data but known to increase vulnerability to drug overdose death include low income and the presence of mental illness [28].

In order to understand whether fatal overdoses occur more often among certain groups, we have compared numbers of fatal overdoses by group to that group's representation in the total Marion County population. For example, since whites make up 65% of the Marion County population, if deaths occurred evenly among all racial and ethnic groups, we would expect 65% of deaths to occur among whites. However, the data show that a larger percentage of whites (72%) are dying from drug overdose than other race/ethnicities. Blue shading in Table 1 highlights all demographic groups with disproportionately high representation among fatal overdoses in the Marion County population.

While the data appear to indicate disproportionate representation among those who are unemployed and have less than high school education (gray shading in Table 1), more complete data are needed to make that determination. A recent national study of opioid-involved overdose deaths found that certain occupations are associated with a disproportionately high rate of opioid-related overdose fatalities, including construction, extraction (e.g., mining, oil and gas extraction), and health care practitioners [29]. A greater understanding of those groups most vulnerable to opioid misuse and death can inform targeted interventions.

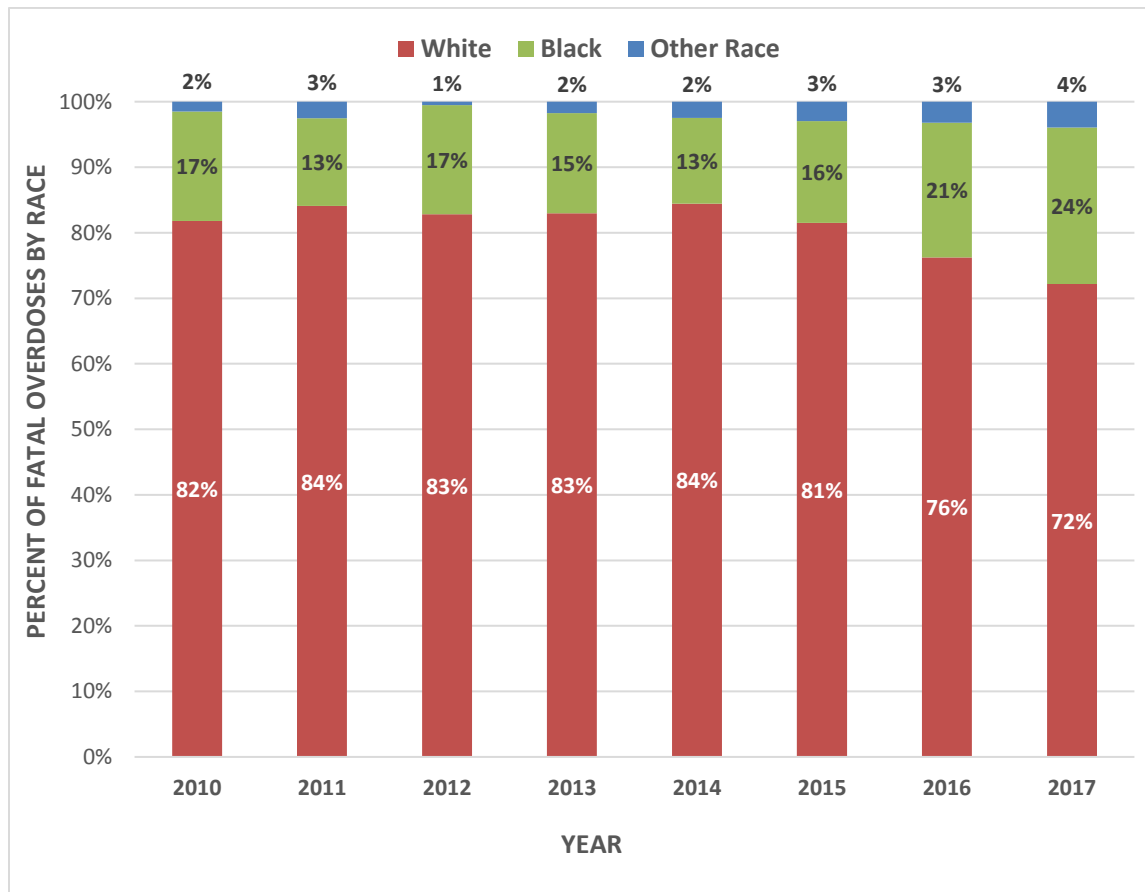
TABLE 1: Demographics of 2017 drug overdose deaths reported by Marion County Coroner's Office, Marion County, IN.

	2017 Fatal Overdoses (Percent of Total, n=403)	Representation in 2017 Marion County Population
Sex		
Female	33%	52%
Male*	67%	48%
Age		
17 and younger	1%	21%
18 - 24	6%	14%
25 – 34*	31%	17%
35 – 44*	27%	13%
45 – 54*	22%	13%
55 - 64	12%	12%
Over 65	2%	11%
Race/Ethnicity		
White*	72%	65%
Black	24%	29%
Other	4%	6%
Education		
Less than HS	46%	15%
HS/GED	13%	28%
More than HS	9%	57%
<i>Unknown</i>	32%	0%
Employment Status		
Employed	32%	62%
Unemployed	41%	6%
Student	0%	N/A
Disabled/Retired	7%	N/A
<i>Unknown</i>	21%	0%

**Populations disproportionately represented among drug overdose deaths in Marion County, IN*

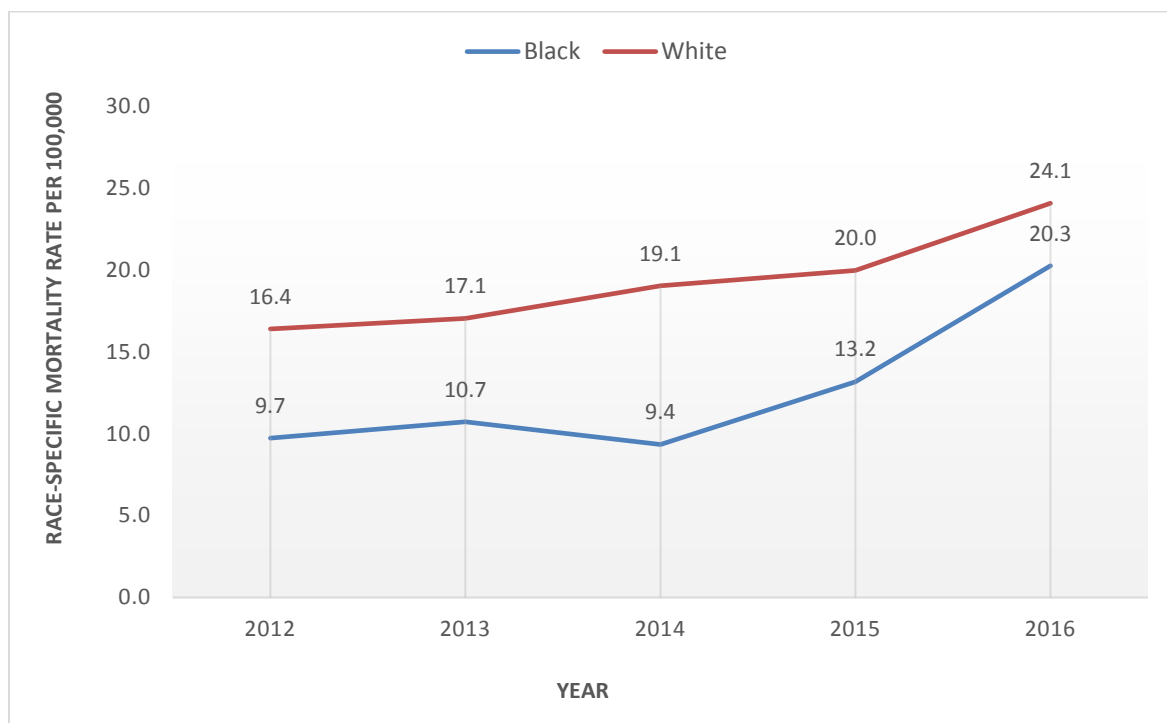
While the proportion of 2017 drug overdose deaths among blacks (24%) is not disproportionate to the population of blacks (29%), overdose deaths among blacks have been increasing in Marion County since 2015 (Figure 9) [20]. Similar trends are being observed across the nation with treatment admissions and fatal overdoses among blacks on the rise [30, 31].

FIGURE 9: Percentage of drug overdose deaths by race reported by Marion County Coroner's Office, Marion County, IN, 2010- 2017 (Marion County Coroner's Office)



Indiana data show that the racial gap in drug overdose deaths is closing between blacks and whites in Marion County, and also across the state. While whites continue to have higher race-specific rates of fatal overdose in Indiana, the rate among blacks has been increasing at a faster pace since 2014 (Figure 10) [32].

FIGURE 10: Race-specific drug overdose death rates, Indiana, 2012-2016. Adapted from *2016 Black Hoosier Drug Overdose Deaths and Drug Trends*, ISDH, retrieved 9/12/2018 from <https://www.in.gov/isdh/files/African%20American%20Report.pdf> [32]



HOW MANY OVERDOSES DO NOT RESULT IN DEATH?

In 2003, it was reported that up to 30 nonfatal overdoses occur for each fatal one [33]. As the number of overdoses has increased since then, so has the number of patients visiting the emergency department (ED) or being hospitalized for nonfatal overdoses involving opioids. Since naloxone has become available for both first responders (2014) and lay responders (2015) in Indiana, the timely administration of naloxone by family, friends, or first responders has reversed many overdoses. Marion County rates of ED visits due to a nonfatal overdose were above the state average every year from 2009 to 2015 (Appendix B10), and hospitalization rates for nonfatal heroin overdoses showed similar trends (Appendix B11). People who survive an opioid overdose are at high risk of dying within 12 months, highlighting the critical need for increased access to naloxone and medication-assisted treatment in the immediate aftermath of the overdose event [34].

Table 2 shows the rates of non-fatal hospitalization and emergency department visits due to any opioid and heroin specifically for 2016. The rates of hospitalization and ED visits for non-fatal opioid overdoses were higher in Marion County than throughout Indiana⁴ [8]. It is likely that higher rates in Marion County reflect both 1) higher rates of OUD, and 2) greater access to emergency care and naloxone in the urban area than in rural areas throughout the state.

TABLE 2: Rate of non-fatal hospitalization and emergency department visits due to opioids and heroin (ISDH, 2016)

	Hospitalization Rate per 100,000		Emergency Department Visit Rate per 100,000	
	Indiana	Marion Co.	Indiana	Marion Co.
Any Opioid	36.6	46.6	104.5	192.6
Heroin	9.8	16.3	70.7	139.7

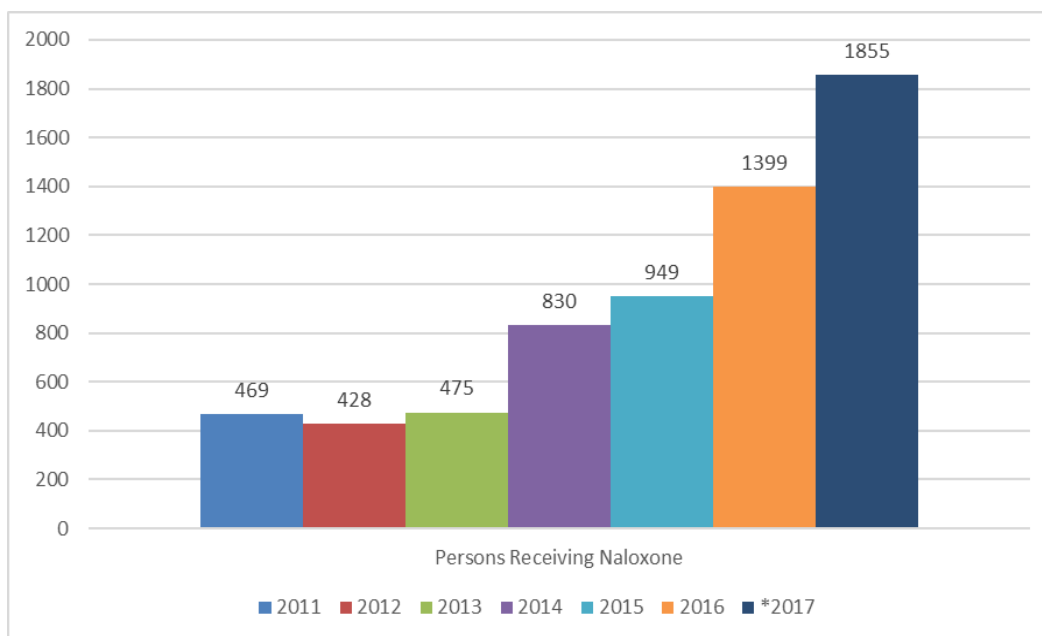
⁴ The U.S. transitioned from ICD-9-CM to ICD-10-CM diagnosis coding on Oct. 1, 2015; therefore, rates for 2015 and prior years cannot be compared to 2016.

HAS THE USE OF NALOXONE INCREASED?

Naloxone is a life-saving medication designed to rapidly reverse the symptoms of an opioid overdose. Opioid overdoses kill people by stopping their breathing. Naloxone works by blocking the effects of opioids in the brain, allowing people to start breathing on their own again. Access to naloxone is crucial to reduce the number of people who die from an opioid overdose. In 2015, Indiana Senate Bill 406, also known as Aaron's Law, was signed into public law, allowing the lay public access to naloxone without a prescription.

Figure 11 below reflects the number of unique persons rescued with naloxone by Indianapolis EMS from 2011 through 2017 (though 2017 data are provisional and subject to change). Nearly twice as many Marion County residents were administered naloxone in 2014, after laws were passed making it legal for all first responders to carry and administer naloxone. Pre-hospital naloxone use got another boost with the passage of Aaron's Law in 2015, with 906 additional persons rescued in 2017 compared to 2015.

FIGURE 11: Patients receiving naloxone from Indianapolis EMS 2011-2017* (Indianapolis EMS)

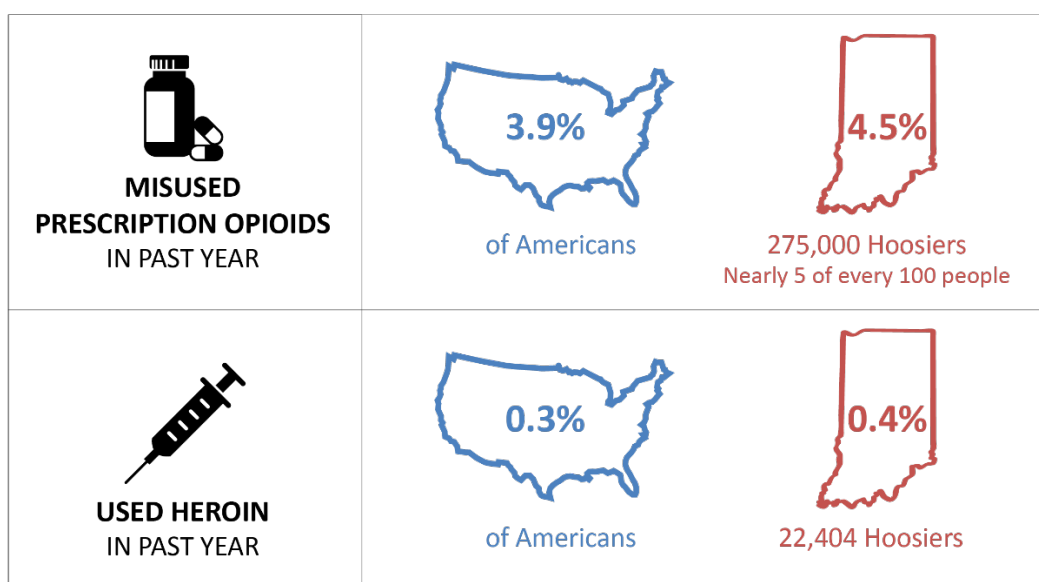


**2017 data are incomplete.*

HOW MANY PEOPLE MISUSED OPIOIDS IN THE PAST YEAR?

From a look at the prevalence of opioid misuse, we can gauge both the current extent of opioid misuse throughout the population, as well as whether that proportion is rising or falling over time. The National Survey on Drug Use and Health (NSDUH) annually provides prevalence estimates on substance use within the U.S. population, aged 12 and older.

FIGURE 12: Population age 12 and up who misused prescription opioids or heroin in the past year, NSDUH 2016



**Any drug prescribed or illicitly obtained containing hydrocodone, oxycodone, tramadol, codeine, morphine, fentanyl, buprenorphine, oxymorphone, methadone, and other prescription pain relievers*

Prescription opioid misuse is far more common than heroin use in the U.S. and Indiana. The rate of prescription opioid misuse in Indiana is more than 11 times the rate of heroin use. The prevalence rate of past-year prescription opioid misuse in Indiana in 2016 was higher than in the U.S., though the difference was not statistically significant; heroin usage in Indiana and the nation were similar.

FIGURE 13: Prevalence of past year prescription opioid misuse by age group (NSDUH, 2016)

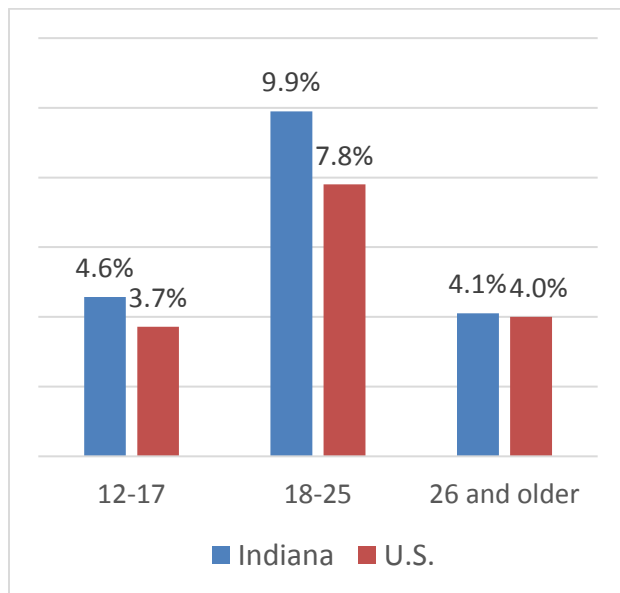
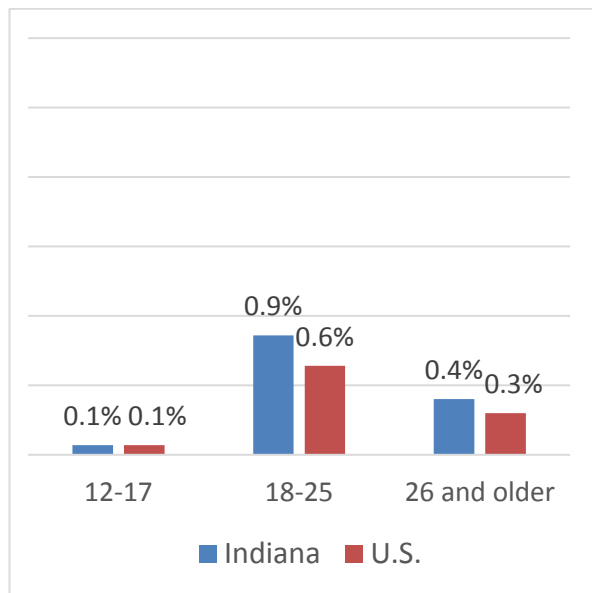


FIGURE 14: Prevalence of past year heroin use by age group (NSDUH, 2016)



Prescription opioid misuse and heroin use are highest among young adults ages 18-25 across the U.S. and in Indiana; about 1 of every 10 young Hoosier adults reported misusing prescription pain relievers in the past year, and nearly 1 of every 100 young Hoosier adults reported using heroin in the past year.

ARE THE RATES OF OPIOID MISUSE STILL RISING?

According to the National Survey on Drug Use and Health (NSDUH), about one in 20 Hoosiers reported misusing a prescription opioid in 2016 (4.9%). Due to changes in NSDUH's data collection methodology, this rate cannot be compared with rates of prior years for an assessment of trend. However, previous rates were generally within a similar range [35].

An additional indicator for potential prescription opioid misuse is the rate of opioid prescriptions filled. In 2016, Indiana's opioid prescribing rate was 83.9 per 100 persons, a rate higher than the national average of 66.5 per 100 persons (Figure 17). Marion County's prescribing rate, 72.4 per 100 persons, was below the state average (Figure 18) [36].

FIGURE 15: U.S. opioid prescribing rate maps with Indiana rate per 100 persons, 2016. Reprinted from U.S. Opioid Prescribing Rate Maps, 2016, Centers for Disease Control and Prevention, retrieved 9/3/2018 at <https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html> [36]

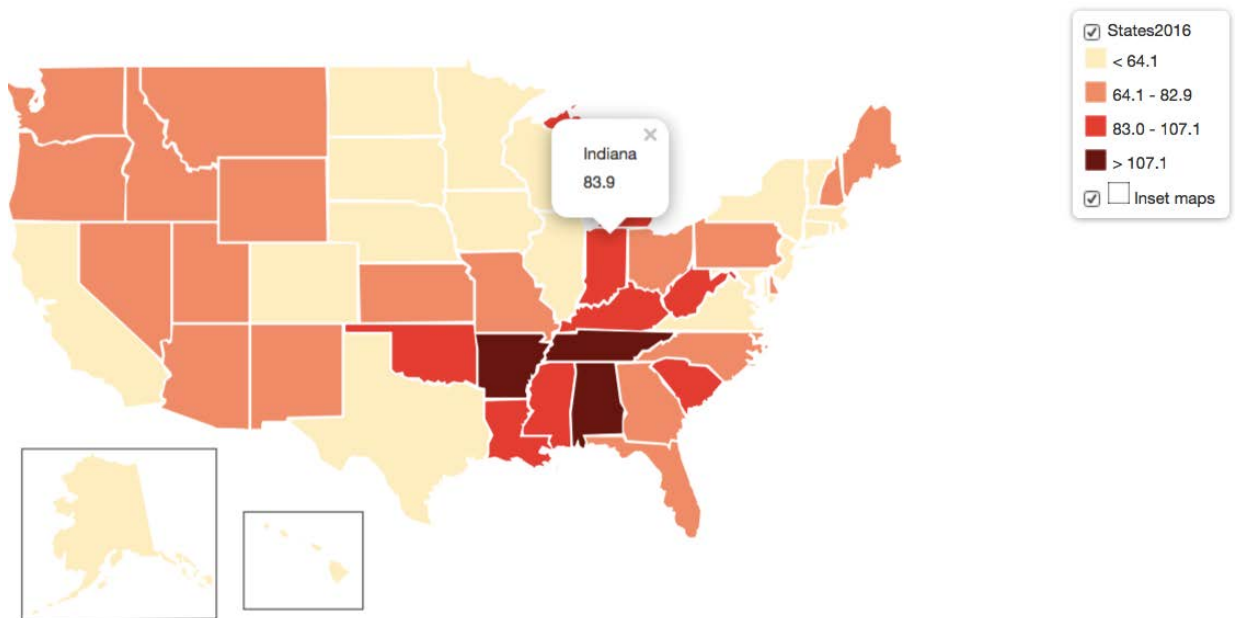
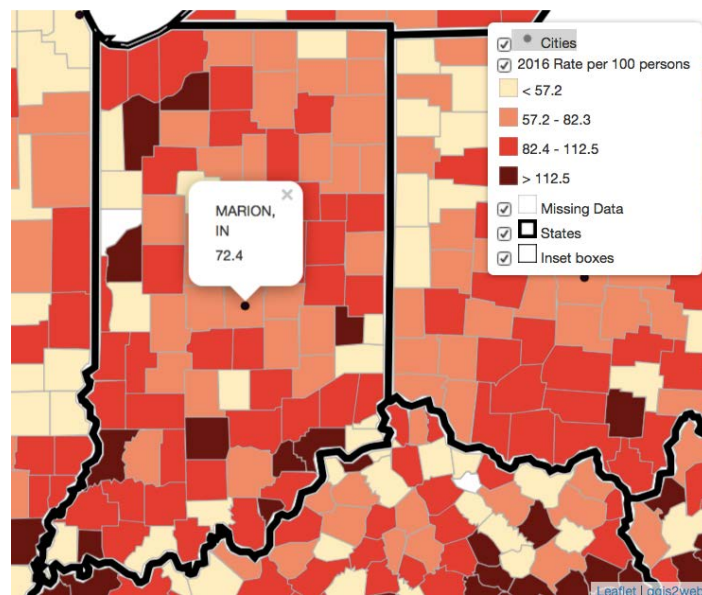
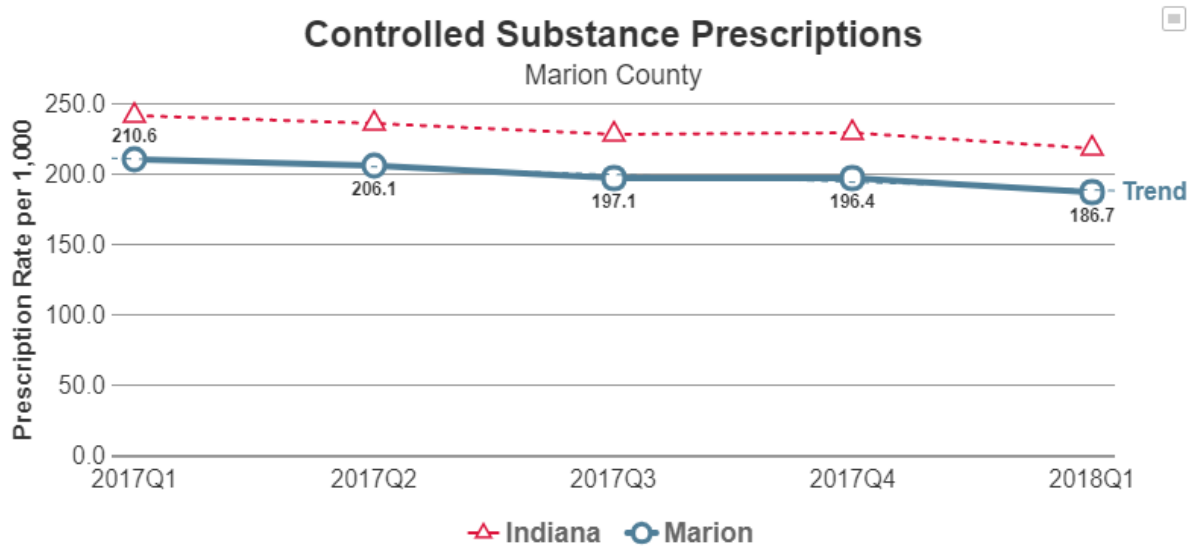


