



The Opioid Epidemic: Madison County, NY

Prepared by: Madison County Public Health

Last updated: August 18, 2025

Table of Contents

Executive Summary	3
Background	4
The Heart of the Epidemic	5
Overdose Deaths	5
Effects on the Healthcare System	6
Emergency Department Visits	6
Prevention Efforts	7
Opioid Prescribing Trends.....	7
Drug Sales	8
Mental Health First Aid	9
Substance Use Among Youth	10
Harm Reduction Efforts	11
Safe Disposal Programs	11
Fentanyl Strips	11
Naloxone Use	11
Treatment	13
Opioid-Related Treatment Facility Admissions	13
Conclusion	13
Appendix A: Data Tables	14
References.....	15

Executive Summary

Since 2016, this report has provided a comprehensive overview of the opioid epidemic at local, state, and national levels. The purpose is to guide future actions, efforts, and policies by presenting current data and highlighting examples of current initiatives.

Notably, this year's report shows the continued decline in opioid-related overdose deaths for both Madison County and New York State. The decline mirrors the national trend, which estimates a decrease in overdose deaths for 2023. This improvement suggests that the culmination of prevention, harm reduction, and treatment efforts are working together to reduce opioid-related deaths and ultimately improve our community.

The current report has been expanded to include more data related to current initiatives as a way to measure the progress of this complex issue. It is divided into two sections. The first part examines the outcomes of the opioid epidemic, specifically overdose deaths and emergency department visits. The second part highlights initiatives to address opioid use through prevention efforts, harm reduction strategies, and treatment options. Previous initiatives are captured through past reports and are available online:

<https://www.madisoncounty.ny.gov/1754/Opioid-Epidemic-Annual-Reports>.

Key data insights outlined in this report include:

- Nationally, all overdose deaths decreased between 2023 and 2024.
- In Madison County, opioid-related overdose deaths continued to decrease for a third consecutive year in 2024.
- Emergency department visits related to opioids continued to decline in Madison County and the Central New York region.
- Opioid prescribing rates have continued to decrease on a national, state, and local level; however, the rate in Madison County remains higher than the region and state.
- The number of reports for use of naloxone (Narcan®) continued to decrease in the past year.
- Annual opioid-related treatment admissions to OASAS-certified chemical dependence programs slightly increased in 2023 and 2024.

Background

Opioids are a type of highly addictive drug commonly used to treat moderate-to-severe pain. The opioid epidemic in the United States is a complex, multi-layered problem, characterized by three distinct waves (Figure 1). The first wave began in the 1990s due to widespread over-prescription of highly addictive pharmaceutical opioids like oxycodone (OxyContin®) and hydrocodone (e.g., Vicodin®).^{1,2} During the second wave, prescription practices tightened, and many individuals experiencing addiction shifted to more accessible alternatives such as heroin. From 2011 and 2013, heroin-related deaths increased among all demographic groups, but most notably in historically low-rate populations such as women and people who identify as non-Hispanic white.³

The current wave of the opioid epidemic began in 2013 when the use of synthetic opioids surpassed heroin due to their higher potency, cost-effectiveness, and ease of transport.^{4,5} In particular, fentanyl, which is 50-100 times more potent than morphine, has especially exacerbated this crisis.⁶ In 2022, the vast majority of opioid overdoses were attributed to fentanyl, accounting for nearly 70% of all overdose deaths.⁷

Since the opioid epidemic was declared a public health emergency in 2017, increased awareness has driven prevention, harm reduction, and treatment efforts.⁸ The number of opioid-related overdoses declined for the first time in five years in 2023 and again in 2024. As of May 2025, the CDC reported that overdose deaths declined by nearly 30,000 between 2023 and 2024, decreasing from 83,140 to 54,743.⁹

Three Waves of Opioid Overdose Deaths

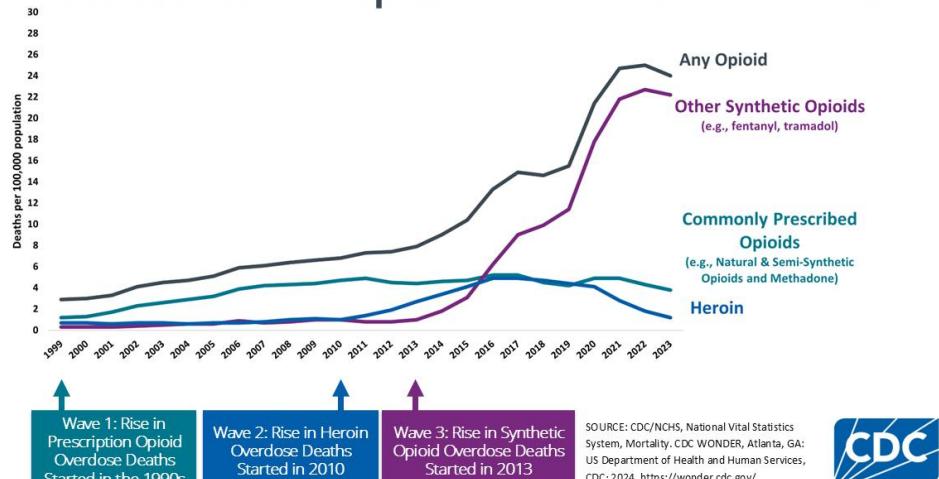


Figure 1. Opioid overdose death rates per 100,000 population among waves 1-3 of the opioid epidemic. Source: Centers for Disease Control and Prevention (CDC). Accessed: 08/2025.

