

ISSUE BRIEF

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Addressing the Opioid Crisis in Small and Rural Communities in Western Massachusetts

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EXECUTIVE SUMMARY

The opioid crisis is having a devastating impact on public health in the Commonwealth of Massachusetts with specific challenges in rural and small communities in Western Massachusetts. A detailed literature review and 24 stakeholder interviews helped identify those challenges as well as describe action steps being taken in the region and highlight recommendations for future success. Several themes emerged including: the vitality of collaboration and the role of community coalitions in ensuring an effective response, the rehabilitative role of the criminal justice system, innovative solutions aimed to engage more people on medications for opioid use disorder (MOUD), and the necessities of harm reduction strategies and recovery support services (RSS).

Beyond the economic toll, the intergenerational impact of this opioid addiction epidemic has left infants born dependent on opioids, grandparents raising grandchildren, an increase of children in the foster care system, and an increasing incarcerated population struggling with opioid use disorder (OUD). While much is being done, the crisis continues. Appropriate access to treatment and supportive recovery in the region is hindered by challenges including socioeconomic distress, inadequate treatment infrastructure and housing, rural isolation, stigma, transportation, and trauma. What was made clear is the degree of community willingness, leadership, innovation, and compassion that the people of Western Massachusetts exemplify, from regional collaborations, to the criminal justice system, to healthcare providers and hospital systems, to harm reduction specialists.

The Problem

The most recent data on overdose deaths due to opioids shows that, while deaths decreased in the Commonwealth as a whole, there was a 73% increase in Western Massachusetts. After all four counties in the region saw a decrease in deaths in 2017, each county set or matched a record high in 2018. Hampshire County had a 29% increase, Berkshire County had a 48% increase, Hampden County had an 84% increase, and Franklin County had a 144% increase.¹ Though the percentage increase can be overstated in less populated counties, this escalation in opioid-related overdose deaths is significant and concerning. There is a higher prevalence of OUD in some counties, higher opioid prescribing in all four counties compared to the state, but a lower presence of fentanyl in overdose deaths before 2018 compared to the rest of the state. Interviews and preliminary data suggest an increase in fentanyl in 2018, which has likely played a significant role in the recent increase of overdose deaths in Western Massachusetts. The potential tragedy is that, should the presence of fentanyl continue to increase in the illicit drug supply, we are likely to see a corresponding spike in the number of fatal and nonfatal overdoses.

Those most at risk of an opioid overdose death in Massachusetts are: those who have experienced a nonfatal overdose (one in 10 will die within two years), the homeless (risk is 30 times higher than general population), those diagnosed with mental illness (3-6 times higher), the recently incarcerated (120 times higher), mothers with OUD (321 times higher than mothers without OUD) especially 6-12 months postpartum, and those who have been prescribed opioids for three months or longer (30 times more likely to die within five years).² In addition to these groups, populations that were identified in the interviews as disproportionately impacted by the opioid crisis in Western Massachusetts include those with a history of trauma and those of low socioeconomic status.

Another devastating impact of the opioid crisis is Neonatal Abstinence Syndrome (NAS), where babies are born dependent on opioids, which affects up to 80 percent of babies born to mothers who experienced

OAD during pregnancy.³ The rate of maternal OAD in Massachusetts is more than double the national average, and NAS rates in Western Massachusetts are higher than the state average and have increased over sevenfold from 2004 to 2013.^{4,5}

Opioid use disorder is inexplicably linked to the criminal justice system at every level. One senior official interviewed estimated that 90% of larcenies and robberies were related in some way to opioids. Nationally, research shows that over 50% of those in prison and 68% of those in jail population meet criteria for a substance use disorder (SUD), including opioids, alcohol, and other drugs.^{6,7} This proportion is even higher in Western Massachusetts. In Hampden County, the prevalence of SUD among the jail population has increased from 79% to 88% over the past 10 years, and those meeting criteria for OAD increased from 20% to 43%. In Franklin County, 48% of inmates report the use of heroin and 90% have been diagnosed with a SUD, mental illness, or both. Yet, nationally less than 20 percent of individuals received drug treatment while incarcerated.^{8,9}

Economic impact

Extrapolating data from the Massachusetts Taxpayers Foundation, a rough estimate of the annual economic burden of the opioid crisis in Western Massachusetts is \$1.8 billion.¹⁰ This includes productivity losses and costs for criminal justice, healthcare, and public safety. This estimate does not put a monetary value on lives lost, but a national study that does so provides an estimate of the crisis to cost over \$500 billion per year.¹¹ In the Commonwealth, the two occupations with the highest level of opioid-related overdose death rates are construction and agriculture, which are well represented in Western Mass.¹² Employers are also significantly impacted, as two-thirds of people that report misuse of prescription opioids in Massachusetts are employed full-time, and a national survey reports that 75% of employers are directly impacted by the opioid crisis, yet 83% did not feel extremely well prepared to deal with the issue.^{13,14}

Unique Challenges in Western Massachusetts

Studies find that rural areas have higher rates of opioid prescribing,¹⁵ substance use during pregnancy,¹⁶ NAS,¹⁷ and non-medical prescription opioid use by adolescents.¹⁸ Further, rural areas have had a greater increase in the overdose death rate compared with urban areas.¹⁹ However, several predominantly rural states have low opioid-related overdose death rates.²⁰ Much like this rural variation on the national level, Western Massachusetts is a large region comprised of urban, suburban, and rural communities with varied characteristics and challenges. The challenges identified were informed by the interviews, were supported by the literature, and were similar to evidence from other rural areas.^{21,22} These challenges varied by county and/or community, but they establish a foundation of the barriers present in Western Massachusetts that must be overcome by best practices and effective policy to mitigate the opioid crisis. In no order of magnitude these include transportation, socioeconomic distress, access to treatment, isolation, trauma, housing, acquiring data, and stigma.

Western Massachusetts has hubs of providers, and many areas have sparse public transportation unavailable for much of the day, which makes accessing care much more difficult. People report commuting five hours or more to access treatment. The region has several “methadone deserts”, which effectively make this option unavailable for many. While the crisis affects every socioeconomic group, socioeconomic distress is an additional barrier to accessing care and compounds problems of transportation, affordable housing, and employment options and stability. Western Massachusetts has an

average income significantly lower than the state²³ and an outmigration of young adults, which can further depress the economy and affect opportunities for young adults who remain.

With national estimates of 80% of people with OUD not receiving treatment and 92% of SUD treatment facilities in urban areas, access to treatment is a problem for many in these small towns and more remote areas.^{24,25} There are significant shortages of detox and treatment beds. While the region has a higher-than-average percentage of doctors who can prescribe buprenorphine, access to all forms of MOUD (methadone, buprenorphine, and extended-release naltrexone) remains a major challenge.²⁶ Rural isolation often leads to closer communities and family ties which can be helpful, but this isolation also makes it difficult for people to anonymously access OUD services, challenging for those in recovery to change social networks, and devastating in terms of the ripple effect of an overdose death.

The limited availability of affordable housing and sober housing can displace people from supportive networks and is a major impediment to recovery. Even when affordable housing is available, landlords may avoid renting to people with a felony record or history of incarceration. Stigma is pervasive in society, and this is no different in many parts of Western Massachusetts, although progress has been made. This chronic brain disease does not match with people's conception of a disease and, therefore, is often perceived as a moral failing. Further, there is stigma around MOUD, particularly methadone, among medical and service providers, the general public, and even people with OUD themselves. Trauma was also identified as particularly challenging in Western Massachusetts, as adverse childhood experiences (ACEs) were prevalent among incarcerated individuals, people with OUD, and children who have parents with OUD.

Interventions in the Region

Interventions to respond to the opioid crisis in Western Massachusetts are being advanced by regional coalitions, people in recovery and recovery allies, the criminal justice system, harm reduction specialists, healthcare systems, community health centers, providers, and governmental organizations and occur within a continuum of care that includes prevention, early intervention, treatment, recovery, and harm reduction. Below are descriptions of several innovative programs in the region that are detailed in the brief.

Community coalitions break down silos through coordination between individuals and families in crisis, government services, nonprofit organizations, providers, and the criminal justice system. They employ a public health framework with a focus on the entire continuum of care. This brief details several coalitions in Western Massachusetts with an emphasis on the work in Franklin County and the North Quabbin Region. Community collaboration facilitated by these coalitions, as well as leadership and partnerships, creates an environment that enables implementation of evidence-based treatment, stigma reduction, and innovation.

Prevention is vital in reducing new cases of OUD, whether this be through opioid prescribing interventions or education and awareness campaigns. For example, building on the school-based and community-based prevention coalitions in Western Massachusetts, the Young Adult Empowerment Collaborative will serve all four counties with the aim of preventing and treating OUD among young adults. The Franklin Family Drug Court is implementing MISSION-Hope to holistically address entire families affected by OUD and mitigate its intergenerational impact.

Early intervention is critical to mitigate future harms and may include screening patients, prescription monitoring, and identifying and intervening on high-risk populations. For example, BayState Franklin Medical Center runs a program called EMPOWER/Moms Do Care, which identifies and supports mothers with OUD. The DART program in Hampshire County intervenes on another high-risk population, those who have recently experienced a nonfatal overdose.

The most effective treatment of OUD is with MOUD combined with psychosocial services.^{27,28} The criminal justice system, particularly jails and prisons, are critical touchpoints for initiating MOUD. Franklin County Jail and House of Corrections has a promising model that combines intensive treatment with buprenorphine. Pilot programs that offer all three forms of MOUD are underway in Hampshire, Franklin, and Hampden Counties. In addition to MOUD, reentry programs that support people after they are released are crucial to successful outcomes, as shown by promising evidence from the After Incarceration Support Systems (AISS) through the Hampden County Jail.

Recovery from OUD is facilitated by recovery support services (RSS), which are typically embedded within local communities and can target many of the social determinants of health including social support, vocational training, housing, and educational attainment. Recovery community organizations (RCOs), an innovative form of RSS, are increasingly being used to support recovery. Six established RCOs in Western Massachusetts include; Hope for Holyoke Recovery Center, The RECOVER Project in Greenfield, Beacon Recovery Community Center in North Adams, the North Quabbin Recovery Center, The Nest in Belchertown, and Northampton Recovery Center. Several others are in the planning and implementation stages.

Harm reduction are approaches that intend to reduce the consequences associated with drug use for individuals and their communities with an aim to decrease mortality, decrease transmission of infectious diseases, and provide linkage to services. Harm reduction services include naloxone distribution, syringe service programs, fentanyl test strips, and education on safe injection practices and overdose prevention. Examples in Western Massachusetts are Tapestry, a comprehensive harm reduction service provider with multiple sites in Western Massachusetts, and the Harm Reduction Hedgehogs, a grassroots organization using peer-based street outreach to deliver harm reduction supplies to high-risk, hard-to-reach populations.

Policy recommendations

No single opioid policy will make a substantial impact on the crisis, but a portfolio of evidence-based policies that work together to prevent OUD, treat OUD, and mitigate its effects and is contextualized to the area will be most effective.²⁹ We make the following recommendations:

1. **Increase and improve the addiction treatment workforce through funding initiatives and mandate education on addiction and trauma-informed care to individuals who will work in any capacity with the SUD population:** This will increase workforce capacity and access to appropriate treatment, help reduce stigma, encourage people to engage in treatment, and facilitate implementation of evidence-based strategies.
2. **Support and expand municipal-based coalitions and strengthen county-based coalitions:** These coalitions break down silos, support the continuum of care, and reduce stigma.
3. **Continue interventions that lead to cautious opioid prescribing practices:** This includes utilization of the prescription drug monitoring program (PDMP), adherence to state opioid prescribing

policies, academic detailing, and patient education on safe storage and disposal of prescription opioids to prevent prescription opioid exposure and OUD.

4. **Increase capacity of MOUD and increase MOUD initiation at vital touchpoints:** This includes addressing methadone deserts and increasing initiation of MOUD in the criminal justice system, emergency departments, and community health centers.
5. **Increase treatment role of the criminal justice system:** Access to all three forms of MOUD, intensive treatment, and supportive reentry services should be offered throughout the criminal justice system.
6. **Provide a robust and comprehensive treatment and recovery continuum of care that is supported by payors:** Infrastructure should be increased such that treatment-on-demand is a reality for all areas of Western Massachusetts and there is a smooth transition beyond acute stabilization. MassHealth and private payors should be required to facilitate links to certified sober housing, and the availability of RSS should be more broadly expanded.
7. **Use low bandwidth technology as a cost-effective way to deliver services to underserved areas:** Telemedicine can increase buprenorphine capacity, and digital technology apps that deliver evidence-based treatment and recovery support services are emerging as a cost-effective solution to address continuum-of-care gaps in rural and underserved areas.
8. **Support the increased distribution of naloxone and other harm reduction strategies:** These strategies are evidence-based and should expand in Western Massachusetts. Outreach targeting high-risk populations should be expanded.
9. **Provide funding that is sustainable for the entire continuum of care:** Federal and state funding, whether direct or through grants, needs to take into account the unique needs of smaller and rural communities. Funding needs to be sustainable in recognition of the long-term nature of SUD, including OUD.
10. **Address upstream factors related to OUD:** Addressing the social determinants of health will increase access to treatment and improve recovery outcomes.

Conclusion

Western Massachusetts finds itself in a precarious time as opioid-related overdose deaths in 2018 increased to record highs in all four counties. Therefore, the dissemination and implementation of evidence-based strategies for prevention, early intervention, treatment, recovery, and harm reduction as well as strong community collaboration are vital to stem the tide of overdose deaths in this region. Fortunately, Western Massachusetts is comprised of people who care deeply about this issue, communities that are willing to respond, and systems of care that are adopting innovative interventions. However, there is much work to be done to save lives and move forward from the devastation of the opioid crisis.

