POVERTY SOLUTIONS
UNIVERSITY OF MICHIGAN

OPEN
Evidence. Resources. Engagement.

NOVEMBER 2023

OPIOID USE IN MICHIGAN (2019): A REVIEW OF COUNTY-LEVEL OPIOID AND POVERTY-RELATED DATA

Presented in partnership between the Opioid Prescription Engagement Network (OPEN)
and Poverty Solutions at the University of Michigan

By John Bulat and Amanda Nothaft
———————

This paper is intended to supplement the Opioid Crisis in Michigan (2019) interactive map.
———————

Introduction:

Over the past decade in Michigan, there has been much progress in the fight against opioid use disorder (OUD). Medical professionals and researchers have established prescribing practice guidelines. Harm reduction initiatives, such as "take back" events that dispose of leftover medication, have been and continue to be conducted throughout the state. Much work, however, is left to be done. Throughout the state, and particularly in distinct clusters of counties, the signs of OUD among the population persist. This paper will describe some of the demographic attributes in these counties, review patterns in opioid prescriptions and usage, discuss the health care facilities in these communities, and offer suggestions on where potential intervention activities could take place[1].

Methodology:

Using publicly available data from the U.S. Census Bureau, the Centers for Disease Control and Prevention, the Michigan Department of Health and Human Services, and others, researchers at Poverty Solutions at the University of Michigan constructed a map of Michigan's counties[2]. This map includes demographic information with a connection to OUD (e.g., unemployment rates, income levels) as well as other indicators of mental and physical health, opioid-related outcomes (e.g., hospitalizations), and available health and addiction care resources within the counties[3]. In the following sections we take a closer look at three regions with pronounced signs of opioid use.
—————

[1] While this work is similar to the Michigan Substance Use Vulnerability Index (p. 7-9) which examines substance use disorder and demographic indices, this paper and accompanying map focus strictly on OUD-related indicators and rely on individual demographic measures.

[2] See the Appendix for a full listing of the data sources.

[3] Please note, unless otherwise indicated, the data for the maps are from 2019 due to issues with the 2020 Census and data availability when the project started. As data for more recent years become available, the analysis will be updated.

Bay County Region

The most intense clustering of counties with OUD indicators is centered around Bay County, home to Bay City and just north of Saginaw and east of Midland. This region stretches from Alcona County in the north to Genesee County in the south. The most populous county in the region is Genesee County, home to Flint, with a population of close to 406,000 people.

The population numbers per county in this region steadily decline moving north from Genesee County. For instance, Saginaw County, immediately north of Genesee County, has a population of approximately 190,000, and Bay County, just north of it, has a population of around 103,000. Arenac, Iosco, and Alcona counties all have populations below 30,000, with Alcona County having the smallest population in the region (approximately 10,400).

This change in population numbers demonstrates the changing nature of the region as one moves north through it. The more populated urban centers of Flint, Saginaw, and Bay City give way to smaller cities, such as Standish and East Tawas, which are surrounded by rural areas.