The Heart of the Epidemic

Overdose Deaths

In 2024, the opioid overdose death rate in Madison County declined for the third consecutive year, dropping 7.3% from 19.1 to 11.8 deaths per 100,000 population (Figure 2).¹⁰ The rate remains below both the region and state (excluding NYC), who share a similar decreasing pattern.¹⁰ Additionally, the county continues to experience reduced opioid overdose deaths from prescription opioids and heroin (Figure 3).¹⁰

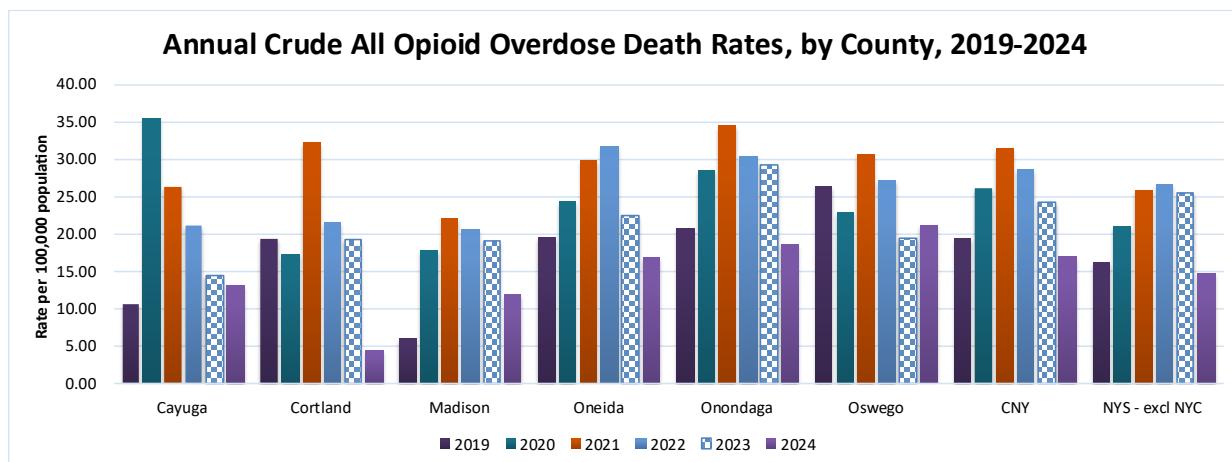


Figure 2. Annual opioid overdose death rate among Central New York counties compared with NYS (excluding NYC), 2019-2023. Source: NYSDOH Vital Statistics; 2019-2024 — NYSDOH, New York State County Opioid Quarterly Reports.¹⁰ Accessed 07/2025

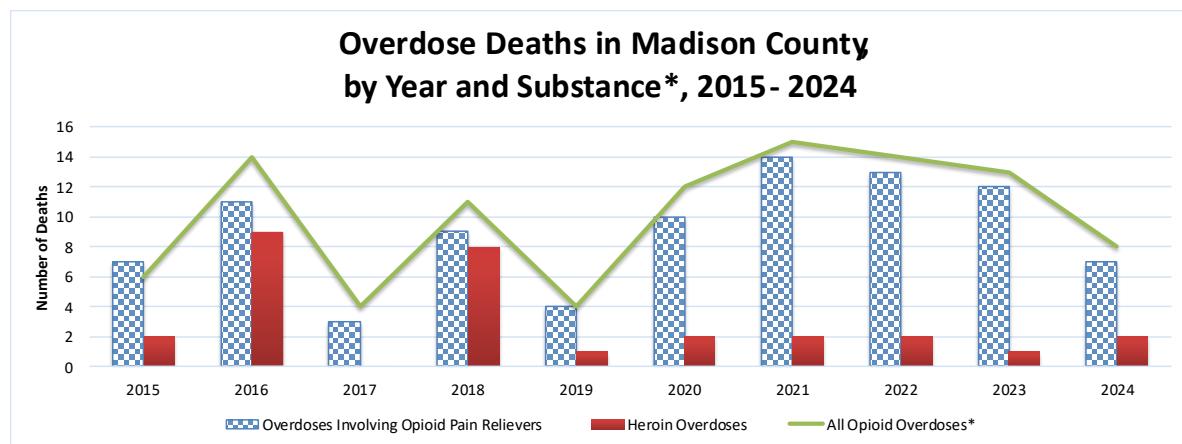


Figure 3. Annual overdose deaths by substance, Madison County, 2015-2024 (January-September 2024).

Source: 2015-2024 — NYSDOH, New York State County Opioid Quarterly Reports. Accessed 07/2025.

*Indicators are not mutually exclusive. Decedents and patients may have multiple substances in their system. Thus, overdoses involving heroin and overdoses involving prescription opioid pain relievers will not add up to the overdoses involving all opioids.

Effects on the Healthcare System

Emergency Department Visits

The national opioid epidemic has placed a significant economic burden on the United States healthcare system. According to a 2020 study, the societal costs of opioid use disorder totaled \$786.8 billion in 2018, with healthcare expenditures accounting for \$89.1 billion of this amount.¹¹ Nationally, the cost of opioid-related visits and hospitalization remains high each year.

Opioid overdose-related emergency department (ED) visits in New York State are tracked through the Statewide Planning and Research Cooperative System (SPARCS). In Madison County and Central New York, opioid-related ED visit rates peaked in 2016. Since then, there has been a steady decline in ED visit rates across the county, region, and state (excluding NYC) (Figure 4).¹⁰ In 2024, the ED visit rate among Madison County residents dropped from 19.7 to 15.5 per 100,000 population.

