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# Analysis and Trends in EMS Naloxone Administration

A three-year retrospective review 2022-2024

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## Source and Limitations

The data for this analysis comes from the Minnesota Office of Emergency Medical Services (OEMS) Minnesota State Ambulance Reporting System (MNSTAR). It examines all patient care records where Emergency Medical Services (EMS) either administered naloxone or documented that naloxone was given prior to their arrival.

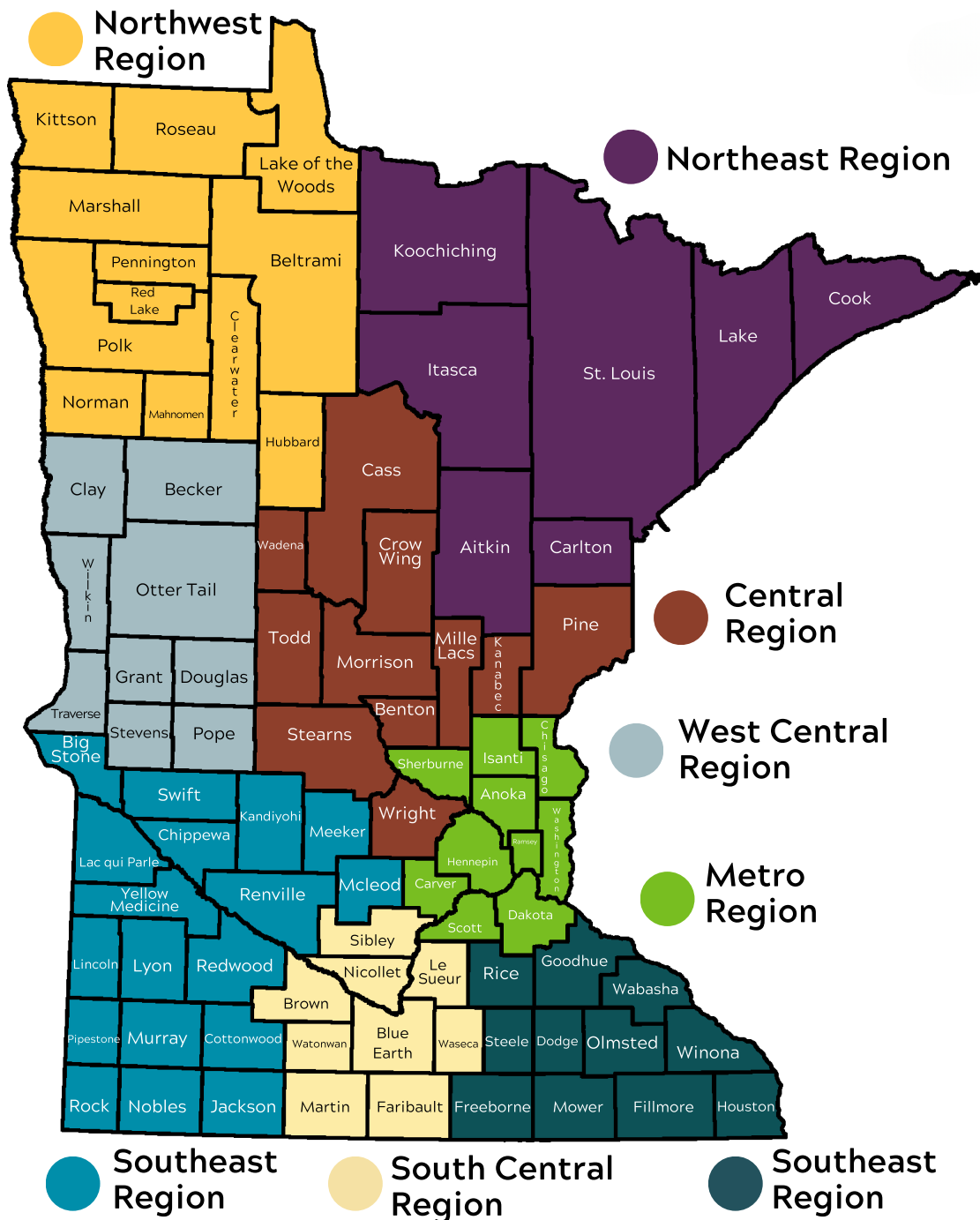
All data is presented at either a state or regional level. MNSTAR data collected by OEMS is classified as private data on individuals by Minnesota Statute 144E.123. As a result, OEMS cannot publish information where an individual or any characteristic that could identify an individual. This report meets the definition of summary data as defined in Minnesota Statute 13.02 Subdivision 19.

