



Substance Exposed Newborns and Maternal Opioid Use Surveillance Data

Massachusetts Department of Public Health

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Introduction

DPH monitors the impact of the opioid epidemic on mothers and babies in a number of ways. On the next two pages are a series of maps depicting infants exposed to controlled substances and mothers who used opioids or benzodiazepines during pregnancy. These maps are created using surveillance data based on standardized administrative codes as reported by the birth hospital. This data provides timely reporting on Neonatal Abstinence Syndrome (NAS) and Substance-Exposed Newborns in Massachusetts. These measures have been validated and found to be relatively sensitive, with a high positive predictive value¹.

Additionally, DPH produces the [NAS Dashboard](#), which provides population-based data on NAS and eight other key indicators related to perinatal opioid use. Data are provided for the state overall, as well as by maternal race/ethnicity, education, age, and insurance coverage. In addition to statewide estimates, data are also presented by the six Executive Office of Health and Human Services (EOHHS) regions.

To learn more about how DPH supports mothers in recovery, please visit our summary of [treatment services for pregnant and postpartum women](#) and more resources are available through DPH's partner, the [Institute for Health and Recovery](#).

Glossary of Terms

Neonatal Abstinence Syndrome (NAS) – Intrauterine exposure to opioids, antidepressants, barbiturates, or benzodiazepines may result in a neonatal condition known as Neonatal Abstinence Syndrome. Infants with NAS are often fussy and hard to soothe. Treatments for NAS include skin-to-skin, swaddling, low light and low noise, non-nutritive sucking, rocking, and pharmacologic therapy. NAS is a qualifying condition for one year of Early Intervention (EI) services. The EI program provides family-centered services to support child development.

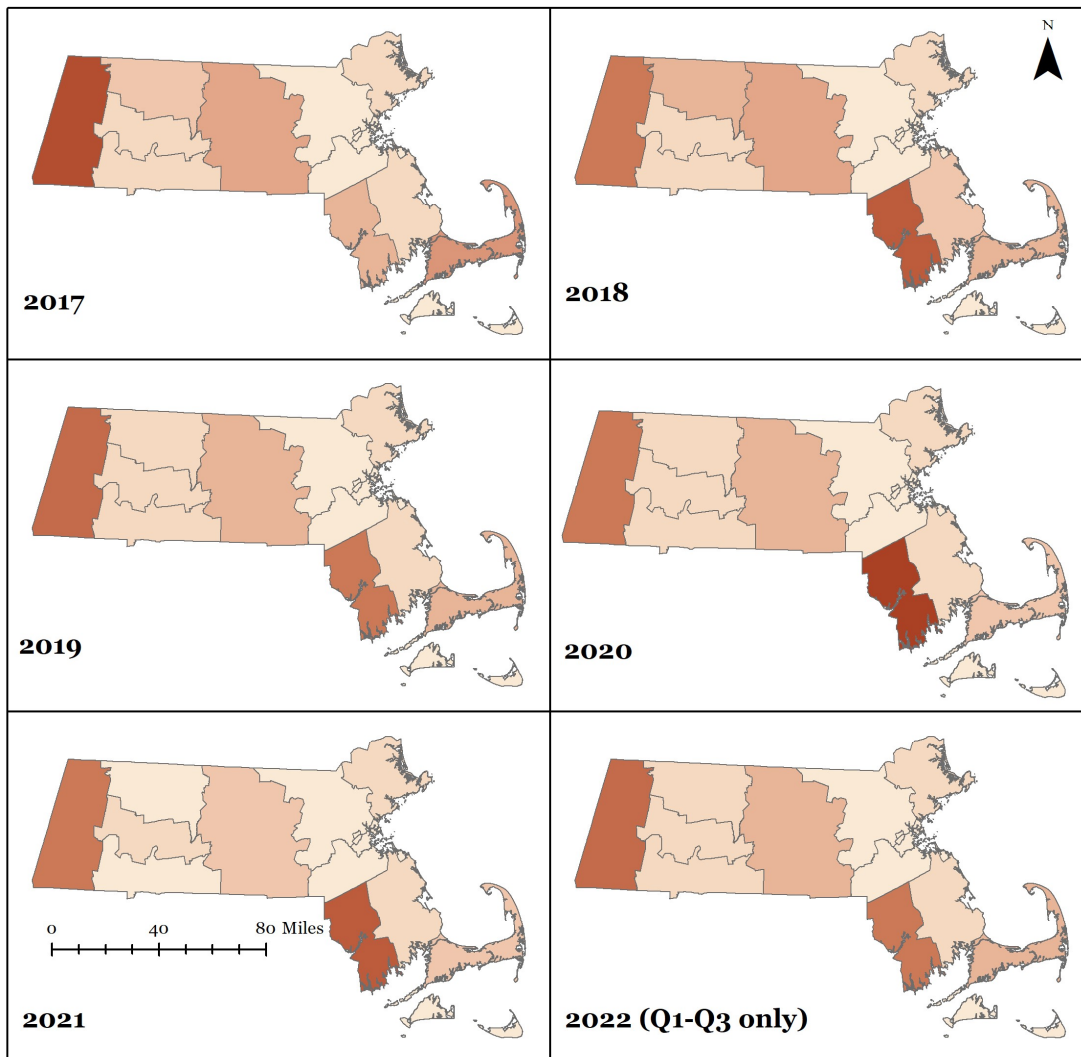
Neonatal Opioid Withdrawal Syndrome (NOWS) – While NAS is often caused by exposure to opioids, it can be caused by exposure to other substances. Although NOWS refers to the same constellation of symptoms as NAS, NOWS differs in that it is specifically caused by exposure to opioids. This can include both illicit opioids and Medication for Opioid Use Disorder such as Buprenorphine, Methadone, or Suboxone.