Introduction

The devastation brought on by the opioid addiction epidemic impacts all aspects of society in the Commonwealth including healthcare systems, the criminal justice system, social services, employers, and first responders. Opioid use disorder (OUD) not only affects the individual, but ripples to families and the community. The impact can be amplified in small and rural communities. Residents of these communities may be predisposed to socioeconomic vulnerabilities that have been associated with higher opioid-related morbidity and mortality. Appropriate access to treatment and supportive recovery services are hindered by challenges including socioeconomic distress, inadequate treatment infrastructure and housing, rural isolation, stigma, transportation, and trauma. This issue brief examines the opioid crisis in small and rural communities in Western Massachusetts and will focus on four key areas: (1) the extent of the problem, including epidemiological comparisons with the state and the nation, and an examination of the costs and consequences; (2) the unique challenges and identified gaps faced by these communities; (3) current best practices for prevention, early intervention, treatment, recovery, and harm reduction for OUD with highlights of innovative programs in Western Massachusetts; (4) policy recommendations to better address the problem in these regions.

This work was informed by interviews, an extensive literature review, and publicly available secondary data. We conducted purposive, semi-structured interviews with 24 stakeholders selected from five groups: providers, community coalitions, criminal justice, harm reduction specialists, and government officials. The interview guide contained general questions about the impact of the opioid crisis, the community's response, access to treatment, unique challenges, collaboration of public safety and public health, innovative programs, and populations affected, in addition to questions related to the interviewee's background. Several solution-oriented themes emerged, including: the vitality of collaboration and the role of community coalitions in ensuring an effective response, the rehabilitative role of the criminal justice system, innovative solutions aimed to engage more people on medications for opioid use disorder (MOUD), and the necessities of harm reduction strategies and recovery support services.

This issue brief explores the opioid crisis in the context of small and rural communities in Western Massachusetts, identifies unique challenges and gaps in these regions and how they are being met, and suggests action steps tailored to mounting an effective response in these less populated areas of the Commonwealth. Wherever possible, we strived to accurately represent all small communities in Western Massachusetts, a region where rurality, cultural context and historical influences are varied.

I. The Problem – Underlying Epidemiology

The most recent data from the Massachusetts Department of Public Health (DPH) reports that all counties in Western Massachusetts, comprised of Franklin County, Hampshire County, Hampden County, and Berkshire County, experienced record highs in opioid-related overdose deaths in 2018. While overdose deaths due to opioids in the Commonwealth decreased, there was a 73% increase in Western Massachusetts.³⁰ Data and interviews suggest that explanations as to why Western Massachusetts has seen an uptick in opioid-related overdose deaths may be related to an increase in fentanyl. Various parts of this region have a higher prevalence of OUD, for reasons partially explained by historically higher levels of opioid prescribing compared to the rest of the state and by the social ecology of more rural areas. In addition, from 2015-2017 the percentage of opioid deaths attributed to fentanyl has been lower in Western Massachusetts compared with other parts of the Commonwealth. The presence of fentanyl is likely increasing in the context of high rates of OUD in Western Massachusetts, which suggests that

opioid-related overdose deaths could intensify. Therefore, the dissemination and implementation of evidence-based strategies for prevention, treatment, supportive recovery, and harm reduction as well as strong community collaboration are vital to stem the tide of opioid-related overdose deaths in this region.

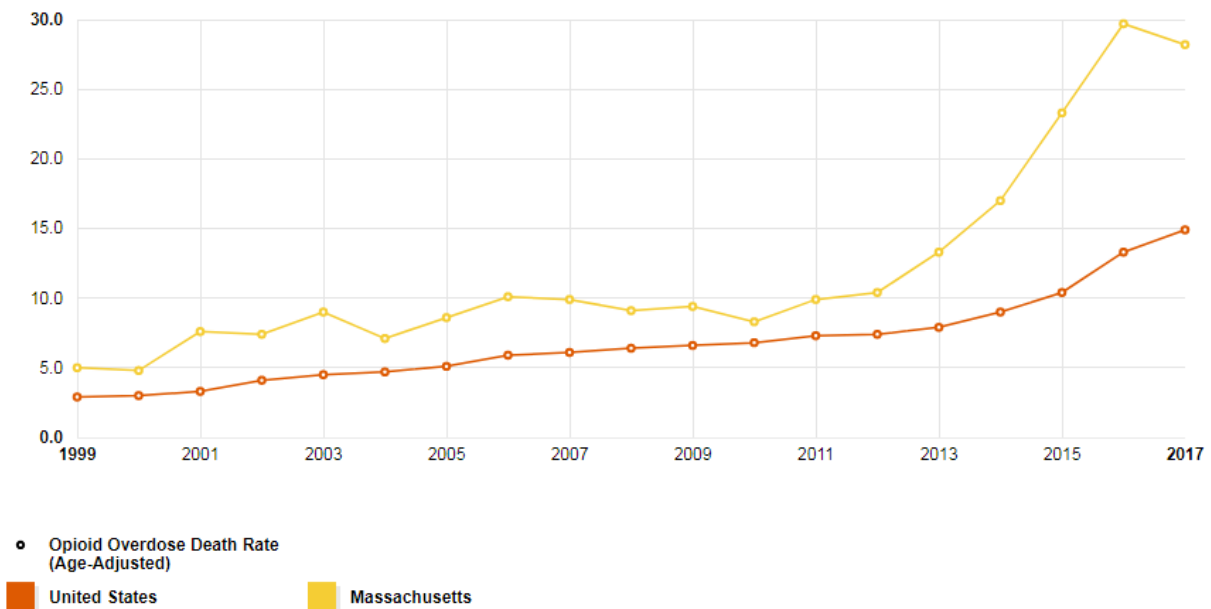
Opioid-related Overdose Deaths

Like the nation and the state, Western Massachusetts has been hit by three waves of opioid-related overdose deaths: (1) the increase in prescription opioid overdose deaths beginning in the late 1990's (2) the increase in heroin overdose deaths starting in 2010, due in part to people with OUD switching from prescription opioids to heroin as a result of supply and cost factors (3) the emergence of fentanyl in the illicit drug supply in 2013.³¹ Nationally, an overdose victim was more likely to be white, male, and middle-aged in 2017.³²

State: In 2017, Massachusetts had the 6th highest age-adjusted opioid-related overdose death rate in the United States at 28.2 deaths per 100,000 people, a decrease from 29.7 the year before.³³ The death rate increased exponentially from 2012-2017 and has been consistently higher than the national average as seen in Figure 1 below:

Figure 1

Opioid-Related Overdose Death Rate Trend: National and State Average

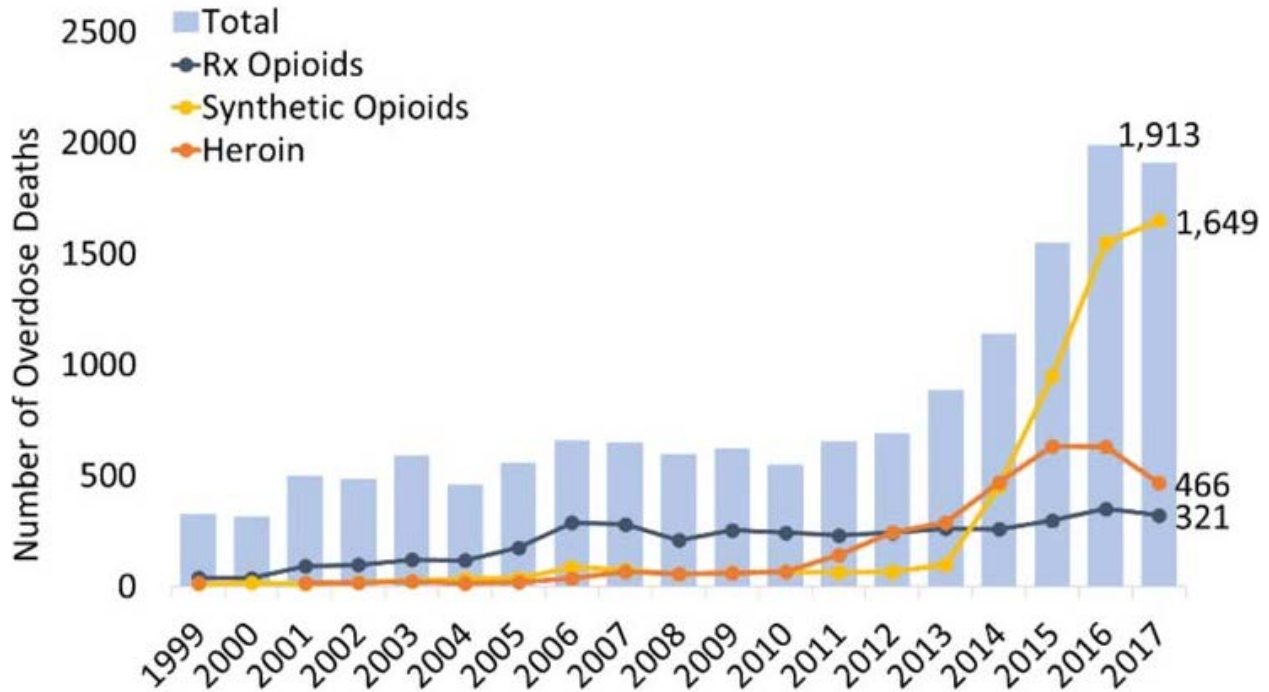


Source: Henry J. Kaiser Family Foundation (2019)

The presence of synthetic opioids, largely fentanyl and fentanyl derivatives, in overdose deaths was over 85% in 2017 and preliminary 2018 data from DPH shows an increase to over 89%.³⁴ This exponential increase began with the emergence of fentanyl in 2013 as seen in Figure 2 below, and coincides with the exponential increase in the death rate from 2012-2017:

Figure 2

Number of Opioid-Related Overdose Deaths by Specific Opioid Type in Massachusetts

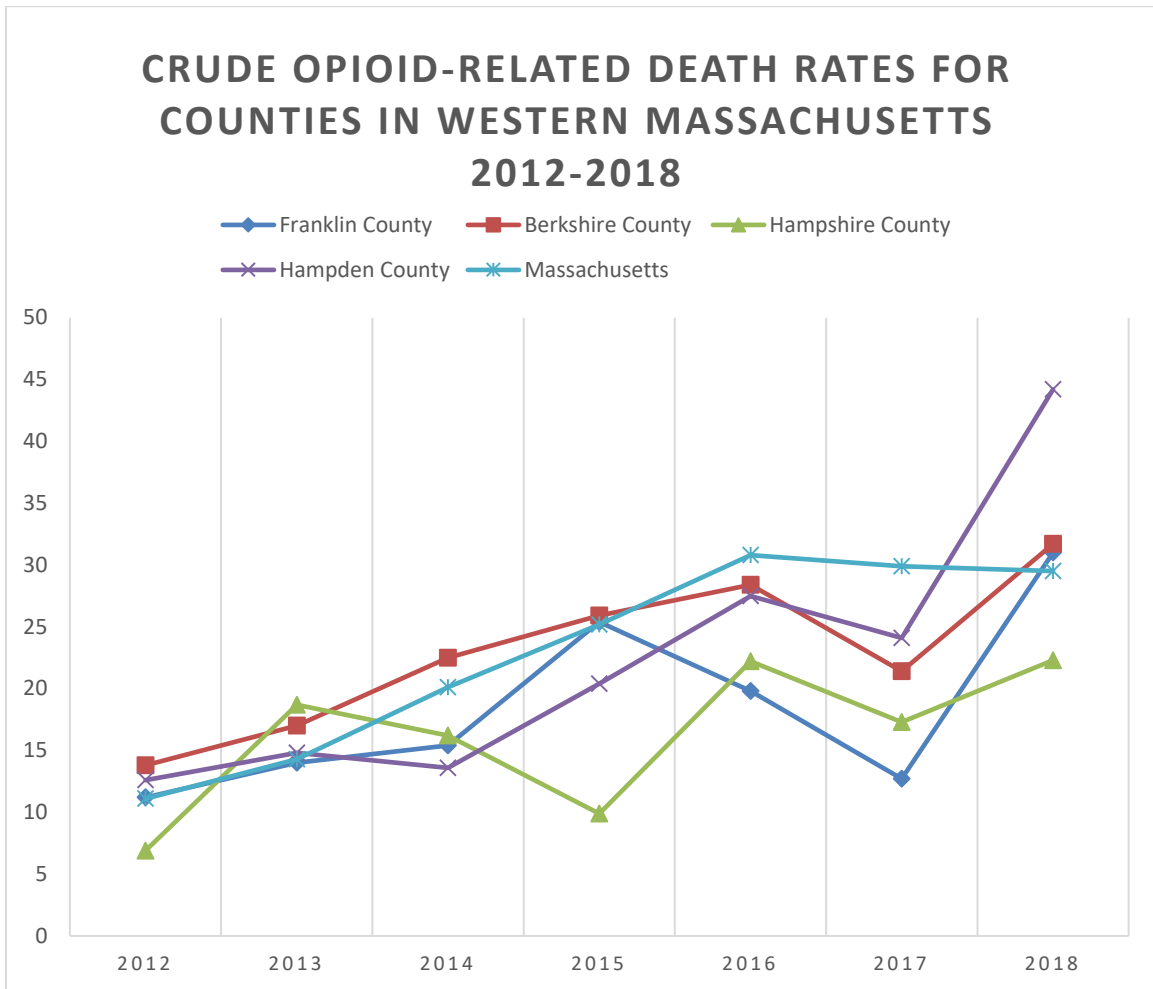


Source: NIDA (2019)

Data from DPH for 2018³⁵ show the proportion of males dying of opioid-related overdose deaths is higher than females (72% v. 28%) but this gap is narrowing. Most of the deaths (78%) occurred between the ages of 25 and 54, which has been consistent over the years. 5.7% of the deaths occurred in young adults (ages 18-25), similar to previous years, though nearly a quarter of deaths in young adults are attributed to overdoses.³⁶ Most deaths were in people identified as white (80%), followed by Hispanics (13%) and African-Americans (4%), with the age-adjusted opioid-related death rate in whites more than twice as high as African-Americans. There has been a substantial increase in the death rate of Hispanics starting in 2015, shortly after the emergence of fentanyl. The DPH data for 2018 does indicate a 1% decrease in opioid-related overdose deaths, indicating two consecutive years of slight reductions of deaths attributed to opioid overdoses in Massachusetts, though the death rate remains nearly double the national average.