FIGURE 16: Marion County opioid prescribing rate, per 100 persons, 2016. Reprinted from U.S. Opioid Prescribing Rate Maps, 2016, Centers for Disease Control and Prevention, retrieved 9/3/2018 at <https://www.cdc.gov/drugoverdose/maps/rxrate-maps.html> [36]



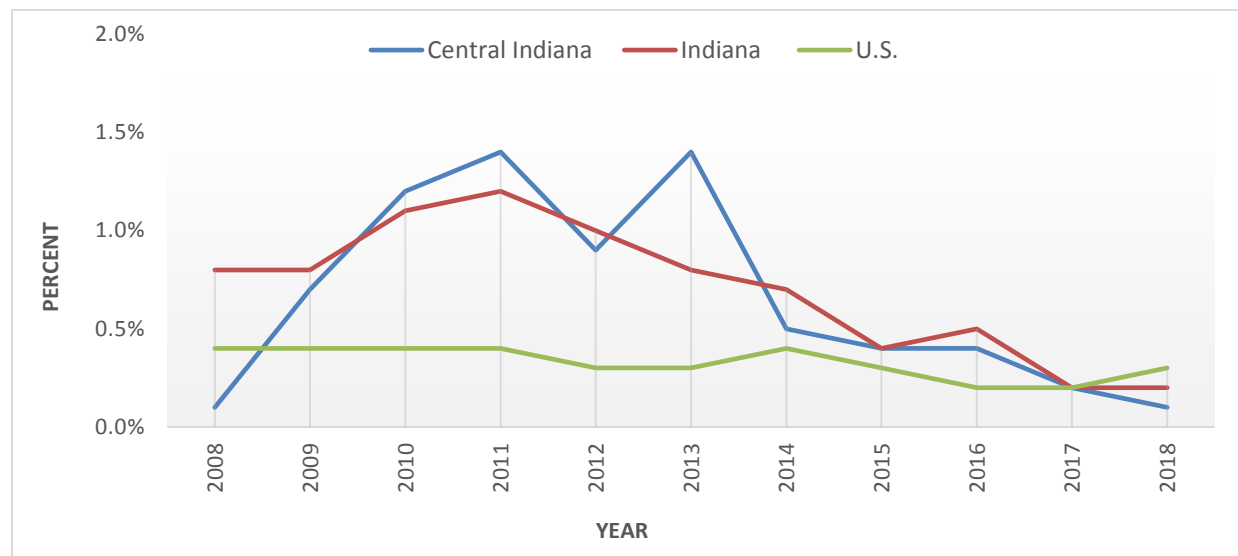
Per INSPECT data from the Indiana State Department of Health, shown in Figure 17, the rate of controlled substance prescriptions dispensed throughout Indiana and Marion County declined throughout 2017 and into the first quarter of 2018.

FIGURE 17: Opioid prescriptions dispensed in Indiana and Marion County, 2017. Reprinted from *ISDH Stats Explorer*, retrieved 9/2/2018 from <https://www.in.gov/isdh/27393.htm> [37]



High-school seniors who report using heroin are a subgroup at high risk of OUD. Following these trends provides insight into future prevalence of OUD in this age cohort. The rates of past month heroin use among 12th graders in Central Indiana exceeded the U.S. rates from 2009 to 2016, but have been declining steadily since 2013. In 2017 the U.S., Indiana, and Central Indiana rates converged at 0.2%, and in 2018 the Indiana and Central Indiana rates fell slightly below the U.S. rate (Figure 18).

FIGURE 18: Percentage of monthly heroin use by 12th graders in Central Indiana*, Indiana, and the United States (Indiana Youth Survey and Monitoring the Future Survey, 2008-2018) [38]



*Central Indiana includes Boone, Hamilton, Hancock, Hendricks, Johnson, Marion, Morgan, and Shelby County.

IS TREATMENT CAPACITY SUFFICIENT TO MEET THE NEEDS OF PEOPLE WITH OUD?

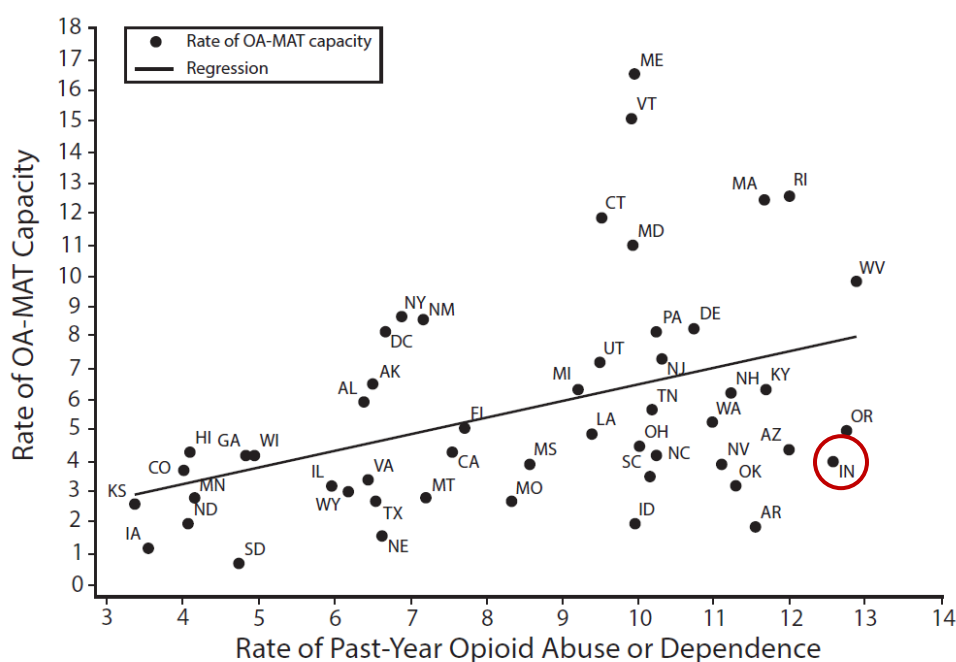
Substance use disorder is a chronic disease that is “complex but treatable” [39]. However, only 18% of people in the U.S. who needed treatment for a substance use disorder in 2016 reported receiving it during that year [40].

To assess whether or not we have sufficient treatment capacity to meet the needs of people with opioid use disorder (OUD) first requires us to know how many people are affected by it. Determining the number of people diagnosed with OUD is more an art than a science. Using medical diagnoses or existing treatment data would greatly underestimate the prevalence of OUD as there are many who are not ready to access care, or not able to do so for reasons discussed elsewhere in this report. Although there are surveys that capture estimates of opioid misuse, we were unable to find Indiana-level data documenting numbers of people with OUD that included both prescription and illicit opioids. Estimates of numbers of people with OUD have been loosely calculated based on survey data about opioid misuse [41]. They are also informed using other available data sources, including drug overdose deaths, ED visits and hospitalizations for issues related to opioid use, and rates of acute hepatitis C infection.

Using available data from the 2012 National Survey on Drug Use and Health, researchers graphed rates of past-year opioid abuse or dependence by state against the rate of opioid agonist MAT (buprenorphine or methadone) capacity in the state [42]. Figure 19 shows the relationship between the need for treatment, based on prevalence of OUD in each state in 2012 (horizontal axis), and each state’s capacity for effective medical treatment in 2012 (vertical axis). Indiana, as circled in red (Figure 19) had a high need based on

the prevalence of OUD, but a low capacity for effective medical treatment. The 2012 Indiana and U.S. estimates from this study are shown in Table 4. There are, however, no current data that are directly comparable to those reported in the study for 2012 (Table 4). The 2015-2016 National Survey on Drug Use and Health captured only prevalence of past year pain reliever use disorder, a rate that does not include abuse, only dependence, and also does not include heroin.

FIGURE 19: Comparison of state rates of past-year opioid abuse or dependence and capacity for opioid agonist medication-assisted treatment: United States, 2012. Reprinted from *National and State Treatment Need and Capacity for Opioid Agonist Medication-Assisted Treatment* by Jones et al, American Journal of Public Health, August 2015. Retrieved from <http://doi.org/10.2105/AJPH.2015.302664>. Copyright 2015, American Journal of Public Health. [42]



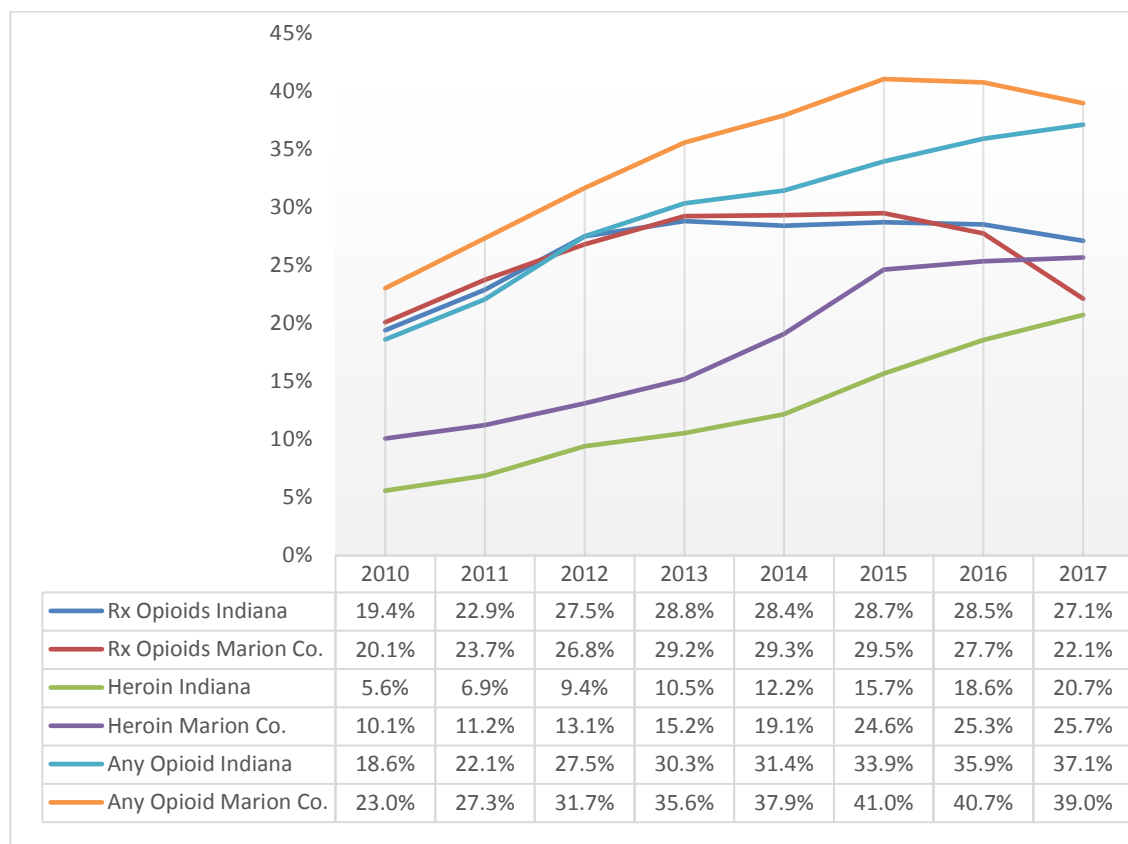
Note. OA-MAT = opioid agonist medication-assisted treatment.

TABLE 4: Estimates of Indiana and U.S. prevalence of Opioid Use Disorder, 2012[42]

2012	Past-Year Opioid Abuse or Dependence Rate per 1,000 Persons Aged ≥ 12 (95% CI)
U.S.	8.3 (7.8, 8.9)
Indiana	12.6 (8.6, 18.4)

While we do not have good current estimates for the prevalence of OUD, we have some data to show trends in the proportion of treatment admissions for OUD. The Treatment Episode Data Set (TEDS)⁵ provides information on treatment *admissions* (not unique persons) to publicly-funded programs for people with substance use disorders; i.e., those who have become dependent on alcohol or drugs. Though this data set is not representative of all people in treatment, it is one of the few data sources that can offer national, state, and county-level comparisons, provide demographic information on those receiving services, and identify drug trends. The percentage of substance use treatment admissions with reported opioid misuse increased substantially in Marion County and Indiana from 2010 to 2017, although the increase stalled and leveled off in Marion County after 2015 (Figure 20). In Marion County, heroin use (25.7%) was more frequently reported at treatment admission than prescription opioid misuse (22.1%), while throughout the state, the opposite was true (heroin: 20.7%; prescription opioids: 27.1%). For details, refer to Figure 20 [43].

FIGURE 20: Percentage of treatment episodes with reported misuse of prescription (Rx) opioids, heroin, and any opioid use reported at treatment admission (Treatment Episode Data Set, 2010-2017) [43]



⁵ TEDS is a national database maintained by the Substance Abuse and Mental Health Services Administration (SAMHSA). It collects information on individuals receiving substance use treatment services. It must be noted that the information represents admissions rather than individuals and, thus, individuals could be admitted to treatment more than once a year. In Indiana, the data are collected by the Division of Mental Health and Addiction (DMHA) and submitted to SAMHSA. DMHA collects the information from publicly funded treatment providers on clients whose income is at or below 200% of the federal poverty level.

Note: Rx opioid and heroin use are not mutually exclusive; i.e., a person can report using both. Any opioid use includes the categories Rx opioids and heroin.

Most treatment admissions for opioid misuse at these facilities were among persons of white race and between the ages of 25 and 34 years. More than half of statewide admissions for OUD treatment were among males (57.3%), while less than half of admissions in Marion County were among males (46.0%).

Information on the treatment capacity in Indiana are available from the National Survey of Substance Abuse Treatment Services (N-SSATS), an annual survey that collects data on the location, characteristics, and utilization of alcohol and drug treatment facilities and services throughout the United States. In 2016, Indiana had 13 opioid treatment programs (OTPs) that were overseen by the State. Furthermore, 324 healthcare providers were licensed to provide office-based buprenorphine prescriptions for the treatment of opioid use disorder. In comparison to surrounding states, the Indiana and Marion County rate of OTPs was lower than all states but Ohio. Indiana's rate of buprenorphine providers was lower than all states but Illinois; yet Marion County was higher than Illinois, Indiana, and Michigan (Table 4).

It should be noted that five additional OTPs were added in Indiana during 2017-18. These are not reflected in Table 4 because we report capacity across states last known from the N-SSATS for 2016. It is possible that other states have also added treatment programs in the intervening time. We also note that one additional OTP is located in Marion County that is operated by the U.S. Veterans Administration, not the State. It also is not reflected in the count for Marion County.

TABLE 4: Number and rate of Opioid Treatment Programs and office-based buprenorphine providers (2016 N-SSATS)

Location	Opioid Treatment Programs		Buprenorphine Providers	
	No.	Rate per 100,000 people	No.	Rate per 100,000 people
Indiana	13	0.20	324	4.86
Ohio	23	0.20	850	7.29
Illinois	64	0.50	496	3.88
Michigan	35	0.35	564	5.66
Kentucky	15	0.34	459	10.31
Marion County, IN	2	0.21	67	7.05

In 2014, the “Provider Availability Index – the number of psychiatrists, psychologists, counselors and social workers available to treat every 1,000 people with SUD” was first developed [44]. In that assessment,

Indiana ranked 4th from the bottom among all states, despite having much greater documented need for treatment providers (Table 5). These data document Indiana’s low starting point, and provide a benchmark, though an updated index would be informative. (Full rankings by state are available from this link: <https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2015/4/01/how-severe-is-the-shortage-of-substance-abuse-specialists>.)

TABLE 5: 2014 Provider Availability Index [44]

Lowest State Index	Indiana State Index	National Average	Highest State Index
11	18	32	70

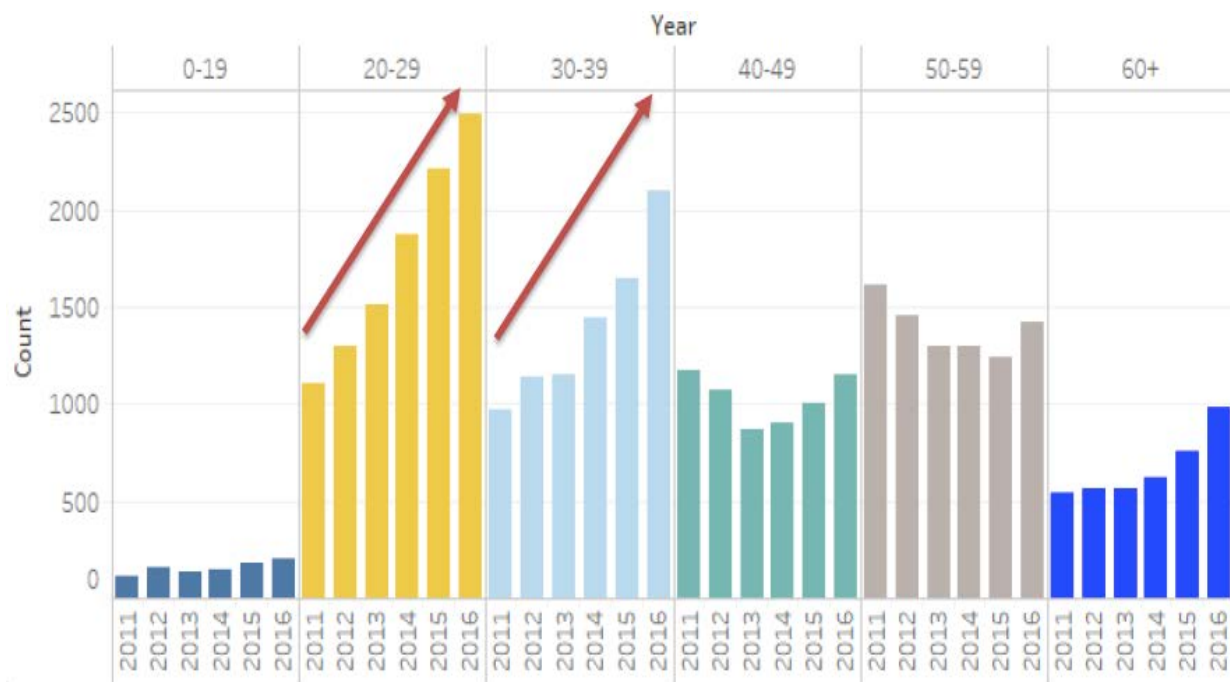
Data from a variety of sources indicate that Indiana’s treatment capacity is clearly insufficient to meet the needs of people with OUD living in the state. While capacity has increased, so has need.

HAVE INFECTIONS RELATED TO INJECTING DRUGS INCREASED?

Sharing needles and other items like cookers and water to inject drugs puts people at risk for getting or transmitting infectious diseases, such as HIV and hepatitis B and C. It is estimated that 50 to 80 percent of people who inject drugs (PWID) will contract one of these viruses within five years of beginning injection drug use [45]. Hepatitis C is most efficiently transmitted via injection drug use. It is rarely sexually transmitted. This makes it a bellwether for identifying populations with high rates of injection drug use and explains the increasing rates of hepatitis C infection in younger adult populations aged 20 – 40 years at highest risk for injection drug use.

FIGURE 21. Hepatitis C acute and chronic cases by age group at time of diagnosis, Indiana, 2011-2016.

Reprinted from the *2016 Viral Hepatitis Epidemiological Profile*, Indiana State Department of Health, retrieved 9/3/2018 from <https://www.in.gov/isdh/27850.htm> [46]

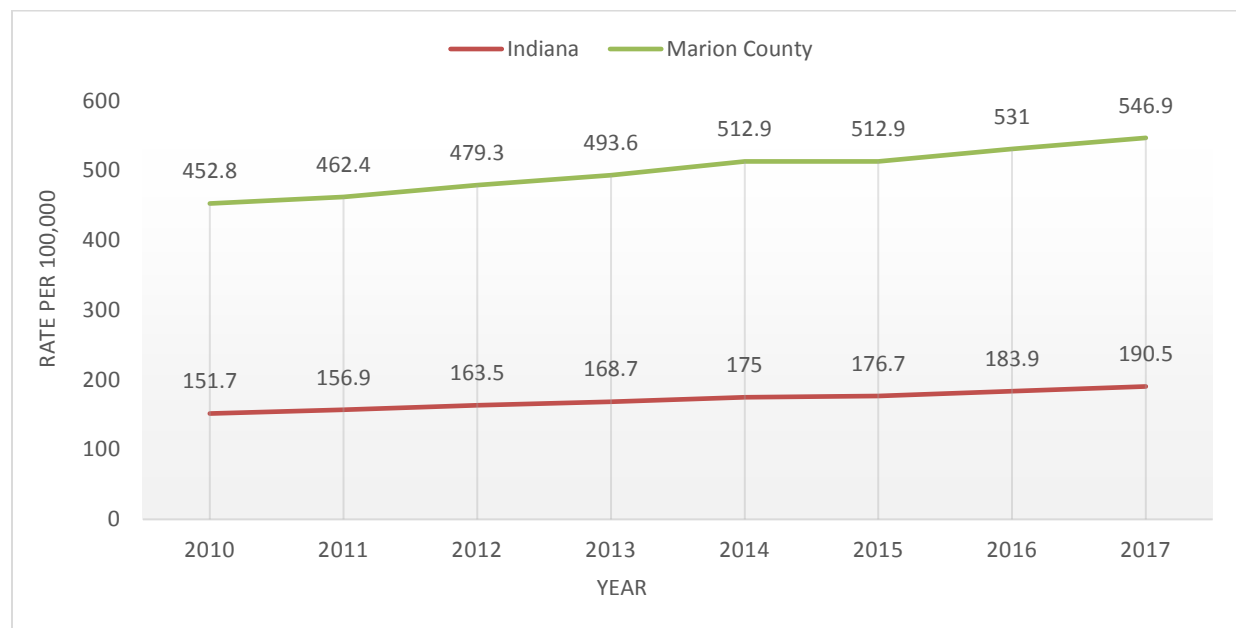


There are effective long-term treatments available for HIV, vaccinations for hepatitis B, and medications to cure hepatitis C. However, the lifetime health effects and costs of these treatments present a significant burden. “The estimated cost of treatment for HIV infection is \$379,668 to \$648,000 per person. The cost of HCV (hepatitis C) treatment ranges from \$54,600 to \$95,000 per 12-week course” [47]. The cost to the individual of untreated hepatitis C is chronic liver disease with possible progression to cirrhosis, liver cancer and death. In fact, hepatitis C is associated with more deaths in the United States than 60 other infectious diseases reported to CDC combined [48].

The largest rural outbreak of HIV in the nation related to injection drug use was identified in Austin, Indiana, in January 2015. Since then, 234 individuals [49] have been diagnosed with HIV, over 90 percent co-infected with hepatitis C, in a county where only 5 individuals had been diagnosed with HIV during the 10-year period, 2004-2013 [50].

As of the end of 2017, there were 5,148 individuals living with HIV in Marion County, including 234 individuals who were newly diagnosed during 2017. The prevalence rate of people living with HIV/AIDS for 2017 was 546.9 per 100,000 in Marion County, an increase of nearly 100 cases per 100,000 since 2010. Indiana as a whole only saw an increase of about 40 cases per 100,000 for the same time period (Figure 22).