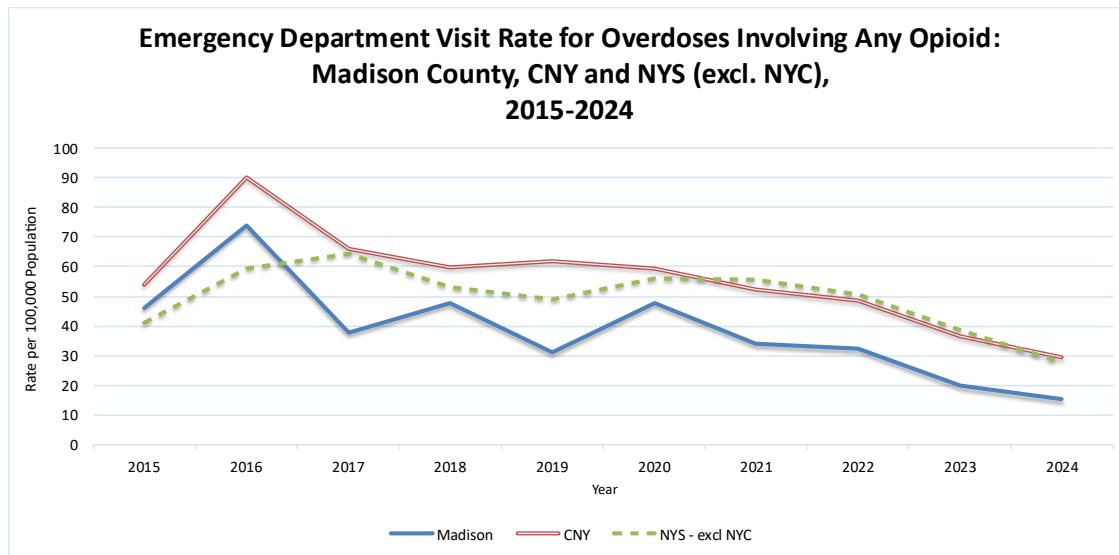


Figure 4. Annual emergency department visit rates due to an opioid overdose in Madison County, CNY, and NYS (excluding NYC) from 2015 – 2024.¹⁰

Source: NYSDOH, New York State County Opioid Quarterly Reports. Accessed 07/2025.

Prevention Efforts

Opioid prevention efforts aim to reduce non-medical use of prescription and all illicit opioids through strategies that monitor trends in access, usage, and address community needs.¹² This section examines local prevention efforts, including prescription monitoring programs (PMP), trends in drug sales, monitoring youth substance use, and the implementation of programs such as Mental Health First Aid (MHFA).

Opioid Prescribing Trends

In the United States, the opioid dispensing rate declined from 46.8 prescriptions per 100 people in 2019 to 37.5 in 2023.¹³ This trend has been consistent since the release of a 2015 Federal Brief advocating for statewide Prescription Monitoring Programs and universal prescribing practices, followed by the CDC Opioid Prescribing Guidelines published in 2016.¹⁴⁻¹⁶

In New York State, opioid prescribing data are collected through the online Prescription Monitoring Program Registry, maintained by the Bureau of Narcotic Enforcement under the Department of Health.¹⁷ Licensed prescribers (excluding veterinarians) are required to report to the registry when prescribing Schedule II-IV controlled substances.

Across Madison County, Central New York, and New York State (excluding New York City) opioid prescription rates have steadily declined since 2016 (Figure 5); however, the Madison County rate remains higher.¹⁸

Clinical guidelines strongly advise limiting prescriptions to opioid-naïve patients to no more than a 7-day supply. Opioid-naïve patients are individuals who have either never been prescribed opioids or have not received a recent opioid prescription. In 2023, 15.1% of these prescriptions occurred in New York State compared with 14.1% in Madison County (Figure 6).¹⁷

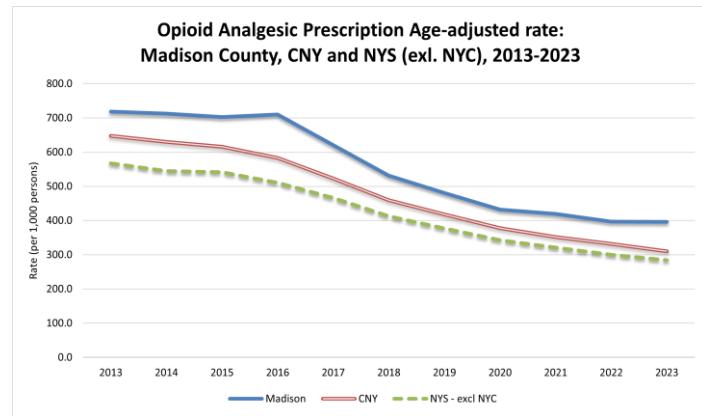


Figure 5. Opioid analgesic prescription rates, Madison County, Central New York (CNY), and New York State (excluding NYC), 2013-2023. Source: NYSDOH, New York State Opioid Data Dashboard.¹⁸ Accessed: 05/2025.

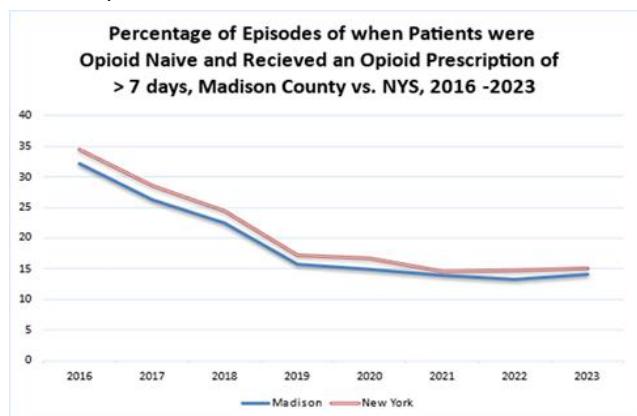


Figure 6. Percentage of Episodes of when Patients were Opioid Naïve and Received an Opioid Prescription of > 7 days, Madison County vs. NYS, 2016-2023. Source: NYSDOH, New York State Opioid Data Dashboard.¹⁷

Drug Sales

Although opioid use in the United States has shown signs of decline, the country remains one of the largest consumers globally.¹⁹ In 2021, the United States reported 31,860 Defined Daily Doses per million people per day (S-DDDpm), far exceeding the less than 10,000 S-DDDpm typical in most countries.²⁰ To ensure accountability in the distribution of controlled substances like opioids, U.S. drug manufacturers and distributors must report retail transactions to the Drug Enforcement Administration in the Automated Reports and Consolidated Orders System (ARCOS).²¹

According to the most recent ARCOS Retail Drug Summary, opioid sales have declined across Central New York (CNY) and New York State (NYS) since 2014 (see Figure 7).²² Throughout this period, the NYS rate per 100,000 population has been consistently lower than the region except for 2018. In 2018, oxycodone was temporarily excluded from the annual ARCOS statistical reports, contributing to the difference.