Western Massachusetts: DPH data for opioid-related overdose deaths at the county level indicate that the problem is getting worse in Western Massachusetts. Although all four counties in the region saw a decrease in deaths in 2017, each county set or tied a record high in 2018. The number of opioid-related overdose deaths in Western Massachusetts increased by 73% from the previous year, whereas the state average and the metro Boston area saw a decrease. Specifically, Hampshire County had a 29% increase, Berkshire County had a 48% increase, Hampden County had an 84% increase, and Franklin County had a 144% increase.³⁷ Though the percentage increase can be overstated in less populated counties, this escalation in opioid-related overdose deaths is significant and concerning. Because of the varying sizes of the counties, it is more appropriate to compare death rates. Figure 3 below shows crude death rates – unadjusted for age or other demographics – calculated for Massachusetts and the four counties in Western Massachusetts from 2012-2018:

Figure 3



*Numerator from DPH Data; Denominator from US Census Bureau

*Per 100,000 people

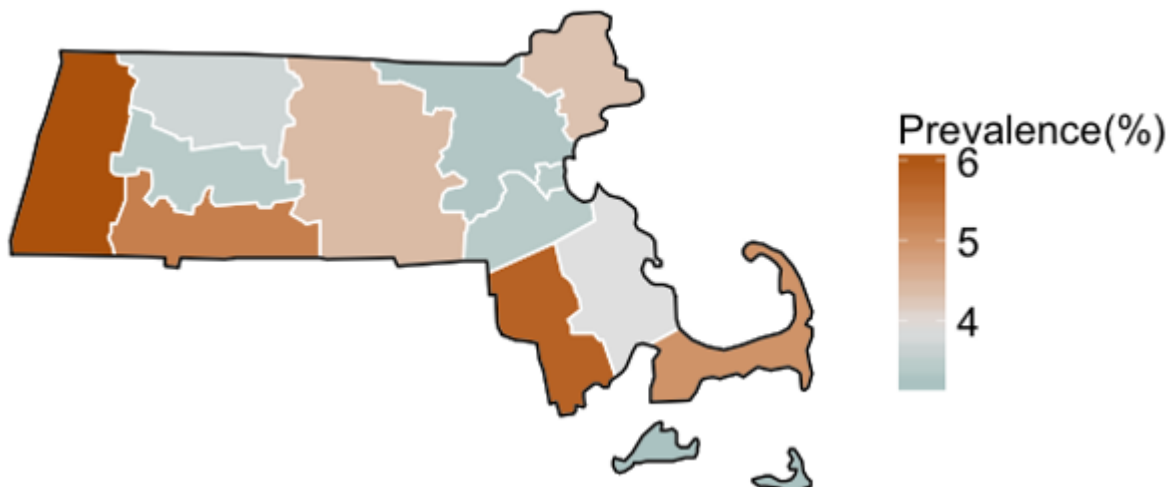
Although there are limitations to comparing death rates in counties with small populations, all counties in Western Massachusetts except for Hampshire have crude death rates higher than the state average for 2018, suggesting that the opioid crisis may be intensifying in this region.

Opioid Use Disorder

Nationally, OUD is growing in prevalence more than any other type of substance use disorder (SUD).³⁸ Opioids are involved in at least 2/3 of drug overdose deaths,³⁹ with some studies suggesting that this percentage is much higher.^{40,41} In Massachusetts, researchers estimated that 4.6% of residents aged 11 and over had an OUD in 2015, with a steady rise in prevalence during the study period from 2011 to 2015.⁴² There was also significant variation at the county level as depicted in Figure 4 below:

Figure 4

County-Level Prevalence of OUD



Source: Barocas et al. (2018)

Berkshire County was found to have the highest prevalence of any county in the state in 2015 (6.1%) and Hampden County had the 3rd highest prevalence (5.3%). Both Franklin County (3.7%) and Hampshire County (3.4%) had an OUD prevalence lower than the state average.

In another measure of opioid use, the Berkshires and Pioneer Valley had a higher rate of opioid-related hospital discharges compared with metro Boston in 2015, and had a 90% and 176% increase, respectively, in emergency department discharges from 2012-2017, compared with a 41% increase for metro Boston.^{43,44} These data add evidence for the finding that there are some regions in Western Massachusetts that have a higher prevalence of OUD, and thus a larger population susceptible to nonfatal and fatal opioid-related overdoses.

Opioid Prescribing

There was a near perfect correlation between national rates of opioid prescribing and opioid-related overdose deaths in the 2000's suggesting that the oversupply of prescription opioids evolved into the opioid crisis that we are experiencing today.⁴⁵ The data indicate that exposure to opioids significantly increases the risk of OUD and can cause physiological dependence in a matter of days.⁴⁶ This expanded supply increased nonmedical prescription opioid misuse with more than 65% of people in a national survey reporting that they obtained the opioids from a friend or relative at no cost.⁴⁷ Further, an estimated 80% of heroin users started with prescription opioids.⁴⁸ Near the peak of opioid prescribing in 2010, the United States, with 4.4% of the world's population, consumed 99% of the world supply of hydrocodone, used in pharmaceuticals like Vicodin and Lortab, and 83% of the world supply of oxycodone, used in pharmaceuticals like Oxycontin and Percocet.⁴⁹ Nationally, opioid prescribing peaked in 2011 and has been steadily declining since.⁵⁰

In Massachusetts, during the peak year of opioid prescribing in 2011, 1.1 million individuals filled an opioid prescription with 20% of these individuals having been prescribed an opioid for over three months. Tracked over five years, this group was 30 times more likely to die of an opioid-related overdose compared with the general population.⁵¹ Between 2012 and 2015, the number of people receiving new opioid prescriptions in Massachusetts has dropped by roughly 50% and, according to the most recent CDC data, Massachusetts ranks as the 5th lowest state in prescribing rates.⁵²

While the Commonwealth has overall made great strides in reducing opioid prescriptions, there is significant county-level variation in prescribing with all counties in Western Massachusetts having higher prescribing rates than the state average. Table 1 shows the most recent data from the first quarter of 2019:

Table 1

County-Level and State Representation of Opioid Prescribing

	% of Population Receiving Schedule II Opioid Rx	Total Number of Dosage Units Per Capita
Massachusetts	3.5	4.1
Franklin County	4.6	6.4
Berkshire County	4.5	5.1
Hampshire County	3.8	5.5
Hampden County	4.5	5.9

Source: Massachusetts DPH (2019)

These percentages have been steadily decreasing, but counties in Western Massachusetts have a higher percentage of the population receiving prescription opioids and a higher per capita number of dosage units compared with the state average.⁵³ An older population and a higher prevalence of comorbidities may contribute to this difference. However, research found that potentially inappropriate prescribing practices, particularly opioid prescriptions without pain diagnosis and high milligram dosage units, were more prevalent in Western Massachusetts.⁵⁴

Beyond current opioid prescribing, it is important to analyze historical trends in prescribing due to the strong association between exposure to prescription opioids and OUD. A DEA database recently made available to the public revealed that, from 2006 to 2012, Hampden County received the 2nd highest number of prescription opioids per capita in Massachusetts and Berkshire County the 3rd highest.⁵⁵ In addition, a pharmacy in Greenfield received more prescription opioids than any other pharmacy in Massachusetts.

Emergence of Fentanyl

Fentanyl is a synthetic opioid that can be produced in an underground lab and is up to 50 times more potent than heroin. From an economic perspective, a kilogram of fentanyl is similar in cost to a kilogram of heroin yet can be 20 times more profitable on the street level, with a \$54,000 investment bringing a \$5 million return.⁵⁶ This more potent opioid allows for small packages to be smuggled through the postal system that can still yield large profits. As seen in Figure 6 below, a fatal dose can be just a few milligrams:



Figure 6

Fatal Dose of Heroin and Fentanyl

Source: New Hampshire State Police Forensic Lab

As a result of its synthetic nature, ideal smuggling profile, and vast profit margin, fentanyl and fentanyl derivatives are quickly becoming the opioid of choice for distributors. Yet tragically, due to its increased respiratory depression compared with other opioids, strong potency, and heterogeneous presence in the illicit opioid supply, fentanyl and its analogs have emerged as the leading cause of

overdose deaths nationally, increasing from 2,628 in 2012 to 29,406 in 2017.^{57,58} Just last year, 33 kilograms of fentanyl were seized in a drug bust in Massachusetts, enough fentanyl to kill everyone in the Commonwealth.⁵⁹ Quest Diagnostics, in their 2017 annual report, revealed that 83% of specimens for pre-employment screening testing positive for heroin were also positive for non-prescribed fentanyl, an 84% increase from the previous year.⁶⁰ Supporting preliminary 2018 data from DPH show that nearly 90% of all overdoses in the Commonwealth can be attributed to fentanyl and fentanyl derivatives.⁶¹

We used death data from 2015-2017, obtained through a contract with the Massachusetts DPH, to better understand fentanyl-related overdose deaths in Western Massachusetts. This breakdown, along with trend analysis, can serve as a proxy for the presence and infiltration of fentanyl in Western Massachusetts compared to the rest of the Commonwealth. Our analysis found that fentanyl-related deaths were less common in Western Massachusetts while deaths related to prescription opioids were more common compared with the rest of the state for this time period. This finding is similar to nationally representative data for rural areas.⁶² Detailed analysis is available in Table 2 and Table 3. Further extrapolation from this data suggests that: 1) given higher death rates where heroin was present and lower death rates where fentanyl was present in Western Massachusetts, the illicit drug supply may not have been as contaminated with fentanyl prior to 2018 compared with the rest of the state; 2) higher opioid prescribing in Western Massachusetts has likely led to higher death rates involving prescription opioids compared with the rest of the state; and 3) given that the fentanyl-related overdose death rates and the percentage of opioid-related deaths with presence of fentanyl in Western Massachusetts have been increasing faster than the rest of the state, the infiltration of fentanyl may be the primary driver of the recent increase in opioid-related overdose deaths in Western Massachusetts. This is supported by preliminary data from the Northwest District Attorney's Office, which shows that fentanyl was present in 81.3% of the opioid-related overdose deaths in Franklin County, Hampshire County, and the North Quabbin Region in 2018.

Table 2

Unadjusted Death Rates by Specific Opioid Type: Western Massachusetts Compared to Rest of the State

	<u>2015</u>	<u>2016</u>	<u>2017*</u>
Western Mass: Fentanyl	4.7	13.6	12.5
Rest of State: Fentanyl	15.3	22.9	23.5
Western Mass: Heroin	10.0	15.8	11.8
Rest of State: Heroin	9.6	8.1	5.7
Western Mass: Prescription Opioids	4.6	5.3	6.4
Rest of State: Prescription Opioids	3.4	3.8	3.0

*Unadjusted death rates are per 100,000 people

*Specific opioid types are not mutually exclusive

*Information compiled by the Brandeis/IBH team

*Data provided through a contract with Massachusetts DPH; *2017 data are preliminary

Table 3

Percentage of Opioid-Related Deaths with Presence of Fentanyl: Western Massachusetts Compared to the Rest of the State

	<u>2015</u>	<u>2016</u>	<u>2017*</u>
Western Mass	24.2%	55.9%	65.6%
Rest of State	62.8%	78.1%	85.6%

*Information compiled by the Brandeis/IBH team

*Data provided through a contract with Massachusetts DPH; *2017 data are preliminary

Who is at Greatest Risk?

When asked which groups seemed to be most impacted by the opioid crisis, most interviewees stated that low socioeconomic groups were disproportionately impacted. Other groups noted were those with co-occurring disorders, history of trauma, exposure to the criminal justice system, pregnant women, and those that live in the more remote areas of Western Massachusetts. Several interviewees also spoke about the intergenerational impact of the opioid crisis, leading to a younger population being more vulnerable to both OUD and behavioral issues and an elderly population tasked with raising grandchildren. The intersection of intergenerational poverty makes these groups even more susceptible to opioid-related morbidity and mortality. These identified groups were similar to high-risk populations highlighted by the Chapter 55 Report, a legislatively mandated report providing an assessment of fatal and nonfatal opioid overdoses in the Commonwealth.⁶³ Populations susceptible to opioid-related overdose deaths in Massachusetts, using Chapter 55 data from 2011-2015, include:

- **Recently incarcerated:** the opioid-related death rate is 120 times higher for those that have been recently released from prison or jail compared with the rest of the adult population.
- **History of nonfatal overdose:** nearly one in ten people who experienced a nonfatal overdose died of an opioid-related death within two years.

- **Homelessness:** the risk of a fatal opioid overdose is 30 times higher for those that have experienced homelessness compared with the rest of the population.
- **Diagnosed mental illness:** the risk of a fatal opioid overdose is six times higher for those diagnosed with a serious mental illness and three times higher for those diagnosed with depression.
- **Mothers with OUD:** the five-year opioid-related death rate of mothers with evidence of OUD was 321 times higher than the rate among mothers without evidence of OUD. The highest death rate in the postpartum period is between six months and one year.
- **Those prescribed opioids by a physician:** those who received three months of prescribed opioids in 2011 were four times as likely to die from an opioid-related overdose within one year and 30 times as likely to die of an opioid-related overdose within five years, compared to the general population.

II. The Problem – Cost and Consequences

The opioid crisis has had a profound, indelible effect on Western Massachusetts that goes beyond economic costs. The intergenerational impact has left infants born dependent on opioids, grandparents raising grandchildren, an increase of children in the foster care system, and an increasing incarcerated population struggling with OUD. The majority of employers have seen the effect of the opioid crisis in their workplaces, the job of first responders has shifted to responding to opioid overdoses, and healthcare systems have become overburdened with inpatient hospitalizations and emergency room visits related to opioids.