FIGURE 22: HIV/AIDS prevalence in Marion County and Indiana, 2010-2017 (ISDH) [18]



Earlier this year (2018), the Marion County Public Health Department (MCPHD) requested approval for a Syringe Services Program “to slow the growing number of HCV (hepatitis C) infections within the county and prevent an HIV outbreak, similar to what transpired during 2015 in Scott County, Indiana, which would come at a crippling cost” [47]. According to the Indiana State Department of Health (ISDH), Marion County reported 1,146 residents with hepatitis C in 2017 [51]. The MCPHD reports that the rate of acute hepatitis C infections in the county increased from 0.6 to 7.6 per 100,000 between 2013 and 2017, a 2017 rate that is 12 times the 2013 rate [47]. Because new hepatitis C infections are often asymptomatic, the CDC estimates that the actual number of people newly infected with hepatitis C is 14 times higher than the number diagnosed [52].

Endocarditis is a serious bacterial infection of the lining of the heart and heart valves that can be deadly. The most common way bacteria enter the blood stream and travel to the heart is through injecting drugs with a needle that is not sterile. Treating endocarditis requires lengthy hospital stays, with an average cost of more than \$120,000 per hospitalization [53]. Repeated episodes of endocarditis can cause permanent damage to heart valves, leading to heart failure and the need for valve replacement surgery [54].

From 2011 to 2015, emergency department (ED) visits in Indiana for endocarditis increased substantially, from a rate of 7.4 per 100,000 to 11.7 per 100,000 persons. During this time, ED visits for endocarditis in Marion County also increased, though less steeply, from 4.0 per 100,000 to 4.8 per 100,000 persons [54]. In 2016, rates of ED visits for endocarditis for Indiana and Marion County were 15.1 per 100,000 and 11.8 per 100,000 respectively. (The U.S. transitioned from ICD-9 CM to ICD-10-CM diagnosis coding on October 1, 2015. Therefore, 2016 rates cannot be compared with rates from prior years.)

HOW MANY INFANTS EXPERIENCE DRUG WITHDRAWAL SYMPTOMS AFTER BIRTH?

Neonatal Abstinence Syndrome (NAS) is a constellation of withdrawal-like symptoms in infants exposed to certain drugs during pregnancy, like opioid pain medications, antidepressants, benzodiazepines, heroin, and alcohol. NAS can occur whether a drug is used licitly for pain management or treatment of OUD, or illicitly. Symptoms of opioid withdrawal in full-term Infants include tremors, irritability, sleep problems, high-pitched crying, hyperactive reflexes, poor feeding, vomiting, diarrhea, and rarely seizures [55].

Estimating the incidence of NAS is challenging for several reasons. Infants of women who do not report prenatal opioid use may be discharged prior to the onset of symptoms. Symptoms of NAS may be subtle, and may go undiagnosed. Indiana hospitals are not required to report infants diagnosed with NAS, and hospital coding for billing purposes may prioritize symptoms of NAS such as respiratory distress, seizure disorder, and poor feeding, but may not include a diagnosis of NAS. Nationally, rates of NAS have increased significantly since the year 2000. Among 28 states with publicly available data, the overall incidence of NAS increased 300 percent between 1999-2013, from 1.5 per 1,000 hospital births in 1999 to 6.0 per 1,000 hospital births in 2013 [56]. Indiana data were not included in this report.

The reported rate of NAS is higher in Marion County than in Indiana, but both local and state rates have increased by similar amount (86%, 87%) comparing the 2013-2014 period to the 2015-2016 period (Table 6). An ISDH pilot program to standardize the identification, treatment and reporting of infants with NAS at Indiana birthing hospitals was launched at four hospitals in 2015 and its expansion will undoubtedly result in more accurate assessments and data collection. However, the dramatic increase in the rate between 2013-2014 and 2015-2016 shown in Table 6 pre-dates any systematic improvements in the reporting of NAS and therefore reflects an increase in the occurrence of NAS.

TABLE 6: Rates of Neonatal Abstinence Syndrome per 1,000 hospital births in Indiana and Marion County, 2013-2014 and 2015-2016 (Indiana State Department of Health)

Neonatal Abstinence Syndrome	2013-2014	2015-2016	Percent increase between time periods
Indiana	10.2 Per 1,000 hospital births 1,712 infants	19.0 Per 1,000 hospital births 3,177 infants	86%
Marion County	13.5 Per 1,000 hospital births 389 infants	25.2 Per 1,000 hospital births 722 infants	87%

Withdrawal symptoms in infants associated with maternal opioid use are manageable with both medical and nonmedical interventions. Studies have found that between 45-75% of infants with NAS require treatment with an opioid medication to ease their symptoms [57–59]. Breastfeeding, skin-to-skin contact, music therapy, and other interventions that promote maternal/infant bonding have been shown to reduce the severity of symptoms and the need for opioid medications, resulting in shorter hospital stays [60, 61].

Management of infants with NAS was estimated to cost the state \$43,385,585 in 2017 due to longer hospital stays and additional care [62]. A study of the Kids' Inpatient Database (2003-2012) found that average length of hospitalization was 17 days for infants with NAS compared to 5 days for those without NAS [63]. Likewise, hospital costs for NAS infants were more than triple that for a non-NAS infant.

WHAT ARE THE ECONOMIC COSTS TO SOCIETY?

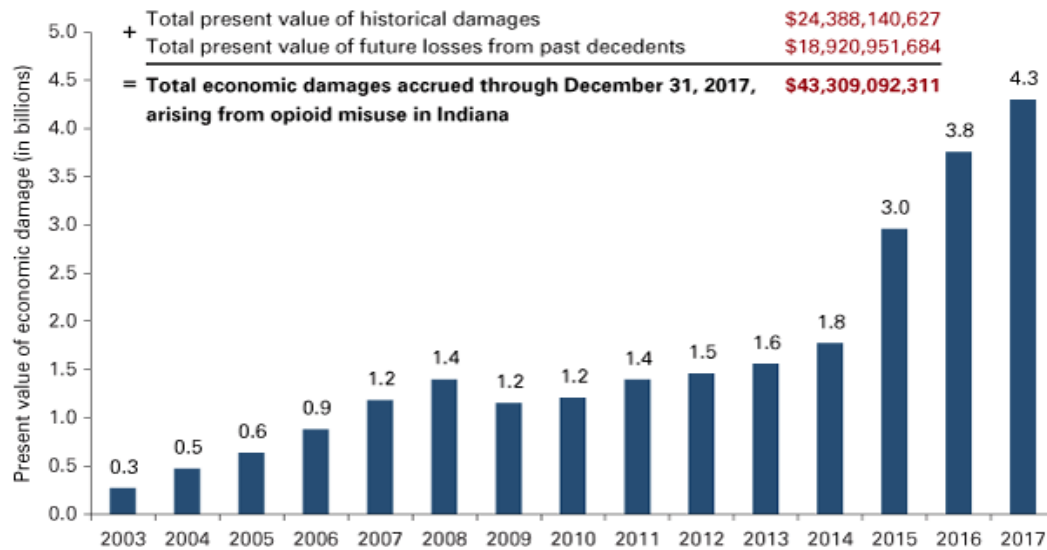
There are many factors that determine just how much the opioid crisis is costing Indiana [64-66]. A study by Brewer and Freeman (2018) found that the state accrued over \$43 billion in economic damages over the past 15 years due to opioid misuse (Figure 23) [66]. This includes estimates of:

1. Loss to the gross state product (GSP) because of the reduction in labor force due to opioid addiction (lost productivity);
2. Loss associated with products and services expended in the opioid epidemic (such as hospitalizations and foster care);
3. Loss of economic contributions due to opioid-related deaths.

FIGURE 23: Annual economic damages stemming from Indiana's opioid epidemic in billions of 2017 dollars.

Reprinted from *Cumulative economic damages from 15 years of opioid misuse throughout Indiana*, by Ryan Brewer and Kayla Freeman, *Indiana Business Review*, 2018 retrieved from

<http://www.ibrc.indiana.edu/ibr/2018/spring/article1.html> [66]

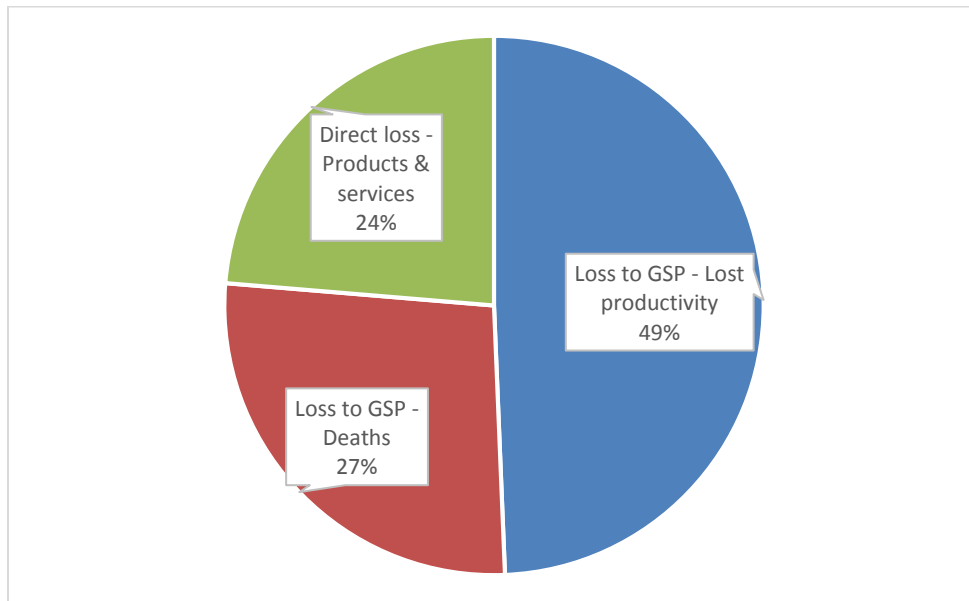


Findings from the study reflect a broad scope of economic damages. Table 7 lists categorical estimated costs for 2017, summing to nearly \$4.3 billion [65, 66].

TABLE 7: Estimated economic damages stemming from Indiana's opioid epidemic in 2017 [66]

Estimated Economic Damages	2017	Percentage of Total Annual Cost
Acute hospitalization	\$625,906,625	14.9%
Incarceration	\$93,850,932	2.2%
Foster care	\$73,497,347	1.8%
Property losses	\$63,771,612	1.5%
Long-term treatment	\$43,417,692	1.0%
Neonatal abstinence syndrome	\$43,385,585	1.0%
HIV	\$17,448,276	0.4%
Arrest and court cost	\$17,232,788	0.4%
Funerals	\$8,557,004	0.2%
First response	\$5,114,570	0.1%
Total direct damages	\$992,182,430	23.7%
Loss to GSP from deaths	\$1,130,714,333	27.0%
Loss to GSP (labor markets)	\$2,070,922,127	49.4%
Total annual cost (direct and indirect)	\$4,193,818,890	
Adjusted to represent value as of December 31, 2017	4,297,994,441	

FIGURE 24: Categorical breakdown of 2017 opioid-related economic damages [62]



Unemployment resulting from opioid use disorder can impair the labor market. Most of the economic damages are attributable to loss in Gross State Product (GSP) due to a reduced labor force and productivity (49%). Additional losses to the GSP resulting from deaths account for 27% of annual damages. Direct damages, such as costs associated with the provision of products and services to combat the opioid crisis, account for 24% of annual damages [66].

Among direct costs, hospitalizations account for the largest proportion (14.9%). Caring for children affected by the opioid epidemic has also contributed to direct costs. The number of children in foster care due to drug misuse by parents and caregivers increased from 2,837 in 2003 to almost 9,000 in 2016 in Indiana. In 2003, only about 26% of the 2,837 children in foster care were placed there due to parental opioid misuse; however, in 2016 that percentage increased to almost 60% [66]. Arrests and court costs and costs of incarceration for opioid-related crimes have also increased substantially over time.

Of the \$43.3 billion in estimated economic damages to Indiana from 2003 through 2017, the largest share was incurred by Marion County, with total damages close to \$7.4 billion. This is not surprising given that Marion County is Indiana's largest, most populous county. However, in per capita damages, Marion County ranked 28th out of the 92 counties, with estimated cumulative opioid-related costs of \$7,759 per capita over the period from 2003 to 2017 [67].

KEY TAKEAWAYS ABOUT SCOPE

- People are dying of drug overdoses at a higher rate in Marion County than in the state or the nation. The 2017 rate of drug overdose deaths in Marion County (37.4 per 100,000) is higher than the Indiana rate (25.7 per 100,000), and both are higher than the U.S. rate (22.4 per 100,000).
- Like the rest of the nation, drug overdose deaths have increased significantly in Indiana and Marion County since 1999. However, while some parts of the country are beginning to see reductions, Indiana is not. More than 1,700 Hoosiers died from drug overdose in 2017, reaching an all-time high. There was a 75% increase in the drug overdose death rate in the state from 2011 to 2017, and an increase of more than 15% between 2016 and 2017 alone. Drug overdose deaths in Marion County have also increased by more than 123% from 2011 to 2017, with over 350 residents dying in 2017.
- Toxicology screens identified opioids as the most common cause of overdose death in Marion County, involved in 81% of all fatal overdoses. While there has been a decline in the involvement of prescription opioids in overdose fatalities since 2011, there has been a rapid rise in the presence of the synthetic narcotic, fentanyl. Fentanyl was present in 46% of all fatal overdoses in Marion County in 2017.
- Marion County has higher rates of hospitalization and emergency department visits for non-fatal overdoses than across Indiana (2016). This may reflect both higher rates of OUD and greater access to emergency care and naloxone in this urban area contrasted to rural areas of the state. Doses of naloxone dispensed by the Indianapolis EMS have increased four-fold since 2013.
- Opioid misuse can affect anyone; however, certain groups are more vulnerable. In Marion County fatal overdoses in 2017, people who were white, male, and between the ages of 25-54 were disproportionately represented. In recent years, there has been a marked increase in fatal overdoses among black Indiana and Marion County residents, a trend also seen nationally. From national data, we see that people with chronic medical conditions or mental health problems, those who live in poverty, or those who are employed in certain occupations are more likely to misuse opioids.
- There are signs of progress in prevention with falling opioid prescription fill rates and falling rates of heroin use among 12th graders. However, prevalence of prescription opioid misuse among young adults age 18-25 remains higher than the national average.

- Despite a significantly higher burden of OUD in Indiana than most of the nation, the state lags behind in access to effective treatment. Compared to other states in the Midwest, Indiana has fewer providers per capita authorized to prescribe buprenorphine than every state but Illinois, yet a higher burden of unmet need.
- Nearly four out of ten people seeking treatment for addiction at a publicly-funded treatment program report opioid misuse at admission. While treatment admissions for prescription opioids have decreased in Indiana and Marion County, admissions for heroin have increased.
- Increases in diagnoses of hepatitis C in communities is a bellwether for increased rates of injection drug use. Both Indiana and Marion County have experienced increases in acute HIV, hepatitis C, and endocarditis infections; many of these infections have resulted from using unsterile needles and other items used to inject opioids and other drugs. These infections are entirely preventable. Not only are these infections potentially deadly, medical treatment for hepatitis C, endocarditis, HIV and the complications of these infections are also costly for communities and the state.
- There has been a significant rise in the number of infants experiencing drug withdrawal symptoms after birth who are diagnosed with Neonatal Abstinence Syndrome in both Marion County and Indiana. These babies require longer hospital stays and ongoing care to minimize the harm of drug exposure on their health and wellbeing.
- The opioid epidemic was responsible for an estimated \$4.3 billion in economic damages to the state of Indiana in 2017 alone (adjusted value as of 12/31/17). Of this, 24%, or just over \$1 billion, arises from direct damages, such as costs associated with acute hospitalization, incarceration, neonatal abstinence system, and foster care. The remaining 76% (more than \$3 billion) results from lost productivity. Over the past 15 years, the epidemic has been responsible for an estimated \$43 billion in economic damages statewide. The largest share was incurred in Marion County, with total damages close to \$7.4 billion or \$7,759 per Marion County resident.

“No Matter What, He’s My Child

Taylor Newkirk and Jackie Crane

TAYLOR NEWKIRK

I started using opioids around age 13. I tried them because I knew that I liked how prescription cough syrup felt and I was told they were the same drug. Also, they were easy to get at school.

When I got to high school, I was taking painkillers every day. I would check medicine cabinets everywhere I went. After a few years, the pills were getting harder to find and heroin showed up. I tried it for the first time. I started by snorting it, then by 21 I was using it intravenously.

I was on suboxone for going on four years and my doctor said he had to taper me off. I was fine until the day came that I wasn’t taking anything at all and withdrawal hit.

I knew I could take away the pain.

I got some heroin and did half of it. When I got home I did the rest of the 40 bag and all I remember is waking up on the bathroom floor covered in blood with my family and cops all around.

JACKIE CRANE

I was shocked! I could not believe I had a child who was using heroin. I was a nurse and never saw the signs. He lived with me and I never suspected it.

I’m a public health nurse and we had a training session on how to administer Narcan®. We had several kits donated to our department and I took one home with me because I knew the kids knew people that were using heroin. I wanted to have some on hand in case anyone needed it. I never thought I would ever be using it on one of my children.

His grandmother called me and said she just got home and found Taylor unconscious on the bathroom floor. I called my coworker on the way there and asked her to refresh my memory on how to use the Narcan®. I was scared to death he would die before I reached him because we did not know how long he had been home alone.



I was so scared that I was going to watch my son die right in front of me. I called 911 and the dispatcher asked a million questions before sending the police. When the police arrived, they treated it like a crime scene investigation instead of the medical emergency that it was.

It was ugly and wrong the way they treated me and Taylor, but he finally woke up. When they lifted him up off the floor, I saw blood everywhere. I wasn’t sure if he had taken something or he had tried to kill himself. They put him in handcuffs and took him to the hospital and would not let me go with him.

To know that your child is in jail is indescribable. You can’t help them, they are like animals in a pen. You see them behind a glass wall and talk to them on a phone with no physical contact when all you want to do is hug them and tell them everything is going to be ok. Another side of you is thankful that at least they are not using.

The stigma and shame attached to being a person with a substance use disease is hard enough to deal with, let alone dealing with the shame of being in jail for that action. I did not tell my family what had happened. I definitely did not want anyone talking bad about Taylor. No matter what he’s my child and I would do anything to protect him.

THE LANDSCAPE OF STRATEGIES TO ADDRESS THE OPIOID CRISIS

An effective response to the opioid crisis will require a strong, coordinated response across the spectrum of prevention, treatment, and harm reduction strategies. The pace at which prevention and treatment approaches are being adapted or developed, as well as limited access and time to review scientific literature, make it difficult for those on the ground to assess what works and what does not. Furthermore, what works does not always work in every context, and it can be difficult to determine which pieces of an intervention (if any) can or should be implemented in a specific state or community. **Therefore, the goal of this section is to present the landscape of strategies currently being used to combat the opioid epidemic nationally in light of what is known about their potential to help or harm individuals and communities.**

While the focus of this section is the scientific evidence underpinning specific strategies, we present this evidence in a local context to lend deeper understanding. That context includes the identification of initiatives applying each strategy in Marion County or statewide as well as the perspectives of local key informants such as persons with OUD or professionals working in the field.

Approach

Information to identify existing strategies and assess the landscape of need in Marion County was collected through four (4) activities: (1) We identified unique strategies known to us through our work in the field and assessed the evidence related to them; (2) We conducted a search of recent academic literature review articles on opioid-related interventions; (3) We conducted a search of news articles, government documents and organizational reports to find further information on the interventions; and (4) We conducted interviews with key informants and supplemented this information with a focus group discussion conducted with people with OUD, some of whom are in recovery.⁶

Strategies we identified were then rated based on two factors. First, we rated the level of evidence for each strategy's ability to obtain desired outcomes as being:

- *Outstanding* = There is consensus in the scientific literature that the strategy has the ability to obtain desired outcomes.
- *Promising* = There is developing and/or weak evidence within the scientific literature to support the strategy's ability to obtain desired outcomes.
- *Concerning* = There is no evidence within the scientific literature to support the strategy's ability to obtain desired outcomes OR there is scientific evidence that the strategy does not lead to desired outcomes.

⁶ Focus groups of people living with OUD were conducted by the Patient Engagement Core of Indiana CTSI's Community Health Engagement Program. These data were included in the thematic analysis.

Second, we rated each strategy for the level of potential risk for serious harms (e.g., overdose, death, contraction of communicable diseases) that could result to individual(s)⁷ or the community as being:

- *Low*
- *Unknown*
- *High*

By combining the evidence for outcomes with the level of potential risk, we assigned grades/ratings to each strategy on an A-F scale, as follows (**Table 9**):

A = Outstanding evidence and low risk of harm
B = Promising evidence and low risk of harm
C = Promising evidence and unknown risk of harm
D = Promising evidence and high risk of harm
F = Concerning evidence and high risk of harm

TABLE 9: Strategy rating grid

Risk of serious harm	Evidence for reaching desired outcomes		
	Outstanding	Promising	Concerning
Low	A	B	n/a
Unknown	n/a	C	n/a
High	n/a	D	F

In the sections that follow, we present the review of strategies grouped according to their main focus:

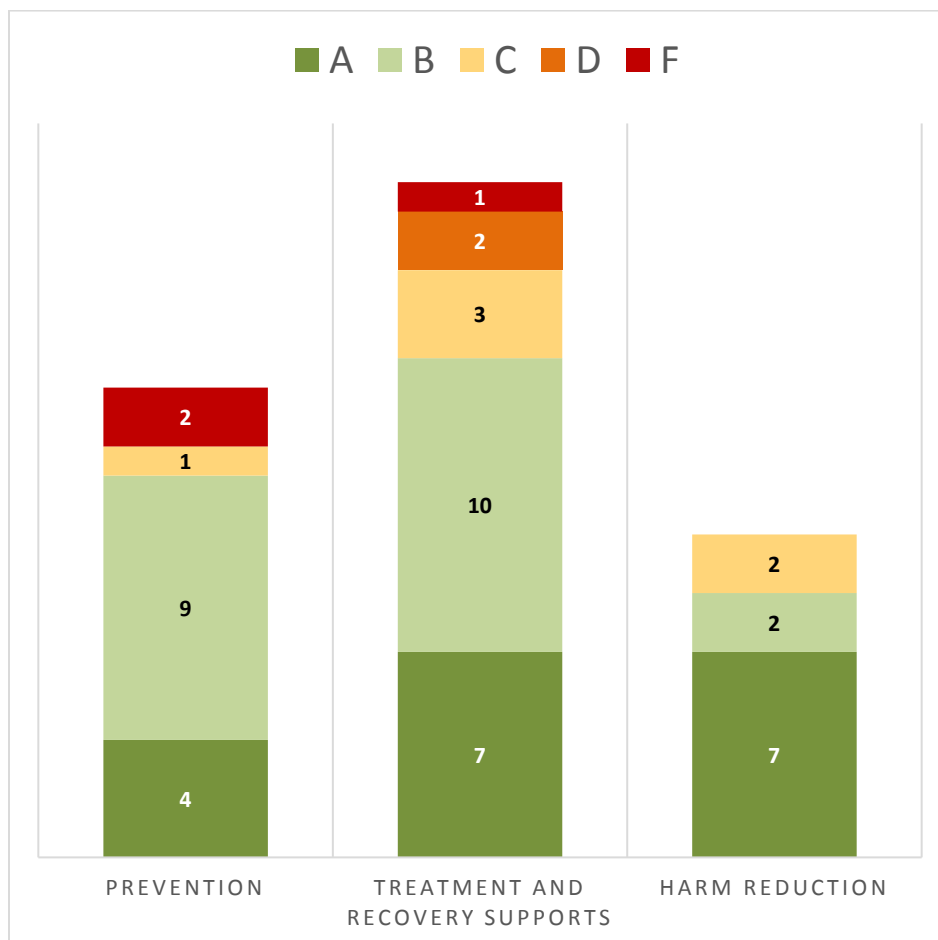
- Strategies aimed at **preventing** the onset of opioid misuse and/or opioid use disorder;
- Strategies aimed at **treating** opioid use disorder; and
- Strategies aimed at **reducing harm** for those who are not ready for treatment or those who are on the recovery path and at risk for returning to use.