EMS administration of naloxone does not automatically equate to an overdose, as there are ambulance services whose protocols direct them to administer naloxone in cases of an unconscious person with an unknown cause. There are instances where naloxone was given, and the cause of unresponsiveness was something other than an overdose.

All data, except instances where a different time period is specified, is from calendar year 2022 through calendar year 2024.

## EMS Regions

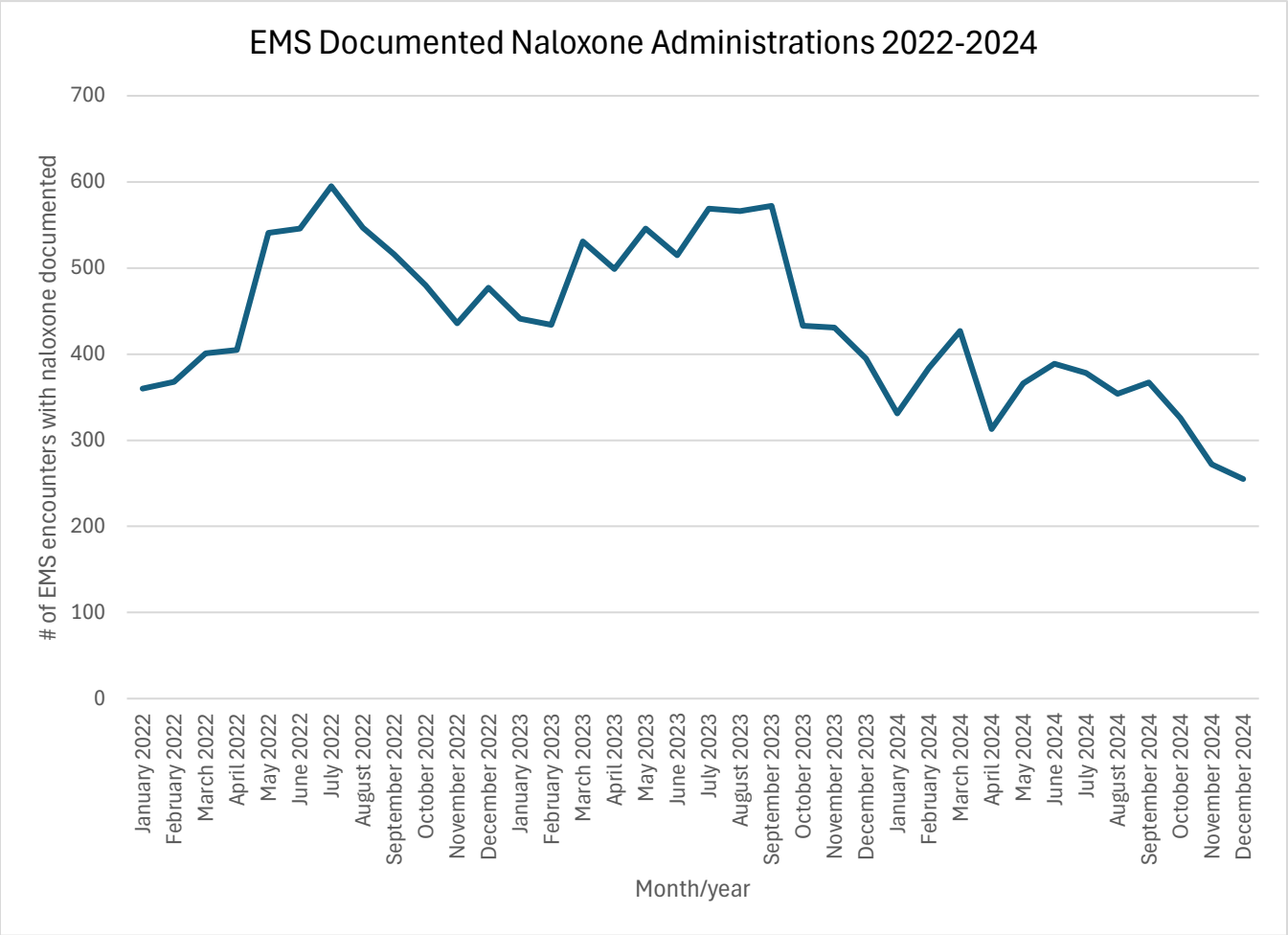
In order to comply with the Minnesota Government Data Practices Act, the data presented in this report is done at a regional level. The State of Minnesota emergency medical services system is divided into eight different geographic regions by county. The map below indicates which counties belong to which regions.