The median household income for the region is close to $48,000, with the southern counties having higher median household incomes than their northern counterparts. The unemployment rate is just over 8% for the region, but Genesee County has a higher rate (9.3%) than most other counties in the state. Additionally, the percent of families in the region with incomes below 100% of the Federal Poverty Level (FPL) is 18.1%. Some of the highest percentages of those experiencing poor mental or physical health are in or near the counties in this region.
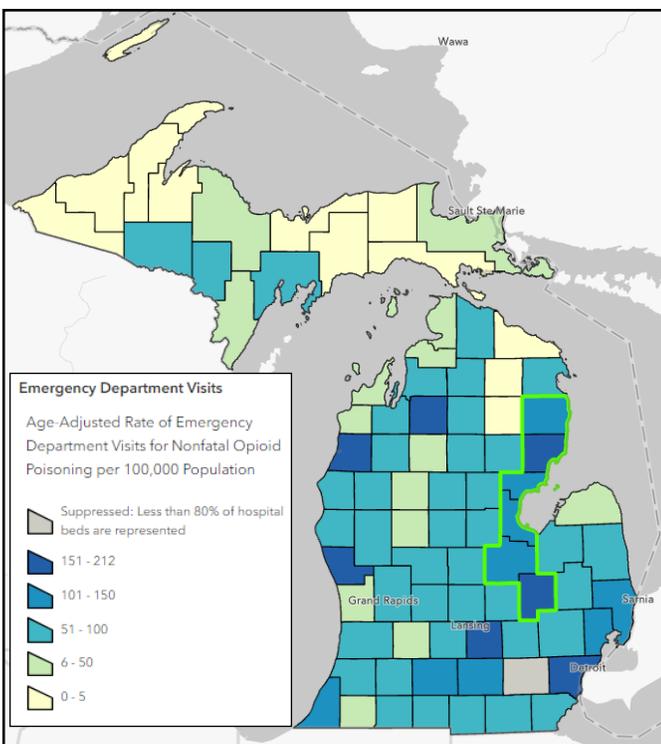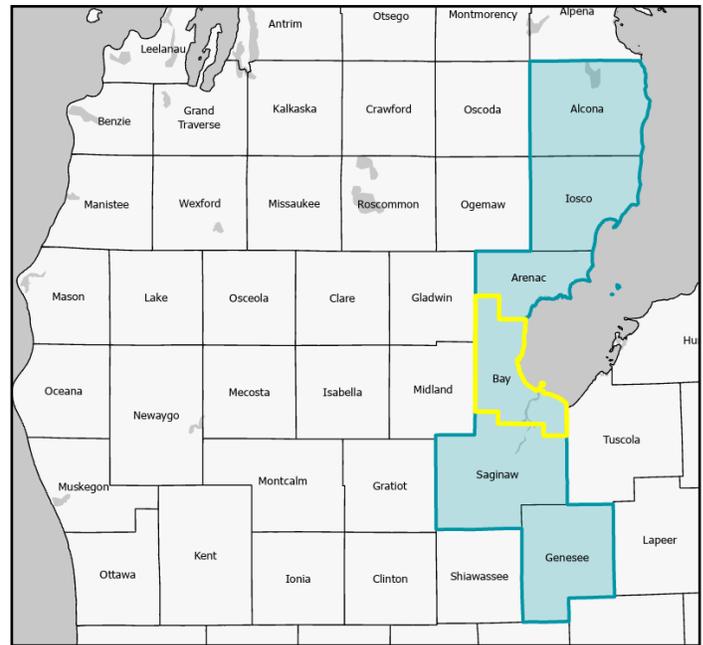
In terms of opioid-related data, Iosco County has the highest rate of emergency department visits for nonfatal opioid poisonings in the state (211.3 per 100,000 people). Genesee County also has one of the highest rates in the state (160.7 per 100,000 people). Bay County's emergency department visit rate for nonfatal opioid poisonings per 100,000 people is 140.3.

In 2022, Bay, Saginaw, and Genesee counties also ranked among the highest in the state for all drug overdose emergency department visits per 100,000 people per the Michigan Monthly Overdose Update (Figure 7).