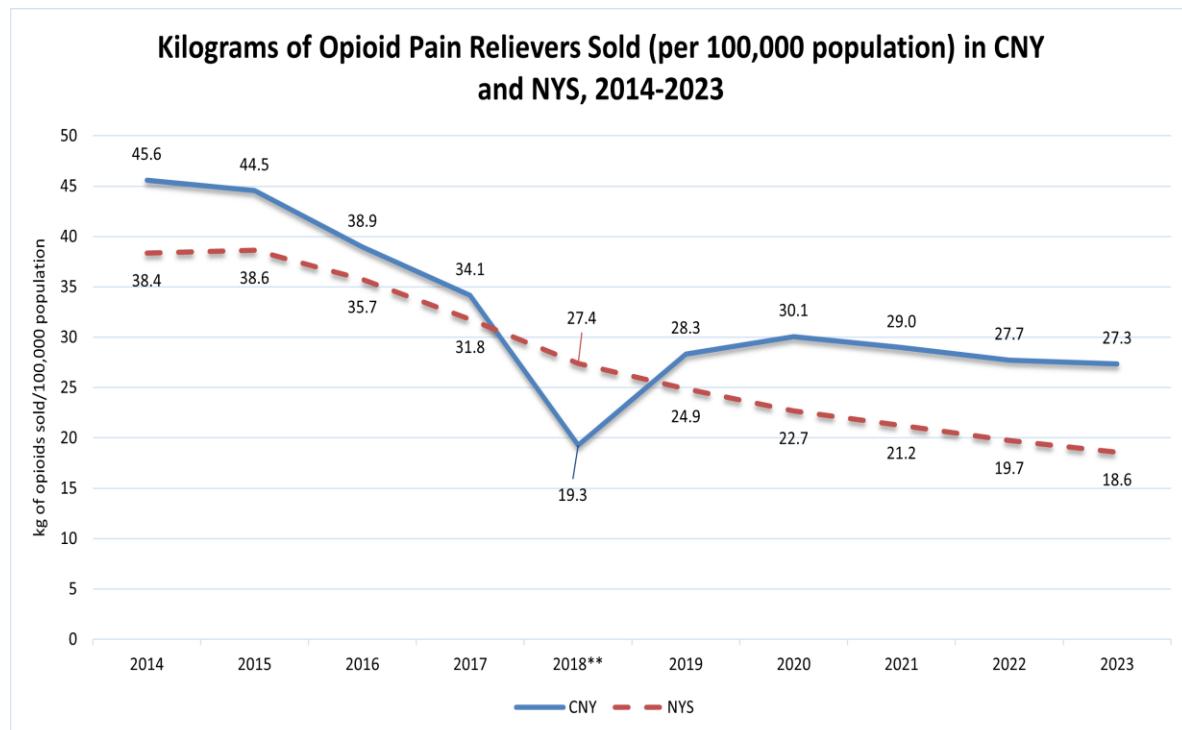


Figure 7. Opioid sales per 100,000 population in CNY and NYS, 2014 – 2023.²² Drug sales data collected for: CNY zip codes 130XX-135XX; New York statewide; and drugs: Codeine, Fentanyl, Hydrocodone, Hydromorphone, Meperidine (Pethidine), Methadone, Morphine, and Oxycodone.
Source: Automated Reports and Consolidated Ordering System (ARCOS). Accessed 05/2025.
**Oxycodone distribution was excluded from CNY total in 2018

Mental Health First Aid

Mental Health First Aid (MHFA) equips individuals with the tools to recognize, respond and provide initial support to those experiencing issues with mental health or substance use.²³ Since 2022, the Madison County Rural Health Council (MCRHC) has offered MHFA courses to teens and adults in Madison County and surrounding areas.²⁴

In the first year of the partnership, MCRHC trained 722 students in MHFA followed by an additional 893 in the second year (Figure 8). During the 2024–2025 school year, MCRHC trained and certified 544 Madison County students across eight school districts, bringing the total to 2,159 trained countywide. In the same school year, participating schools reported 231 student referrals to mental health and substance use resources, 92 of which were initiated by students. In 2024, 37 adult participants were certified in Adult MHFA and 127 in Youth MHFA.

Research shows that the quality of a person's relationships and social networks can influence their risk of developing co-occurring mental health and substance use disorders.^{25–27} The National Council for Mental Wellbeing estimates that if 1 in 15 Americans were MHFA-certified, nearly everyone would have a Mental Health First Aider in their close circle.²⁸ Based on this ratio, the 2,194 people certified in Madison County could positively impact up to 32,910 individuals. Through these trainings, MCRHC has strengthened community prevention efforts by fostering supportive networks.

To learn more, please visit the website: mcruralhealthcouncil.org.

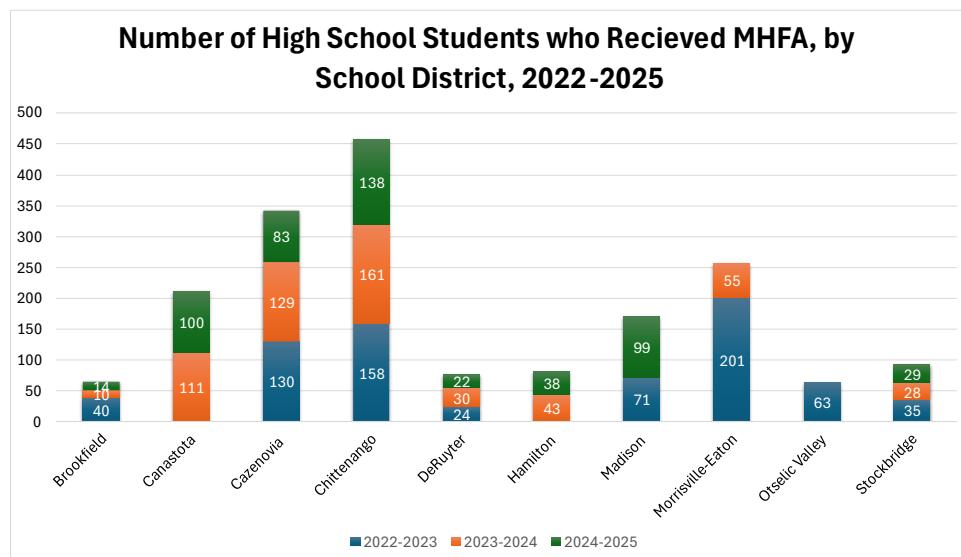


Figure 8: Number of MHFA Recipients among Madison County Residents by School District between 2022 – 2025.
Source: Madison County Rural Health Council. Requested: 08/2025.