Economic Impact

National Cost Estimates: On top of devastating human costs, the economic impact of prescription opioid use and misuse is estimated to be \$78.5 billion per year.⁶⁴ The cost of all opioid use and misuse, factoring in the value of a statistical life, has been estimated over \$500 billion per year.⁶⁵ Individuals and the private sector bear nearly half of the economic burden of the opioid crisis, the federal government a quarter, and state and local governments over 20%, with most economic costs attributed to productivity losses.⁶⁶ In addition to the costs measured by these studies, there is a recent estimate that state governments lost \$11.8 billion in income and sales tax revenue and the federal government lost \$26 billion in income tax revenue from 2000 to 2016 due to the adverse labor market outcomes of opioid misuse.⁶⁷ Increased costs are also associated with new cases of HIV, Hepatitis C, and newborns with Neonatal Abstinence Syndrome.

State and Regional Cost Estimates: An analysis done by the Massachusetts Taxpayer’s Foundation estimated that the overall economic costs of the opioid crisis to the Commonwealth was \$15.2 billion in 2017.⁶⁸ The largest contributor (\$9.7 billion) was productivity losses comprised of three cohorts: people who died of an overdose, individuals that are not actively in the workforce because of an OUD, and those whose productivity at work is compromised by an OUD. Healthcare costs were estimated at \$4.5 billion, criminal justice costs at \$500 million, and public safety costs at \$550 million. With Western Massachusetts containing 12% of the state’s population,⁶⁹ extrapolating a crude estimate from this report, not accounting for variation, suggests an economic burden of \$1.8 billion in the region.

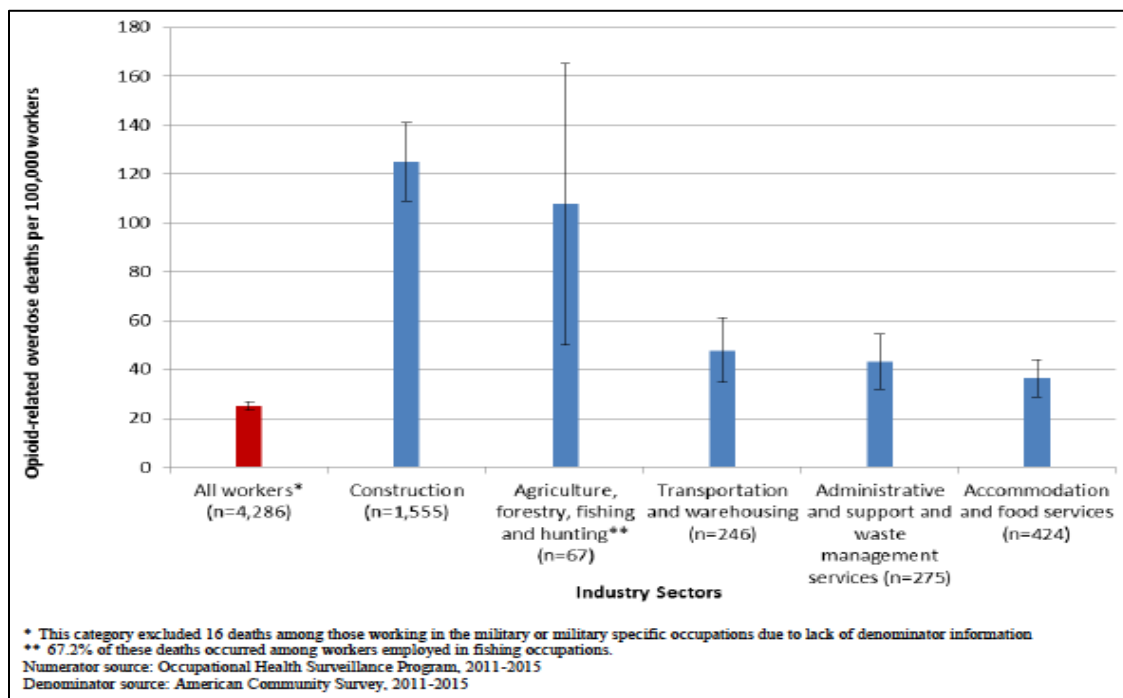
Impact on Employers

Labor Force Participation: From a national perspective, there is correlation between areas with high opioid prescribing rates and reductions in labor force participation^{70,71} as well as a positive association between overdoses and unemployment rates.⁷² In addition, it is estimated that 20% of non-participating prime age males are also regularly using prescription opioids.⁷³ Even so, the majority of persons with an OUD in the United States are employed full-time and two-thirds of people in the Commonwealth who reported misuse of prescription opioids were employed.^{74,75} Employers in the United States certainly have taken notice, as 75% reported that their workplaces have been directly impacted by opioids, yet only 17% felt extremely well prepared to deal with the issue.⁷⁶

Industry-specific Impact: Although most employers have seen an impact from the opioid crisis, not all employment sectors are affected equally. Nationally, rural areas in socioeconomic distress that have a large mining industry or service dependent industry presence have been associated with higher opioid-related overdose deaths.⁷⁷ In Massachusetts, the construction, agriculture, fishing, and hunting industries are disproportionately affected, as seen in Figure 7; in fact, from 2011 to 2015 construction workers accounted for nearly a quarter of all opioid-related deaths.⁷⁸ Many of these high-risk occupations are predominant in Western Massachusetts.

Figure 7

Breakdown of Industry-Specific Opioid-Related Death Rates in Massachusetts



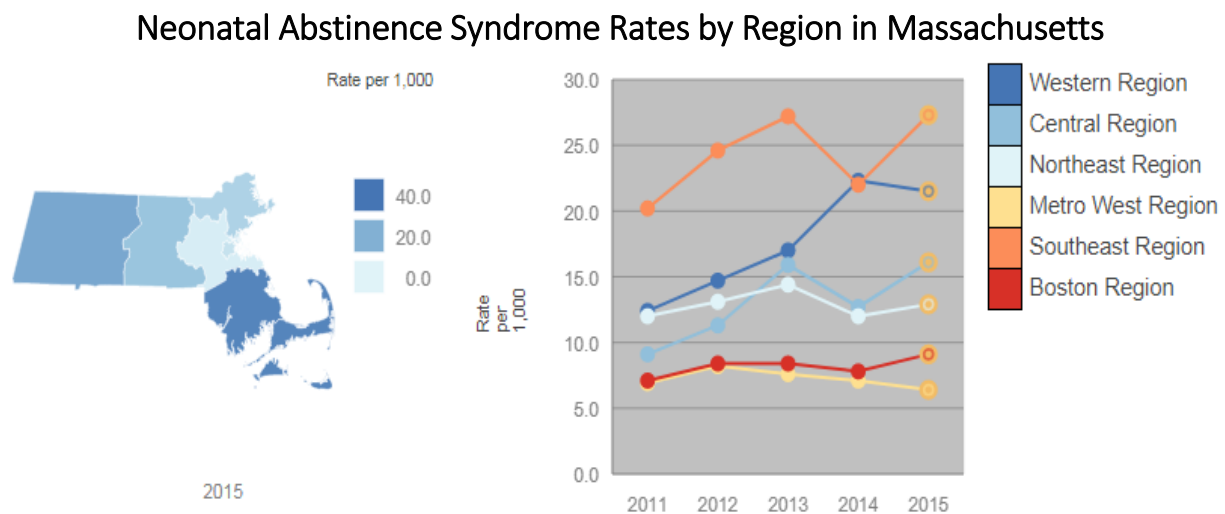
Source: Massachusetts DPH (2018)

Neonatal Abstinence Syndrome

The opioid crisis has an intergenerational impact on families. Neonatal Abstinence Syndrome (NAS) is a consequence of maternal opioid use, with up to 80% of infants experiencing NAS when the mother uses heroin or synthetic opioids during pregnancy.⁷⁹ Nationally, the incidence of NAS has increased fivefold from 2004 to 2014 with rural areas disproportionately affected.^{80,81} The prevalence of maternal OUD in Massachusetts has grown exponentially and at a rate of more than double the national average.⁸² NAS rates in Western Massachusetts have increased over sevenfold from 2004 to 2013.⁸³ Further, hospitals in regions that serve a greater number of Medicaid beneficiaries see more cases of NAS. For instance, Berkshire Medical Center had a NAS/Substance Exposed Newborn (SEN) rate of nearly 70 per 1,000 live births in 2017, ranking as third highest in the state, and Heywood Hospital in the North Quabbin Region, Mercy Medical Center in Hampden County, and Baystate Franklin had rates more than double the state average for NAS/SEN of 25 per 1,000 live births.⁸⁴ Western Massachusetts, as depicted in Figure 8 below, had a NAS rate above the state average in 2015, with 21.5 per 1,000 live births experiencing NAS, more than triple the national average.⁸⁵

The average costs of an infant with NAS treated pharmacologically is estimated at \$93,400 compared to about \$3,500 for a normal delivery without complications.⁸⁶ Over 80% of mothers who delivered infants with NAS in 2014 were on Medicaid, costing the state and federal government \$462 million, an increase from \$65 million in 2004.⁸⁷ To appreciate the economic costs to Western Massachusetts, 260 infants were born with NAS in the region in FY 2013 with an average hospital length of stay of 18.9 days and an average cost of \$30,043, resulting in overall costs of \$7.8 million.⁸⁸ This cost has likely grown with the increasing prevalence of NAS in Western Massachusetts since 2013.

Figure 8



Source: Neonatal Abstinence Syndrome Dashboard, Massachusetts DPH (2019)

Foster Care and Grandparents Raising Children

Nationally, the percentage of foster care entries attributable to parental drug use has increased from 14.5% in 2000 to 26.2% in 2017.⁸⁹ Generally, counties with high drug overdose rates and drug-related hospitalizations tend to have higher foster care caseloads, and placements that are primarily due to

substance use indicators are correlated with more complex child welfare cases.⁹⁰ In Massachusetts, the number of children in foster care has increased by almost 20% in the last five years with roughly 9,200 children in the foster care system, largely attributable to the opioid crisis.⁹¹ Many of the interviewees noted the burden on the foster care system in their counties as well as the increased number of grandparents raising grandchildren. In fact, there are nearly 40 mutual support groups of grandparents raising grandchildren across the Commonwealth.⁹² Interviews suggest that many of these cases are opioid-related and that these additional responsibilities are for grandparents who are in prime working ages.

Criminal Justice System

There is considerable intersection of the opioid addiction epidemic and the criminal justice system, as individuals that use opioids have a marked involvement with the criminal justice system. From a national perspective, while 3% of the general population has been involved with the criminal justice system, 20% of those with prescription drug use disorder and 40% of heroin users had criminal justice involvement.⁹³ Whereas 16% of the general population of the United States meets criteria for SUD, 53% of the prison population, 68% of the jail population, and 35-40% of those on parole/probation meet criteria for SUD.^{94,95} In Hampden County, over the last ten years, the prevalence of SUD among the jail population has increased from 79% to 88%, with those meeting criteria for OUD increasing from 20% to 43%. In Franklin County, 48% of those incarcerated report the use of heroin and 90% have been diagnosed with a SUD or a mental illness or both. These findings, gathered through the interview process, suggest that increases in SUD are largely driven by increases in OUD. Also, these data suggest that SUD and OUD may be even more prevalent in Western Massachusetts' criminal justice systems. In fact, several interviewees spoke about substance use as a rite of passage in various rural areas of Western Massachusetts and others pointed out that people of lower socioeconomic status were disparately affected.

Nationally, the annual economic impact of the opioid crisis on the criminal justice system has been approximated at \$7.8 billion.⁹⁶ The cost in Massachusetts was estimated at \$500 million in 2017.⁹⁷ One high-ranking official in Western Massachusetts predicted that 90% of larcenies and robberies were related in some way to opioids. Unfortunately, only 1 in 5 individuals received drug treatment while incarcerated,^{98,99} but this is starting to change as many leaders are realizing that incarceration is an opportune time to provide evidence-based treatment for OUD.

III. Unique Challenges in Western Massachusetts

Even though Western Massachusetts is a large region comprised of urban, suburban, and rural areas, the challenges identified in the interview process were similar for both metropolitan and non-metropolitan areas. Along the urban-rural continuum in the United States, studies have found significant variations that can lead to OUD and opioid-related overdose death. For example, rural areas have higher rates of opioid prescribing,¹⁰⁰ substance use during pregnancy,¹⁰¹ opioid use among women with protective orders,¹⁰² and non-medical prescription opioid use by adolescents,¹⁰³ relatedly, rural areas have higher rates of NAS and a greater rate of increase in the overdose death rate compared with urban areas.^{104,105} Yet, some predominantly rural states with lower rates of opioid prescribing, like North and South Dakota, Nebraska, and Idaho, have low rates of opioid-related overdose deaths.¹⁰⁶ Therefore, a myriad of factors such as the presence of fentanyl, socioeconomic conditions, opioid prescribing, treatment access, and industry mix should be considered when assessing the opioid problem in a region.

The challenges identified in Western Massachusetts, informed by the interviews, were supported by the literature and similar to other qualitative studies in rural areas.^{107,108} These challenges cannot be defined as uniquely rural due to the variation of the region, nor are they necessarily generalizable to other areas due to the multitude of factors that can impact the opioid problem, but they establish a foundation of the barriers that are present in Western Massachusetts that must be overcome by best practices and effective policy to mitigate the prevalence of OUD and opioid-related overdose death.

Transportation

Every stakeholder interviewed mentioned transportation as a challenge to treating OUD in Western Massachusetts, especially in the context of poverty and other socioeconomic vulnerabilities. Many of the public transportation systems in Western Massachusetts do not operate on evenings or weekends and, sometimes, a person must navigate two different public transportation services to access services. Interviewees also mentioned the lack of access to methadone treatment in certain towns amplified by transportation barriers. An example was given of a woman who must spend five hours a day commuting to the nearest methadone clinic using public transportation. Another person interviewed noted that the Connecticut River, which runs through the Pioneer Valley, exacerbates transportation issues, especially when services are localized in hubs on the other side of the river. Another interviewee told a story that she had heard repeat itself many times, that a person was seeking treatment and, because of the lack of treatment-on-demand, was put on a waiting list; once treatment was available, that person had no transportation to get there.