Strategies we present in one category can overlap and extend into others, as there are often fuzzy boundaries between them; however, these three approaches are common avenues to disrupt the epidemic. In total, we identified 50 strategies. Thirty-nine (39) strategies were identified with outstanding or promising evidence *and* low risk of harm (rated A or B): 13 for prevention, 17 for treatment and

⁷ We specifically focused on individual harms for *people who use opioids*, as strategies identified have different levels of risk depending on the substance(s) involved.

recovery supports, and 9 for harm reduction. We rated three (3) strategies as F, due to concerning evidence and high risk of harm. Of the remaining strategies, six (6) were C-rated, indicating promising evidence with unknown risk of harm, and two (2) were D-rated, indicating promising evidence but high risk of harms if implemented without targeted modifications.

FIGURE 25: Strategies by category and rating



WHAT WORKS FOR PREVENTION?

The prevention of opioid misuse is critical to reducing subsequent waves of opioid use disorder. Where primary prevention strategies are focused on circumventing initial misuse of prescription opioids or use of illicit opioids, secondary prevention strategies are focused on preventing the progression of this misuse/use to a person with OUD. Monies directed toward effective prevention strategies are monies well-spent, as they can prevent death due to drug overdose and avert dollars being lost to cover the cost of future treatment, criminal activities associated with drug use, and lost productivity among those who might be unable to work due to their addiction. (For a listing of prevention strategies by rating, see Appendix C1.)

A**Strategies with outstanding evidence and low risk of harm.**

Four (4) prevention strategies were A-rated.

Prescription Drug Monitoring Programs (PDMP) are state-level databases that track prescribing and dispensing information for controlled substances, including opioids. While PDMPs are effective at reducing problematic prescribing that can lead to substance misuse, research has found many states have not implemented all of the PDMP best practices linked to reductions in problematic prescribing [68–73]. The Indiana Scheduled Prescription Electronic Collection and Tracking Program (INSPECT) [41, 42], administered by the Indiana Professional Licensing Agency, is the State’s PDMP. Although INSPECT has been enhanced to include near-real time data reporting and there are initial efforts at Electronic Health Record (EHR) integration, it *remains limited as a public health tool* because of various organizational and federal policies (e.g., HIPAA, CFR 42) that prevent meaningful data sharing between state agencies. Additionally, research has demonstrated mandating prescriber use of PDMPs is an effective tool for reducing problematic prescribing [76, 77]. Indiana does not currently mandate prescriber PDMP use; however, INSPECT has integrated other identified PDMP best practices including [73]: physician delegation of medical staff to access INSPECT, unsolicited reports that flag potentially harmful prescribing activity, “real-time” data reporting (within 24 hours), streamlined provider enrollment into the system, and educational activities.

There are several **school-based programs** with strong evidence for effectiveness. Some of the most successful evidence-based school prevention programs include the Botvin LifeSkills and Project ALERT [78, 79]. However, care should be taken when selecting school-based prevention programs, as not all are evidence-based [80], and some might even cause harm [81]. For instance, the DARE (Drug Abuse Resistance Education) program, widely disseminated across the United States, has limited support for its effectiveness [80]. Effective school-based programs teach students decision-making, communication, emotional self-regulation and other skills, in addition to providing information about dangers associated with substance use. Within Marion County, the Richard M. Fairbanks Foundation awarded more than \$10 million to support schools in selecting and implementing school prevention programs that are evidence-based [82]. There is currently a lack of consistent state and federal funding for school-based prevention efforts.

Family-based programs focus on development of parenting skills and adolescent substance refusal skills, typically implemented with families of youth who exhibit high-risk behaviors (sometimes combined with classroom strategy components) [83]. The Strengthening Families Program is one such program that has been shown to reduce prescription drug misuse up to 13 years after intervention delivery [84, 85]. Community Reinforcement and Family Training (CRAFT) is an evidence-based family-based program that prepares families to help motivate people with SUD into treatment [86–88].

Drug take-back programs attempt to limit the supply of prescription opioids in communities by providing locations where unused medications can be dropped off for proper disposal. While there is no direct evidence of drug take-back programs direct impact on incidence of OUD or overdose fatality to date, they are demonstrated to meet their primary goal of reducing the number of drugs on the street [89–91].

Therefore, they are a key tool in the fight against opioid trafficking. A list of prescription drug take-back locations across Indiana is listed on Indiana’s Bitter Pill website [92]. CVS⁸ and Walgreens⁹ pharmacies also have disposal programs with medication drop-off locations throughout the state [93].

B	Strategies with promising evidence and low risk of harm. Nine (9) prevention strategies were B-rated. Many of these strategies fall under the banner of surveillance or monitoring programs.
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Drug utilization reviews (DUR) are programs with promising evidence that track and send information to physicians about their individual prescribing patterns with the goal that high prescribers will change their behaviors. Reviews are typically administered by managed care insurance providers or agencies like Medicaid. Research specific to opioids is limited but demonstrates success in lowering problematic prescribing and suggests further targeting of physicians whose behaviors do not change in response to DUR information [94]. One recent study utilizing DUR data found alerts sent to providers when a patient to whom they prescribed controlled substances dies of an overdose are effective at changing prescribing behavior [95]. Indiana Medicaid has a DUR review board, which does have opioid-related review procedures in place [96].

Drug diversion control refers to practices aimed at reducing the number of controlled prescription drugs in circulation outside of legitimate medical prescribing [97]. At the medical practice level, supply-side opioid diversion control focuses on office-based practices like pill counting and urine testing to ensure patients are taking prescribed medications and not selling them. From a criminal justice perspective, supply-side diversion control includes shutting down “pill mills” and arresting dealers of prescription drugs. Acute and chronic pain prescribing guidelines and drug take back programs also assist in diversion prevention. Furthermore, increasing access to evidence-based treatment will reduce demand for diversion [97]. Diversion control is a routine practice in healthcare and criminal justice organizations and does occur in Marion County; however, a complete census and assessment of the quality of these programs is beyond the scope of this report.

Overdose fatality review (OFR) teams provide communities with a process to study deaths caused by drug overdose in order to identify opportunities to improve policies, systems, and operations to prevent similar deaths [98, 99]. OFR teams consist of representatives from various sectors, typically at the county level (e.g., public health, medicine, social services, legal services). Indiana implemented a pilot OFR program in 2017 that currently consists of four counties, not including Marion County [100, 101]. This program is scheduled to last through August 2019 and is focused on identifying potential barriers and facilitators to further OFR expansion. Currently identified barriers include: lack of a statutory mandate to create and maintain OFRs, lack of representation from key agencies/organizations such as the county

⁸ CVS’s drop box locations can be found here: <https://www.cvs.com/content/safer-communities-locate>

⁹ Walgreens’ medication disposal locations can be found here:
<https://www.walgreens.com/storelocator/find.jsp?RxDisposal=true>

health department or county coroner, and health data privacy concerns that prevent sharing of meaningful information.

Overdose toxicology surveillance requires coroners to initiate and report results of toxicology testing when an overdose death is suspected. Research conducted in Marion County has demonstrated significant differences in the information contained in official death records and toxicology reports [102]. Improving accuracy of overdose death reporting is essential for ensuring a timely public health response. As of July 1, 2018, Indiana coroners are required to obtain information from INSPECT and report toxicology results to ISDH.

College programs focus on strategies to reduce misuse among students at institutions of higher education. While effective programs have been identified, outcomes are related to misuse of drugs other than opioids (e.g., alcohol and cannabis) [103]. The U.S. Department of Education has published a document outlining model college substance misuse prevention programming. However, the strength and type of the evidence they refer to in the report varies by intervention, and these programs are largely focused on alcohol use with little discussion of their approach to drug use [104]. None of the programs this report mentions were from Indiana.

Drug-free workplaces encompass a wide variety of programs and activities from prevention education to workplace drug testing. There is a weak evidence base for these programs; specifically related to drug testing, the benefits observed by the available research might be limited to specific industries [105–107]. SAMHSA recommends selecting general evidence-based prevention strategies for implementation in workplaces and does not highlight any intervention specifically targeted to the work setting [108]. The Indiana Workforce Recovery Initiative, established in 2018, provides a list of actions employers can take to “improve awareness, update company policies and offer support” to address opioid misuse in the workplace [109]. Drug-free workplace initiatives can be implemented in tandem with employee assistance programs (see below) to address both prevention and treatment.

Physician/prescriber education has been shown in some studies to reduce overprescribing of opioids through training related to proper prescribing practices [68, 110, 111]. Physician education will likely reap greater benefits if paired with other approaches, as training has been demonstrated to be a necessary implementation strategy for a wide range of evidence-based practices that is ineffective when used alone [112]. A specific type of physician education that has been demonstrated to effectively reduce problematic prescribing in general and holds promise for preventing problematic opioid prescribing is *academic/public health detailing* [113–115]. This approach uses trained professionals who “drop in” to a physician’s office and have discussions about proper drug prescribing and might highlight prescribing trends in the physician’s community. The Indiana State Medical Association (ISMA) has developed a physician resource center that provides educational materials on opioid prescribing for physicians [116], and they have been active in disseminating and providing education around Indiana’s opioid prescribing guidelines. While we could find no formal studies assessing its impact, it is recommended prescribing and SUD should be integrated in formal medical education (in addition to continuing professional education highlighted above).

Guidelines for pain prescribing can provide physicians with a roadmap for both chronic and acute prescribing. Indiana’s guidelines and final rule for pain management prescribing were implemented in 2013 and pre-exist those developed by the Centers for Disease Control and Prevention (CDC) [117–120]. Early policy evaluation has demonstrated significant improvements in indicators related to problematic prescribing [121], but further evaluation is necessary to determine the extent to which these changes were attributable to guideline implementation or other factors. Indiana’s acute pain prescribing law limits initial opioid prescriptions to a 7-day period, reducing the number of unused pills available for diversion. It requires providers and dispensers to reduce the quantity of opioids prescribed if patients or their guardians request fewer pills. These guidelines are only effective to the extent they are observed; however, physicians in Indiana are able to exercise considerable professional discretion in their practice and therefore might not follow them.

Public educational campaigns represent a broad grouping of strategies aimed at promoting health literacy, reducing stigma, and normalizing healthy behaviors. A number of factors can impact effectiveness of these approaches [122, 123], and *care should be taken to ensure any messages are crafted appropriately for the context in which they are delivered* [124, 125]. The most recent of these approaches used in Indiana has been the implementation of a humanizing campaign called “Know the O Facts” by the Division of Mental Health and Addiction (DMHA), which is supported by federal funding [126–128].

C	Strategies with promising evidence and unknown risk of harm. One (1) prevention strategy was C-rated.
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Cannabidiol (CBD) oil is a non-psychoactive component in cannabis that is thought to reduce chronic pain. (There are also claims it can be used to treat OUD, but these are not as prevalent as the chronic pain claims.) However, current scientific evidence is weak and existing studies have utilized a CBD compound that includes tetrahydrocannabinol (THC; the psychoactive component of cannabis) [129]. Despite this, CBD is already legal in all 50 states. While risk associated with ingesting CBD is low, a significant risk in promoting it is that people experiencing chronic pain might use it in lieu of seeking out appropriate evidence-based care that could lead to more beneficial results. As such, *more research should be conducted to investigate the extent claims supporting it* [130].

D	Strategies with promising evidence and high risk of harm. No prevention strategies were D-rated.
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F	Strategies with concerning evidence and high risk of harm. Two (2) prevention strategies were F-rated.
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Drug paraphernalia laws aim to dissuade drug use by making it illegal to carry equipment associated with its consumption, and they received an F-rating. Unfortunately, these laws can lead to significant potential harms when they discourage people from carrying sterile drug use equipment that can prevent the spread of communicable disease [131–133]. Indiana considers possession of paraphernalia to be a punishable offense [134].

Overdose fatality/homicide laws establish that a charge of drug-induced homicide may be brought against opioid suppliers in cases where that substance can be linked to a fatal overdose, and they received an F-rating. More than 20 states have drug-induced homicide laws in place. While these laws are promoted as punishing illicit drug dealers, critics claim such laws are expensive in implementation; tend to be used disproportionately to prosecute people of color, along with the friends, families, and those who would use drugs with the decedent; and increase risks for fatal overdoses [135, 136]. Indiana implemented such a law in July 2018 [137]. One potential negative consequence of this law is that it will result in fewer people calling 911 when an overdose occurs because of fear of prosecution [135], which could potentially lead to a rise in overdose fatality.

WHAT ARE KEY INFORMANT PERSPECTIVES ON PREVENTION?

We reviewed the perspectives of key informants to identify prominent themes, consider how these themes aligned with our review of the evidence, and recognize instructive local context or emerging ideas.

Informants interviewed discussed several issues relating to prevention. The need for broader public **education** in order to reduce stigma was highlighted. Lack of knowledge was seen as contributing to stigma towards people living with opioid use disorder and people engaged in MAT. The need for more school- and employment-based education was identified. Informants suggested that schools be mandated to engage in prevention activities and teach drug education. While the need for more evidence-based school prevention was not specifically noted, it was pointed out that DARE is an ineffective school-based strategy that should not be funded. Informants also thought there should be more education for healthcare providers, with an emphasis on alternative forms of chronic pain management.

Informants discussed the need for better data to improve planning and evaluation of the **prevention infrastructure**, which underscores the need for proper data sharing between agencies, particularly as it relates to PDMP data. Shortages of trained prevention professionals and funding to appropriately enact prevention plans was discussed, as well as the need for more law enforcement professionals to remove opioids from the streets. However, their discussions also demonstrated that they believed criminal justice efforts should not be implemented in such a way that they would criminalize people with SUD.

Informants thought the social determinants of substance use disorder, specifically previous exposure to substance use in the home and child abuse or trauma, should be taken into greater account when designing prevention activities. Three interventions were mentioned that were not identified in our strategy review because they are not directly connected to opioid use prevention. Specific approaches aimed at youth that were mentioned included addressing adverse childhood experiences [138–140] that

could lead to substance misuse and the PAX Institute’s Good Behavior Game, which is an evidence-based classroom management tool that integrates trauma informed care [141]. Regarding adults, an informant discussed PsySTART, which is a triage program that links mental health services to disaster care [142], and it is currently being utilized by Indiana’s DMHA.

Finally, informants discussed the need for prevention programming for **specific populations** they viewed at high risk for opioid misuse, including children and adolescents in home environments where opioid use is occurring, young adults with children who might have trouble coping with the demands of parenthood, adults with limited job prospects and low education, people experiencing homelessness, and people with a history of incarceration.

Effectiveness of some specific programs they identified, however, could not be confirmed. Key informants also placed emphasis on prevention approaches that take into consideration one’s social history, adverse childhood experiences, and mental health, as potential contributors to one’s risk of OUD. We did not identify this strategy in our evidence review, yet this may be an emerging strategy to follow for developing evidence of application to OUD.

IN THEIR WORDS

“

“So personal connection helps a lot....Education is great and I’m grateful for the state and the campaign that they’ve done, but the true way to break stigma is personal connection...and to actually meet somebody, form an opinion – a positive opinion – of somebody.”

“[It is a problem] to focus on how addictive substances are and how they can ruin your life without ever addressing the very real reasons that people use drugs in the first place.”

“My suggestion is that we find the tools to address [adverse childhood experiences and social determinants of health], because if we are addressing those things, we’re going to stop kids from using substances as a means of coping.”

– Key Informants

”

“From Homeless to Addiction Advocate

Brandon George, Director of Indiana Addiction Issues Coalition

Substance use disorder wasn't on anyone's radar when my symptoms started showing in middle school. I began by experimenting with alcohol and drugs and quickly moved into moderate use disorder.

My substance use interfered with my ability to finish high school. However, at that time I was not considered sick, just a troublemaker who didn't like to go to school. Reality was that I had a substance use disorder and it interfered with my ability to complete daily tasks.

As my addiction progressed, so did the consequences. I had friends murdered at the age of 17 or sent to prison. My life was falling apart before it began.

I became an intravenous drug user. I was shooting roughly a gram of heroin a day and adding in methamphetamine when possible. This resulted in eight inpatient stays at six different facilities.

After being arrested, I was able to get into a residential treatment facility. The typical length of stay was 30-90 days. I ended up staying over 11 months. Having time to build this foundation was the best thing that ever happened to me. Getting into recovery was a combination of critical factors that led to my success – supportive housing environment (residential care/recovery residence), psychotherapy (group counseling), medication (buprenorphine), and social supports (12-step recovery, celebrate recovery, smart recovery).



Without the medication I wouldn't have been able to focus on my recovery and use my brain's bandwidth for important issues by eliminating cravings.

I once stole from my best friend. Because of my recovery, I stood beside him as he buried his parents. In active addiction, I was an absentee father, unemployed, homeless, a high school dropout and womanizer. Now, in recovery, I am an active father with intimate relationships with both my 19-year-old and three-year-old. I am the director of a statewide nonprofit that advocates for people with addiction. I am a homeowner and active community member. I have multiple college degrees and graduated summa cum laude from Indiana Wesleyan. I am now a dedicated husband, married for five years.

WHAT WORKS FOR TREATMENT & RECOVERY SUPPORT?

When it comes to opioid use disorder, evidence-based treatment is prevention. Engaging someone in treatment for OUD prevents illicit drug use, incarceration, and related burden on the criminal justice system; prevents chaotic drug-seeking behaviors that interfere with work, school, or caring for children; decreases overdose and death; prevents the spread of infectious diseases like HIV and hepatitis C; and provides a path for people to reintegrate into their families and communities. Many individuals in long-term recovery are champions for those with OUD, engaging them in harm reduction programs and that can lead to treatment and supporting them along the path to recovery. (For a summary of treatment and recovery support strategies by rating, see Appendix C2.)

A

Strategies with outstanding evidence and low risk of harm.

Seven (7) treatment & recovery support strategies were A-rated.

Medication-assisted treatment (MAT) and those programs that offer MAT to high-risk populations, such as prison-based programs and programs for pregnant women, received an A-rating. MAT involves pharmacological treatment of addiction supported by behavioral therapy. The three medications approved for the treatment of OUD in the U.S. include methadone (an *opioid agonist*), buprenorphine/Suboxone® (a *partial agonist*), and naltrexone/Vivitrol® (an *opioid antagonist*). Methadone and buprenorphine are long-acting opioid medications that prevent withdrawal and decrease opioid cravings, drug seeking, and drug use. Naltrexone is a non-opioid medication that completely blocks the effect of opioids in the body. People who receive MAT have longer periods of abstinence and reduced risk of overdose and death, and are less likely to become infected with HIV and hepatitis C. Despite this, numerous barriers prevent people from accessing or successfully completing MAT services including long wait lists, inability to pay, and lack of transportation [143–145]. The American Society of Addiction Medicine and SAMHSA recommend that prescribing decisions be based on a medical evaluation and consider the patient’s preferences, past treatment history, and treatment setting when deciding between the use of methadone, buprenorphine, and naltrexone in the treatment of addiction involving opioid use [146]. Research demonstrates that many people with OUD are unwilling to initiate MAT with naltrexone because it requires a long period of painful detoxification [147–149]; it also has higher rates of MAT discontinuation than agonists [150–153], with one study of Vivitrol® demonstrating 54% of participants did not complete the treatment course during the study [154]. Therefore, patients whose options are limited to naltrexone are at a disadvantage compared to those who are not. Vivitrol® treatment is much more expensive, costing approximately \$12,000 for a year of injections (plus the costs of detox, which can reach around \$30,000 for a 30-day, in-patient stay) compared to \$5,000 for a year for oral buprenorphine treatment [155, 156].

Jail/Prison-based treatment and **treatment for pregnant women** are two other A-rated practices. However, this A-rating *only applies to those programs that employ MAT appropriately based on prescriber/client interaction and assessment* [157–159]. Many criminal justice settings focus on abstinence-only treatment. When they do implement MAT, it is often limited to naltrexone due to its non-

psychoactive properties [160]. Termination of Medicaid benefits upon long-term incarceration (i.e., incarceration lasting more than 30 days) is a key barrier supporting MAT in prisons, as it places the burden of paying for these treatments on the criminal justice system. Furthermore, the lag between prison release and reinstatement of Medicaid benefits creates a window of significant risk where people with OUD are unable to access necessary treatment. Also, parole officers are often reluctant to support treatment with methadone or buprenorphine. Pregnant women should always be provided with buprenorphine or methadone treatment, as ongoing use of short-acting opioids and treatment requiring detoxification have been shown to place women at higher risk of miscarriage [161]. It is important to note that appropriate treatment for pregnant women can also reduce potential for NAS in the infant. Indiana University Health provides access to such treatment with buprenorphine for pregnant women who have OUD under the care of Dr. Tara Benjamin, a maternal fetal medicine specialist. Also in Indianapolis, the Fresh Start Recovery Center [162], operated by Volunteers of America of Indiana, focuses on helping mothers recover from opioid, heroin, and other drug addictions and have healthy children. It admits pregnant women with an addiction involving opioids, some of whom have an open case with the Indiana Department of Child Services (DCS) and some who do not [162]. This program allows mothers and up to two children under age 5 to stay together while the mother receives residential treatment for SUD. Mothers who are working with DCS to regain custody of their children also participate in this program. Services are at no cost to the mother and insurance is not required. Space is limited, however.

MAT primary care integration refers to a wide range of strategies for incorporating MAT into standard, office-based medical settings. Common elements of primary care integration models include: use of buprenorphine/Suboxone® or naltrexone/Vivitrol®, provider and community education, coordination and integration of OUD treatment with other healthcare needs, and psychosocial services. The Agency for Healthcare Research and Quality identified 12 models of integrated primary care for MAT [163]. One of the most widely known is Vermont’s Hub-and-Spoke Model, which provides two levels of care: (1) “spokes” are primary care clinics that work with less complex patients through buprenorphine or Vivitrol® prescribing, while (2) “hubs” are outpatient treatment providers that provide methadone, can taper people off MAT, and provide consultative services to the spokes [164]. Indiana recently passed two laws that require the development of best practice guidelines for office-based opioid treatment, which will help with primary care integration efforts [165, 166]. We have included this as an A-rated strategy because it supports MAT, which is evidence-based.

Drug treatment courts offer community-based treatment and supervision in lieu of a criminal conviction or incarceration [167, 168]. The drug court judge leads a multidisciplinary team of professionals, which commonly includes a program administrator, prosecuting attorney, defense attorney, probation or community supervision officer, treatment representatives, and law enforcement representative. Participants are required to complete substance use disorder treatment and other indicated services, undergo random weekly drug and alcohol testing, and attend frequent status hearings. During these hearings the team reviews their progress in treatment, and the judge may impose sanctions (e.g., transfer to a more intensive level of care, writing assignments, community service, brief jail detention) or incentives (e.g., verbal praise, reduced supervision requirements, token gifts). Successful graduates have their criminal charges reduced or withdrawn, and the arrest or conviction may be expunged from their legal record. Marion County has had a drug treatment court since 1998 [169]. Eligible participants must

have committed a non-violent drug-related felony (with the exclusion of drug dealing), be at least 18 years old, a resident of Marion County, have no history of violent offenses, no criminal history of drug delivery, and have no pending charges outside the county.

There are two policies that received an A-rating because they are necessary for improving evidence-based treatment access. **Expansion of buprenorphine data waivers** allows physicians to increase the number of individuals they treat with buprenorphine. It also extends buprenorphine prescribing privileges to advance practice nurses [170, 171]. While this is a federal-level policy, state-level education and incentives can encourage providers to obtain waivers and to serve the maximum number of patients their waiver allows.

Expanding coverage/payment sources is essential to promote access to MAT and other supportive recovery-oriented services. Indiana Medicaid currently covers all federally-approved forms of MAT. The program received a waiver in 2018 [172] to increase coverage to adults covered under Medicaid who receive short-term residential treatment for SUD at a location designated by Medicaid as an “institution for mental disease” (IMD). However, many people living with opioid use disorder are not eligible for Medicaid and do not have another form of insurance. Recovery Works is an Indiana criminal justice re-entry program that pays for treatment and supportive services for people with felony convictions. Early evaluations of this program have demonstrated positive outcomes [173], and it could serve as a model for similar programs for high-risk populations.

B	Strategies with promising evidence and low risk of harm. Ten (10) treatment and recovery support strategies were B-rated.
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Opioid use disorder screening can happen in a variety of different healthcare contexts. Screening can be carried out through blood and urine testing, but the preferred approach is the use of non-invasive written or verbal screening instruments conducted within the context of regular patient care. There is evidence supporting their effectiveness related to alcohol, and providers have been encouraged to use these instruments based on their potential to work with other SUD despite the lack of existing evidence specific to OUD [174, 175]. A screening intervention frequently discussed in the literature is Screening, Brief Intervention, and Referral to Treatment (SBIRT), which includes screening and motivational interviewing for those with a positive screen for substance use disorder, as well as referral to treatment when the patient is ready.