Substance Use Among Youth

In 2022, the Madison County Youth Bureau's Teen Assessment Project (TAP) surveyed 3,099 students in grades 7–12 from Madison-Oneida BOCES and nine school districts to assess youth risk factors, protective factors, and resources. Substance use behaviors have been tracked since the survey began in 1999.²⁹

Between 2014 and 2022, 96–99% of students reported never using heroin or other opiates, and over 94% consistently abstained from non-prescribed prescription drugs. In 2022, 68.5% of student respondents viewed using prescription medication without a prescription as causing “a lot of harm” (Figure 9). Health concerns and addiction prevention remain the top deterrents to substance use, while family influence—the second most common—has steadily declined since 2014.²⁹

Opioid use among Madison County adolescents is uncommon; however, schools and parents should continue to stress the dangers of opioid drugs, particularly the risk of fentanyl exposure, as teens transition to college or the workforce. To address youth mental health needs, the Madison County Mental Health Department provides school-based satellite clinics in most districts. In the 2024–2025 school year, 195 new students were referred, and 5,685 counseling sessions were delivered.

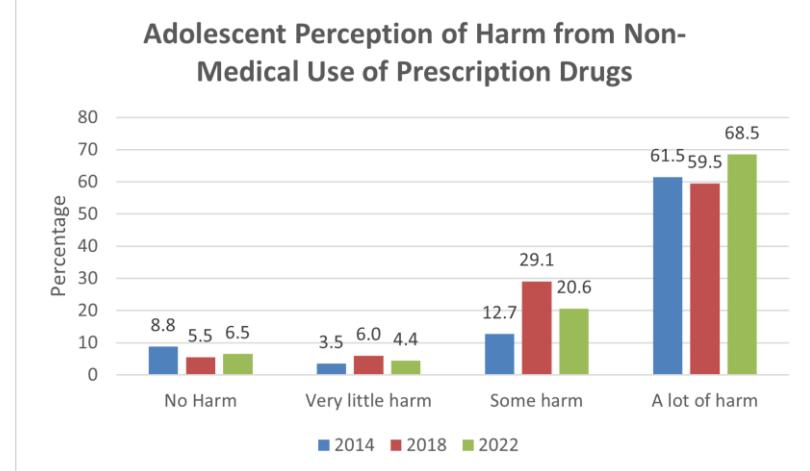


Figure 9. Adolescent Perception of Harm from Non-Medical Use of Prescription Drugs. Source: Madison County Youth Bureau, Teen Assessment Project (TAP) Survey Report.²⁹ Accessed: 05/2025.

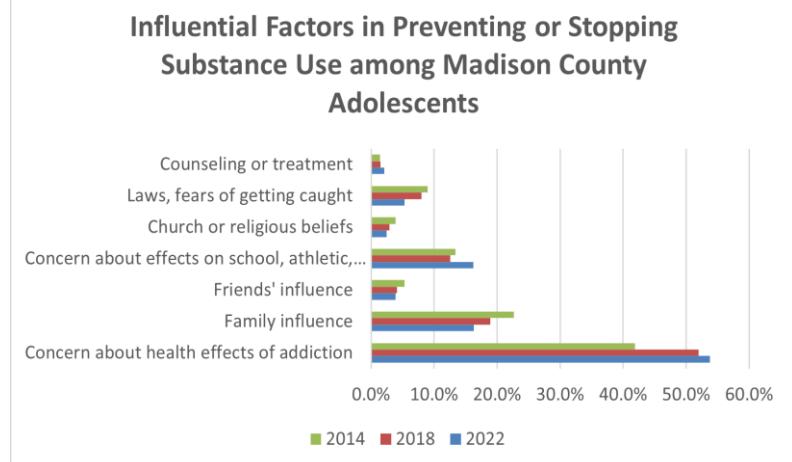


Figure 10. Influential Factors in Preventing or Stopping Substance Use Among Madison County Adolescents. Source: Madison County Youth Bureau, Teen Assessment Project (TAP) Survey Report.²⁹ Accessed: 05/2025.

Harm Reduction Efforts

Harm reduction is a public health approach that reduces the negative effects of behaviors—such as wearing sunscreen outside or arranging a sober ride when drinking alcohol—and, when applied to opioid and other substance use, seeks to minimize harm for both individuals and the wider community.^{31,32} When implemented effectively, harm reduction strategies save lives and prevent future substance use. Programs include resources for safe disposal of medications along with access to naloxone and fentanyl test strips.

Safe Disposal Programs

Safe disposal refers to the ways in which most unused or expired medicines can be properly disposed of with the goal of reducing accidental use, intentional misuse, and potential environmental harm.

In Madison County, there are several permanent kiosks for safe medication disposal available year-round. Full list of locations available on the Madison County Solid Waste Department website: www.madisoncounty.ny.gov/2392/PharmaceuticalWaste. Community members may also contact BRiDGES at 315-697-3947 to receive a Deterra bag for safe, at-home disposal. Lastly, community members can participate in bi-annual Drug Take Back Day events hosted by BRiDGES and local law enforcement agencies.

Fentanyl Test Strips

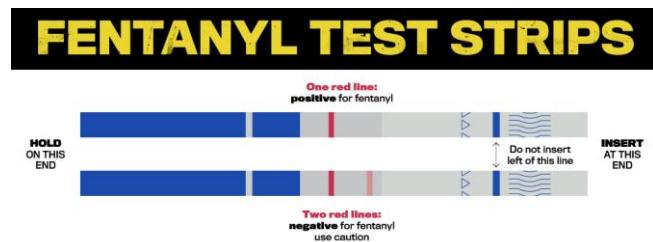
One major concern with fentanyl is its presence in other drug supplies, including counterfeit pills, which poses a risk of unknowingly consuming the substance with high potency leading to accidental overdose.³⁰

To address this issue, BRiDGES offers fentanyl test strips (FTS) to residents as part of their harm reduction services. FTS are low-cost harm reduction tool that detects fentanyl in various drugs (cocaine, methamphetamine, heroin, etc.) and forms (pills, powder, injectable).