The University of Michigan's Michigan System for Opioid Overdose Surveillance (SOS) map shows that this cluster of counties continues to experience some of the highest statewide rates for EMS naloxone administrations in 2023.
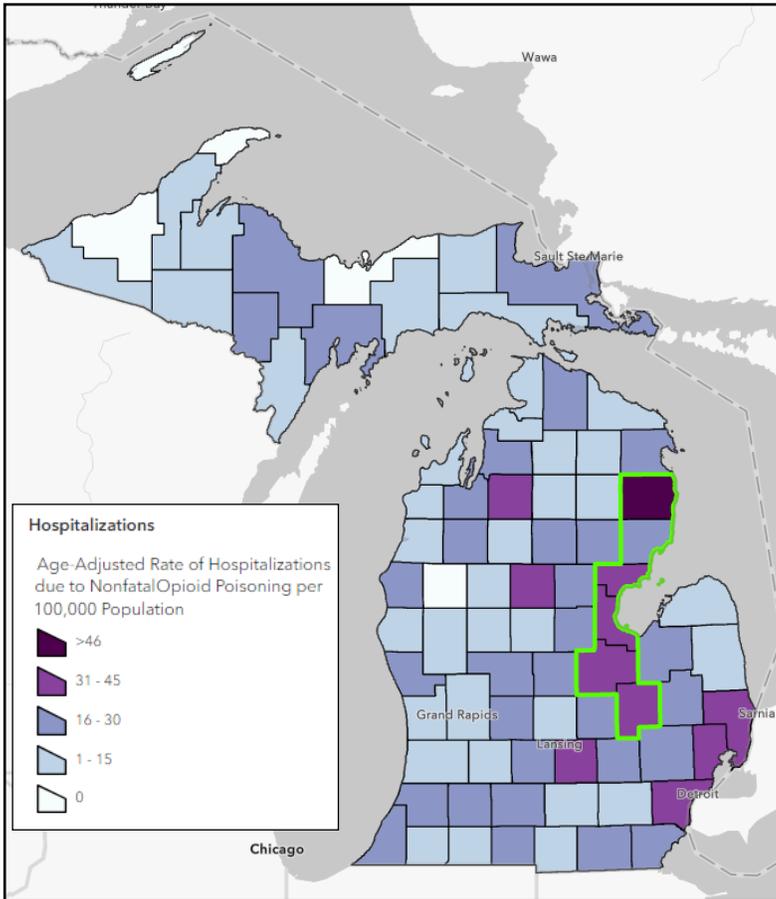
Hospitalization rates for nonfatal opioid poisonings per 100,000 are also high in Bay County (32.5) and the surrounding counties (Arenac County – 33, Saginaw County – 34.9, Genesee County – 41.6).

Alcona County has the highest opioid poisoning hospitalization rate in the state at 87.3 per 100,000 people.

Genesee and Iosco counties have high rates of deaths from opioid poisoning, at 35.4 deaths and 34.5 deaths per 100,000 people, respectively. This trails only Wayne County (35.7 deaths per 100,000 people) in fatal opioid poisoning rates[4]. These data are not available for Bay and Arenac counties be-cause a high percentage of drug overdose deaths there involve unspecified drug types[5].

That said, notably, there is a lack of medication-assisted treatment (MAT) facilities in the region, and those that exist are concentrated in the south-ern portion of this cluster of counties, with one in the city of Saginaw and four in Flint.

Admission rates for opioid treatment in Bay and Genesee counties, however, were among the highest in the state (5.7 and 4.7 per 1,000 population, respectively)[6].

In terms of harm reduction resources, there are a handful of "take back" locations in Bay City with more in Midland and Saginaw. The locations become more sparse or nonexistent north of Bay City along Lake Huron, which may be due to the lack of population in these areas.

Although the entire region is similarly affected by the reach of opioids, the counties that comprise the region vary in distinct ways. Primarily, the northern half of the cluster is more rural and lacks access to the type of treatment re-sources that are more readily available in the southern, more urban half of the region. As a result, intervention strate-gies may need to be tailored to fit the characteristics of the individual intervention sites.

Taken together, the rates of opioid-related treatment admissions, emergency department visits, hospitalizations, and deaths in the region, as well as the lack of MAT facilities, demonstrate the severe impact of opioids in these counties and highlight the communities' need for additional treatment options and/or harm reduction resources.

——————

[4] Among the counties for which the data is not suppressed.

[5] See explanation on https://mitracking.state.mi.us/.

[6] According to prevalence estimates and estimated totals from the Substance Abuse and Mental Health Services Administration's (SAMHSA) 2018-2019 National Surveys on Drug Use and Health (NSDUH), approximately 2.5% of those aged 18 and over in Michi-gan (n≈191,000) were needing but not receiving treatment at a specialty facility for illicit drug use. For those between the ages of 18-25, the estimate was over 7.5% (n≈82,000). Further, a 2019 policy brief from Poverty Solutions noted that "Officials in three quarters (74%) of Michigan counties reported unmet need for drug treatment programs in their jurisdiction with more than a third (36%) of counties reporting significant unmet need."