Peer recovery coaches (PRC) are individuals in recovery from substance use disorder who provide support, encouragement, and connection to resources for individuals with SUD. Research in this area is limited and largely highlights how PRCs can form stronger relationships with substance users due to their similar shared experiences [176]. Mental Health America and the Indiana Counselors Association on Alcohol and Drug Abuse (ICAADA) have been expanding the PRC workforce in Indiana through training and certification. Barriers to the wider utilization of PRCs include *restrictive policies* that prevent healthcare systems from hiring people with felony records [177].

Emergency department (ED)-based initiation and linkage to treatment capitalizes on the opportunity to provide care at a critical point where people living with OUD might be receptive to care, when they are receiving services within the ED—typically after an overdose. ED-initiated MAT is a practice that provides an immediate bridge prescription for buprenorphine treatment to people living with opioid use disorder who seek care in the emergency department. Positive short-term outcomes from initial clinical trials have resulted in a national scale-up of this practice [178, 179]. ED-based buprenorphine prescribing *cannot be successful in communities that do not have MAT providers available for patient referral to continuing treatment*. This is not currently standard practice in any Indiana emergency department we could identify. ED-based recovery coaching uses PRCs to engage and link patients to care. Three emergency departments in Indianapolis have hired recovery coaches to work with people presenting with opioid-related issues; one of these hospitals is part of Indiana’s Peer Recovery Coach Initiative, implementing emergency department-based PRCs in 10 hospital systems across the state. This initiative is rooted in Project POINT, an ED-based recovery coaching program developed by Dr. Krista Brucker at Eskenazi Hospital, which aims to link opioid overdose survivors to MAT as soon as possible after their ED discharge.

Telehealth/Telemedicine is the use of telecommunications and digital technology platforms to provide distance-based provider supervision or direct patient care, and it has *mostly been applied as a way to improve health care access for rural patients* but can also be used in urban contexts. Barriers include limits on how digital platforms can be used, funding for technology and training, and reimbursement [180]. Project ECHO is a promising telehealth practice that provides education to physicians through virtual clinics [181–183]. The Richard M. Fairbanks School of Public Health and the Indiana University School of Medicine recently started two separate, opioid-focused ECHO projects in Indiana [184].

Pre-booking diversion programs divert people from incarceration for behavioral health issues and include crisis intervention teams and community triage centers and help link them to treatment. Most of the evidence describes use for people with co-occurring disorders [185, 186]. The Reuben Engagement Center, opened in 2017 in Indianapolis, employs pre-diversion tactics for working with people who are intoxicated and experiencing homelessness [187–189]. Mobile Crisis Assistance Teams (MCAT) are outreach teams consisting of law enforcement and health professionals that provide engagement, intervention, and follow-up for people exhibiting behavioral health and substance use issues. Typically arriving with emergency medical services, MCATs mitigate the immediate crisis and suggest treatment, detoxification, and rehabilitation services. Indiana is using federal funds to develop additional mobile crisis teams across the state. As of February 2018, there were two teams covering 14 counties and initial evaluation results have been positive [190].

Employee assistance programs (EAPs) are employer-based programs that provide employees with free short-term counseling and referral services for a variety of psychological and emotional concerns, including substance use disorder [191, 192]. The range of services varies, with some providing direct counseling and treatment services and others referring outside of the EAP for these services. Elements of EAPs likely to benefit those with a SUD include: assurance of confidentiality, not requiring a co-pay for services, and extending services to family members. Pathways to Employment is a new employer program run by Belden, a manufacturing company in Richmond, Indiana, that combines elements of a drug free workplace and EAP to specifically employ people in recovery from SUD [193].

Psychosocial interventions in the form of individual or group psychotherapy can be provided *alone or in combination* with MAT. Research shows psychotherapy is more effective than not providing any treatment [194, 195]. However, there is no current evidence that psychotherapy is more effective than MAT alone or that it provides any benefit above MAT when offered in conjunction with it. An evaluation of MAT in Indiana’s Scott, Porter, and Starke counties found that *required engagement in psychosocial services with inflexible schedules presents a barrier to MAT access and retention*, as patients often had difficulty arranging their work and child care schedules to participate in these services [196].

Recovery-oriented systems of care (ROSC) are “networks of organizations, agencies, and community members that coordinate a wide spectrum of services to prevent, intervene in, and treat substance use problems and disorders” [197]. ROSCs go beyond coordinated care models, as they seek to develop and provide community-based, treatment, prevention, and recovery resources that support long-term recovery beyond clinical intervention and throughout a person’s life. While these programs focus on both treatment and prevention, the emphasis in the literature has been on treatment [198]. ROSCs are a very promising idea; however, they are currently *more of an ideal than a reality* when it comes to implementation. Additionally, there is no well-defined model, as ROSCs are largely a collection of principals supported by research to be important to the recovery process. Public Advocates in Community Re-Entry (PACE) in Indianapolis is currently conducting a pilot program of Substance Use Programming for Person-Oriented Recovery and Treatment (SUPPORT), an intervention that follows a ROSC model [199, 200].

Recovery housing provides short-term housing with peer supports to people living with SUD (and often with co-occurring serious mental health issues) [201]—typically the individual enters recovery housing during or after completing outpatient treatment. Recovery homes can, but do not always, have professional staff support. Evidence on recovery housing is mixed, with some studies supporting its effectiveness and others that do not [202]. Recovery housing programs in general have historically been rooted in an abstinence-only philosophy that can be problematic for people with OUD who are receiving MAT (see abstinence-only treatment below). While the National Alliance of Recovery Residences supports MAT within recovery homes [203], many programs do not accept residents who are receiving methadone or buprenorphine treatment [204]. Thus, people living with OUD might decide not to start (or continue) MAT when it is the most appropriate route for them if they have a housing need that a recovery housing program can fill. As such, *only recovery housing that accepts MAT should be considered a promising practice*. Lack of housing is a barrier to both initiating and sustaining treatment. Housing options for people receiving MAT are desperately needed in Marion County and across the state.

Medication Assisted Recovery Anonymous (MARA) is a support group for individuals in MAT [205, 206]. This is a consumer-run group following the basic tenets found in 12-step programming. It was developed as an alternative to traditional 12-step groups, which are noted to be unsupportive of those in MAT. While evidence around 12-step programs is lacking in general, research does demonstrate that social support is an important part of recovery [205, 206], and MARA participants are likely to find more support and experience less stigma related to their chosen recovery path than they would in another 12-step group. Public Advocates in Community Re-Entry (PACE) was scheduled to begin hosting Marion County’s first MARA meeting in September 2018.

C	Strategies with promising evidence and unknown risk of harm. Three (3) strategies for treatment and recovery support were C-rated.
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The **Bridge** is an acupuncture device developed in Indiana that claims to reduce pain associated with opioid withdrawal through electrical stimulation of cranial nerves via wires implanted behind the ear [207]. This device has been used to assist in opioid detox prior to initiation of naltrexone MAT. The Bridge has been cleared by the FDA for use in people going through opioid withdrawal. While this clearance identifies the device as being safe to use on a person, it does not indicate that it is effective in OUD treatment. Early favorable results from pilot research has been *called into question due to ethical concerns regarding lack of informed consent of participants and a potential conflict of interest by the investigator* [208, 209]. The Bridge does not treat OUD but is rather a “bridge” to naltrexone treatment, and it should thus be presented as an option alongside methadone and buprenorphine in order to meet best practices in MAT prescribing. Indiana has directed some pilot funding to support use of the device. In 2017, a Greenwood, Indiana, judge was the first in the state to begin offering the device as a bridge to naltrexone MAT as part of a drug treatment program [208].

Laws protecting pregnant women who use illicit opioids seek to eliminate fear of prosecution and child separation as a barrier to seeking prenatal care. While we could find no literature to support the effectiveness of these laws, there is evidence that laws criminalizing pregnant women with OUD have significant harms [158, 210]. In 2016, an Indiana law was passed that prohibits prenatal care providers from informing law enforcement of drug screening results for pregnant women [211].

Support programs for women with babies and children received a C-rating. These programs largely coincide with the child protective services system and aim to treat the mother for opioid and other substance use disorders while also keeping the children in the mother’s custody, under safe conditions (as such, these can be considered prevention programs from the perspective of the child). We have distinguished these programs separately from those aimed directly at pregnant women because they tend to focus on SUD broadly (OUD specific approaches are only just emerging), and nationally, child protective services programming has a history of employing an abstinence-only philosophy that is not supportive of MAT. Consequently, there is no clearly defined clinical or social service-based model for support programs for women with OUD that includes keeping children in the mother’s custody with a strong evidence-base supporting it at this time. Despite lack of evidence, those *programs linking mothers with MAT are informed by sound scientific evidence and are likely to be more successful* than those programs requiring abstinence. Indiana DCS and the Indiana Council of Community Mental Health Centers joined forces to create Sobriety Treatment and Recovery Teams (START) [212, 213], which are support programs for women with children that operate in Monroe and Vigo counties. The Fresh Start Recovery Center also offers services to women with babies and children in addition to the previously discussed services they have for pregnant women [162]. The CARE Plus program, developed by the IU School of Medicine, is a newly-implemented, two-year pilot program addressing the gap in care experienced by mothers with OUD post-partum. It connects mothers to treatment, provides wraparound services, and builds parenting skills while mothers continue in their own recovery. Community Health Network is also implementing a program to address NAS and maternal opioid use disorder through access to MAT and other services.

D**Strategies with promising evidence and high risk of harm.**

Two (2) strategies for treatment and recovery support were D-rated.

Abstinence-only treatments refer to any inpatient, outpatient, or residential program that require abstinence from any psychoactive substances without providing any other treatment options. These programs are not accepting of evidence-based methadone and buprenorphine as treatment options but are generally accepting of naltrexone. They receive a D-rating because these interventions often require people living with OUD to go through detox, which can increase risk of overdose during a relapse due to the person's decreased tolerance [151, 214–216]. It is important to note there are also programs that view abstinence as an option (i.e., abstinence-based/focused, rather than abstinence-only) among a wide variety of recovery options. These programs should be offered as part of the continuum of treatments so they are available for those who wish to engage in them, as many people do achieve recovery through the route of abstinence.

Narcotics Anonymous (NA) is a 12-step support group (not a formal treatment type) that generally follows an abstinence-only philosophy. It received a D-rating because it is typically not supportive of people receiving MAT treatment with methadone or buprenorphine (see MARA above). While the program likely has very positive benefits for some individuals, there is no strong evidence to support its overall effectiveness [212, 213]. This is because the anonymous aspect of these groups prevents strong scientific study of their outcomes. As this is an abstinence-focused form of peer support, it raises the same concerns mentioned above for abstinence-only treatments. NA is spread widely across the U.S. The Indiana Region of Narcotics Anonymous website indicates approximately 100 meetings are actively being held in the Indianapolis area [217].

F**Strategies with concerning evidence and high risk of harm.**

One (1) treatment and recovery support strategy was F-rated.

Involuntary treatment received an F-rating. This approach is rooted in criminal justice policies that force individuals into treatment as an alternative to jail or prison and are often, but not always, abstinence-only. There is some evidence these programs are less effective (whether abstinence-only or not) at obtaining long-term outcomes because patients lack motivation for treatment they did not choose to initiate [218], and abstinence-based involuntary treatment has also been demonstrated to increase risk of relapse and overdose [218–220].

WHAT ARE KEY INFORMANT PERSPECTIVES ON TREATMENT & RECOVERY SUPPORT?

Key informant discussions highlighted a **need for appropriate and evidence-based inpatient, outpatient, and residential services** that utilize MAT. Expanding on what we found in our strategy review, they also discussed the need for evidence-based treatment to provide care for illnesses resulting from opioid use (e.g., HIV, hepatitis C, endocarditis). Relatedly, they discussed a need for **better integrated and coordinated care**. This includes continuum-of-care recovery models, more multi-disciplinary care, better communication between the stages of care, better integration and communication with the broader health and social service systems, integration of peer recovery coaches into treatment settings, and better integration of emergency medical systems. In addition to integration between systems, informants discussed the need for integration between treatment approaches and the community, as intervention success might depend on the extent to which it fits with a community's culture.

Informants also noted that responses to the opioid epidemic should take into consideration individual-level factors (i.e., social determinants) that can negatively impact treatment outcomes. Such factors include: stigma against those with opioid use disorder and MAT; criminalization of drug use, which deters many people from seeking treatment; lack of a payment source for people who need treatment; Marion County's fractured public transportation infrastructure; and housing instability. All of these factors have been demonstrated to be barriers to MAT for people within the healthcare literature [143–145]. One approach FSSA has taken to addressing access barriers that was discussed in a positive light is OpenBeds, which provides the City's 211 service with real-time information to assist them in locating programs with open SUD treatment slots they can connect callers with. However, this program is too new to assess any benefits at this time.

Informants also discussed a need for treatment services for **special populations** such as youth/adolescents, people experiencing homelessness, pregnant women and women with children, and justice-involved individuals. While our review identified treatment interventions for the latter two of these groups, youth and homeless specific treatment approaches were not identified. Regarding justice-involved individuals, informants also pointed to the need for treatment to be used as an alternative to incarceration and the need for more post-release treatment options.

IN THEIR WORDS

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“There might be a 5 minute window, a 3 day window...where you can't get drugs, and if I call you today and say 'Please let me in a treatment facility' don't tell me to get a referral and wait a month from now. Who knows where I'll be. If I want to go today, get me in there. Do whatever you have to do...because if someone calls me before you call me back, I won't answer. I'll be gone.”

“We always have gaps in treatment services for youth, and I think that accessing treatment for individuals who are not justice-involved is hard because we've put all our treatment dollars toward the justice-involved community.”

“Why isn't every single physician that gets out of medical school able to prescribe MAT?...We need to start educating and training ... so we can get it put back into the regular healthcare system.”

— Key Informants

”

In addition to the need for more and better-quality services, informants recognized treatment infrastructure is insufficient to adequately address the opioid crisis, with SUD treatment **workforce development** highlighted as a key need. In particular, there is a need for more primary care providers and substance abuse counselors who are appropriately trained to work with patients with OUD.

Informants also discussed a number of what they perceived to be **problematic or ineffective treatment approaches** that are currently in use. At the top of this list were “one-size-fits-all” and abstinence-only approaches to treatment that fail to take account of a patient’s individual situation and needs. Informants raised specific concern for patients who received abstinence-only treatment when they are not ready for it, as this lowers their opioid tolerance and can increase their risk for overdose death upon relapse. Informants indicated that the criminal justice system specifically relies on ineffective treatment approaches. Informants also discussed providers who consider 12-step group involvement as therapy and who might bill for such services, though they are offered in the community free-of-charge. Finally, dovetailing the information in the evidence review related to recovery housing, informants pointed to the overabundance of profit-driven recovery homes that do not follow an evidence-based approach (primarily because they do not allow tenants on MAT) as problematic.

Informants also indicated a need for more abstinence-based detox, which is not reflected as a useful practice in our evidence review. This statement also contradicted statements reflecting the need for more MAT and harm reduction services. Inpatient detoxification involves medically supervising patients while they withdraw from opioids. The fear of detox (i.e., avoidance of pain associated with it) is the primary reason many people living with OUD do not enter treatment or are more successful with MAT.

“

Recovery Doesn't Happen Overnight

Ben Gonzales

Shortly after discovering my heroin addiction, my family took me to see Dr. Timothy Kelly. I wasn't ready to go "all in" with my recovery when we first met. He started out by introducing me to Medication Assisted Treatment (MAT). Dr. Kelly recommended I try Vivitrol®, a monthly injectable form of naltrexone. It was a strong fit for my case – non-narcotic, helped with cravings, blocked the effects of opioids, and would last an entire month, giving my family and myself peace of mind.

In addition to Vivitrol®, Dr. Kelly explained that I would need a recovery program along with MAT to have long term success. But I was unwilling to commit to a recovery program.

A few months went by and things continued to get worse. Two arrests, a few totaled cars and six accidental overdoses later, I was finally willing to listen.

I went to long-term treatment and discovered drugs and alcohol had become my one and only coping skill. I used them to handle all of the ups and downs in my life. Over the next nine months of my treatment, I found new coping skills, new ways of thinking, recovery supports, a stable living environment, and ways to spend my time. Slowly but surely, these alternatives, in conjunction with MAT, made the use of mind-altering substances unnecessary.



Four years later, the things I do to maintain my recovery are essentially the same. It's about being willing to take suggestions and put those suggestions into action.

My life looks a whole lot different now. I am closer with my family than ever before. I work at the same hospital where Dr. Kelly treated me, I am in two master's programs, and I have helped nearly 5,000 patients toward recovery.

None of this would have been possible if not for the support and tools that aided my recovery including MAT, counseling, a new support system, and a stable living environment. Should we hope to end this crisis, these tools will need to be readily available for all who need them.

WHAT WORKS FOR HARM REDUCTION?

Harm reduction is a philosophy that any movement toward positive change is beneficial to the health and wellbeing of individuals with SUD. Harm reduction programming is largely aimed at people who inject opioids and/or other illicit substances, and includes services like syringe exchange, naloxone distribution, and housing. Evidence-based treatment for OUD, HIV, and HCV can all be considered harm reduction as they prevent illness, disease transmission, and death even if they don't entirely prevent illicit use of drugs. (For a summary of harm reduction strategies by rating, see Appendix C3.)

A	Strategies with outstanding evidence and low risk of harm. Seven (7) harm reduction strategies were A-rated.
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Naloxone (commonly known by one of its popular brand names, Narcan®) is an opioid antagonist that is used to reverse the effects of an overdose. **Naloxone training and distribution programs** provide naloxone kits and education to first responders and the broader public and have been demonstrated to reduce overdose death rates [193–198]. Although wide-spread, and largely acceptable to the public, most programs have *design barriers* that likely prevent many people who use opioids from accessing them, such as distribution in a highly visible location or the failure to engage people who use drugs in the planning and site selection of naloxone distribution events. Furthermore, the high cost of naloxone prevents many people from being able to purchase the drug from the pharmacy and also prevents many healthcare providers from dispensing it to high-risk patients. The Indiana State Department of Health has a program aimed at distributing naloxone kits to lay persons and first responders throughout the state. Overdose Lifeline and the Indiana Recovery Alliance have also been key proponents of naloxone distribution within the state.

Take-home naloxone programs provide the medication and education on use directly to those at high risk for overdose, such as people with OUD released from incarceration or leaving an abstinence-based treatment program. These programs have been demonstrated to improve overdose survival rates [221–223]. In 2017, Overdose Lifeline in Indiana partnered with Marion County Community Corrections to distribute naloxone to persons post-release and under correctional supervision.

Syringe services programs (SSP) provide free access to sterile syringes for people who inject drugs and facilitate safe disposal of used syringes. These programs prevent syringe sharing that can result in the spread of communicable disease (e.g., HIV, hepatitis C) [131–133, 224]; however, many programs also provide additional services and linkages to treatment [225]. There are many noted barriers to implementation of these programs including lack of funding and limited capacity, lack of broad political support, weak implementation, negative and unfounded views on the part of community key informants that syringe programs enable drug use, and a prohibition on state and federal funds to support the purchase of syringes. Indiana law currently *requires a public health epidemic be declared* in an area before a syringe services program is implemented, but permits local governments to approve and operate the SSP [225]. Indiana currently has nine approved syringe services programs and locations including Marion

County, which approved the implementation of a new syringe services program in June 2018 [225, 226]. The Richard M. Fairbanks School of Public Health recently released a report detailing evidence and best practices for SSPs [225].

Supervised injection facilities (SIF) are legally sanctioned locations where people can use drugs under medical supervision. They are also known as safe consumption facilities, as services are not limited to those who use injection drugs. International research has provided evidence demonstrating SIFs can prevent secondary health issues resulting from injection drug use (e.g., HIV/HCV transmission, abscesses/wounds/endocarditis, and overdose), provide linkage to treatment, and reduce overdoses [227–229]. SIFs exist in 11 countries worldwide. Though not currently legally implemented in the U.S., there are “underground” SIFs. Several cities are on the verge of piloting SIFs (e.g., Philadelphia, PA; Seattle, WA; San Francisco, CA; Denver, CO; and Ithaca, NY), and Boston, MA, currently has a facility where drug users can receive medical supervision while on opioids; however, they cannot inject within the facility [227, 230–234].

Housing First (HF) provides low-barrier, immediate housing for people experiencing chronic homelessness, a high-risk group for drug overdose. The model differs from recovery housing in that it does not require any engagement in treatment or recovery services. Rather, the model understands that housing is an essential foundation of recovery that is provided to people so they can come to recovery on their own terms. In addition to supporting engagement in MAT, some HF programs have gone so far as to integrate MAT into their housing facilities. HF has strong evidence demonstrating its ability to appropriately address SUD-related issues in tenants [235, 236]. It is also supported by the federal government and many national advocacy organizations. While the philosophy has spread, many programs are not implementing the practice with integrity to the evidence-based model [236], and most of Indiana’s homeless care continuums can be viewed as following a HF philosophy without having implemented actual HF programming. This is because many programs within the state do not appropriately integrate harm reduction. Penn Place is the only program in Marion County that has been demonstrated to practice Housing First with integrity to the model [237, 238].

There were two A-rated harm reduction policies/laws we identified. **Expanded naloxone access** allows members of the broader public to access naloxone and **Good Samaritan/immunity laws** provide immunity from (or no criminal liability for) arrest, charges, or prosecution for controlled-substance and paraphernalia possession when a person calls 911 for an opioid-related overdose. Much research supports the effectiveness of these laws for reducing overdose deaths [239–243]. Indiana’s Aaron’s Law, implemented in 2015, both expands naloxone access and provides some Good Samaritan protections. However, *the law is limited* in that it only offers immunity when naloxone is administered and does not extend immunity to the person who overdosed or other bystanders at the scene. Research has demonstrated the limitation of immunity in Aaron’s Law is a likely deterrent to people calling 911 [135].

B	Strategies with promising evidence and low risk of harm. Two (2) harm reduction strategies were B-rated.
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Pharmacy-based syringe access programs involve the provision of sterile syringes through community pharmacies. While research is still developing, this practice appears to be effective for reducing needle sharing [244, 245]. In addition, the positive evidence for SSPs suggests that pharmacy-based syringe exchanges may be similarly effective. Indiana does *not currently have legislation* that would support pharmacy-based syringe exchanges.

Fentanyl test strips are paper strips given to people who use illicit drugs to test for the presence of fentanyl in their opioid supply. Strips can be purchased commercially, and a handful of programs and studies have been assessing the potential of these strips for reducing drug overdose. Preliminary research suggests people will use them but that the detection of fentanyl might not change their drug use behavior [246, 247]. Possessing these test strips may be considered a criminal offense under some “drug paraphernalia” laws; this is a barrier to their use. No known programs in Indiana are distributing these strips.

C	Strategies with promising evidence and unknown risk of harm. Two (2) harm reduction strategies were C-rated.
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Safe stations are designated places in the community where people living with OUD can go to dispose of paraphernalia and receive services such as medical care and linkage to treatment and resources [212, 213]. People can also receive medical monitoring if they enter a safe station under the influence of opioids; however, safe stations are not places where individuals can inject opioids under medical supervision. In these places, immunity from prosecution as well as Good Samaritan/immunity laws for those assisting others are in place. Safe stations are generally designated fire and police stations. People with OUD may not feel comfortable or trust their safety when entering certain “safe stations,” such as police stations. There are no known safe stations in Indiana.

Cannabis legalization for both medical and recreational purposes exists in some form in thirty states and DC. While proponents state that it is an alternative to opioids for treatment of chronic pain that can prevent OUD and reduce opioid overdose and research demonstrates a reduction in opioid prescribing following cannabis legalization [250, 251], *more research is needed* to determine if these benefits are long-term and to assess any potential unintentional consequences [215–221]. In 2018, the Indiana House voted to study the issue of legalizing cannabis for medical purposes [252].

D	Strategies with promising evidence and high risk of harm. No harm reduction strategies were D-rated.
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F	Strategies with concerning evidence and high risk of harm. No harm reduction strategies were F-rated.
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WHAT ARE KEY INFORMANT PERSPECTIVES ON HARM REDUCTION?

Key informant discussions of harm reduction were intermingled with those of prevention and treatment. It was evident from these discussions that informants felt harm reduction needed to be firmly integrated with prevention and treatment practices. Particular harm reduction approaches key informants felt were benefiting Marion County included naloxone distribution and Housing First programming (when harm reduction is appropriately implemented). Informants also discussed SSPs (currently in the process of being implemented) and SIFs as programs that could benefit Marion County.

WHAT ARE PERSPECTIVES OF PEOPLE LIVING WITH OPIOID USE DISORDER?

Perspectives of people who are currently using opioids or in recovery from using opioids are critical to understanding what services are needed and how to best provide them to the community. “Nothing About Us Without Us” is a statement suggesting that including the perspective of the recovery community and people who are actively using drugs facilitates access to harm reduction services and care and demonstrates respect for the autonomy and self-determination of people who use drugs. In addition, people who use opioids are interested in contributing to the needs of their community if they feel accepted and welcome.