For access to testing supplies and harm reduction kits, please contact BRiDGES at 315-697-3947.

Naloxone Use

Naloxone (commonly referred to by the brand name, Narcan®) is a life-saving drug that can reverse the effects of an opioid overdose, including fentanyl. Naloxone is non-addictive and the training of



community members on how to administer it can help reverse opioid overdoses and support efforts by emergency medical services (EMS) to save more lives.³³

In New York State, all naloxone administrations must be reported and made publicly available. The primary sources of reported administrations include EMS, law enforcement agencies, and registered Community Opioid Overdose Prevention (COOP) programs.

In Madison County, the two registered COOP organizations where residents can receive naloxone and training are BRiDGES and Madison County Public Health (MCPH). BRiDGES has trained or recertified 1,851 individuals to respond to an opioid overdose using naloxone. Since becoming a COOP program, MCPH staff have equipped 287 community members and employees in naloxone administration.

Between 2019 and 2021, Madison County experienced a steady rise in naloxone use followed by a period of decline. In 2024, reported administrations decreased by another 26%, totaling 37 doses for the year. EMS organizations consistently remained the primary administrators. In the past year, EMS reported administering naloxone 29 times, law enforcement reported 6 administrations, and registered COOP programs reported none (Figure 11).

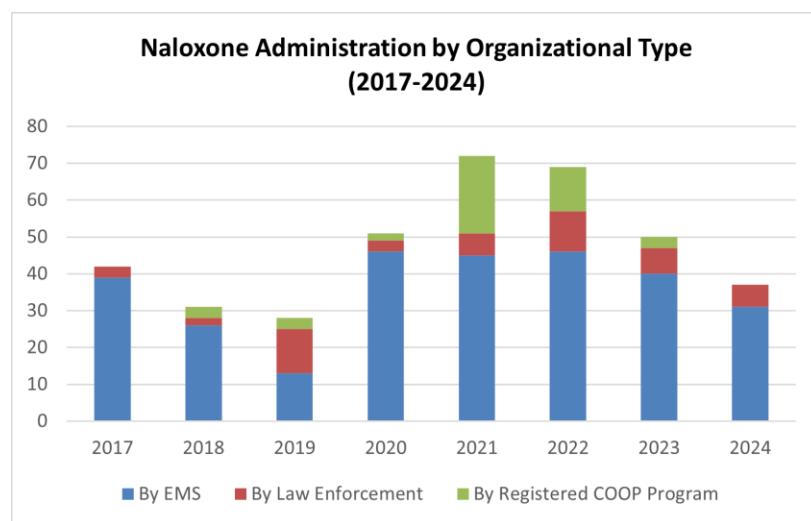


Figure 11. Naloxone Administration in Madison County by Organizational Type, 2017-2024. Source: NYSDOH, County Opioid Quarterly Report for Counties Outside of New York City.¹⁰ Accessed: 05/2025.

Notes: Naloxone data reflects the county in which the overdose occurred and naloxone was administered – not necessarily the county of the overdosed person's residence. Although reporting naloxone administration is mandated under regulation, all data is self-reported and may be incomplete. COOP – Community Opioid Overdose Prevention.

In 2022, Madison County Public Health and BRiDGES started a joint initiative to distribute wall-mounted boxes to house emergency-use naloxone throughout the county. As a result of this collaboration, 92 boxes have been installed throughout the community.

Treatment

Opioid-Related Treatment Facility Admissions

In 2022, an estimated 48.7 million individuals aged 12 and older had a substance use disorder (SUD), yet only 13.1 million (27%) received treatment nationwide.³⁴ In New York State, treatment programs are overseen by the Office of Addiction Services and Supports (OASAS).³⁵ In Madison County, admissions to OASAS-certified opioid treatment programs peaked in 2016, then declined until a slight increase in 2023 and 2024 (Figure 12).³⁵ Since 2016, an average of 97% of county residents receiving opioid treatment through OASAS programs have had to seek care outside the county (Figure 12).

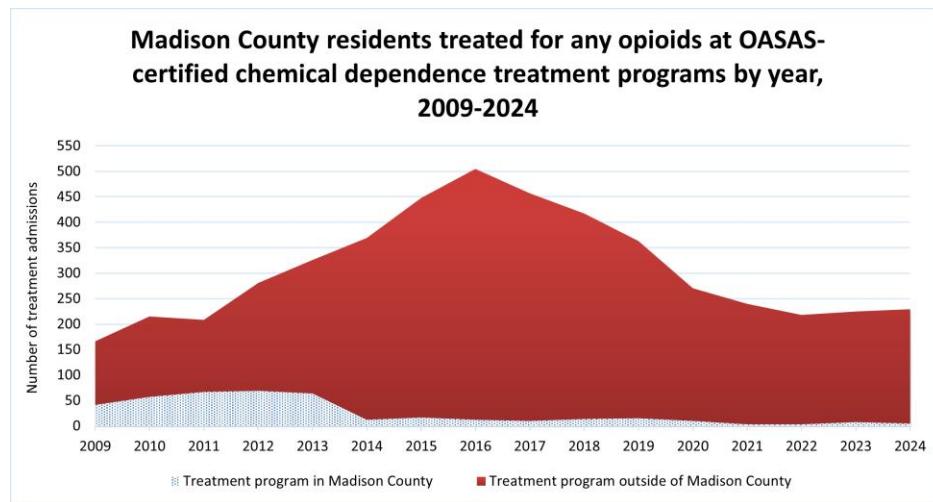


Figure 12. Admissions rates to OASAS-certified treatment programs for use of heroin and/or any opioid (2009-2024).