Marquette County Region
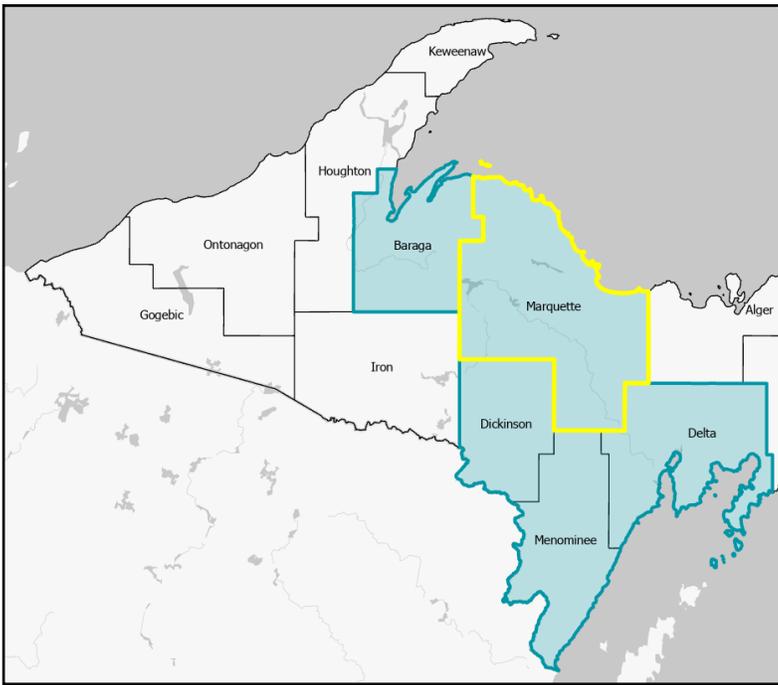
A second cluster centers around Marquette County in the Upper Peninsula (U.P.). Marquette County is the most populous county in the U.P. with a population of close to 67,000.

It is also home to the city of Marquette, the largest city in the U.P., which has a population of approximately 21,000.

Compared to the Bay County region, the median household income is slightly higher for this set of counties. The unemployment rate is much lower comparatively (5.2% compared to 8.2%) and the percent of the population with incomes below 100% FPL is also lower (14% compared to 18.1%). These data indicate the region is more prosperous economically than the Bay County cluster.

Further, the residents of the Marquette County region also have slightly better mental and physical health indicators in comparison to the those in the Bay County cluster.

In two counties neighboring Marquette County, Delta and Dickinson, the number of opiate prescriptions per person are high compared to statewide numbers, 1.1 and 1.5, respectively. There is only one MAT facility in the entire region (one of two in the entire U.P.), however, and it is located about a 30 minute drive from Marquette city proper. Compared to the Lower Peninsula, especially the lower half of the Lower Peninsula, the population per county is much lower in the Marquette County region. This may explain why there is a limited number of MAT facilities[7]. Although access to MAT facilities is limited, there are a handful of "take back" locations spread throughout the region.

While rates of emergency department visits and hospitalizations for opioid poisoning aren't particularly high compared to the Bay County region, the Marquette County region has high admission rates for opioid treatment,

with Baraga County having the highest rate in the state (7.1 per 1,000 people - see map above). Bay County has the next highest at 5.7. U-M's SOS map indicates that Baraga County also has the highest rate of EMS naloxone administrations in the U.P. in 2023 (96 per 100,000 people as of Oct. 26, 2023).