Map produced by the MN Dept. of Agriculture, Graphic added by OEMS 2025

# Naloxone Administrations Over Time

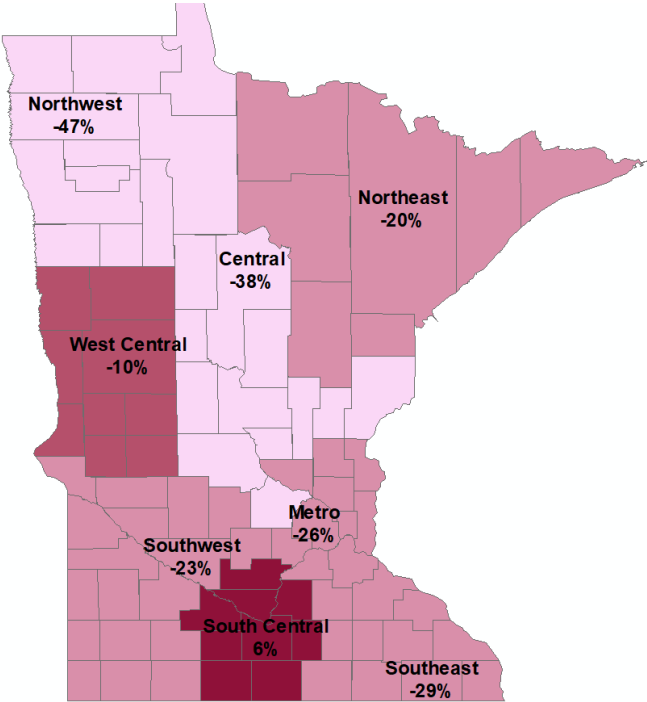
From 2022 to 2024 Minnesota ambulance services have documented administration of naloxone on 15,766 EMS patient encounters. In comparing calendar year 2022 to 2024 documented naloxone administrations are down 26.62%. 12,247 (77.6%) of administrations occurred in the Metropolitan EMS region.



# Naloxone Administration Changes Over Time

All EMS regions of Minnesota with the exception of the South-Central region reported fewer patient encounters where naloxone was administered when comparing 2022 to 2024. The map below shows the highest percentage reduction at the regional level was (47%) in the Northwest EMS region. This was a result of a net change of 70 fewer patients documented receiving naloxone when comparing the 2022 totals to the 2024 totals. Comparatively the South-Central region reported a 6% increase.