Factors important for a successful recovery

Focus group participants emphasized that the most important factor contributing to successful recovery is a strong desire to recover on the part of the person who is actively using drugs. Without this, they felt treatment efforts would be in vain. Appropriate coping skills and strong social support systems were mentioned as important foundations of recovery. Reducing barriers to treatment was also discussed as important to a successful recovery, with one of the largest barriers discussed being lack of finances to pay for treatment. Finally, providing opportunities for immediate placement when a person is ready to begin treatment makes success more likely.

Effective and ineffective treatment approaches

Focus group participants mentioned a variety of approaches to recovery that they felt were effective or with which they had positive personal experiences. They expressed the need for treatment opportunities

that remove those in recovery from people and situations that increase risk of relapse and the need for treatment to link people with opportunities for work. Some individuals discussed needing support from therapists and peer recovery support workers who had personal experience with SUD, and others stated the need for support from someone who they felt genuinely listens to them, does not dismiss their perspectives and feelings, and is empathetic regarding their struggles.

Supportive services (e.g., transportation, housing, employment, etc.) in conjunction with treatment were considered necessary. There was also discussion of the need for harm reduction services because they keep people who are not ready to quit using safe and create an environment where they feel understood. Regarding specific treatment approaches, one participant discussed how medical cannabis and CBD oil helped them in their recovery by diminishing cravings for opioids. Participants noted that “one-size-fits-all” treatment was particularly ineffective due to the need for individualized supports. Some participants felt advice from people who had not been through SUD recovery themselves was unhelpful. Finally, participants said that 12-step-affiliated groups were ineffective for people who are not religious.

“

Kind of Ironic, Don't You Think?

Carrie Foote, Associate Professor

At 17, I was a high-school dropout, homeless and hooked on heroin.

After entering rehab in 1988, I tested positive for HIV and then in 1993 learned I had HCV (hepatitis C). Since then, I have overcome my addiction, been cured of HCV, earned a GED and eventually pursued a PhD in sociology.

I am now a mother, professor at IUPUI and nationally-known HIV activist chairing the HIV Modernization Movement-Indiana which is working to end the criminalization of people living with HIV.

It's not always been easy, but I manage well and live a good and rewarding life. Being diagnosed with what was a life-threatening illness at the time, gave me the motivation to truly start living over 30 years ago.



Carrie Foote, New York City,
1987 (17 years old)

Carrie Foote, New York City,
2016 (47 years old)

KEY TAKEAWAYS ABOUT STRATEGIES

- Indiana is employing several prevention, treatment, and harm reduction strategies demonstrated to be evidence-based; however, improvements in implementation might yield better results. Specific interventions where implementation should be assessed and improved include the state's PDMP, particularly as it relates to data sharing and wider electronic health record integration; expansion of all three forms of MAT to ensure patients are able to receive the most appropriate care; improving naloxone uptake through stronger and more well-defined access and Good Samaritan laws; and ensuring recovery housing is accepting of MAT.
- MAT and treatments that utilize MAT have the strongest evidence supporting their effectiveness, and they have been demonstrated to be effective for high-risk populations such as pregnant women and justice-involved individuals. Despite this, they are not sufficiently implemented within the community. Wider implementation of MAT and integration within settings such as primary care and recovery housing would be extremely beneficial.
- Schools and employers have a wide variety of effective strategy options available for preventing and addressing OUD. However, it is also important to note that while many strategies are evidence-based, some programs lack research for their effectiveness and, as such, schools and employers should take care when selecting and implementing strategies.
- Harm reduction strategies seek to reduce harms without directly treating OUD. There is significant evidence supporting many of these strategies, and key informant interviews pointed to a need for more harm reduction strategies in Marion County. While it should not be their focus, harm reduction approaches such as SSPs and SIFs can also be used to link patients who do not typically access other areas of the healthcare system to treatment.
- Key informant interviews and focus groups with people living with OUD emphasized that “one-size-fits-all” approaches are not beneficial. There are many roads to recovery that should be reflected in the community by implementing a wide array of strategies from those that are supportive of abstinence—but do not require it—to those that are willing to work with active users in a harm reduction capacity.
- Some interventions identified inflict personal and societal (e.g., stigmatization and criminalization) harms on people living with opioid disorder and make patients reluctant to seek treatment. Abstinence **only** (as opposed to abstinence-based/focused) treatments and drug paraphernalia and opioid fatality/homicide laws are some with the most potential for harm.

RECOMMENDATIONS FOR ADVANCING A RESPONSE

In our review of the evidence, we identified 38 evidence-supported strategies with no or low risk (*A- and B-rated strategies*: 13 for prevention, 17 for treatment and recovery supports, and 9 for harm reduction), and these strategies aligned well with the perspectives of key informants and people living with OUD. In fact, many of these evidence-supported strategies have been adopted for use, wholly or in part, in Marion County. Prioritizing the inclusion of those strategies not currently being used, or which have not been fully adopted, presents a high-yield, low-risk opportunity to impact the opioid epidemic in the county.

C- and D-rated strategies are still promising and might yield substantial benefits if implemented. However, they should not be prioritized over A- and B-rated strategies, given questionable evidence and unknown or known potentials for harm. The harms we identified for many of the D-rated strategies are particular to OUD. In particular, the incompatibility between many of these strategies and MAT can lead to potential relapse, overdose, and/or death. Strategies such as recovery housing and Narcotics Anonymous could easily move to a B rating if they were more widely accepting of MAT. More treatment programs that seek to support abstinence-based recovery rather than requiring it would also lead to greater acceptance of people in MAT-based recovery.

Finally, the F-rated strategies do not have any promising evidence behind them. As such, these strategies should not be supported, and in some cases will need to be strategically removed to prevent further harms related to them from occurring.

It is important to recognize all evidence-informed strategies are developed and/or tested using strict research protocols. The community environment must be considered in the selection of any intervention, and ongoing evaluation and modification should be built into the implementation to maximize its local effectiveness and minimize its potential harms [83]. Key informants we interviewed also highlighted the need to consider current health disparities related to the opioid epidemic when selecting interventions and taking steps to make sure implementation does not exacerbate them or create new ones. For example, engaging faith communities in harm reduction activities may be a more effective way to reach individuals who do not interact with the traditional healthcare system.

Additionally, strategies must be appropriately tailored for specific age groups to be effective. Comprehensive services for school-aged children must include both strategies identified during key informant discussions for **prevention** among school-aged children and those for **treatment** services with evidence supporting their effectiveness for this age group. Current scientific evidence supports the use of MAT for adolescents and teenagers [253, 254]. Despite this, there is social resistance to starting young people on long-term MAT therapy. This resistance must be addressed to make effective treatment more available to those with OUD in this age group. At the other end of the age-spectrum, there are few targeted prevention strategies for older adults. Older adults may be at increased risk for opioid misuse and overdose resulting from complex medical conditions for which multiple healthcare providers prescribe sedating medications; higher rates of opioid use for chronic pain, particularly in conjunction with

other sedating medications or alcohol use; and increased rates of confusion or dementia which may inadvertently lead to over-consumption of pain medication [255].

A recent Indiana University report identified policies interfering with the implementation or effectiveness of proven strategies and areas for future legislation. For instance, Indiana's overdose homicide law, implemented in July 2018, could limit effectiveness of current naloxone distribution efforts and Good Samaritan protections by discouraging people at the scene of an overdose from calling 911 [135]. In addition, Indiana laws restricting access to opioid prescribing data deny use of this information for prevention planning. Finally, laws regulating the use of possible future settlement funds awarded through litigation of opioid manufacturers/distributors should prioritize evidence-based prevention and treatment efforts.

In order to reach people at risk for opioid misuse, overdose, and death with interventions designed to prevent, treat, and reduce harm, communities must proactively identify places they are likely to be found. This is best done by including people with a history of OUD (both actively using and in recovery) in planning for prevention and treatment activities to ensure more effective outreach and engagement with the target population, which reflects the harm reduction approach "Nothing About Us Without Us." For example, involving people with a history of OUD in the design of naloxone distribution efforts could result in innovative approaches to engaging those who are actively using opioids, thus saving additional lives [256].



Aaron's Law

Justin Philips



From the beginning, Aaron was an athlete. His first word was "ball," and for Halloween at the age of two he asked to be a baseball.

Sports injuries would be his first exposure to prescription pain medicine and his introduction to dependence. I will never know if it was the codeine cough medicine, the first broken bone or his teenage risk-taking personality that led to his opioid misuse and subsequent heroin use.

At this point it doesn't matter.

What matters is that I did not know that an adolescent brain introduced to prescription pain medication makes that child five times more likely to misuse later in life. I did not know prescription opioids and heroin are the same.

Aaron overdosed and died on October 9, 2013, at the age of 20.

After Aaron's death, I went to a heroin roundtable. I began raising money for first responders to carry naloxone, a life-saving medication. Through these efforts, I met Senator Jim Merritt and we worked to create a law that would allow any Hoosier to obtain a prescription for naloxone if they believe someone they know is at risk of an opioid overdose. In April of 2015 Senate Enrolled Act 406-2015 passed, but you may know it better as "Aaron's Law."

I want Aaron to be remembered for his amazing charm, loving heart, athletic talent and his intellect. It is a huge honor to have Aaron's name on this law, because in a small way he doesn't go away. This law is who Aaron was, he would want to help people.

WHAT CAN SECTORS OF THE COMMUNITY DO TO ADDRESS THE CRISIS?

With this evidence in hand, what are the specific steps we can take to improve our response to the opioid crisis in Marion County? As previously stated, a crisis as serious, persistent, and complex as the opioid epidemic cannot be effectively addressed by one sector, but rather calls for a society-wide approach. Recommendations that follow describe what various sectors can contribute to the response.

WHAT ARE UNIVERSAL BEST PRACTICES?

Appropriately addressing the opioid crisis in Marion County will ***require collaboration with commitments to information and resource sharing among various sectors***, including organizations representing federal, state, and local governments, health care, social services, nonprofits, universities, and community and faith-based organizations. These stakeholders must also ***bring people living with OUD to the table*** when developing and accessing programs and policies concerning them. Involving both people in recovery from OUD and those who are currently using opioids will result in more effective strategies with less negative unintended consequences.

Marion County must ***strive to implement strategies that address fundamental social problems underlying the opioid crisis*** (e.g., poverty, unemployment, community connectedness), as well those that address immediate causes of opioid misuse (e.g., inappropriate prescribing practices and illicit drug availability).

All sectors seeking to address the epidemic must also ***apply sound scientific practices whenever possible***. Implementing evidence-based strategies with integrity to the scientifically-supported approach is critical, unless appropriate assessments are made to support modifications to local contexts. Programs must ensure ongoing evaluation or quality assurance activities to assess the implementation, reach, and effectiveness of currently employed strategies. Finally, novel or newly developed interventions must be rigorously evaluated to determine effectiveness and identify unintended consequences.

WHAT ARE POLICY SOLUTIONS?

From a prevention perspective, state and local governments must ***eliminate internal agency policies that prevent cross-sector data sharing*** of key data sources/information that is difficult to access (e.g., prescription drug monitoring, arrests, child welfare involvement, etc.) and develop new centralized policies that explicitly permit sound data sharing practices, as well as requiring separate agencies (including non-health entities such as the Department of Corrections and Department of Child Services) to share data for public health planning and evaluation activities (e.g., public health surveillance, overdose fatality review, evaluation of SUD strategies). These policies must also help agencies to properly navigate federal-level rules that guide sharing of SUD treatment data to ensure compliance and protection of individuals' personal information. Accomplishing this task will allow for better public health surveillance of opioid trends and a better ability to assess the impact of strategies implemented on key opioid-related

outcomes. State agencies like ISDH (e.g., Stats Explorer) and the Management Performance Hub (MPH) have made progress in this area. Despite these advances, MPH continues to experience roadblocks with respect to sharing of federally-governed data, despite policies that facilitate inter-agency sharing of state-level data.

Strengthening and clarifying Indiana's Good Samaritan protections by removing the requirement that naloxone be administered at the scene of an overdose, extending protections to the overdose survivor and other bystanders, and providing immunity for a larger range of issues (e.g., execution of warrants, parole/probation violations) is necessary to ensure lay responders feel comfortable calling 911 at the scene of an overdose. Perhaps the most significant barrier to calling 911 in Indiana is the *newly implemented overdose homicide law*. ***Indiana should prioritize repealing this law*** if it wishes to further encourage lay responders to engage EMS during an overdose event.

State and federal funding should be increased to address three specific gaps. First, ***eliminating federal and state policies that prevent full financial support of SSPs*** will strengthen these programs. The HIV epidemic in Scott County, Indiana, precipitated rescinding of what was previously a total ban on funding for SSPs. However, while monies can now be used to support the SSP service infrastructure, they cannot be used to purchase syringes, which makes program implementation and sustainability difficult. Second, ***providing funding to K-12 schools to implement evidence-based prevention*** programs should be a priority, as this will ensure programs implemented are of high quality and can help stop OUD before it begins. Third, ***funding that incentivizes implementation of MAT and MAT-compatible programming in criminal justice settings*** should also be provided.

In 2017, Indiana Medicaid began covering the cost of methadone treatment for OUD and removed its requirement for prior authorization for buprenorphine, increasing access to MAT across the state. Injectable naltrexone (Vivitrol®) is also covered under Indiana Medicaid but requires a prior authorization. Despite these changes, barriers to Medicaid enrollment (e.g., lack of patient computer and fax machine access, insufficient numbers of navigators to assist with enrollment, difficulties reinstating after incarceration, inability to reliably receive Medicaid correspondence for individuals with insecure housing) remain a critical barrier to MAT in Indiana. If MAT is to effectively reach people with OUD and support their recovery without interruption in treatment, the next move must be for Medicaid to ***ensure adequate coverage for supportive services (e.g., recovery coaching, housing, transportation, child care), as well as reduce the above-mentioned barriers to Medicaid enrollment***.

WHAT CAN HEALTHCARE INSTITUTIONS AND PROVIDERS DO?

Increasing the availability of all forms of MAT in the community so providers can refer patients to the most appropriate services is critical. In addition to expanding coverage for methadone and buprenorphine, Indiana lawmakers voted to increase the number of authorized methadone treatment providers across the state (including one in Johnson County, accessible to Marion County residents). Expanding the number of providers will increase the ***capacity to enroll clients into MAT quickly and efficiently***, given the short window between the time a person is willing to receive help for OUD and the point when services must begin before they are lost to treatment. Additional access points with 24/7

availability, such as ED-based clinics, would ensure immediate access to treatment. Once these services are expanded, there must also be **improved access to recovery supports** (e.g., transportation, housing, employment, and childcare) to ensure patients are able to stay in treatment. **Requirements to access MAT should not discourage people from treatment.** Burdensome intake processes and requiring frequent, inflexible psychosocial therapy sessions can prevent access to MAT or ongoing engagement in treatment, due to lack of affordable transportation, therapy costs, and time off from work. These requirements should be reduced or removed. Furthermore, screening, MAT, and wraparound recovery services must be **appropriately integrated with primary care** to ensure patients receive coordinated and holistic healthcare.

Marion County should strive to **expand and implement more robust harm reduction interventions**, given the strong evidence behind them and key informants' expressed need for these services. Keeping people living with OUD alive and as healthy as possible ensures they have a chance at recovery when they are able and ready to access treatment. The approval of Marion County's syringe exchange earlier this year is an important step in the right direction for harm reduction. Additional efforts should focus on shoring up harm reduction strategies being utilized through the following activities: identifying ways to get naloxone directly into the hands of people who use drugs, rather than waiting for them to show up at a local health department or emergency room; expanding SSP services to increase access for people across the county; expanding ED, jail, health departments, and addiction treatment providers' ability to conduct rapid HIV and HCV testing in high-risk communities; and ensuring Housing First is being practiced with integrity to the model. Indianapolis's 5-year plan to end homelessness, announced in August 2018, includes the identification of 400 units of permanent supportive housing and presents an ideal opportunity to implement robust Housing First programming [257]. **Investment in promising harm reduction interventions** with low risk of harm, such as fentanyl test strips (which could be implemented at SSPs), post-injection sites like the Boston Safe Place for Observation and Treatment (SPOT) facilities [258], and pharmacy-based syringe exchanges, should be explored and, if implemented, paired with robust research designs to identify whether they are working as intended.

Free continuing education should be offered to primary care providers. Three foci to this education are necessary: (1) appropriate opioid prescribing; (2) multi-modal pain management strategies; and (3) evidence-based treatment for patients with addiction. Didactic education alone will not be enough to accomplish this. Providers serving patients living with OUD should also be **educated in appropriate shared decision-making techniques** to ensure they start patients on the most appropriate MAT type for their unique situation or provide a referral to appropriate MAT services when they cannot. ECHO (Extension for Community Healthcare Outcomes) clinics, such as those offered at Indiana University (www.echo.iu.edu), provide free ongoing training and support for providers who prescribe MAT or offer other treatment and support services for people with OUD. Healthcare institutions should support ECHO clinics by covering the cost of participating for both experts and primary care providers.

Scaling up recovery coaching services should be a priority. While there isn't a robust body of scientific literature evaluating the effectiveness of peer recovery coaching, a published review of the evidence found that most studies demonstrated that participation seemed to make a positive contribution to

outcomes for people with SUD [259]. In addition, peer recovery coaching provides a much sought-after avenue to stable employment for people in recovery from OUD. Recovery coaching also presents an opportunity to reduce stigma within the healthcare industry, as it requires providers to regularly interact with people presenting positive examples of lived recovery. In order to scale coaching services, **healthcare organizations must identify and address policies preventing them from hiring people with felony backgrounds**, something most people with a history of SUD typically have.

Organizations involved in public health should strive to **guarantee that harm reduction services have the ability to connect people to treatment and recovery supports** by developing referral relationships and MOUs between organizations. People who are actively using opioids are often more comfortable with people who provide harm reduction services due to their non-judgmental approach, and the relationships that develop in the context of harm reduction interactions can serve as a foundation for motivation to seek treatment for OUD. However, this opportunity is lost when treatment is not accessible. It is *important to remember the goal of harm reduction is to help people make decisions that will reduce their risk of negative health outcomes despite continued substance use*. Therefore, connecting people with treatment is a positive benefit of harm reduction services, but not the overall purpose.

Public health-focused organizations must also ensure harm reduction and overdose prevention efforts include **targeted and timely messaging and services regarding the risk of fentanyl contamination directly to people who use drugs** when fentanyl is identified through community surveillance. Shortening the window between the time when adulterated drugs hit the street and when messaging occurs will maximize the benefits of community surveillance. Indiana's recent toxicology surveillance requirements are a step in the right direction. However, **testing drugs at the scene of an overdose**, rather than waiting for toxicology reports, is one potential way to ensure more timely identification of drug adulteration that can be acted upon. Another would be to integrate drug-testing services in easily accessible areas in the community and ensure immunity from criminal prosecution for people who utilize them. Workers at these locations could then alert public health authorities to mobilize resources when they see a spike in adulterated drugs.

WHAT CAN THE CRIMINAL JUSTICE SYSTEM DO?

The criminal justice system must integrate evidence-based practices into its practice standards. This would entail **ensuring justice-involved individuals have access to all three forms of MAT** and **implementing take-home naloxone programs** to reduce risk of overdose after prison release. **MAT should also be offered as an alternative to incarceration** through pre-arrest diversion programs and drug treatment courts, **regardless of ability to pay fees associated with these programs**. These changes will require a cultural shift within the criminal justice system that should be supported with **targeted education for criminal justice professionals** focused on stigma reduction. Models for stigma reduction education within criminal justice currently exist. Educational efforts for front-line police officers should also cover Indiana's Good Samaritan protections to ensure the law is being implemented appropriately on the ground, as this will boost lay responders' confidence in calling 911 when an overdose occurs. Finally, **strong collaborative relationships between local police and SSPs**, in counties across the state with SSPs, should be developed

and sustained. This will help ensure police are aware of legal rights of people who utilize the SSP and that SSP participants are not criminalized for their use of these services or possession of paraphernalia.

WHAT CAN EMPLOYERS DO?

Employers can best support employees with OUD **by implementing robust employee assistance programs and offering comprehensive health insurance benefit plans** that provide adequate coverage for treatment, including MAT, do not require co-pays and guarantee confidential substance use disorder (SUD) services.

Simply having these programs is not enough; **employees should regularly be made aware of the presence of these services** and how to access them. Health fairs and reminders during open-enrollment periods are two possible mechanisms for this. State and local chambers of commerce can serve as a resource for employers in identifying and implementing effective tools.

Drug-free workplace policies requiring regular drug testing are likely not beneficial for most work environments and should be reserved for those where drug use could result in significant physical dangers, such as factory floors. All drug-related workplace **policies should include clear guidance on medication use** (e.g., medications permitted for use at work, medication use that should be reported, policies regarding non-medical use of prescription and over-the-counter medications, and drug testing policies), and employees using medications that could impair their work should be assigned alternative work tasks.

Treatment efforts will not be successful unless people have opportunities to engage in meaningful employment during their recovery. As such, employers who truly wish to assist in addressing the opioid problem should seek to **actively recruit employees in recovery from OUD** in a similar fashion to Belden, a manufacturing company in Richmond, Indiana, whose Pathways to Employment program provides SUD treatment for potential employees who fail a drug test and an opportunity for employment after successful completion of the treatment program. This can be accomplished by developing relationships with local job training programs for low-income individuals, felony offenders, and people experiencing homelessness. A commitment to hiring individuals in recovery will likely also require many employers to **eliminate or retool policies that prevent the hiring of people with non-violent criminal offenses**. Addressing these policies should be a priority of healthcare organizations that serve people with SUD, as they are a major barrier to hiring peer recovery coaches.

WHAT CAN K-12 SCHOOLS DO?

K-12 schools should **ensure selection and implementation of evidence-based school prevention strategies**, such as Botvin LifeSkills and Project ALERT. Various resources exist for identifying these strategies including Youth.gov, Blueprints, the Indiana Family and Social Services Agency's Evidence-Based

Practice Guide, and/or the Indiana Prevention Resource Center.¹⁰ In line with the above recommendation for more targeted distribution of naloxone to people with OUD, schools should ensure naloxone is available during school days and at after-school events in case it is needed for students or parents with OUD.

Finally, schools should **investigate approaches to serving both students and parents** dealing with SUD issues through family-based programs or school-based health clinic models.

WHAT CAN COLLEGES AND UNIVERSITIES DO?

Institutions of higher education are highly familiar with substance misuse within the young adult population, as college is a time when considerable experimenting with alcohol and drugs occurs. Every college or university has some policies around substance use/misuse, and those with residential students are likely to have robust programs in place for both preventing and reacting to these issues. However, most of these programs focus largely on alcohol or marijuana use. **Programs should be implemented specifically to address opioid use among students.** These programs should borrow strategies demonstrated to address substance use effectively within this population such as personalized feedback and challenging expectations related to substance use [83]. It is also important to be realistic by understanding that drug experimentation is going to happen on college campuses, and **harm reduction strategies such as naloxone availability and condom distribution should be implemented** to help mitigate negative consequences related to this experimentation.

Colleges and universities must also make a **meaningful commitment to admit and train the medical and behavioral workforce** needed to staff treatment facilities by maximizing opportunities for students to receive appropriate education in addiction medicine, psychology, social work, and recovery support. **Students must be incentivized to enroll in these courses and continue to serve those living with SUD** through scholarships and student loan repayment opportunities. Similar **incentives for medical and social work students to specialize in addiction fields** will also strengthen the workforce. More robust education and clinical experience should be routinely provided as part of basic medical school education, primary care residency training, and training programs for advance practice nurses, social workers and others to ensure healthcare providers can identify and treat or refer patients with SUD.

Universities can also commit to tackling OUD by **incentivizing or funding opioid-related research**. The Indiana University Addictions Grand Challenge provided \$50 million to fund research, a data repository, and translational services related to OUD. Universities must also take efforts to **ensure research is translated appropriately** to ensure its results are being put to appropriate use within the community. This

¹⁰ Weblinks to repositories: Youth.gov at <https://youth.gov/evidence-innovation>; Blueprints at <https://www.blueprintsprograms.org>; Indiana FSSA's Evidence-Based Practice Guide at https://www.in.gov/fssa/dmha/files/Indianas_Evidence_Based_Practice_Guide_Feb_16.pdf; Indiana Prevention Resource Center at <https://www.rmff.org/preventionmatters>.

will mean investments in design and communications activities, which are typically not funded by research grants.

WHAT CAN OTHER NON-PROFIT, COMMUNITY, AND FAITH-BASED ORGANIZATIONS DO?