—————
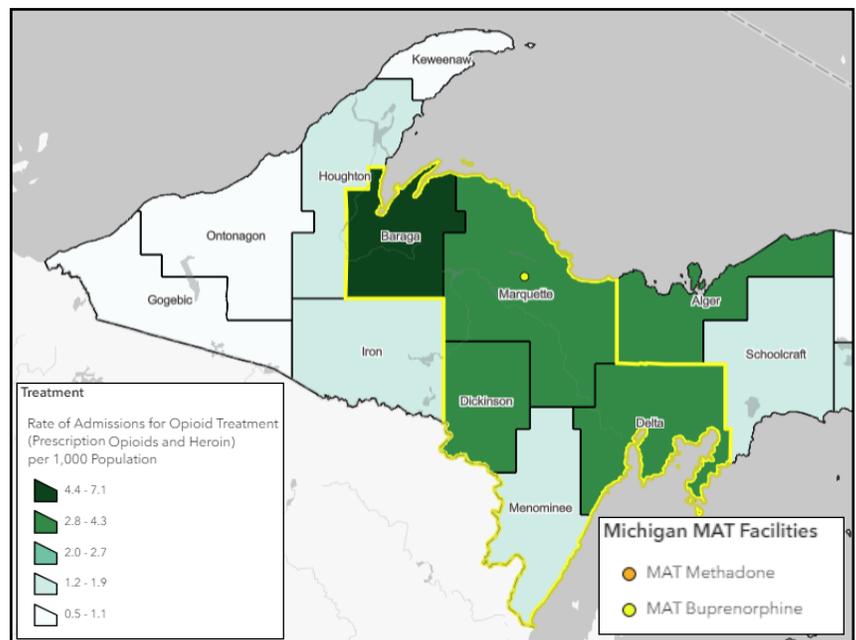
[7] In absence of brick-and-mortar facilities, alternative treatment delivery services such as telehealth and/or mobile delivery services could be pursued. See here and here for examples noted by the Bureau of Justice Assistance's Comprehensive Opioid, Stimulant, And Substance Abuse Program Resource Center.

Even though extreme crisis indicators, such as high hospitalization and emergency department visit rates, may be absent, opioid usage can be gauged using other variables such as treatment rates.

In comparison to the Bay County region, there are fewer hospitals in the Marquette County region as well as more geographic distance between the hospitals. This may have an impact on whether overdose victims make it to a hospital for treatment and may also help explain the prevalence of naloxone administrations by EMS in Baraga County. Given this, increased community-based access to naloxone along with training in naloxone administration would likely prove valuable.

Wayne, Macomb, and St. Clair County Region

A third cluster of counties is found in the southeastern portion of the state and stretches from Wayne County northeast through Macomb County and up into St. Clair County.

These counties vary significantly demographically. Wayne County, home to Detroit, is Michigan's most populous county with a population of almost 1.8 million people.

The counties become less populous and more rural as one moves farther away from Wayne County, with St. Clair County being the most rural and least populous of the three counties in the cluster.

Taken together, the median household income for the cluster is approaching $56,000, but there is a $15,000 difference between Macomb's median household income (≈$62,000) and Wayne County's (≈$47,000). St. Clair County's median household income is close to $57,000.
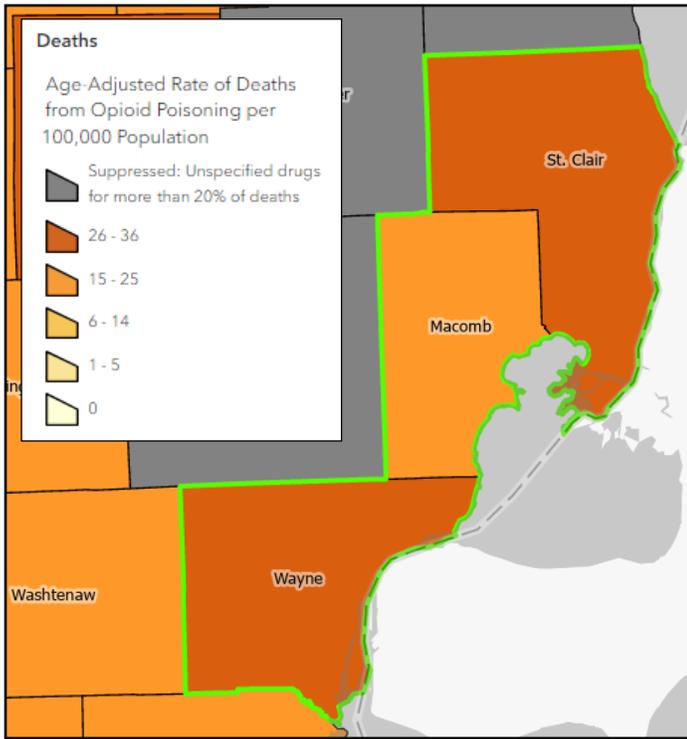
The overall unemployment rate for the region is 7.8%, but Wayne County's rate (9.2%) exceeds both St. Clair's (6.4%) and Macomb's (5.4%). A similar story is found in the poverty rate. The rate for the region is 18.1%, but Wayne County's rate is 22.3% while St. Clair County's (12.6%) and Macomb County's (10.6%) rates are both much lower[8].