Source: NYSDOH, OASAS Data Warehouse.³⁵ Note: Treatment admissions are not a unique count of individuals.

*Individuals may be admitted more than once in a given year. Requested 05/2025.

Conclusion

Madison County's progress in combating opioid misuse and reducing overdoses can be attributed to the national, state, and local efforts. Despite progress, challenges remain, particularly with the growing national concern over polysubstance use. The community's dedication to prevention and recovery efforts has shown promising results, highlighting the importance of continued investment in comprehensive strategies. Moving forward, future reports will continue to share information on emerging trends and innovative local efforts.

Appendix A. Data Tables

Table 1. Overdose Deaths — Madison County

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
All opioid overdoses**	7	14	3	11	4	10	15	14	13	10
Heroin overdoses	2	9	0	8	1	2	2	2	1	2
Overdoses involving opioid pain relievers	7	11	3	9	4	10	14	13	12	7

**Indicators are not mutually exclusive. Decedents and patients may have multiple substances in their system. Thus, overdoses involving heroin and overdoses involving prescription opioid pain relievers will not add up to the overdoses involving all opioids. Source: 2015-2024 — NYSDOH, New York State County Opioid Quarterly Reports. Accessed 07/2025.

Table 2. Emergency Department Visit Rates (per 100,000 population) for Overdoses Involving Any Opioid

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Madison County	45.9	73.8	37.9	47.9	31.0	47.9	33.8	32.3	19.7	15.5
Central New York	53.8	89.9	66.1	59.8	61.7	55.9	52.4	42.2	36.5	22.7
New York State (excluding New York City)	41.0	59.4	64.4	53.0	49.0	53.3	55.6	47.8	38.5	21.9

s: Data for indicator are suppressed for confidentiality purposes if there are less than 6 discharges.

Source: NYSDOH, New York State County Opioid Quarterly Reports. Accessed 07/2025.

Table 3. Opioid Analgesic Prescription Age-Adjusted Rate (per 1,000 population)

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Madison County	702.7	710.2	620.3	531.7	480.1	431.9	419.5	397.2	369.0
Central New York	615.8	583.0	522.9	459.3	418.1	377.4	351.8	332.1	310.3
New York State (excluding New York City)	541.6	510.5	466.4	413.0	377.2	342.4	321.2	300.2	283.8

Source: NYSDOH, New York State Opioid Data Dashboard. Accessed 05/2025.

Table 4. Kilograms of Opioid Pain Relievers Sold per 100,000 population

	2015	2016	2017	2018	2019	2020	2021	2022	2023
Central New York	44.5	38.9	34.1	19.3*	28.3	27.6	26.5	25.4	27.3
New York State	38.6	35.7	31.8	27.4	24.9	23.7	22.1	20.6	18.6

Drug sales data collected for: CNY zip codes 130XX-135XX; New York statewide; and drugs: Codeine, Fentanyl, Hydrocodone, Hydromorphone, Meperidine (Pethidine), Methadone, Morphine, and Oxycodone. Source: Automated Reports and Consolidated Ordering System (ARCOS). *Sales of oxycodone was excluded from CNY total in 2018. Accessed 05/2025.

References

1. Centers for Disease Control and Prevention. Understanding the Opioid Overdose Epidemic. CDC. <https://www.cdc.gov/overdose-prevention/about/understanding-the-opioid-overdose-epidemic.html>. Published: April 5, 2023. Accessed: May 8, 2025.
2. U.S. Department of Health and Human Services. Opioid Facts and Statistics. HHS. <https://www.hhs.gov/opioids/index.html>. Updated: December 16, 2023. Accessed: May 8, 2025.
3. Centers for Disease Control and Prevention. CDC Press Release. July 7, 2015. Accessed: May 8, 2025. Available at: https://archive.cdc.gov/www_cdc_gov/media/releases/2015/p0707-heroin-epidemic.html
4. Ciccarone D. The triple wave epidemic: Supply and demand drivers of the US opioid overdose crisis. *Int J Drug Policy*. 2019 Sep;71:183-188. doi: 10.1016/j.drugpo.2019.01.010. Epub 2019 Feb 2. PMID: 30718120; PMCID: PMC6675668.
5. Drug Enforcement Administration. Fentanyl Flow in the United States. DEA. Published: January 2020. Accessed May 8, 2025. Available at: https://www.dea.gov/sites/default/files/2020-03/DEA_GOV_DIR-008-20%20Fentanyl%20Flow%20in%20the%20United%20States_0.pdf
6. National Institute on Drug Abuse. Fentanyl DrugFacts. Published: June 2021. Accessed: May 8, 2025. Available from: <https://nida.nih.gov/publications/drugfacts/fentanyl>
7. National Institute on Drug Abuse. Overdose Death Rates. Trends & Statistics. Published May 14, 2024. Accessed May 8, 2025. Available from: <https://nida.nih.gov/research-topics/trends-statistics/overdose-death-rates#:~:text=Overall%20drug%20overdose%20deaths%20rose,overdose%20deaths%20reported%20in%202022>
8. Centers for Medicare & Medicaid Services. Ongoing Emergencies and Disasters. Updated: September 6, 2023. Accessed May 8, 2025. Available from: <https://www.cms.gov/about-cms/what-we-do/emergency-response/current-emergencies/ongoing-emergencies#:~:text=On%20Thursday%20October%202026%2C%202017,is%20a%20national%20health%20emergency.%E2%80%99>
9. Centers for Disease Control and Prevention. NCHS Press Release. Published May 15, 2024. Accessed May 8, 2025. Available from: https://www.cdc.gov/nchs/pressroom/nchs_press_releases/2024/20240515.htm
10. New York State Department of Health. Opioid Quarterly Reports Dashboard. Updated: April 2025. Accessed July 20th, 2025. Available from: https://apps.health.ny.gov/public/tabvis/PHIG_Public/opioid-quarterly/reports/#state
11. Murphy SM. The cost of opioid use disorder and the value of aversion. *Drug Alcohol Depend*. 2020;217:108382. doi:10.1016/j.drugalcdep.2020.108382 Hawk KF, Vaca FE, D'Onofrio G. Reducing Fatal Opioid Overdose: Prevention, Treatment and Harm Reduction Strategies. *Yale J Biol Med*. 2015;88(3):235-245. Published September 3, 2025.
12. Centers for Disease Control and Prevention. About Prescription Opioids. Centers for Disease Control and Prevention website. Published: May 8, 2024. Accessed: May 2, 2025. <https://www.cdc.gov/overdose-prevention/about/prescription-opioids.html>
13. Centers for Disease Control and Prevention (CDC). US Dispensing Rate Maps. Published: March 19th, 2024. Accessed May 8, 2025. Available from: <https://www.cdc.gov/overdose-prevention/data-research/facts-stats/us-dispensing-rate-maps.html>
14. Opioid Abuse in the U.S. and HHS Actions to Address Opioid-Drug Related Overdoses and Deaths. ASPE. Published March 25, 2015. Accessed: May 8, 2025. <https://aspe.hhs.gov/o-pioid-abuse-us-hhs-actions-address-opioid-drug-related-overdoses-deaths>