Lack of access to consistent public transportation throughout Western Massachusetts makes it challenging for individuals to access services in centralized “hubs” where most services are located. Springfield and Holyoke were identified as major hubs in Hampden County, Northampton in Hampshire County, Greenfield in Franklin County, Athol and Orange in the North Quabbin Region, and Pittsfield in Berkshire County. This centralization of services was noted as both an asset and a challenge in the interviews whereby people knew where to access services, but lack of transportation reduced access and resources were misallocated, being concentrated in the hubs while the rural outskirts were often neglected.

Socioeconomic Distress

Although people of all income levels in the United States have experienced a rise in opioid-related morbidity and mortality, lower income groups are disproportionately affected by the opioid crisis.¹⁰⁹ A recent study analyzed economic distress in small cities and rural areas and found that higher economic distress was associated with higher rates of “deaths of despair” (alcohol-related liver disease deaths, suicide, and drug poisoning deaths).¹¹⁰ Higher mortality from these deaths of despair was correlated with poverty, unemployment, the uninsured, those from single parent families, lower levels of education, and those that had a disability. Whereas low education levels are associated with greater risk of opioid-related overdose death, education was found to have a protective effect.¹¹¹ A nationally representative study showed that people with incomes under \$20,000 per year were more than three times as likely to have used heroin in the past year compared with someone who earns more than \$50,000 per year.¹¹² A systematic review of over one hundred studies found a significant association of economic distress with poor mental health.¹¹³ Though there is discourse on the causality of socioeconomic distress’ role in the opioid addiction epidemic, it is likely that those of lower socioeconomic status have had less access to both quality treatment and holistic recovery support services.^{114,115}

Similar impacts were found in Western Massachusetts. Income was cited as having a direct impact on the ability to access treatment and recovery services. Generational poverty, lack of opportunities, and out-migration of young adults were all mentioned as exacerbating the opioid crisis in Western Massachusetts. All counties in Western Massachusetts have an income per capita that is significantly less than the state average, and the median age in the two most rural counties, Franklin and Berkshire, is five years older than the state average, supporting these observations.¹¹⁶ Out-migration of young adults can have a depressing effect on the economy and leave the young adults who remain more exposed to socioeconomic distress that will increase susceptibility to opioid-related overdose death.¹¹⁷ Speaking to this deprivation, a qualitative study interviewing treatment seeking drug users found common themes of hopelessness and lack of opportunity as reasons why the participants used drugs and why they thought others around them used drugs.¹¹⁸

Access to Treatment

With an estimated 80% of those with OUD not receiving any type of treatment and 92% of SUD treatment facilities located in urban areas in the United States,^{119,120} a region like Western Massachusetts, with many small towns and remote areas, struggles with providing adequate access to services for OUD. Many times, the most effective treatment for OUD will include long-term treatment, including Acute Treatment Services (ATS, also known as detox), Clinical Stabilization Services (CSS), Transitional Support Services (TSS), Residential Recovery Services (RRS), and/or sober housing, with levels of care defined by the Massachusetts Department of Public Health, Bureau of Substance Addiction Services ([more info here](#)). Although RRS beds have been present in all four counties of Western Massachusetts for a long time, there were no ATS or CSS beds in Franklin County until 2016, when 64 beds were opened in Greenfield. Similarly, in Berkshire County, before 2016 there were only 21 ATS beds with no step-down CSS beds. In 2016, Berkshire County added a 30-bed CSS program as a step-down for the now 30-bed ATS program. There was a reported shortage of detox beds in Hampden County during the interview process, even though the county strives to provide treatment-on-demand. There tended to be more beds concentrated in urban areas of Hampden County and the rest of Western Massachusetts. Hampshire County still has no state funded ATS or CSS beds, following a consistent theme that more rural counties, like Franklin, Berkshire, and Hampshire, get the least amount of treatment dollars and have fewer programs.

Access to all three forms of MOUD (buprenorphine, methadone, and extended-release naltrexone) is another challenge. One positive note is that all four counties in Western Massachusetts have more physicians waived to prescribe buprenorphine per capita than the national average,^{121,122} although this does not indicate that capacity can address treatment demand. Yet, methadone capacity and the presence of methadone deserts pose significant challenges. Through the interview process, it was reported that the two methadone clinics in Berkshire County and the methadone clinic in Franklin County either have long waiting lists or are not taking new patients. Areas like the North Quabbin Region and the south part of Berkshire County are considered methadone deserts with impractical travelling distances severely restricting access to clinics. Accessibility to all three forms of MOUD, including extended-release naltrexone for highly motivated individuals, is important for individualization of treatment and each is associated with decreased opioid-related overdose deaths.^{123,124,125,126}

Another challenge is the lack of support for people who relapse, which is a common part of this chronic disease even if they have received treatment, so continuing support is essential for long-term recovery.^{127,128,129} People currently in or recently finishing treatment are expected to be in remission to be eligible for services and relapse can lead to people losing treatment support services or housing, or

being incarcerated. This is counter to the chronic brain disease model of OUD and the National Institute on Drug Abuse (NIDA) definition of addiction, as “compulsive drug use despite negative consequences”.¹³⁰

Rural Isolation

The barrier of rural isolation was cited in most of the interviews from stakeholders in more remote areas, such as parts of Franklin County, Berkshire County, and the North Quabbin Region, and can manifest itself in several ways. In a physical sense, services that are available are more spread out and there is limited access to broadband technology in many rural areas. Also, people in rural areas return to the same social network after treatment and have less opportunity to recreate a network with positive connections compared with people that live in more urban areas. This limits people’s opportunity to increase their social capital and supports, which is shown to be a protective factor from overdose death¹³¹ and for recovery. The reduced anonymity of living in smaller, more isolated areas is a barrier to seeking treatment and harm reduction services. For example, a high probability of knowing other people at a treatment center or a mutual support group has been shown to reduce the chance that people seek out these services.¹³² Rural isolation typically leads to close knit family and friend groups. An overdose death can have a devastating impact on these groups, even among first responders who may know the person that just experienced an overdose. Also revealed in interviews was the increased likelihood that opioid use is hidden in small communities in Western Massachusetts, as many individuals use alone due to stigma and rurality, putting them at greater risk for death if an overdose occurs.

Trauma

Trauma, captured by adverse childhood experiences, has a strong relationship to initiation of drug use, susceptibility to addiction, and likelihood of injection drug use.¹³³ Higher adverse childhood experience (ACE) scores predict an earlier onset of opioid use and a higher likelihood of both injection use and overdose.¹³⁴ A national study has shown that a male child with an ACE score of 6 or greater has a 46-fold higher likelihood of engaging in injection drug use later in life.¹³⁵ The impact of trauma was mentioned by several interviewees as both a challenge in Western Massachusetts and a risk factor for developing OUD. A stakeholder in a rural area noted that their population seemed to have higher ACE scores, although, generally, urban areas have been found to have slightly higher ACE scores than rural areas.¹³⁶ The Franklin County House of Correction has been tracking ACE scores and has found that over 60% of inmates had an ACE score of 4 or greater, putting them at much greater risk for developing OUD. This is in line with previous research that found that four times as many incarcerated men had an ACE score of 4 or higher compared with the general population.¹³⁷ In response to these data, there has been a push to create trauma-informed communities, such as the efforts made by Hampshire Hope, Northern Berkshire Community Coalition, the Opioid Task Force of Franklin County, the North Quabbin’s Building a Resilient Community, and the peer-led Western Massachusetts Recovery Learning Center, as well as the cradle-to-grave perspective taken by the Opioid Task Force. Incorporation of people’s life experiences and recognition of how that has molded their life trajectory is essential to any intervention aimed at preventing or treating OUD.

Housing

The limited availability of affordable and sober housing was seen as a major barrier to accessing treatment and supporting recovery in Western Massachusetts, which causes a severe disruption in the continuum of care for OUD. More generally, the shortage of affordable housing leads to displacement from social support. Further, many people in remission from OUD have previous histories of incarceration, which can negatively impact their ability to find housing because individuals with felony records are prohibited from obtaining federally subsidized housing support. Due to supply and demand factors, there is a shortage of housing in many areas of Western Massachusetts which allows landlords to be selective about which tenants they bring in, most often leaving those with histories of incarceration and those who are honest about their recovery struggling to find a place to live.

In regard to formerly incarcerated people with OUD who are re-entering the community, an interviewee stated, “If people are not able to find stable housing and employment, they are destined to use again.” From an inmate’s perspective, housing is reported as the top need and employment a close second for clients about to enter After Incarceration Support Systems (AISS) in Hampden County. While more research is needed, studies have supported stable housing as beneficial to former inmates.^{138,139} The same is true for sober housing, also known as recovery housing, after someone finishes SUD treatment, especially inpatient or residential services.¹⁴⁰ In fact, the recovery capital scale, a commonly used measure to assess substance use recovery, dedicates an entire domain to housing and safety.¹⁴¹

Data Challenges

Several interviewees expressed frustration over the data challenges that exist in rural areas of Western Massachusetts. Accurate and timely data is necessary to understand the scope of the problem and the value of interventions. In less populated areas, release of certain data may identify individuals, thus it is often not made available. Due to this safeguard, the number of overdoses in many towns in Western Massachusetts is not reported, or where reported, it may not be made available by subgroups such as demographics. As outreach after a nonfatal overdose has become a crucial intervention point, many communities must rely on Massachusetts Ambulance Trip Record Information System (MATRIS) data, which interviewees noted can take weeks or even months to receive. In addition, many nonfatal overdoses decline transport or do not call 911, as many friends and bystanders now carry naloxone and revive individuals who have overdosed without involving first responders. Therefore, an overdose response team may not be aware of some nonfatal overdoses and may conduct outreach weeks later for others. Ultimately, these challenges make data-driven solutions difficult.

Stigma

Stigma is present in the perception that OUD is simply a moral failing or a choice rather than a disease and is especially prevalent as a challenge in Western Massachusetts. It is also evident in the utilization of MOUD for OUD, with many people seeing MOUD as substituting one drug for another. Methadone was mentioned as having more stigma attached to it than buprenorphine and extended-release naltrexone. One interviewee mentioned that, even though patients were doing well on MOUD, they planned to discontinue the medication due to the social stigma attached. In addition, a Massachusetts survey by Shatterproof, partially funded by RIZE, revealed that less than half of emergency room, internal medicine,

and family medicine physicians believe that OUD is a treatable condition.¹⁴² Healthcare decisions are being made because of stigma, not due to what is recognized as best practice for the patient, leading to suboptimal outcomes. Numerous studies support long-term MOUD treatment, as length of time on MOUD has been inversely associated with mortality,¹⁴³ 95% of those who taper off methadone do not achieve abstinence,¹⁴⁴ and 90% of those who taper off buprenorphine relapse within eight weeks.¹⁴⁵

The interview process revealed that Western Massachusetts communities are making progress to reduce stigma, though it still has a substantial impact and varies within each region. Misunderstanding is at the root of stigma; therefore, efforts are being made to educate the public, physicians, first responders, and law enforcement officials on the physiology of addiction. In addition, alignment of leadership was also mentioned as crucial to reducing stigma. Having people in positions of power who support and adopt rehabilitative policies reflective of treatment for a chronic brain disease has a profound ripple effect on the entire community.

IV. Community Action and Best Practices

A range of community responses in Western Massachusetts address the opioid addiction epidemic. These include opioid prevention task forces and coalitions, people in recovery and recovery allies, the criminal justice system, harm reduction specialists, healthcare systems, providers, family support organizations, law enforcement, and governmental organizations. People are passionate and committed to making a difference, and communities are willing to adopt innovative strategies. In this section, some of these strategies are highlighted, though this is not a complete list of the many ways that the region is responding to this crisis. Best practices are also emphasized that a community should be engaged in across the continuum of care to address the impact of the opioid crisis in Western Massachusetts.

Community Collaboration

Community collaboration, partially facilitated by coalitions, prevention task forces, leadership, and partnerships, can create an environment where evidence-based strategies are easily implemented and stigma is reduced. Counties with coalitions have been shown to increase MOUD capacity, increase naloxone distribution, and decrease opioid prescribing compared to counties without coalitions.¹⁴⁶ The alignment of leadership committed to address OUD as a medical illness can lead to criminal justice reform, stigma reduction, increased MOUD capacity, and implementation of evidenced-based harm reduction strategies. Partnerships across the private sector, public sector, healthcare system, and criminal justice system can increase capacity and enable smooth transitions through the continuum of care for OUD. Many times, these partnerships are established and strengthened through community coalitions. Below, we highlight two programs that exemplify strong community collaboration:

Breaking Down Silos - A snapshot of the Opioid Task Force of Franklin County and the North Quabbin Region

Community collaboration was identified in the interview process as a vital part of an effective response to the opioid crisis. The Opioid Task Force of Franklin County and the North Quabbin Region ([Opioid Task Force](#)), serves as a model to break down silos and cultivate this collaboration. It was born out of a meeting in 2013 convened by leaders in the county that saw the dramatic toll that opioids were having on the community. What was supposed to last two hours turned into a five-hour meeting attended by over 400 people. These leaders, who had their roots in Franklin County and the North Quabbin Region, joined

forces to co-chair the Opioid Task Force. This taskforce is evidence of the significant impact that leadership can have when persons in positions of power align for a common cause. In Franklin County and the North Quabbin Region, this alignment of leadership has resulted in increased community willingness, innovation, and reduced stigma by setting the precedent that OUD is a chronic brain disease that responds best to rehabilitative treatment, not punitive measures.