Although there are differences in demographic characteristics among the counties in this cluster, each county ranks highly in an OUD-related indicator.

—————

[8] Detroit undoubtedly impacts Wayne County's overall numbers in these comparisons. Using ACS 2019 5-YR IPUMS data, the following comparisons can be made:

	Wayne County (including Detroit)	Detroit	Wayne County (excluding Detroit)
Median Household Income	≈$47,000	≈$31,000	≈$60,000
Unemployment	9.2%	15.7%	5.6%
Poverty	22.3%	35.1%	15.4%

Deaths
Age-Adjusted Rate of Deaths from Opioid Poisoning per 100,000 Population

- Suppressed: Unspecified drugs for more than 20% of deaths
- 26 - 36
- 15 - 25
- 6 - 14
- 1 - 5
- 0

Wayne County, for instance, ranks second behind Iosco County in the rate of emergency department visits for nonfatal opioid poisonings (163.1 per 100,000 people).

Wayne and St. Clair counties are among the top four counties in the state for the rate of opioid-related deaths (first and fourth, respectively - see map on left). Together with Macomb County, the counties account for three of the top eight rates for hospitalizations due to nonfatal opioid poisonings (38.9 per 100,000 people for Wayne County, 34.7 for Macomb County, and 36 for St. Clair County).

Macomb County also has one of the top rates of admission for opioid treatment per 1,000 people (5.1). Opiate prescriptions per person, however, are close to the average statewide for each county. Still, U-M's SOS map indicates high usage of naloxone by EMS in both Macomb and Wayne counties in 2023.

This region has several MAT facilities, but they are concentrated in northeast Wayne and southern Macomb County, all relatively close to each other.

Of the 21 facilities within the region, 10 are located within Detroit (one additional facility is technically in Macomb County but borders the city)[9].

Northern Macomb and St. Clair counties, on the other hand, only have two facilities between them.

This, again, appears to be a function of population density on the one hand, but on the other, could also speak to an underlying "not in my back yard" attitude regarding the placement of rehabilitation clinics.

As the earlier demographic data indicated, there are pronounced differences among the counties in the Wayne/Macomb/St. Clair County region in terms of median house-

Treatment
Rate of Admissions for Opioid Treatment (Prescription Opioids and Heroin) per 1,000 Population

- 4.4 - 7.1
- 2.8 - 4.3
- 2.0 - 2.7
- 1.2 - 1.9
- 0.5 - 1.1

Michigan MAT Facilities
- MAT Methadone
- MAT Buprenorphine

hold income, unemployment, and poverty, much more so than in the other clusters. Each county in this cluster, however, is negatively impacted by the reach of opioids and requires further mitigation efforts.

——————
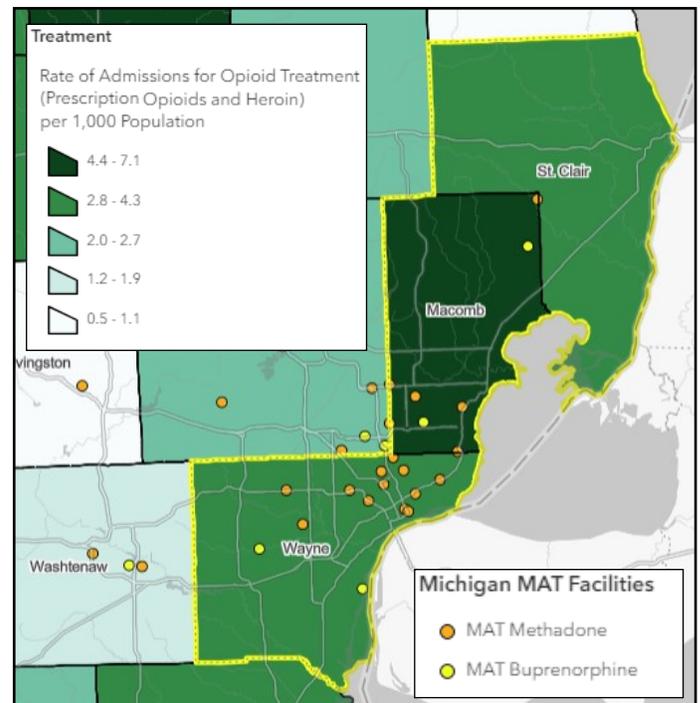
[9] Even with this concentration of MAT facilities, substate estimates from the 2016-2018 NSDUH show Wayne County (MI Region 7) as having the highest percentage, by substate region, of those 12 and older needing but not receiving treatment at a specialty facility for illicit drug use in the past year (≈3.2%).