The table below displays the % change by region and includes information on the change from 2022 to 2023, 2023 to 2024, and the cumulative 2022 to 2024 change



Region	% Change CY2022 to 2023	% Change CY2023 to 2024	% Change CY2022 to 2024
Central	(15%)	(27%)	(38%)
Metro	6.6%	(30%)	(26%)
Northeast	18%	(32%)	(20%)
Northwest	(9%)	(41%)	(47%)
South Central	18.9%	(10%)	6%
Southeast	(17%)	(14.6%)	(29%)
Southwest	(12%)	(12%)	(23%)
West Central	23%	(27%)	(10%)

## EMS Naloxone Usage by Region

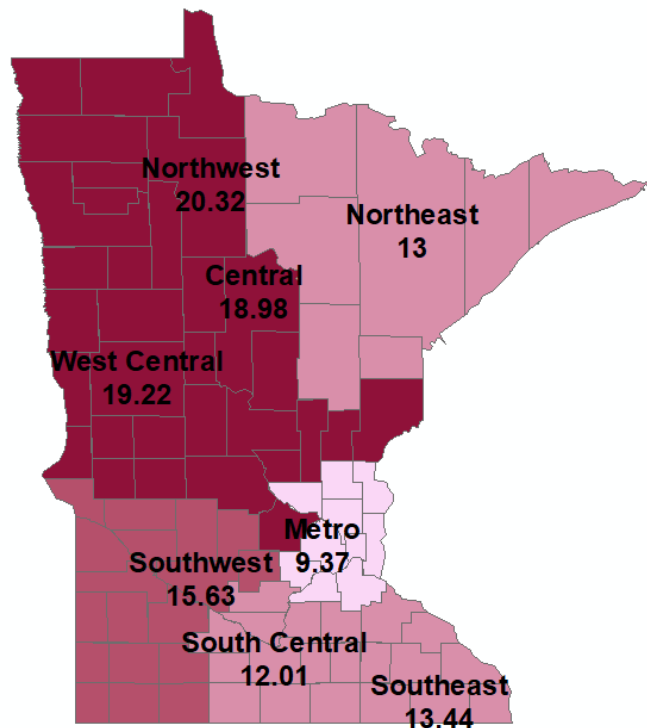
The table below displays by Minnesota EMS region the number of 911 related EMS encounters that resulted in the administration of naloxone by an EMS provider or was properly documented on a patient care report as being given prior to EMS arrival. Data is presented by year for 2022-2024 and a 3-year cumulative total.

Region	2022 Naloxone Usage	2023 Naloxone Usage	2024 Naloxone Usage	3 Year Cumulative Usage
Central	333	283	206	822
Metro	4,366	4,657	3,224	12,247
Northeast	328	388	262	978
Northwest	148	134	78	360
South Central	58	69	62	189
Southeast	273	225	192	690
Southwest	82	72	63	217
West Central	84	104	75	263



## EMS Response Time to Naloxone Incidents by EMS Region

When considering response strategies related to the opioid crisis, one factor is how quickly can professional help arrive. The map below illustrates the 90<sup>th</sup> percent response time in minutes (90% of responses were at this time or less) of ground ambulances to naloxone related incidents for calendar year 2024. This data presented at a regional level, does not take into account responses from first response squads or local law enforcement, and only reflects the response of a ground ambulance. Typically, higher density population areas have lower EMS response times than lower population density areas. The table below provides the same information by region but includes also includes comparative data for 2022 and 2023.