The Opioid Task Force has a public health framework that focuses on prevention, intervention, treatment, and recovery. They have an executive council of 18 members with five working committees that look at all aspects of this framework from a cradle-to-grave perspective. The committees include healthcare solutions, housing and workforce development, education and prevention, treatment and recovery, and public safety and justice. Some of the Opioid Task Force's successes include helping secure or advocate for \$7.5M of grant funding, lobbying for ATS and CSS treatment beds when none existed in the region in 2013, offering trauma-informed trainings in a variety of settings, offering training on the physiology of addiction to a multitude of stakeholders, publishing reports and newsletters, holding community listening sessions, and collaborating with over 400 public and private partners in the region. The Opioid Task Force is funded nearly entirely by a line item in the Massachusetts state budget.

In addition to Franklin County and the North Quabbin Region, each county or region has established coalitions, some specifically to address the opioid problem in their area. Berkshire County has the Berkshire Opioid Addiction Prevention Collaborative ([BOAPC](#)), based in Pittsfield, and the Northern Berkshire Community Coalition ([NBCC](#)), based in North Adams. Hampshire County has [Hampshire HOPE](#), based in Northampton, and Hampden County has the Hampden County Addiction Taskforce ([HCAT](#)). The North Quabbin region is supported by the North Quabbin Community Coalition ([NQCC](#)). There are also some smaller town-based coalitions in these regions such as the [Quaboag Hills Community Coalition](#).

Identifying the Gaps with Sequential Intercept Mapping

In September 2015, the Opioid Task Force implemented a tool called Sequential Intercept Mapping (SIM) through a two-day workshop that brought together stakeholders in the criminal justice, behavioral health, and recovery support systems to identify strengths, gaps, and priorities in their communities. This model identifies the vital places in the system where best practices should be implemented, thereby increasing a person's chances of recovery and decreasing recidivism. The identified intercepts are: Intercept 0 – community crisis services; Intercept 1 – dispatch and law enforcement; Intercept 2 – initial detention, initial court hearing, and forensic evaluation/commitments; Intercept 3 – jails, courts, and specialty courts; Intercept 4 – re-entry from jail or prison; Intercept 5 – probation/parole and community support.¹⁴⁷ Through a SIM workshop of key stakeholders, these intercepts are mapped, and priorities are then developed with a goal that decisions are made in collaboration, not silos. This workshop sparked off a statewide SIM project, spearheaded by the Massachusetts Trial Court, bringing together the criminal justice system and other stakeholders throughout Massachusetts. The Massachusetts Community Justice Project has since conducted workshops that have been held in Western Massachusetts, which includes Northampton, Northern Berkshires, Holyoke, Franklin County, Pittsfield, Springfield, Orange, and Athol. The reports are available [here](#).

The SIM workshops have contributed to many successes. For example, the North Quabbin Region (Orange/Athol SIM) and the Northern Berkshires did not have any recovery support services, and their top priority at the end of the workshop was the development of a peer support center. Both of these became realities, thus strengthening the continuum of care and the recovery community. Another SIM workshop contributed to the collective identification of the need for buprenorphine treatment in the

Franklin County House of Correction. These workshops facilitate a space for conversations that otherwise are unlikely to happen, thus breaking down silos and building community collaboration.

Prevention

Prevention, as it relates to the opioid crisis, can encapsulate many things such as decreasing prescription opioid use, preventing future cases of OUD, and preventing opioid-related overdoses. Prevention measures can be applied at various levels, including federal, state, county, and local. Cautious opioid prescribing for both acute and chronic pain has been encouraged through more aware and better-informed providers, institutional interventions, and federal guidelines.¹⁴⁸ The Prescription Drug Monitoring Program (PDMP) is a state-level intervention shown to reduce opioid prescribing.^{149,150} Prescription opioid laws, another state-level intervention, have not been shown to reduce overall opioid prescribing but may decrease exposure to opioids for opioid-naïve people.¹⁵¹ In Massachusetts, providers must check the PDMP before prescribing a schedule II or III drug and pharmacies must submit data of a prescription being dispensed on the same day.¹⁵² In addition, there is a seven-day limit on new opioid prescriptions in the state.¹⁵³ There has also been a push in Western Massachusetts to address the intergenerational impact of the opioid crisis through many school-based and community-based prevention coalitions with the goal of preventing the use of substances or delaying onset of initial use. The developmental factors of susceptibility to SUD are clear, as research has shown that earlier substance use more strongly predicts SUD.^{154,155,156}

Some suggestions of evidence-based preventative measures that a community could consider include: 1) academic detailing to providers on opioid prescribing guidelines that can decrease opioid prescribing and encourage conversations with patients about the risks of prescription opioids; 2) patient education on safe storage and disposal of prescription opioids that can limit misuse; 3) public awareness of the risks of prescription opioids and the impact of overdose deaths on families that can increase perceived risk; 4) developing and strengthening existing prevention coalitions targeting youth substance use.^{157,158} We highlight two programs that include prevention strategies below:

Young Adult Empowerment Collaborative of Western Massachusetts

This collaborative, made up of all four counties and the North Quabbin Region in Western Massachusetts, was created through a recent grant from the Opioid Affected Youth Initiative as part of the Department of Justice Office of Juvenile Justice and Delinquency Prevention. The three-year, \$1 million grant will allow the Young Adult Empowerment Collaborative (YAEC) of Western Massachusetts to serve a population of young adults, aged 16-24, that has experienced increasing rates of opioid misuse and incarceration. The collaborative aims to prevent opioid misuse, address OUD, and improve health outcomes in young adults transitioning to adulthood through transforming systems serving this population. The implementation of evidenced-based, data-driven strategies has the long-term goal of breaking the intergenerational cycle of opioid and other substance misuse in Western Massachusetts. The first year of the grant will be focused on planning and data collection by working with the Regional Opioid Data Collaborative, followed by initiating, expanding, and promoting evidence-based programming that is informed by data to support young people as they transition into adulthood. In addition, YAEC will engage families and communities in their roles to support young adults. This collaborative is one of many examples of community collaboration in Western Massachusetts that extends beyond the county level. Many years of work done by substance use prevention coalitions, namely the Substance Abuse Prevention Collaborative (SAPC) and the more recent Massachusetts Opioid Abuse Prevention Collaborative (MOAPC), both funded by the Massachusetts Department of Public Health, Bureau of Substance Addiction Services (BSAS), have laid

down a foundation for YAEC. SAPC's have five sites throughout Western Massachusetts focusing on preventing underage drinking and drug use in the Commonwealth. MOAPC's have three sites throughout Western Massachusetts focused on preventing opioid abuse and opioid overdoses.

An Innovative Drug Court that Addresses Intergenerational Impact of Opioids

The Franklin Family Drug Court, the first of its kind established in 2016 through the Massachusetts Executive Office of the Trial Court, secured a five-year grant in 2017 from the Substance Abuse and Mental Health Services Administration (SAMHSA) to implement MISSION-Hope, aimed at treating the entire family affected by SUD. Maintaining Independence and Sobriety through Systems Integration, Outreach, and Networking (MISSION)-Hope is modeled after an existing evidence-based model that has been used in the criminal justice system, MISSION-CJ. The judge of the Franklin Family Drug Court saw the need for this program in 2013, when she estimated one in three cases were related to opioid use. Typically, a family enters the program through an initial child welfare case. The program provides evidenced-based treatment and comprehensive wraparound services for parents with a SUD as well as additional support for children and caregivers. Recovery coaching, case management, MOUD, an intensive outpatient program (or higher level of care if needed), accountability through urine drug screens, linkage to primary care providers and mental health professionals, biweekly contact with the judge, and groups focused on life and parenting skills are all employed with the aim of sustained, holistic recovery for the parents and strengthened well-being for the family.

The program currently serves around 30 families. The parents must have a co-occurring mental health disorder in addition to a SUD to be eligible for the program. Nearly three-fourths of the parents have a history of OUD and 65% are currently utilizing MOUD. Parents had an average ACE score of 5 and 100% of children had an ACE score of 4 or greater. This is highly significant as high ACE scores predict opioid use, as previously stated, and are also correlated with negative outcomes in MOUD.¹⁵⁹ The MISSION-Hope model has the potential to mitigate the intergenerational impact of opioids through addressing the social determinants of health and prevalent trauma histories of the families. The sample size of the evaluation is too small to draw conclusions on the effectiveness of the program, but preliminary results seem promising.

Early Intervention

Intervening early in the progression of opioid misuse and OUD can mitigate harms, whether it be in the context of prescription misuse, NAS, or a nonfatal overdose. PDMPs play a role in identifying individuals that may be at high risk for OUD and overdose. Screening, Brief Intervention, and Referral to Treatment (SBIRT) shows promise as a first step in diverting people with OUD to treatment,^{160,161} and integration of OUD treatment into primary care can serve as an important early intervention point.¹⁶² There are several effective models that have identified and supported mothers with OUD through pregnancy, including Baystate Franklin's EMPOWER program discussed below. Nonfatal overdose is another vital intervention point with strategies including post-overdose outreach teams and induction with buprenorphine in the emergency department (ED). Plymouth County, Massachusetts saw a 25% decrease in overdose deaths in 2018, partially attributed to Plymouth County Outreach, a law enforcement collaborative engaged in post-overdose follow up.¹⁶³ ED-initiated buprenorphine in a large urban hospital has been shown to increase engagement in treatment after two months although this effect is attenuated long-term, highlighting the importance of continuing care.¹⁶⁴ The most recent Massachusetts opioid bill, "An Act for Prevention and Access to Appropriate Care and Treatment of Addiction", mandates that all EDs must have this capacity beginning in September 2019. Many bridge programs ensure continuation of

buprenorphine after induction in the ED through linkage of care. One of these bridge programs exists between Berkshire Medical Center and the Brien Center. Below are just a few of the innovative early intervention programs in Western Massachusetts:

Addressing Neonatal Abstinence Syndrome Through EMPOWER/Moms Do Care

Baystate Franklin Medical Center's (BFMC) EMPOWER program, Engaging Mothers for Positive Outcomes with Early Referrals (EMPOWER), has made considerable progress to address NAS in Franklin County and the North Quabbin Region. The program was founded in 2015 by the Franklin County Perinatal Support Coalition, a group of over 20 human service organizations. After screening for maternal OUD, eligible mothers meet with the EMPOWER nurse navigator who offers educational support, referrals to care, and helps develop a personalized pregnancy plan. Women are referred to a peer mentor recovery coach who provides support and helps the mother navigate services and engage with community resources. Recovery coaching during pregnancy has been shown to decrease substance exposure at birth.¹⁶⁵ Mothers are educated about NAS, what to expect during their pregnancy and hospital stay, and the important role they provide in caring for their baby. Efforts are made to attenuate the power imbalance between provider and patient, especially as it relates to points of contact with Massachusetts Department of Children and Families (DCF).

In the past, services were discontinued at birth, but it is known that mothers with OUD are most at risk for overdose death between 6 and 12 months postpartum.¹⁶⁶ In response to a desire to expand services, BFMC applied for and received a \$1 million, two-year "Moms Do Care" grant from BSAS as part of a SAMHSA grant. The new Moms Do Care EMPOWER program extends the continuum of care allowing women to enroll from early pregnancy through 36 months postpartum. Expanded services include care coordination, counseling, expanded peer support, and a pediatric clinic for long-term follow up. The community-based model also partners with the Franklin Family Drug Court and Sheriff's office, providing support to women who are involved in the criminal justice system. Obstetric and MOUD providers collaborate to educate women on the benefits of MOUD during pregnancy and support prevention through access to birth control. There is much emphasis on empowering women, alleviating fear and stigma, community collaboration, and mitigating perceived oppression by the state through mandates and policies.

A Vital Intervention Point – Nonfatal Overdoses and the DART Program

The Drug Addiction and Recovery Team (DART) works from the premise that a nonfatal overdose is a vital point of intervention to prevent subsequent overdose death. DART is an innovative program where a team comprised of police officers, recovery coaches, and harm reduction specialists follows up with people after a nonfatal overdose, substance-related incident, or referral. It was first piloted by the Northampton Police Department in 2016 and has since expanded to all of Hampshire County. The team currently consists of 13 police departments with 35 trained officers, six recovery coaches, and one harm reduction specialist. Rooted in harm reduction, a team member makes contact with an individual who has overdosed within 24-48 hours to assess their needs, with the primary goal to form connections. A person may not be ready to make a treatment attempt, so DART will focus on a safety plan which includes providing overdose education, distributing naloxone, and meeting basic needs. Often, a police officer is a point person, who will then connect the person to a recovery coach and a harm reductionist from Tapestry, a comprehensive harm reduction organization with several sites throughout Western Massachusetts. The people sent to respond are individually tailored depending on what is known about the person, including demographics. There is also a DART response to people who have committed

crimes due to OUD, those that self-refer through a phone/text line, and those referred from outside agencies. MATRIS data has proven to be months behind, so reports from first responders, such as police, are vital for timely response. There is also a data share agreement with four area hospitals so that the same post-overdose response can be initiated in a hospital setting. In addition to post-overdose response, DART also distributes naloxone to individuals, businesses, libraries, and community groups as well as supports family members with a focus on addiction education, self-care, connecting to resources, and bereavement support. Another innovative element of DART is the customized Case Management System (CMS). The CMS, supported by a recent grant from SAMHSA, is a cutting-edge technology that will evaluate program effectiveness, better understand successful trajectories of individuals in the program, provide insight into the drivers of the opioid crisis in Hampshire County, and identify assets and gaps in the system. In addition, the CMS can provide a solution to the data challenges of a timely response to an overdose. DART may soon be expanding into the other counties in Western Massachusetts and the North Quabbin Region.