At the national level, SAMHSA notes that in 2019 the most cited reasons for not receiving substance use treatment (which includes treatment for alcohol use as well as illicit drug use) among those who perceived their need for it were: "Not Ready to Stop Using" (≈40%); "Did Not Know Where to Go for Treatment" (≈24%); and "No Health Care Coverage and Could Not Afford Cost" (≈21%). These categories were not mutually exclusive, and the responses show that physical proximity is not the only barrier to treatment access.

Conclusion:

Counties in the Bay County and Wayne/Macomb/St. Clair County regions rank among the highest in the state in terms of opioid-related hospitalization and emergency department visit rates. Opioid prescription rates in or near the Bay County and Marquette County areas are among the highest in the state. All together, these three regions host four of the top five counties in terms of the rate of admissions for opioid treatment (prescription opioids and heroin) per 1,000 people. Given their higher-than-normal rates in these categories (and, in some cases, the lack of access to MAT facilities within the clusters), these hotspot counties are worthy candidates for interventions to reduce opioid-related harm.

—————————————————
Appendix
—————————————————

Data Categories	Data Source
Age-Adjusted Rates for Opioid-Related Emergency Department Visits, Hospitalizations, and Deaths	MDHHS's Michigan Environmental Public Health Tracking (MiTracking) dataset
Estimated Totals - "Needing But Not Receiving Treatment at a Specialty Facility for Illicit Drug Use in the Past Year"	Substance Abuse and Mental Health Services Administration (SAMHSA), 2018-2019 NSDUH Estimated Totals By State
Michigan MAT Facilities	Michigan Department of Licensing and Regulatory Affairs (LARA) Substance Use Disorder Care
National Level - "Detailed Reasons for Not Receiving Substance Use Treatment in Past Year among Persons Aged 12 or Older Classified as Needing But Not Receiving Substance Use Treatment at a Specialty Facility and Who Perceived a Need for Substance Use Treatment in Past Year"	Substance Abuse and Mental Health Services Administration (SAMHSA), Center for Behavioral Health Statistics and Quality, National Survey on Drug Use and Health, 2015-2019
Opiate Prescriptions Per Person	2019 LARA Annual Drug Utilization Report and Centers for Disease Control and Prevention (CDC) PLACES dataset
Opioid and Heroin Treatment Rate	MDHHS's Treatment Episode Data Set (TEDS) and Centers for Disease Control and Prevention (CDC) PLACES dataset
Population, Health Insurance Coverage, Check-up, Poor Mental Health, and Poor Physical Health	Centers for Disease Control and Prevention (CDC) PLACES dataset
Prevalence Estimates - "Needing But Not Receiving Treatment at a Specialty Facility for Illicit Drug Use in the Past Year"	Substance Abuse and Mental Health Services Administration (SAMHSA), 2018-2019 National Survey On Drug Use And Health: Model-Based Prevalence Estimates (50 States And The
Unemployment, Median Household Income, and Poverty	American Community Survey 2019 5-Year Estimates (via Social Explorer)
Unemployment, Median Household Income, and Poverty for Wayne County with/without Detroit and Detroit alone	American Community Survey 2019 5-Year IPUMS
Substate Estimates - "Needing But Not Receiving Treatment at a Specialty Facility for Illicit Drug Use in the Past Year"	Substance Abuse and Mental Health Services Administration (SAMHSA), Substate Estimates of Substance Use and Mental Illness from the 2016-2018 NSDUH: Results and Detailed Ta-