Community-based organizations have a long history of providing treatment and support for people with SUD. However, the abstinence-only approach many organizations have historically taken is not supported by evidence for the opioid epidemic. Community-based organizations can effectively **provide critical wraparound services such as transportation and recovery housing that assist people with OUD to fully engage in MAT**, and other services, such as meals, child care, and warm clothing that address the needs of individuals. Community-based organizations are key to fighting stigma that exists within the community by **educating community members about MAT-based recovery and by hosting naloxone trainings**. Regarding faith-based organizations, the Indiana State Department of Health has recently begun a series of community conversations with various congregation leaders. These efforts should be continued and expanded.

Recovery housing and other forms of supportive housing services must ensure that individuals have access to MAT. Blending recovery housing with a Housing First philosophy is one avenue to accomplishing this. Given the connection between OUD and homelessness, opportunities to support recovery housing supportive of MAT as part of Indianapolis' plan to end homelessness should be explored.

Finally, while MARA groups should be developed by people in MAT-based recovery, community-based organizations can support their development by **providing space for MARA meetings to be held**. Ideally, meeting locations would be available across Marion County to ensure adequate access.

CONCLUSION

Marion County and the state of Indiana are still very much in the grips of the opioid crisis. Between 2011 and 2017, a total of 8,623 Hoosiers died from drug overdose. One out of every five of those deaths was a resident of Marion County. There are signs of progress, such as the substantial drop in opioid prescriptions filled by Indiana pharmacies and a state-wide focus on increasing access to medication-assisted treatment. However, deadly new challenges, like fentanyl-laced drugs on the street, have emerged.

Those working at the state and county levels to bring this epidemic under control must join forces to confront it on multiple fronts using a number of effective strategies simultaneously. The coordinated response must be sufficiently agile to adapt as the epidemic shifts. With such a sustained and coordinated approach, using strategies that have proven effective across the nation, we can turn the corner on this devastating epidemic in Marion County.

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APPENDICES

APPENDIX A: GLOSSARY OF ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
CBD	Cannabidiol
CDC	Centers for Disease Control and Prevention
CRAFT	Community Reinforcement and Family Training
CTSI	Indiana Clinical and Translational Sciences Institute
DARE	Drug Abuse Resistance Education
DCS	Indiana Department of Child Services
DEA	Drug Enforcement Administration
DMHA	Indiana Division of Mental Health and Addiction
DUR	Drug Utilization Reviews
EAP	Employee Assistance Program
ECHO	Extension for Community Healthcare Outcomes
ED	Emergency Department
EHR	Electronic Health Record
EMS	Emergency Medical Services
FDA	Food and Drug Administration
GSP	Gross State Product
HCV	Hepatitis C Virus
HF	Housing First
HIV	Human Immunodeficiency Virus
INSPECT	Indiana State Prescription Drug Monitoring Program
ISDH	Indiana State Department of Health
IUFSPH	Indiana University Richard M. Fairbanks School of Public Health at
IUPUI	
IUPUI	Indiana University-Purdue University Indianapolis
LST	Life Skills Training
MARA	Medication Assisted Recovery Anonymous
MAT	Medication-Assisted Treatment
MCAT	Mobile Crisis Assistance Teams
MCCO	Marion County Coroner's Office

MCPHD	Marion County Public Health Department
NA	Narcotics Anonymous
NAS	Neonatal Abstinence Syndrome
NREPP	National Registry of Evidence-based Programs and Practices
NSDUH	National Survey on Drug Use and Health
N-SSATS	National Survey of Substance Abuse Treatment Services
OFR	Overdose Fatality Review
OTP	Opioid Treatment Program
ODU	Opioid Use Disorder
PACE	Public Advocates in Community Re-Entry
PDMP	Prescription Drug Monitoring Program
PRC	Peer Recovery Coaches
PWID	People who inject drugs
RMFF	Richard M. Fairbanks Foundation
ROSC	Recovery-oriented Systems of Care
SAMHSA	Substance Abuse and Mental Health Services Administration
SBIRT	Screening, Brief Intervention, and Referral to Treatment
SFP	Strengthening Families Program
SIF	Supervised injection facilities
SSP	Syringe Services Program
START	Sobriety Treatment and Recovery Teams
SUD	Substance Use Disorder
TEDS	Treatment Episode Data Set
USPSTF	U.S. Preventive Services Task Force

APPENDIX B: SUPPLEMENTAL DATA

Appendix B1. Drug overdose deaths by selected opioid categories by sex and race/ethnicity by death year, Indiana residents, (ISDH, 2014-2016) [25]

Demographic	Total Drug Overdoses (X40-X44, X60-X64, X85 or Y10-Y14)			All Opioids (T40.0-T40.4; T40.6)			Opioid Pain Relievers (T40.2- T40.4)			Heroin (T40.1)		
	2014	2015	2016	2014	2015	2016	2014	2015	2016	2014	2015	2016
Total	1,152	1,236	1,518	452	529	785	250	274	488	170	239	296
Sex												
Male	683	776	959	305	367	518	153	184	300	131	172	223
Female	469	460	559	147	162	267	97	90	188	39	67	73
Race												
White	1,082	1,135	1,368	427	493	705	238	259	431	159	221	264
Black	59	84	130	22	29	70	11	11	50	9	14	26
Other	11	17	20	3	7	10	1	4	7	2	4	6
Ethnicity												
Hispanic	17	23	31	9	9	15	3	5	9	5	7	7
Non-Hispanic	1133	1213	1485	442	520	768	247	269	477	164	232	289
Unknown	2	0	2	1	0	2	0	0	2	1	0	0

Data Notes & ICD-10 Codes used for analysis:

**** Deaths may be included in more than one category if multiple drugs were listed on the death certificate.**

To avoid over-counting the number of drug deaths, counts from the drug death categories should NOT be added together.

Total Drug Overdoses: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14

All Opioids: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause T40.0-T40.4; T40.6.

Opioid Pain Relievers: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause T40.2-T40.4

Heroin: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause T40.1

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team; Vital Records

Report prepared by Indiana State Department of Health, Division of Trauma and Injury Prevention

Appendix B2. Number of drug overdose deaths involving opioids and other drugs by year of death, Indiana residents, 1999-2016 (Indiana State Department of Health, 2016)

Year:	Total Drug Overdoses	All Opioids	Opioid Pain Relievers	Heroin	Other & Unspecified Narcotics	Cocaine	Benzodiazepines	Psychostimulants with Abuse Potential, Excluding Cocaine	Other & Unspecified Drugs
1999	184**	43	25	3	15	27	7	4	99
2000	203**	36	24	3	9	14	3	2	136
2001	266**	57	49	4	3	17	7	3	172
2002	281**	56	43	0	14	27	10	3	195
2003	426**	119	92	3	26	36	21	3	291
2004	537**	134	98	7	32	54	18	6	384
2005	609**	157	118	13	31	46	25	4	447
2006	728**	170	135	9	34	53	31	11	535
2007	771**	235	195	16	32	52	45	6	559
2008	818**	304	214	56	47	49	60	9	569
2009	903**	323	259	65	18	41	96	13	663
2010	923**	283	229	54	19	42	88	19	642
2011	957**	347	250	63	46	33	90	12	712
2012	999**	361	206	110	57	36	94	15	699
2013	1049**	350	168	152	51	45	74	19	703
2014	1152**	452	250	170	61	47	84	38	792
2015	1236**	529	274	239	82	67	120	55	803
2016	1518**	785	488	296	92	111	191	120	900

Data Notes & ICD-10 Codes used for analysis:

** Deaths may be included in more than one category if multiple drugs were listed on the death certificate. To avoid over-counting the number of drug

Total Drug Overdoses: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14

All Opioids: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause T40.0-T40.4; T40.6.

Opioid Pain Relievers: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause T40.2-T40.4

Heroin: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause T40.1

Other & Unspecified Narcotics: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause T40.6

Cocaine: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause T40.5

Benzodiazepines: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause T42.4

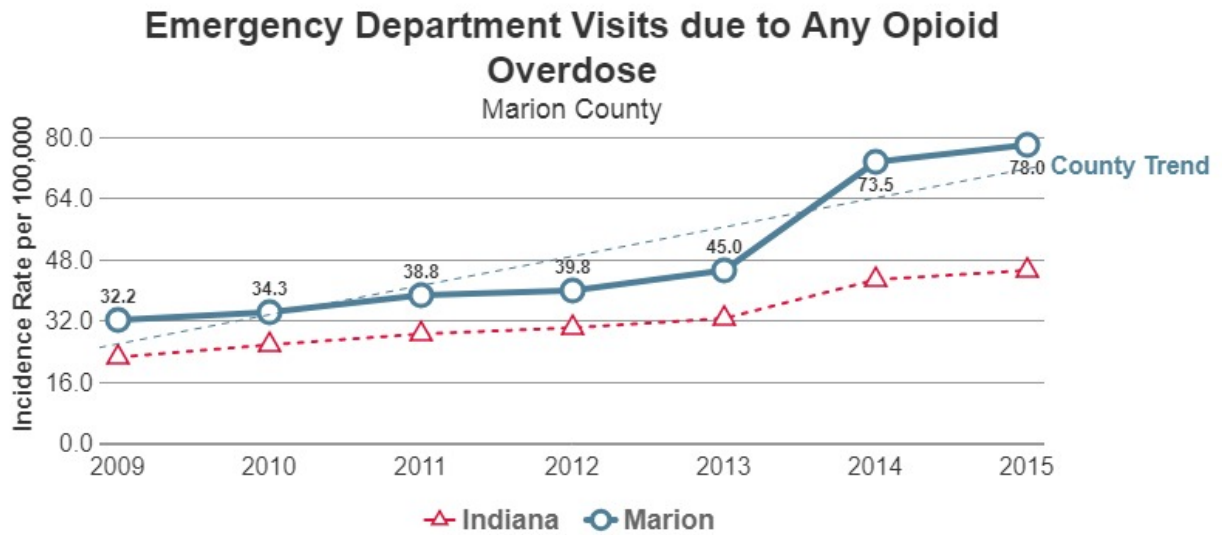
Psychostimulants with Abuse potential, Excluding Cocaine: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 with contributing cause of T43.6 to

Other & Unspecified drugs: Underlying cause of X40-X44, X60-X64, X85 or Y10-Y14 and contributing cause T50.9 and potentially deaths without any codes

Source: Indiana State Department of Health, Epidemiology Resource Center, Data Analysis Team; Vital Records

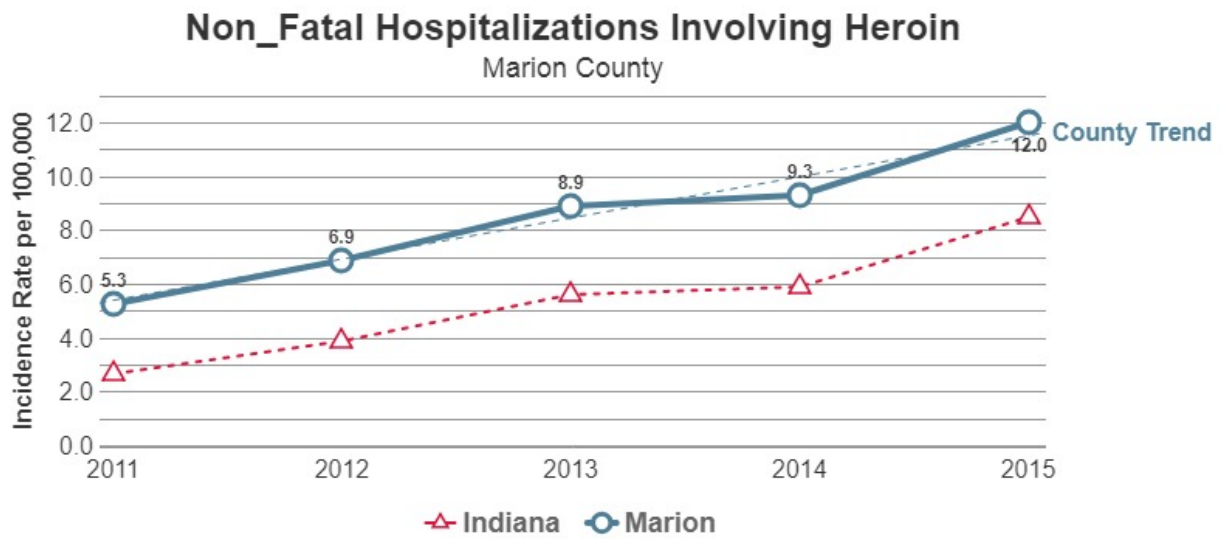
Source: Indiana State Department of Health

Appendix B3. Emergency department visits due to any opioid overdose, Marion County and Indiana, 2009-2015



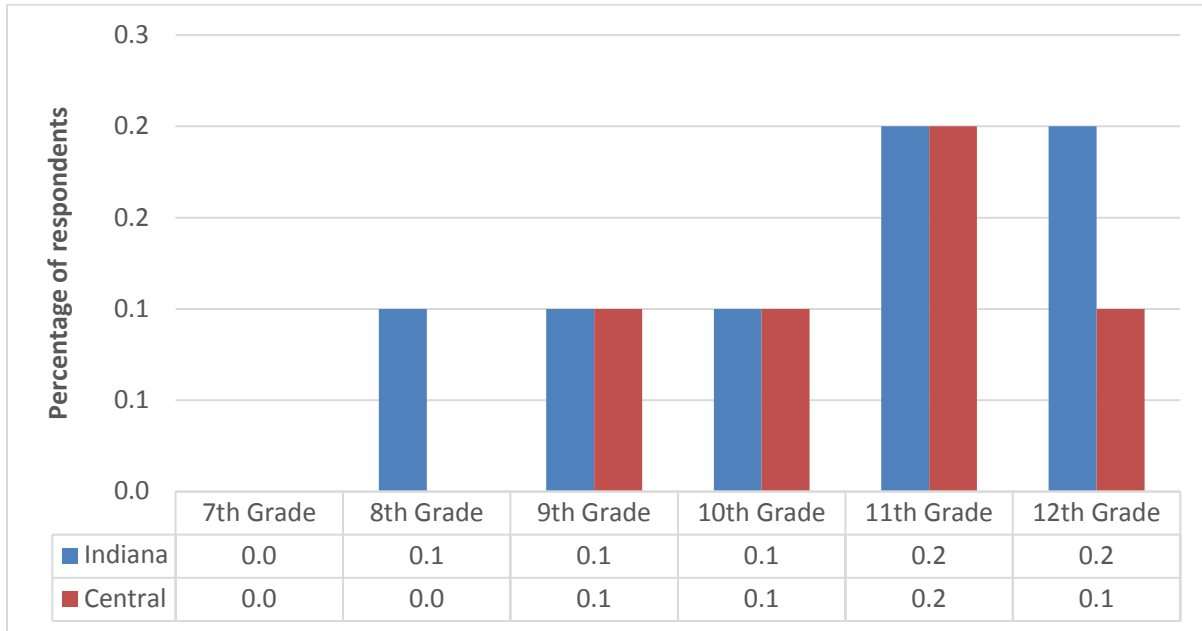
Data source: Indiana State Department of Health, Division of Trauma and Injury Prevention [18]

Appendix B4. Non-fatal hospitalization rates involving heroin, Marion County and Indiana, 2011-2015



Data source: Indiana State Department of Health, Division of Trauma and Injury Prevention [18]

Appendix B5. Heroin Use among 7th-12th graders in Indiana and Central Indiana



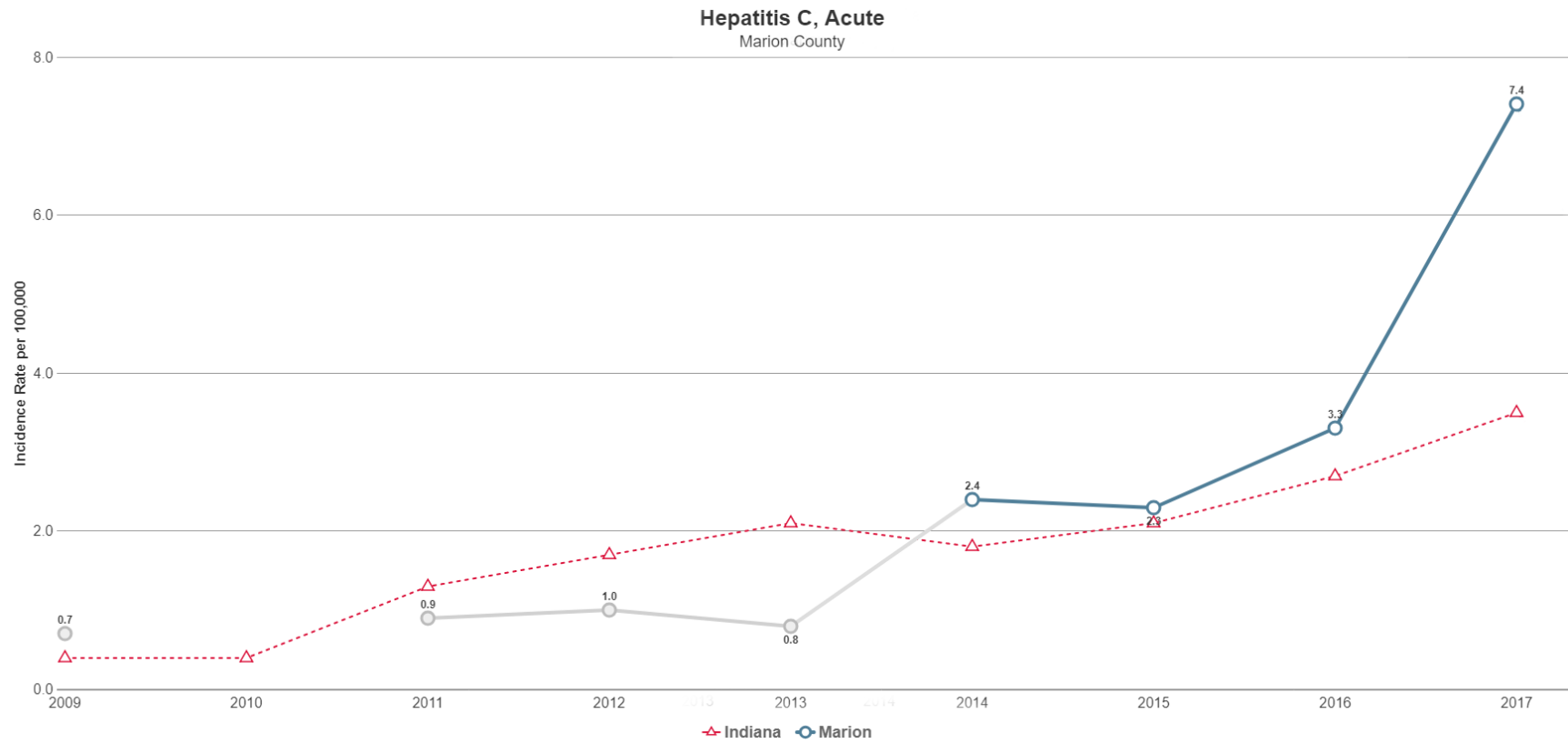
Data source: Indiana Youth Survey, 2018 [260]

Appendix B6. Demographics of those with any opioid misuse reported at treatment admission

		Marion Co.		Indiana	
Gender	Male	757	46.0%	7,967	57.3%
	Female	887	54.0%	6,732	48.4%
Race	White	1,334	81.1%	12,520	90.1%
	Black	212	12.9%	661	4.8%
	Other	98	6.0%	718	5.2%
Age Group	Under 18	13	0.8%	100	0.7%
	18 to 24	186	11.3%	2,257	16.2%
	25 to 34	765	46.5%	6,734	48.4%
	35 to 44	355	21.6%	3,198	23.0%
	45 to 54	178	10.8%	1,080	7.8%
	55 and over	147	8.9%	530	3.8%
Total		1,644		13,899	

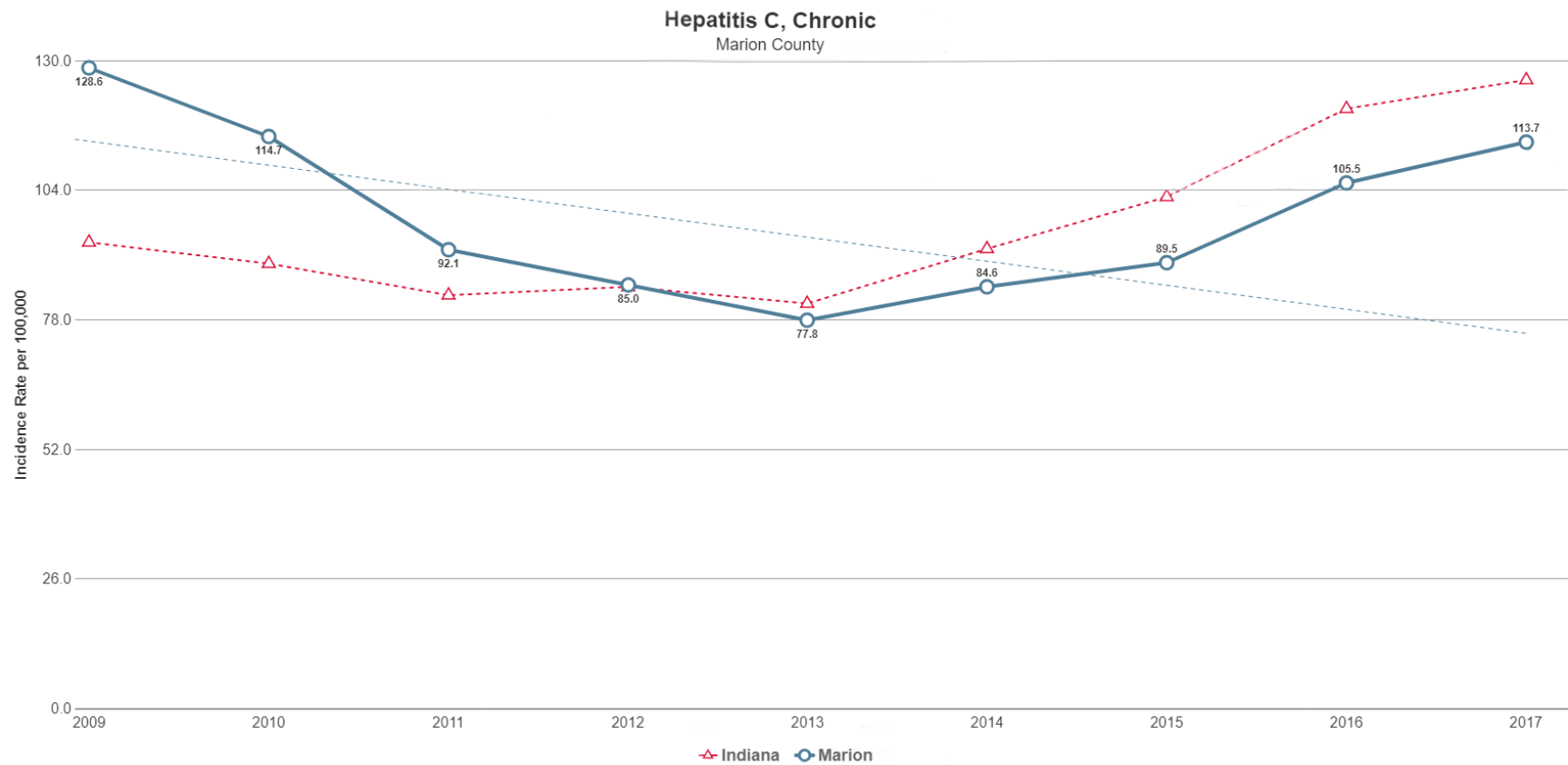
Data source: Treatment Episode Dataset, 2017 [43]