Treatment

There is very strong evidence that initiating and retaining a person with OUD on MOUD substantially reduces mortality, especially in the context of a fentanyl-laden illicit opioid supply. Several studies have shown that, as the number of patients on MOUD has increased, overdose deaths have decreased.^{167,168} In addition to reduced all-cause and opioid-related mortality,^{169,170} there is moderate evidence for lower total healthcare costs,^{171,172} lower healthcare utilization,¹⁷³ decreased criminality,¹⁷⁴ decreased risk of HIV and Hepatitis C,¹⁷⁵ and increased treatment retention compared with psychosocial interventions alone.^{176,177} Despite this rigorous evidence, many people with OUD are not on MOUD highlighting the need for innovative solutions.^{178,179} In addition to ED-initiated buprenorphine discussed earlier, MOUD in the criminal justice system has emerged as a potential evidence-based solution. We know from the Ch. 55 Report and other studies that those released from incarceration are at extremely high risk for overdose death.^{180,181} Implementing MOUD in jails, prisons, and other parts of the criminal justice system has been associated with decreased all-cause mortality,¹⁸² overdose-related mortality,^{183,184} illicit opioid use,¹⁸⁵ injection use,¹⁸⁶ nonfatal overdose,¹⁸⁷ and increased retention after release.^{188,189} Recognizing this important touchpoint, the most recent Massachusetts opioid bill will establish seven pilot programs in county jails to implement treatment with all three forms of MOUD. Hampshire, Franklin, and Hampden County will be a part of this pilot, which will be rigorously evaluated by a NIDA grant (Mass JCOIN). Wraparound with essential psychosocial and medical services is ideal to achieve the best outcomes.^{190,191}

In addition to increasing the number of people with OUD on MOUD, having the appropriate treatment infrastructure in place is vital to positive outcomes. BSAS has made a huge effort in recent years to establish and expand the treatment infrastructure needed to address the opioid crisis in Massachusetts, where state-funded ATS beds have increased 33%, CSS beds have increased 157%, and TSS beds have increased 13% since 2015. Western Massachusetts has benefited from this expansion. In Franklin County, a region that had no state-funded treatment ATS or CSS beds until 2016, there are 252 beds ranging from state-funded, to for-profit, to criminal justice treatment beds. In addition, three co-occurring enhanced RRS programs have recently begun providing services to those with both SUD and mental health disorders in Western Massachusetts, with five more programs soon to open. Although BSAS has made tremendous strides, the treatment and recovery continuums have gaps as treatment-on-demand is still not available in many places, and more TSS beds, RRS beds, and sober housing, where individuals can experience holistic healing and assimilate back into society, are needed. Below, we highlight three innovative program models with treatment components:

MOUD Behind the Walls – Franklin County Jail and House of Correction

Under the context that addiction is a medical condition, the Franklin County Jail and House of Correction provides its inmates with evidence-based, trauma-informed, individually tailored treatment, going so far as referring to the inmates as clients in a locked treatment facility. Initially funded by a Second Chance grant, which is administered through the U.S. Department of Justice's Office of Justice Programs and aims to reduce recidivism and improve reentry outcomes, the Franklin County Jail and House of Correction was one of the first jails in the country to make buprenorphine or extended-release naltrexone available to incarcerated individuals. In addition to MOUD, in the first six months of incarceration there are over 300 hours of intensive therapy, beyond the typical baseline treatment in jails of AA meetings, groups, and life skills training. An estimated 85% of eligible individuals for the treatment program will participate in some capacity. The Franklin County Sheriff stated that there has been a decrease in recidivism since implementation of the program. As part of the new state opioid bill, the House of Correction will be participating in the pilot program that will provide all three forms of MOUD starting September 2019, where new inmates are screened for the program and have the option of starting or continuing MOUD.

Once the clients are released, there is a reentry team, which facilitates a comprehensive wrap-around program to help transition this high-risk population. There are collaborations with other Franklin County/North Quabbin entities to help with follow up appointments for MOUD, counseling, housing, and employment. To attest to the success of the program, the Franklin County Sheriff's Office has an annual Christmas party and invites graduates of the treatment program to attend. They usually have over 60-80 people show up with their families. In a scenario where most would have disdain for the criminal justice system, the Christmas party is testament to how a collaborative, non-judgmental approach coupled with effective addiction treatment can lead to transformation for individuals, families, and society.

An At-Risk Population Supported by AISS

After Incarceration Support Systems (AISS) began in Hampden County in 1996 by now retired Sheriff Ashe with the goals of reducing recidivism, improving public safety, and supporting the whole person. By the end of FY19, it had served 32,645 individuals. Realizing that unemployment, unstable housing, lack of social support, undeveloped life skills, and discontinuation of substance use treatment increase recidivism, AISS provides comprehensive wrap-around services to the former inmates and others with the help of a case manager. In the context of the opioid crisis, several studies indicate that recently incarcerated individuals are at much greater risk of overdose death compared with the general population.^{192,193}

Treatment starts at the Hampden County Jail with continuum of care services, including a 154-bed substance abuse unit with additional focuses on education, vocation, conflict resolution, mindfulness, anger management, and interpersonal conflict. Progressively less restrictive housing is available in Ludlow, Chicopee, and Springfield to continue treatment and connect people to community recovery supports. Upon release, the former inmates have access to AISS which includes educational opportunities, vocational training, employment and housing support, and assistance in obtaining identification documents. There are also linkages to medical and behavioral healthcare, mutual support groups, and a mentorship program. Extended-release naltrexone injections are already being used upon reentry, and the jail is participating in the pilot program that will offer all three forms of MAT starting in September 2019. AISS has been effective, as the recidivism rate has decreased from 31% in 2001 to 16%.

In addition to former inmates, males civilly committed through Section 35, who are housed in Hampden County at the Recovery and Wellness Center, also have access to AISS. The Hampden County Sheriff's Department recognizes the value of and need for support services for all in the community and incarceration is not a pre-requisite to obtain AISS services. With this in mind, there is a re-branding effort currently underway.

Community Health Centers Expand Access to Treatment for Low Income Patients

There are over 50 community health centers (CHCs) in Massachusetts that serve as a local healthcare home for predominantly low-income people with a focus on primary and preventative care. This system of care plays an important role in addressing the opioid crisis, as nearly half of those with OUD had incomes below 200% FPL (\$24,120) in 2017.¹⁹⁴ There are over a dozen CHCs in Western Massachusetts, with Community Health Programs serving Berkshire County, Hilltown CHC serving Hampshire County, CHC of Franklin County serving residents at Greenfield and Orange sites, and several CHCs including Holyoke Health Center and Caring Health Center serving Hampden County.¹⁹⁵ Integrating OUD treatment into primary care at CHCs shows promise as a way to expand access to treatment, especially in rural and underserved areas.¹⁹⁶ More than 60% of CHCs have some degree of OBOT services. The Massachusetts Collaborative Care Model, developed at Boston Medical Center has been adopted by over 20 Massachusetts CHCs, some with multiple sites. This increased the capacity and number of patients on office-based opioid treatment (OBOT), specifically with buprenorphine, and increased the number of physicians in the participating CHCs that were waived to prescribe buprenorphine by 375%.¹⁹⁷

Nationally, around half of CHCs provide MOUD.¹⁹⁸ Many of the CHCs in Western Massachusetts provide OBOT or contract with providers that offer OBOT. CHC of Franklin County, which serves around 8,000 people at their two sites, has seen a growing proportion of their clients with OUD. In addition to being low-income, this population tends to struggle with job instability, food insecurity, relationships, and many have had exposure to the criminal justice system. CHCs are ideal for treating such complex patients, where many healthcare and psychosocial services are integrated into the system of care. As a snapshot of how CHCs can serve a person with OUD, CHC of Franklin County offers their patients OBOT, primary care, behavioral health services through a contracted provider, transportation, recovery coaching, and a community health worker to link to social services. They have begun using a smart phone app ([CHES](#)) that allows peer support and recovery coaching in real time, and there is a plan for the CHC in Orange to be part of addressing the methadone desert in the North Quabbin Region. Statewide initiatives to improve SUD treatment and increase OBOT capacity in CHCs include Substance Use Support and Technical Assistance in Communities (SUSTAIN), which has had a promising preliminary evaluation, and the Controlled Substance Management Module.

Recovery

Recovery has been defined many ways and can be framed as the progression and maintenance of the gains made in treatment as well as an improvement in overall quality of life. This is primarily achieved through recovery support services (RSS). These services are generally embedded within local communities and can target many of the social determinants of health including social support, vocational training, housing, and educational attainment. Some examples include mutual-aid groups (e.g. Alcoholics Anonymous), case management, recovery coaching, relapse prevention, life skills training, faith-based services, and collegiate recovery programs.¹⁹⁹ The SAMHSA definition for recovery is "a process of change through which individuals improve their health and wellness, live a self-directed life, and strive to

reach their full potential.”²⁰⁰ Recovery support services, through a holistic approach, aim to make this a reality for people with OUD. Importantly, there are many pathways of recovery, with a partial list including 12-Step mutual-aid groups, mindfulness and meditation, faith-based organizations, assistance through medication, or a combination of these. RSS are not limited to individuals with OUD, as mutual-aid groups like Learn to Cope and Grandparents Raising Grandchildren support families that have been impacted. Recovery Community Organizations (RCOs) are a relatively new innovation that combine and centralize RSS and recognize all of the pathways of recovery. Below, we present more information on RCOs and other supports in Western Massachusetts:

Beyond OUD Treatment - Recovery Community Organizations

Recovery Community Organizations (RCOs), sometimes referred to as recovery support centers (RSCs), can afford smooth transitions in the continuum of care and strengthen positive social supports for a person either seeking or in recovery. A large majority of these centers employ people with lived experience. Some RSCs also have the roles of public education and policy advocacy, thereby decreasing stigma in the community, in addition to connecting people to recovery coaching.²⁰¹ Western Massachusetts has several established RSCs; Hope for Holyoke Recovery Center, The RECOVER Project in Greenfield, Beacon Recovery Community Center in North Adams, the North Quabbin Recovery Center, The Nest in Belchertown, and the Northampton Recovery Center. Two RSCs are funded and in nascent development; the Springfield Recovery Support Center and the Berkshire County Living in Recovery Center in Pittsfield. In addition to RSCs localized in specific communities, the Western Massachusetts Recovery Learning Community provides regional support and the Massachusetts Organization for Addiction Recovery (MOAR) provides state-level support for recovery. There is a unique center in Western Massachusetts called the Living Room in Springfield, an innovative program that can serve up to five people at a time who are needing support and usually transitioning in between levels of services, such as waiting for a detox bed or stepping down to a lower level of treatment. The Living Room, though the Behavioral Health Network and funded by the Massachusetts Behavioral Health Partnership, provides a safe space where peers are available to meet with clients at no cost. Without treatment on demand, these peer centers are crucial to enlarge windows of opportunity for people seeking treatment and decrease utilization of the emergency department. They can also serve as a point of contact where relationships can be cultivated that may lead people to reduce problematic drug use, seek treatment, and make other meaningful changes in their lives.

Harm Reduction

Harm reduction is predicated on the assumption that some people will use alcohol and drugs and aims to minimize the harm done by these substances. It is designed to meet people where they are at with compassion, understanding, and without judgement. Harm reduction in the context of opioid use includes strategies to prevent overdose and decrease transmission of infectious disease. Some of these strategies include naloxone distribution, syringe service programs, fentanyl test strips, safe consumption sites, and education on safe injection practices and overdose prevention. In addition to decreasing mortality, decreasing transmission of HIV and Hepatitis C, and providing linkage to comprehensive public health services, engagement in harm reduction strategies has been shown to increase a person’s readiness to seek treatment.²⁰² Though safe consumption sites are politically challenging in Massachusetts and fentanyl test strips have only recently emerged, syringe service programs are supported by rigorous research, as discussed below. In addition, targeted naloxone distribution may be a primary driver in the recent decrease of national overdose deaths.²⁰³ Importantly, naloxone should be carried by both individuals that use drugs and first responders.^{204,205,206}

Comprehensive, Community-Based Harm Reduction Services at Tapestry

Tapestry has six sites in Western Massachusetts that provide comprehensive harm reduction services. There are five syringe services programs in all four counties; locations include Greenfield, North Adams, Northampton, Holyoke, and Springfield. Tapestry at Pittsfield provides overdose prevention services only. Syringe service program participants are more likely to seek treatment and more likely to cease injecting,²⁰⁷ and these programs have been shown to decrease HIV and Hepatitis C transmission,^{208,209} reduce the circulation of contaminated needles,^{210,211} and protect public safety officials from needle sticks.^{212,213} Further, syringe service programs do not increase initiation of drug use or increase frequency of use among current users,²¹⁴ and they do not increase neighborhood crime.²¹⁵ Despite this evidence, there has been resistance in several communities to implementing them. It took 20 years of lobbying for the syringe service program to open in Springfield in 2018, there was pushback for the program in Holyoke in 2012, and Pittsfield still does not have a program. Yet, the syringe exchange program that recently opened in Greenfield was well received, suggesting that the emergence of fentanyl coupled with regional leadership can create community willingness to adopt harm reduction strategies. In addition to a syringe exchange, each site provides naloxone and education on safe injection practices as well as linkage to treatment if desired by the client. Tapestry also does naloxone trainings at detoxes, treatment centers, jails, other community settings, and provides naloxone to law enforcement officials.

Outreach to an Elusive Population - The Harm Reduction Hedgehogs

Syringe exchange programs and other harm reduction services are not easily accessible in certain parts of Western Massachusetts due to its vast area and unique challenges such as lack of transportation, rural isolation, and stigma. Even if a program is close by, there are barriers to accessing the brick and mortar buildings. For example, the police department is located close to Tapestry in Northampton. Even though the local sheriff is supportive of harm reduction, some clients may be hesitant to access Tapestry's services. Another barrier is that rural isolation and stigma create fear in accessing services. In small communities, where most people know each other, no one wants to be seen walking into a harm reduction facility. If the person is in the country illegally and is using illicit drugs, fear of deportation may be a barrier to access.