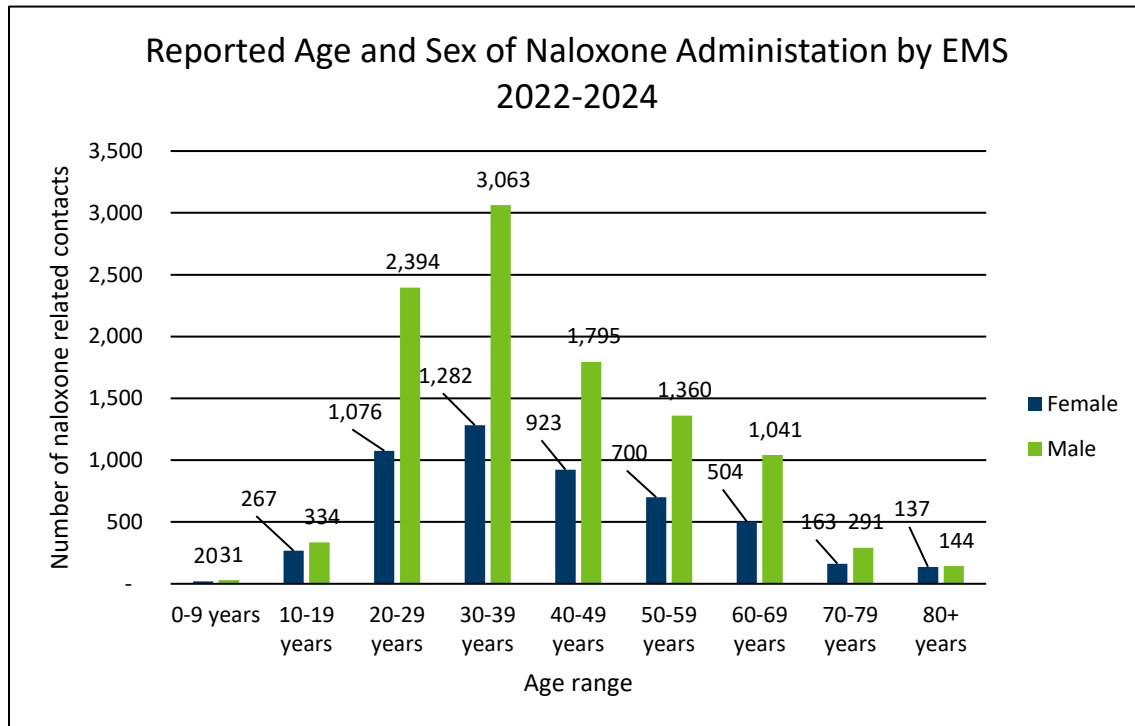


Region	CY2022 Response Time (90 <sup>th</sup> Percent)	CY2023 Response Time (90 <sup>th</sup> Percent)	CY2023 Response Time (90 <sup>th</sup> Percent)
Central	17.83	17.62	18.98
Metro	10.14	9.56	9.37
Northeast	12.96	13.00	13.00
Northwest	14.15	17.30	20.32
South Central	13.00	16.66	12.01
Southeast	12.03	14.20	13.44
Southwest	16.09	16.99	15.63
West Central	13.81	20.45	19.22

## Demographic Information Related to Naloxone Administration

### Analysis by Age and Sex 2022-2024

The graph below illustrates over the three-year sample the frequency of naloxone administration by age and sex. Due to data suppression policies, instances where age or sex were unavailable were not included in this analysis. Males aged 30-39 years old had the highest likelihood of being given naloxone by EMS



### Analysis by Race 2022-2024

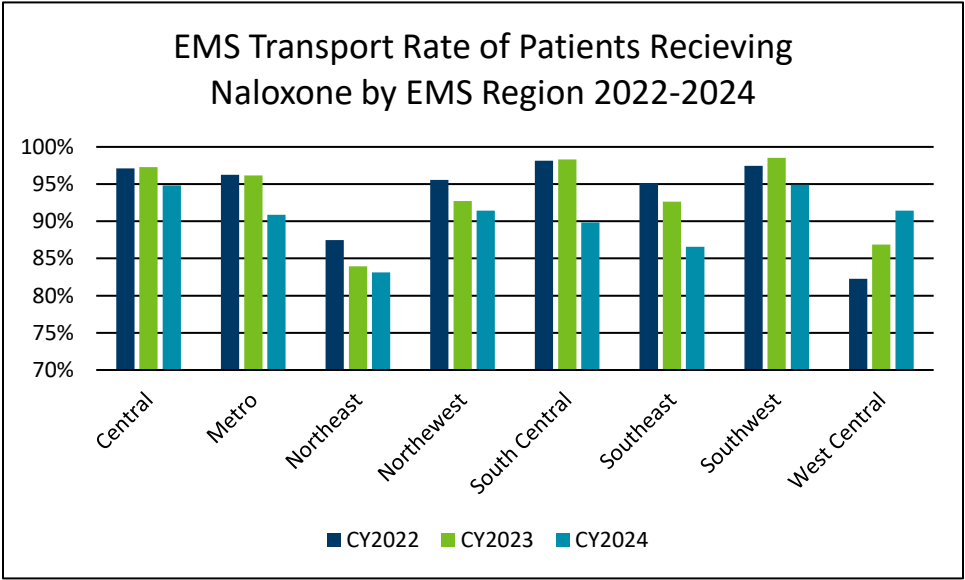
The table below illustrates over the three-year sample the frequency of EMS documented naloxone administrations by race.