Appendix B8. Rate of acute hepatitis C in Marion County, 2009-2017



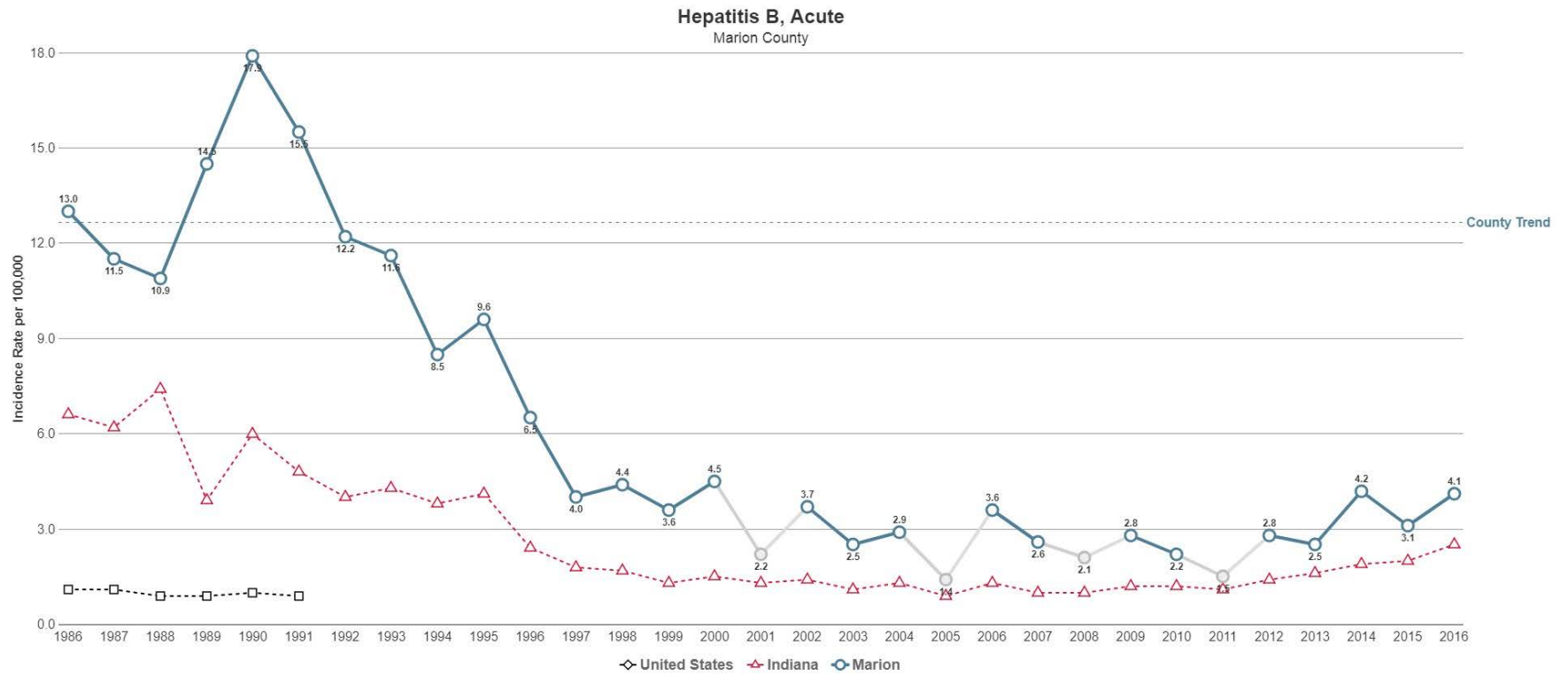
Data source: Indiana State Department of Health, Epidemiology Resource Center [18]

Appendix B9. Rate of chronic hepatitis C in Marion County, 2009-2017



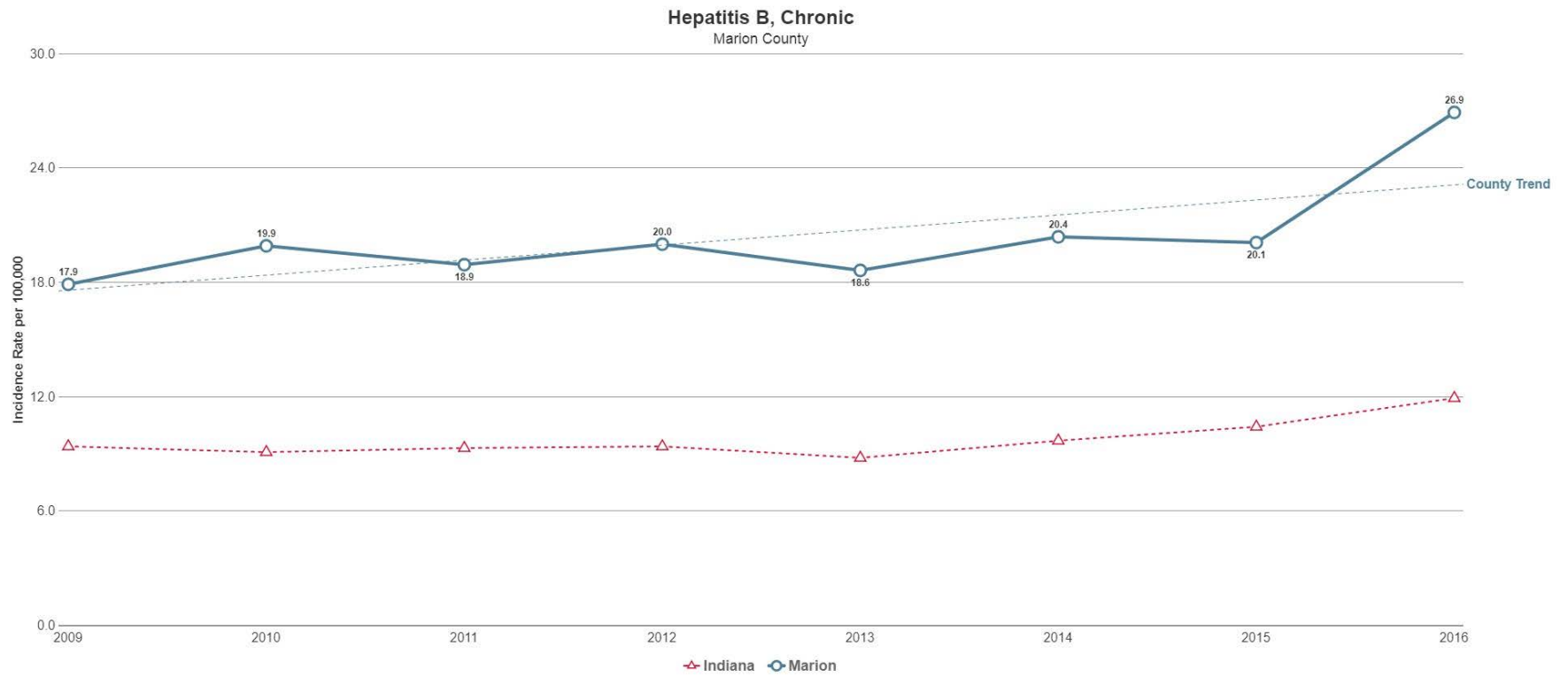
Data source: Indiana State Department of Health, Epidemiology Resource Center [18]

Appendix B10. Rate of acute hepatitis B in Marion County, 1996-2016



Data source: Indiana State Department of Health, Epidemiology Resource Center [18]

Appendix B11. Rate of chronic hepatitis B in Marion County, 2009-2016



Data source: Indiana State Department of Health, Epidemiology Resource Center [18]

Appendix B12. New and total cases of HIV by county, Indiana, 2017

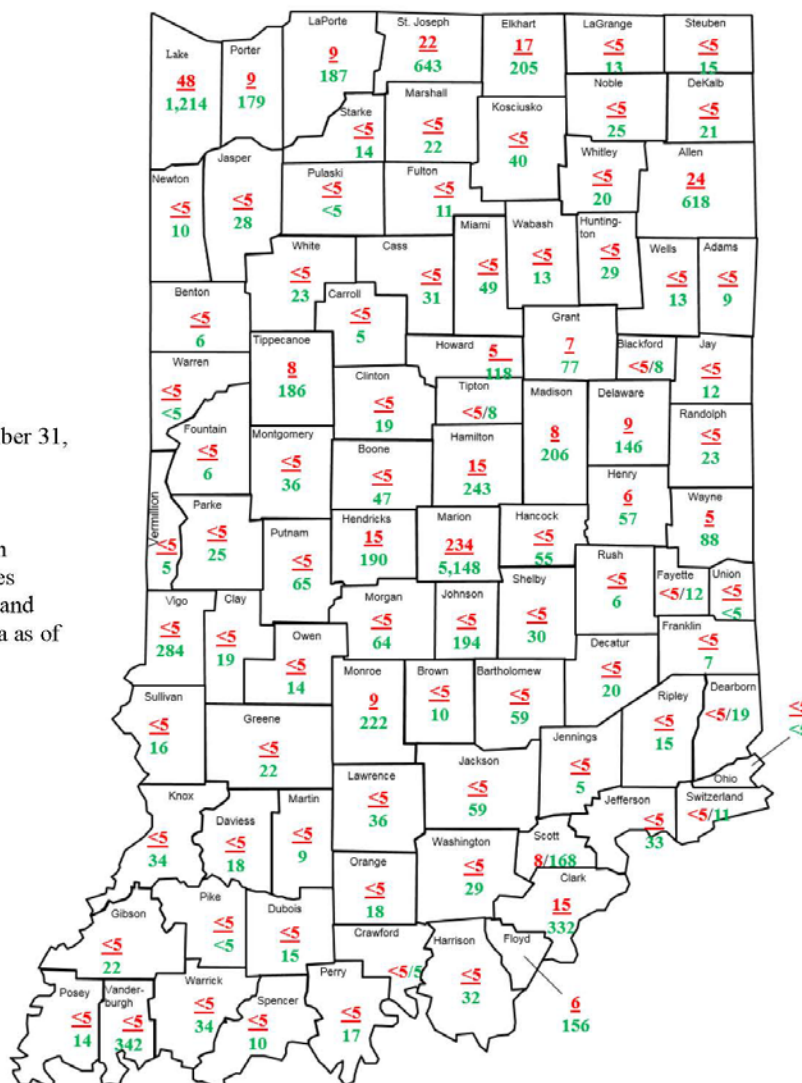
Indiana Persons Living with HIV/AIDS as of December 31, 2017

Top Number:

New HIV/AIDS Reports
January 1, 2017 – December 31, 2017

Bottom Number:

Total Persons Living with HIV/AIDS including cases diagnosed in other states and currently living in Indiana as of December 31, 2017



APPENDIX C: STRATEGY DESCRIPTIONS AND EVIDENCE RATINGS

Appendix C1. Strategies for Prevention (page 1 of 3)					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Prescription Drug Monitoring Programs (PDMP)	A	Program/ Practice	State-level database that tracks prescribing and dispensing information for controlled substances, including opioids.	Policies that prevent data sharing; lack of electronic health record integration	[68, 72–75, 262]
School-based programs	A	Program/ Practice	K-12 programs that provide information about the dangers of substance use and develop resilience.	Many ineffective or untested programs exist	[80–82]
Family-based programs	A	Program/ Practice	Family-focused programs that parenting skills and adolescent substance refusal skills, typically implemented with families of youth who exhibit high-risk behaviors (sometimes combined with classroom strategy components).	Much prior research conducted in rural communities; cultural adaptations likely necessary	[103] [85] [84]
Drug take-back programs	A	Program/ Practice	Specific type of supply-side diversion control strategy where community programs accept unused medications at a drop-off location for proper disposal	None identified	[89–91]
Drug utilization reviews (DUR)	B	Program/ Practice	Programs with promising evidence that track and send information to physicians about their individual prescribing patterns with the goal that high prescribers will change their behaviors	Not typically used outside of managed care	[94]
Drug diversion control	B	Program/ Practice	Wide variety of practices aimed at curtailing the diversion of prescription medications to individuals they were not prescribed for (includes supply-side or demand-side approaches)	Clinical diversion practices can increase provider workload	[97]

Appendix C1. Strategies for Prevention (page 2 of 3)					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Overdose fatality review (OFR) teams	B	Program/ Practice	Multi-sector teams conduct confidential reviews of resident drug and alcohol overdose deaths to identify opportunities to improve operations in a way that will prevent future similar deaths	Data sharing between essential member agencies and organizations	[98–100]
Overdose toxicology surveillance	B	Program/ Practice	Required running and reporting of toxicology testing when coroners suspect a death is the result of an overdose	Cost; inconsistencies in coroner training	[102, 263]
College programs	B	Program/ Practice	Strategies to prevent or reduce substance misuse among college students	Much of the effectiveness of these programs has been shown for cannabis and alcohol misuse	[103]
Drug-free workplaces	B	Program/ Practice	Wide variety of programs that encompass a range of activities from education for prevention to workplace drug testing	No evidence-based programs could be identified, but SAMHSA recommends basing prevention activities on general prevention programs with established effectiveness; positive effects of drug testing may be limited to specific industries	[105] [107] [106]
Physician/prescriber education	B	Program/ Practice	Training in appropriate pain management and narcotic prescribing practices.	Training often not an effective stand-alone behavior change strategy	[68, 110–112, 264]
Guidelines for pain prescribing	B	Policy/ Law	Provide a basis for physicians at the state and national level to follow consistent chronic and acute opioid pain prescribing practices.	Guidelines differ between federal and state entities; significant room for physician discretion in applying	[117–121]
Public educational campaigns	B	Program/ Practice	Broad category of strategies including initiatives to promote health literacy, reduce stigma, and normalize healthy behaviors.	Can increase stigma if not implemented appropriately	[122, 123, 265, 266] [127, 267] [126, 128, 268–270]

Appendix C1. Strategies for Prevention (page 3 of 3)					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Cannabidiol oil (CBD)	C	Program/ Practice	Use of non-psychoactive component of cannabis plant with anti-inflammatory properties that might benefit people with chronic pain.	None noted, legal in all 50 states	[130, 271]
Drug paraphernalia laws	F	Policy/ Law	Thought to dissuade drug use by making it illegal to carry equipment associated with its consumption.	Criminalizes SUD; likely negative impact on effectiveness of certain harm reduction practices (e.g., syringe services programs and fentanyl test strips)	[131][132][133]
Overdose fatality/homicide laws	F	Policy/ Law	Thought to dissuade dealing by establishing a charge of drug-induced homicide may be brought against opioid suppliers in cases where that substance can be linked to a fatal overdose.	Drug “supplier” not well defined in some cases; criminalizes SUD; likely negative impact on Good Samaritan law effectiveness	[135, 136]

Appendix C2. Strategies for Treatment & Recovery Supports (page 1 of 4)					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Medication-assisted treatment (MAT)	A	Program/ Practice	Pharmacological treatment of addiction supported by behavioral therapy.	Community and client stigma; lack of services to support continued engagement (e.g., housing and transportation); burdensome therapy requirements; lack of payment source for some clients; limited choice of MAT treatment type due to unavailability	[195, 272–278]
Jail/prison-based treatment	A	Program/ Practice	Provision of OUD treatment to people in jail/prison: only MAT-based interventions have strong evidence.	Historical lack of support for MAT within the criminal justice system for non-antagonist treatments; lack of Medicaid coverage or other funding for treatment	[157, 279, 280]
Treatment for pregnant women	A	Program/ Practice	Provision of OUD treatment for pregnant women: only MAT-based full or partial agonist interventions are evidence-based.	Public and internalized stigma against mothers who use opioids; historical lack of support for MAT in child welfare system	[158, 159, 161, 210, 276, 281–283]
MAT primary care integration	A	Program/ Practice	A wide range of strategies for incorporating MAT into standard, office-based medical settings.	Need stronger incentives; regulations (e.g., HIPAA and 42 CFR) can prevent sharing of important healthcare information between primary care and behavioral health	[163] [164]
Drug treatment courts	A	Program/ Practice	Community-based treatment and supervision in lieu of a criminal conviction or incarceration for people with SUD	Historical lack of support for MAT within the criminal justice system for non-antagonist MAT	[167, 168]
Expansion of buprenorphine data waivers	A	Policy/Law	Allows primary care providers to increase the number of individuals they treat with buprenorphine. It also extends buprenorphine prescribing privileges to advance practice nurses.	Stigma among providers; waived providers not serving total number of patients allowed	[170, 284]

Appendix C2. Strategies for Treatment & Recovery Supports (page 2 of 4)					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Expanded coverage/payment sources	A	Policy/Law	Allows more people to access Medication-assisted treatment by providing a payment source (typically Medicaid).	Many MAT-prescribing physicians do not take Medicaid; burdensome process can prevent start/completion of Medicaid enrollment	[241]
Opioid use disorder screening	B	Program/ Practice	Screening for opioid use disorder in clinical care, includes Screening, Brief Intervention, and Referral to Treatment (SBIRT).	Lack of reliable screening instruments	[60–66]
Peer recovery coaches (PRCs)	B	Program/ Practice	This service is delivered by a person with a history of addiction and recovery which allows a personal connection with those overcoming addiction through experience.	Policies that prevent hiring people with felony backgrounds; lack of reimbursement mechanisms; strong clinical supervision and supports required to not jeopardize PRC's personal recovery	[86–89]
Emergency department (ED)-based initiation and linkage to treatment	B	Program/ Practice	Capitalizes on a critical moment with patients who have OUD when they are receiving care in the ED, typically for an overdose, to provide an immediate bridge prescription for buprenorphine treatment.	ED-based buprenorphine prescribing cannot be successful in communities that do not have MAT providers available for patient referral to continuing treatment.	[178, 179]
Telehealth/Telemedicine	B	Program/ Practice	The use of telecommunications and digital technology platforms to provide distance-based provider supervision or direct patient care (including behavioral health care).	Patient privacy concerns; limitation to what medications can be prescribed vary by region; might be less beneficial in urban settings	[180, 285, 286]
Pre-booking diversion programs	B	Program/ Practice	Divert people from incarceration for behavioral health issues and help link to treatment; include crisis intervention teams and community triage centers.	Most evidence is for people with co-occurring disorders.	[185] [186]

Appendix C2. Strategies for Treatment & Recovery Supports (page 3 of 4)					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Employee assistance programs (EAPs)	B	Program/ Practice	Provide employees with free short-term counseling and referral services for a variety of psychological and emotional concerns, including substance use disorder. The range of services varies, with some providing direct counseling and treatment services.	Wide range of programs make it difficult to ascertain what is effective for SUD; concerns about confidentiality and potential ramifications to employment may hinder employees from voluntarily accessing this resource	[191] [192]
Psychosocial interventions	B	Program/ Practice	Psychotherapy for treating opioid use disorder. Psychotherapy can be used alone or in conjunction with MAT.	Not as effective as MAT; requirements place burdens on MAT patients when no added benefit has been established	[147, 276]
Recovery-oriented systems of care (ROSC)	B	Program/ Practice	Coordinated network of community-based and person-centered services and supports for those with or at risk of a substance use disorder.	Lack of strong/concrete implementation guidelines	[198–200]
Recovery housing	B	Program/ Practice	Provide short-term housing with peer supports to people living with a SUD (and often with co-occurring serious mental health issues)—typically after the individual enters recovery housing during or after completing outpatient treatment.	Historically rooted in an abstinence-only philosophy that can be problematic for people with OUD who are receiving MAT	[201] [204]
Medication Assisted Recovery Anonymous (MARA)	B	Program/ Practice	Recovery support group for individuals in MAT.	Groups must be developed from within the recovery community, not professionals; potential difficulty finding space for meetings	[205, 206]
Bridge device	C	Program/ Practice	Device worn on the ear that theoretically reduces pain associated with opioid withdrawal. It is used to assist in opioid detox prior to beginning naltrexone or abstinence-based treatment.	Detox not generally offered as an option among evidence-based treatment options	[208, 209]

Appendix C2. Strategies for Treatment & Recovery Supports (page 4 of 4)					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Laws protecting pregnant women who use illicit opioids	C	Program/ Practice	Seeks to eliminate fear of prosecution and child separation as a barrier for women living with opioid use disorder from seeking out prenatal care.	Public and internalized stigma against mothers who use opioids	[158, 210]
Support programs for women with babies and children	C	Program/ Practice	These programs largely coincide with the child protective services system and aim to treat the mother's opioid and other substance use disorders while keeping the children in their custody, under safe conditions (as such, these can be considered prevention programs from the perspective of the child).	Historical lack of support for MAT within child welfare system; potential to criminalize OUD	[212, 213, 287]
Abstinence-only treatments	D	Program/Practice	All treatment options (inpatient, outpatient, residential) that require abstinence from all psychoactive substances, including evidence-based MAT	Abstinence-based approaches can be beneficial for some and should be presented as an option alongside evidence-based treatments	See entry on MAT [288]
Narcotics Anonymous (NA)	D	Program/ Practice	Support group rooted in 12-step, abstinence-only approach for people in recovery from a SUD	Groups must be developed from within the recovery community, not professionals; potential difficulty finding space for meetings; generally not accepting of people receiving MAT	[206, 289–292]
Involuntary treatment	F	Policy/Law	Forced treatment of people with OUD, typically as a result of involvement in the criminal justice system	If implemented properly, can increase overdose risk	[219]

Appendix C3. Strategies for Harm Reduction (page 1 of 2)					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Naloxone training & distribution programs	A	Program/ Practice	Harm reduction method of distribution and training on the usage of naloxone as an overdose rescue medication to prevent overdose deaths.	Public awareness low; distribution locations often not convenient or comfortable for people with OUD	[128, 135, 239, 242, 293–296]
Take-home naloxone programs	A	Program/ Practice	Provides naloxone to those at high risk for overdose, and who are likely to be in a network with other users of illicit substances, upon release from the hospital, prison, or jail, as well as education on usage.	Historical lack of support for harm reduction within the criminal justice system; high expense for health care providers	[221–223]
Syringe services programs (SSP)	A	Program/ Practice	Provide free access to sterile syringes for people who inject drugs and facilitate safe disposal of used syringes.	Lack of funding for syringes; community stigma; lack of political and criminal justice support	[236, 237]
Supervised injection facilities (SIF)	A	Program/ Practice	Legally sanctioned locations where people who use injection drugs can inject under medical supervision.	Community stigma; lack of political and criminal justice support	[227, 230–234]
Housing First	A	Program/ Practice	Low-barrier, immediate housing for people experiencing chronic homelessness. The housing model follows a harm reduction service philosophy that has been demonstrated to reduce overdoses in resident population.	Resistance to implementing necessary harm reduction components of the intervention	[236, 237]
Expanded naloxone access	A	Policy/Law	Expanding naloxone access for lay responders (i.e., people with OUD and others in a position to respond to an overdose).	Requires targeted education and distribution to reach lay responders	[239–243, 297]
Good Samaritan/ immunity laws	A	Policy/Law	These laws generally provide immunity or no criminal liability, from arrest, charges, or prosecution for controlled-substance possession when a person calls 911 for an opioid-related overdose.	Fear of police; limited immunity; lack of public knowledge/ understanding	[135, 241, 294, 297–299]
Pharmacy-based syringe access programs	B	Program/ Practice	Access to syringes through community pharmacies.	Need specific laws to support	[244, 245]

Appendix C3. Strategies for Harm Reduction (page 2 of 2)					
Intervention name	Rating	Intervention type	Description	Noted and potential implementation challenges	For more information
Fentanyl test strips	B	Program/ Practice	Paper strips that can be given to users of illicit opioids to test for the presence of fentanyl.	Drug paraphernalia laws; people might not change use behavior even when strip is positive	[246, 247]
Safe stations	C	Program/ Practice	Safe stations are areas (generally designated police and fire stations) where people misusing opioids can be monitored by healthcare providers and linked with services, such as clean needles or other resources. While in these safe stations, people are protected from prosecution by Good Samaritan/immunity laws.	People with OUD might not feel comfortable entering safe station areas, particularly police stations	[248][241][249]
Cannabis legalization	C	Policy/Law	Legalization of cannabis for medicinal or recreational reasons.	Lack of political support	[252, 300–305]

APPENDIX D: ORGANIZATIONS REPRESENTED BY KEY INFORMANTS

Organization	Organization Type	Subcategory
Marion County Public Health Department	Indianapolis/Marion County Government	Health
Indianapolis Emergency Medical Services	Indianapolis/Marion County Government	Health
Richard M. Fairbanks Foundation	Marion County Nonprofit	Funder
United Way of Central Indiana (2)	Marion County Nonprofit	Funder
Coalition for Homelessness Intervention and Prevention (CHIP)	Marion County Nonprofit	Funder & Advocacy
Drug Free Marion County	Marion County Nonprofit	Health
Indianapolis Center for Congregations	Marion County Nonprofit	Religious
Archdiocese of Indianapolis	Marion County Nonprofit	Religious
Regenstrief Institute	Marion County Nonprofit	Research
Public Advocates in Community Re-Entry (PACE)	Marion County Nonprofit	Service
Horizon House	Marion County Nonprofit	Service
Division of Mental Health and Addiction, Family Social Services Administration	State Government	Health
Indiana State Department of Health	State Government	Health
Indiana State Department of Health, Trauma and Injury Prevention	State Government	Health
Indiana Criminal Justice Institute	State Government	Justice
Indiana Department of Corrections	State Government	Justice
Indiana State Police	State Government	Justice
Indiana Recovery Alliance	Statewide Nonprofit	Advocacy

(cont.)

Organization	Organization Type	Subcategory
Indiana Addiction Issues Coalition	Statewide Nonprofit	Advocacy
Overdose Lifeline	Statewide Nonprofit	Health
Indiana Poison Center, IU Health	Statewide Nonprofit	Health
IU School of Medicine	Statewide Nonprofit	Research & Training
Indiana Counselors Association on Alcohol and Drug Abuse (ICAADA)	Statewide Nonprofit	Training
Indiana Chamber of Commerce	Statewide Nonprofit	Advocacy & Economic