15. Holmgren AJ, Botelho A, Brandt AM. A History of Prescription Drug Monitoring Programs in the United States: Political Appeal and Public Health Efficacy. *Am J Public Health*. 2020;110(8):1191-1197. doi:10.2105/AJPH.2020.305696
16. Centers for Disease Control and Prevention (CDC). CDC Clinical Practice Guideline for Prescribing Opioids for Pain — United States, 2022. *MMWR Recomm Rep*. 2022;71(RR-03):1-22. Available from: <https://www.cdc.gov/mmwr/volumes/71/rr/rr7103a1.htm>
17. New York State Department of Health. Bureau of Narcotic Enforcement. Accessed May 8, 2025. Available from: <https://www.health.ny.gov/professionals/narcotic/>
18. New York State Department of Health. New York State Opioid Dashboard. Accessed May 1, 2025. Available from: https://apps.health.ny.gov/public/tabvis/PHIG_Public/opioid/reports/#county.
19. Gomes T, Kim KC, Suda KJ, Garg R, Tadrous M. International trends in prescription opioid sales among developed and developing economies, and the impact of the COVID-19 pandemic: A cross-sectional analysis of 66 countries. *Pharmacoepidemiol Drug Saf*. 2022;31(7):779-787. doi:10.1002/pds.5443
20. International Narcotics Control Board. Report of the International Narcotics Control Board for 2023. Published: January, 2023. Vienna: United Nations; 2024. Available from: <https://www.incb.org/incb/en/publications/annual-reports/annual-report-2023.html>
21. Drug Enforcement Administration. ARCOS: Automation of Reports and Consolidated Orders System. Accessed May 8, 2025. Available from: https://www.deadiversion.usdoj.gov/arcos/a_rcos.html.
22. Drug Enforcement Administration. ARCOS Retail Drug Summary for 2024. Washington, DC: Drug Enforcement Administration; 2023. Accessed: May 8, 2025. Available from: https://www.deadiversion.usdoj.gov/arcos/retail_drug_summary/report_yr_2023.pdf
23. Mental Health First Aid USA. Mental Health First Aid. Accessed May 8, 2025. Available from: <https://www.mentalhealthfirstaid.org/>
24. Madison County Rural Health Council. 2023-24 Final MCRHC Annual Report. Published May 2024. Accessed May 8, 2025. Available from: <https://mcruralhealthcouncil.org/wp-content/uploads/2024/05/2023-24-Final-MCRHC-Annual-Report.pdf>
25. Hirota T, Paksarian D, He JP, et al. Associations of Social Capital with Mental Disorder Prevalence, Severity, and Comorbidity among U.S. Adolescents. *J Clin Child Adolesc Psychol*. 2022;51(6):970-981. doi:10.1080/15374416.2021.1875326
26. Evans CB, Cotter KL, Rose RA, Smokowski PR. Substance use in rural adolescents: The impact of social capital, anti-social capital, and social capital deprivation. *J Addict Dis*. 2016;35(4):244-257. doi:10.1080/10550887.2016.1171671
27. Substance Abuse and Mental Health Services Administration. Overview of Substance Use Disorder Treatment and Recovery Services in the United States: Results from the 2020 National Survey on Drug Use and Health. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2022. Available from: <https://store.samhsa.gov/sites/default/files/pep22-06-01-005.pdf>
28. Mental Health First Aid USA. U.S. Reach. Accessed May 8, 2025. Available from: <https://www.mentalhealthfirstaid.org/us-reach/>
29. Madison County. Madison County 2022 Teen Assessment Project Report. Madison County Government. Published: March 2024. Accessed May 9, 2025. Available from: <https://www.madisoncounty.ny.gov/DocumentCenter/View/22600/MadisonCounty-2022-Teen-Assessment-Project-Report-PDF>
30. Drug Enforcement Administration. One Pill Can Kill. Accessed May 8, 2025. Available from: <https://www.dea.gov/onepill>.

31. Madison County Public Health. Harm Reduction & Naloxone. Accessed May 8, 2025. Available from: <https://www.madisoncounty.ny.gov/2960/Overdose-Harm-Reduction-Program>
32. Substance Abuse and Mental Health Services Administration. Harm Reduction. Updated: June 24, 2023. Accessed: May 8, 2025. Available from: <https://www.samhsa.gov/find-help/harm-reduction>
33. Centers for Disease Control and Prevention. Lifesaving Naloxone. Published: April 2, 2024. Accessed May 8, 2025. Available from: <https://www.cdc.gov/stop-overdose/caring/naloxone.html>
34. U.S. Department of Health and Human Services. HHS, SAMHSA. HHS, SAMHSA Release 2022 National Survey on Drug Use and Health Data. Published November 13, 2023. Accessed May 8, 2025. Available from: <https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health/national-releases/2023>
35. New York State Office of Addiction Services and Supports. Addiction Data Bulletin. Published: September 2023. Accessed: May 8, 2025. Available from: https://oasas.ny.gov/system/files/documents/2023/09/addiction_data_bulletin.pdf