Reported Race	Number of Naloxone Contacts	Percent of Total
Not Reported	2,809	17.8%
American Indian or Alaska Native	1,154	7.3%
Asian	187	1.1%
Black or African American	4,142	26.27%
Native Hawaiian or Other Pacific Islander	88	<1%
Other	762	4.8%
White	6,624	42%

# Clinical Relevance

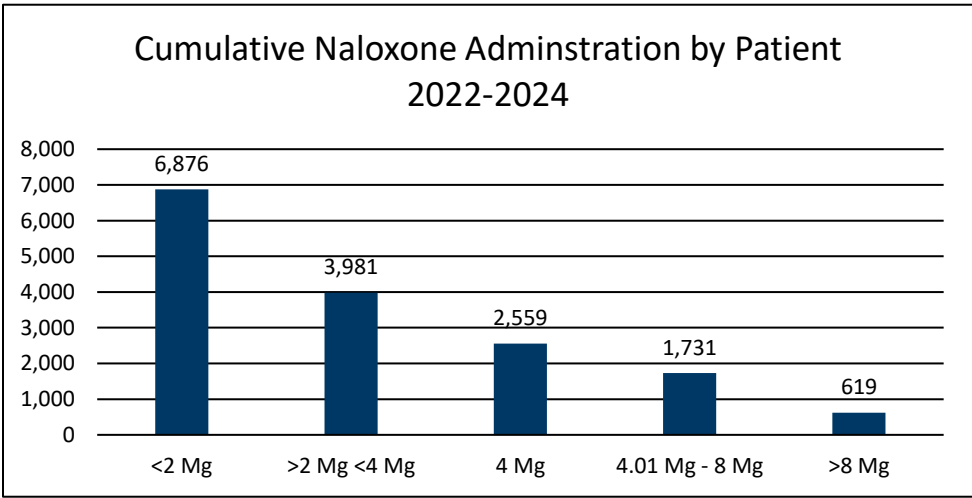
## Transport Disposition 2022-2024

A frequently monitored overdose metric within EMS is how often is a patient transported from the scene for treatment. The statewide transport rate for 2022 was 95.60%, 2023 was 95.13%, and 2024 was 90.44%. The declining transport rate is not necessarily a cause for concern, particularly in areas where EMS is providing pre-hospital Buprenorphine as is the case in the Metro region. The graph below illustrates the transport rate of patients who had a documented administration of naloxone by EMS region for each year 2022-2024.



## Frequency of Cumulative Naloxone Dosage Administered 2022-2024

Most naloxone related EMS patient contacts resulted in a cumulative dose to the patient of less than 2 Mg (43.6%). Only 619 patients (3%) were given more than 8 Mg by ambulance services.



### Emerging Pre-Hospital Medication Assisted Treatment

Since 2023 different ambulance services in the Metro, Northeast, and Northwest Minnesota have begun to administer Buprenorphine, a form of medication assisted treatment to overdose survivors when the patient consents and when clinically appropriate. In 2023 there were 66 documented administrations of Buprenorphine, and in 2024 there were 115. Most of these administrations occurred in the Metro EMS region.

### Ambulance Service Familiarity with Overdose Response

Between 2022 and 2024, 110 ambulance services responded to less than ten EMS responses that resulted in a documented usage of naloxone. 14 ambulance services responded to more than 100 in the same time frame. 60% of the EMS documented naloxone administrations were handled by three ambulance services Hennepin County Medical Center Ambulance, St. Paul Fire Department, and NORTH Memorial Ambulance (Metro Division).