The Harm Reduction Hedgehogs (HRH) emerged a year and a half ago to overcome these barriers of accessing services, change the attitude of communities and leaders towards harm reduction, and identify and train future harm reduction trailblazers. The organization uses peer-based street outreach to get harm reduction supplies into the hands of those who may not access brick and mortar services. In addition to syringes, naloxone, and safe injection practices, HRH also distributes fentanyl strips that enable users to test their drugs for the presence of fentanyl. To our knowledge, this was one of the first organizations to begin doing this in Massachusetts. Another important aspect of HRH is the cultivation of relationships with their clients that can lead to meaningful changes in the person's life, such as a reduction in frequency of use or risky behavior, an increase in treatment seeking, or the feeling of humanness that comes from compassion. HRH, as well as Tapestry, represent more than just a type of public health intervention, but an innovative harm reduction movement that is poised to address inequities within the system.

Policy Recommendations

Research suggests the drivers of the opioid addiction epidemic are both the drug environment, including access to opioids,²¹⁶ and “deaths of despair” caused by deterioration of social and economic well-being with each successive generation.^{217,218} Further, these drivers differ along the urban-rural continuum, with the drug environment most influential in urban areas and socioeconomic factors playing more of a role in rural areas.²¹⁹ Expanding beyond rudimentary socioeconomic measures, stagnating or declining wages, decreased marriage rates, decreased labor participation rates, increasing mental health problems, and increased pain and distress over time increased strain that gave rise to these deaths of despair.²²⁰ Though there is still discourse on causality, extrapolating the findings of these studies to Western Massachusetts reveals that it may be effective to focus on relieving socioeconomic distress to mitigate the opioid crisis in more rural counties, like Berkshire and Franklin County, whereas a focus on the opioid supply, particularly fentanyl, and harm reduction strategies in urban counties like Hampden County may have the greatest impact on overdose deaths. Further complicating solutions at the county level, even primarily urban counties like Hampden County have rural towns on its outskirts. Nonetheless, accounting for this variation in policy initiatives may be important in stemming overdose deaths in Western Massachusetts, where an illicit drug supply highly tainted with fentanyl in the eastern part of the state may be a precursor of what to expect in this region. Most importantly, no single opioid policy will make a substantial impact on the crisis, but a portfolio of evidence-based policies that works together to prevent OUD, treat OUD, and mitigate its effects and is contextualized to the area will be most effective.²²¹

Cross-cutting Themes: During the interview process, several themes emerged as best practices that can inform policy. These included collaboration across all sectors in the community, a criminal justice system that supports treatment and recovery for OUD rather than punitive measures, the importance of embracing harm reduction strategies, increasing recovery support services, and innovative solutions aimed at initiating and retaining more people with OUD on MOUD. Interviewees in rural areas expressed concern about how grant funding and resources have not been tailored to the unique challenges in their communities. Also, it was noted that these rural areas need resources targeting upstream factors linked to opioid use, such as trauma and the social determinants of health, to both prevent OUD and sustain recovery from OUD. Based on the challenges identified in the interview process, the context of increasing opioid-related morbidity and mortality compared to the rest of the state, and effective evidenced-based practices implemented elsewhere, the following policy recommendations are made for Western Massachusetts contingent on federal, state, and local resources:

1. **Increase and improve the addiction and mental health treatment workforce through funding initiatives and mandate education on addiction and trauma-informed care to individuals who will work in any capacity with the SUD population:** The present workforce capacity for addiction and mental health treatment in Western Massachusetts is insufficient to address the demand. Increasing the capacity of a well-trained workforce through innovative funding initiatives, such as recruitment incentives, will increase access to quality, holistic, culturally competent treatment. Stigma is still pervasive among the general public, medical professionals, and service providers. Academic detailing and educating the public are vital to facilitating a compassionate, non-judgmental approach to people with OUD. In turn, this will encourage more people with OUD to access treatment, facilitate the implementation of evidenced-based treatment and harm reduction strategies, and foster the right to human dignity.

2. **Support and expand municipal-based coalitions and strengthen county-based coalitions:** Strengthening community ties through coalitions, task forces, and partnerships can also be a tool to reduce stigma. In addition, these alliances are a vital tool that can increase coordination of care, reduce silos, facilitate implementation of evidence-based strategies, identify and address gaps in the continuum of care, strengthen local partnerships between businesses, public health, and public safety organizations, and bring in funding for their communities.
3. **Continue interventions that lead to cautious opioid prescribing practices:** One of the keys to bringing the opioid addiction epidemic under control is to prevent new cases of OUD.²²² Even though opioid prescribing rates have been declining since 2011, they still remain much higher than prescribing rates before this epidemic began. Further, all four counties in Western Massachusetts have higher opioid prescribing rates compared to the state average. Therefore, interventions aimed at preventing OUD from both medical and nonmedical exposure to prescription opioids are a vital response. In addition to the PDMP and state opioid prescribing policies, interventions may include academic detailing, institutional policies, and patient education on safe storage and disposal of prescription opioids. CDC guidelines on opioid prescribing for chronic pain should be followed and special emphasis should be placed on new opioid prescriptions.
4. **Increase capacity of MOUD and increase MOUD initiation at vital touchpoints:** Most people with OUD in Massachusetts are not engaged in MOUD.²²³ Western Massachusetts has increased its buprenorphine capacity, but methadone is not available to many of its residents. Unless federal regulations are eased, increasing methadone capacity must be done through increasing the number and capacity of Opioid Treatment Providers (OTPs). The state should work together with the region to identify areas with the most need. If possible, state-funded methadone clinics may be preferred to for-profit clinics. In addition, vital touchpoints to initiate MOUD need to be addressed. These include buprenorphine induction in the emergency room after a nonfatal overdose or other opioid-related acute hospitalization, initiation of the most appropriate form of MOUD in jails, prisons, drug courts, and other parts of the criminal justice system, post-overdose response teams, and ensuring that all community health centers have office-based buprenorphine prescribing capabilities. Also, screening for OUD should take place in emergency departments, primary care offices, obstetrics and gynecology practices, and mental health facilities, with appropriate referral to treatment.
5. **Increase treatment role of the criminal justice system:** There is considerable intersection between OUD and the criminal justice system, which appears to be even more prevalent in Western Massachusetts. This highlights a crucial opportunity to deliver evidence-based treatment for a chronic brain disorder and provide linkage to psychosocial services to support the arduous process of rebuilding one's life. All three forms of MOUD should be supported and offered throughout the criminal justice system. Intensive treatment should take place in jails and prisons, similar to the treatment model adopted by the Franklin County Jail and House of Correction, and comprehensive reentry services should be provided upon release, mirroring AISS through the Hampden County Jail, thereby decreasing recidivism and maximizing successful outcomes for individuals and society.
6. **Provide a robust and comprehensive treatment and recovery continuum of care that is supported by payors:** Infrastructure should be increased such that treatment-on-demand is a reality for all areas of Western Massachusetts, with the understanding that access to an ATS or detoxification bed is just the beginning of a person's journey to recovery. CSS, TSS, and RSS beds, followed by sober housing, will be necessary for many people with OUD, and there should be smooth transitions from one level of treatment to the next. Importantly, new and existing treatment infrastructure should be able to address all types of SUD, as alcohol use disorder is more

prevalent than OUD and stimulant use is on the rise.²²⁴ Individuals that are civilly committed, or sectioned, should have the opportunity to go to a treatment facility in Western Massachusetts. It is recommended that both MassHealth and private payers mandate linkage to a sober home certified by the Massachusetts Alliance for Sober Housing (MASH). The availability of recovery support services, including RSCs, partnerships with educational institutions, groups that increase social support, support and collaboration for parents with DCF involvement, and recovery coaching should continue to increase in the region.

7. **Use low bandwidth technology as a cost-effective way to deliver services to underserved areas:** Telemedicine to increase buprenorphine capacity and digital technology apps that deliver evidence-based treatment and recovery support services are emerging as a cost-effective solution to address treatment gaps in rural and underserved areas. Using telemedicine to prescribe buprenorphine has been shown to be just as effective in retaining patients and reducing illicit opioid use as in-person provider visits.^{225,226} With nascent research showing promise for digital recovery support service apps, deployment of this technology in Western Massachusetts has the potential to overcome barriers related to availability and accessibility.²²⁷ These innovative technologies should be utilized in rural areas of Western Massachusetts to overcome transportation barriers, and should have the capacity to be delivered at low bandwidth due to limited broadband access.
8. **Support the increased distribution of naloxone and other harm reduction strategies:** Preliminary 2018 data suggests that overdose deaths in the United States have decreased for the first time in nearly three decades,²²⁸ and a recent CDC report largely attributes this decrease to the increase in the availability of naloxone.²²⁹ Harm reduction strategies save lives, improve the health of people who use drugs, and provide an economic benefit to society.²³⁰ Comprehensive harm reduction service providers like Tapestry should continue to expand in Western Massachusetts and should provide all evidence-based harm reduction services including syringe exchange, targeted naloxone distribution, and injection use and overdose education.²³¹ Innovative outreach, like the Harm Reduction Hedgehogs, is needed for hard-to-reach populations. Promising strategies, like fentanyl test strips, need to be expanded, and interventions that have a strong evidence base in other countries, like safe consumption sites, need to be explored. In the context of fentanyl, Western Massachusetts should move towards a “culture of harm reduction.”
9. **Provide funding that is sustainable for the entire continuum of care:** Even though the opioid crisis has touched every part of society and geographic region, some have been impacted more than others. In addition, both the needs and solutions in rural areas may be different than urban areas. Further, funding that is determined by population has the potential to under-resource rural areas. Federal and state funding, whether direct or through grants, needs to take these factors into account. Also, counties, municipalities, and organizations that receive federal and state funding should have long-term sustainability plans if governments decrease or cut off future financial support.
10. **Address upstream factors related to OUD:** Some of these factors may include many of the social determinants of health such as access to both quality education and healthcare, gainful employment, transportation, public safety, transportation, availability of community-based resources and broadband technology, and safe housing. As a long-term strategy, improvements in these areas can prevent people from developing OUD, increase access to treatment, and produce successful outcomes for those that are working towards sustaining their recovery.

Conclusion

Western Massachusetts finds itself in a precarious time as opioid-related overdose deaths in 2018 increased to record highs in all four counties. Opioid prescribing rates are higher in all four counties compared with the state average, some counties have the highest OUD prevalence rates in the state, and fentanyl and fentanyl derivatives have now become the predominant opioid in the illicit drug supply, much like what has already happened in other parts of the state. Given these findings, it is possible that the opioid crisis could intensify in Western Massachusetts. Therefore, the dissemination and implementation of evidence-based strategies for prevention, intervention, treatment, supportive recovery, and harm reduction as well as strong community collaboration are vital to decrease overdose deaths in this region. The good news is that Western Massachusetts is comprised of communities and leaders that are willing to address this issue, is afforded healthcare systems and organizations that are willing to adopt innovative strategies, and has a strong foundation of task forces and coalitions that can guide interventions and strengthen partnerships. In addition, an ambitious multi-million-dollar federal initiative, the HEALing Communities Study, will involve communities in all four counties with the goal of reducing opioid overdose deaths by 40%. No single policy or organization will likely have a substantial impact, but a range of evidence-based policies, community-based organizations, and systems that work together to prevent OUD, treat OUD, and mitigate its effects will be most effective in addressing the opioid crisis in Western Massachusetts and improving the outlook for future generations.

Appendix A: Interviewees

- Heather Bialecki-Canning - Executive Director, North Quabbin Community Coalition
- Judge Beth A. Crawford - First Justice, Commonwealth of Massachusetts Probate and Family Court Department – Franklin Division and Franklin Family Drug Court
- Sheriff Christopher J. Donelan - Franklin County Sheriff and Co-chair, Opioid Task Force and the North Quabbin Region
- Dr. Elizabeth Evans - Assistant Professor, Department of Health Promotion and Policy, School of Public Health and Health Sciences, University of Massachusetts Amherst
- Michele Farry - Assistant Program Coordinator, Hampshire HOPE
- DA Andrea Harrington - Berkshire District Attorney
- Marisa Hebble - Project Coordinator, Massachusetts Community Justice Project, Executive Office of the Trial Court
- Linda Jablonski - Assistant Nurse Manager of The Birthplace, Baystate Franklin Medical Center and Co-chair, Franklin County Perinatal Support Coalition
- Ruth Jacobson-Hardy - Western Massachusetts Regional Manager, Bureau of Substance Addiction Services, Massachusetts Department of Public Health
- Bette Jenks - Family Services Director, Valuing Our Children, Coordinator, North Quabbin PATCH and facilitator of the Grandparents Support Group in Athol, MA
- Jennifer Kimball - Coordinator, Berkshire Opioid Addiction Prevention Collaborative and Principal Planner in Public Health, Berkshire Regional Planning Commission
- Kirby Lecy - Project Coordinator, State Office of Rural Health, Massachusetts Department of Public Health
- Dr. Martha Lyman - Research Director, Hampden County Sheriff's Department
- Debra McLaughlin - Coordinator, Opioid Task Force of Franklin County and the North Quabbin Region
- John F. Merrigan - Register of Probate, Franklin County and Co-chair, Opioid Task Force of Franklin County and the North Quabbin Region
- Albie Park - Co-founder, Harm Reduction Hedgehogs
- Wendy Penner - Director of Prevention and Wellness, Northern Berkshire Community Coalition
- Dr. Ruth Potee - Director of Addiction Services, Behavioral Health Network and Medical Director for the Franklin County Sheriff's Office and the Opioid Task Force of Franklin County and the North Quabbin Region
- Alison Proctor - Research Specialist, Hampden County Sheriff's Department and Co-chair, Hampden County Addiction Taskforce
- Edward J. Sayer - Chief Executive Officer, Community Health Center of Franklin County
- J. Cherry Sullivan - Program Coordinator, Hampshire HOPE
- DA David E. Sullivan - Northwestern District Attorney and Co-chair, Opioid Task Force and the North Quabbin Region
- Jess Tilley - Co-founder, Harm Reduction Hedgehogs and Executive Director, New England User's Union
- Liz Whynott - Director of Harm Reduction, Tapestry

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