Infants Exposed to Controlled Substances – In these maps we look at Infants Exposed to Controlled Substances. This is based on two administrative ICD-10-CM codes. P96.1: Neonatal withdrawal symptoms, P04.49: Infant affected by maternal use of Controlled Substances). These ICD-10 codes can include opioids (including medications for opioid use disorder), benzodiazepines, methamphetamine, barbiturate, cocaine, hallucinogens, or cannabis. Percent of infants with exposure to Controlled Substances was calculated as: number of infants reported by facilities in that county as having above ICD codes / total number of births, living or dead, where the gestational age is estimated to be 24 weeks or greater as reported by facilities in that county.

¹ <https://www.cdc.gov/mmwr/volumes/69/wr/mm6929a2.htm>

Mothers who Used Opioids or Benzodiazepines – As NAS can be caused by both opioids and/or benzodiazepines, DPH also monitors the number of mothers who use these substances during pregnancy. This is based on two administrative ICD-10-CM codes. F11.20: Opioid dependence, F13.20: Sedative, hypnotic or anxiolytic dependence). Percent of mothers with opioid or benzodiazepine use during pregnancy was calculated as: number of mothers reported by facilities in that county as having above ICD codes / total number of births, living or dead, where the gestational age is estimated to be 24 weeks or greater as reported by facilities in that county.

Percent of Mothers Who Used Opioids or Benzodiazepines During Pregnancy, By County, Massachusetts, 2017-2022



Percent of Mothers Who Used Opioids or Benzodiazepines During

0-1%	2-3%	4-5%	6-7%	8-9%	10-11%
1-2%	3-4%	5-6%	7-8%	9-10%	11-12%

Note: County based on birth hospital, not county of residence.
 Mothers with opioid or benzodiazepine use during pregnancy is reported using ICD-10-CM codes (F11.20: Opioid dependence, F13.20: Sedative, hypnotic or anxiolytic dependence). Percent of mothers with opioid or benzodiazepine use during pregnancy was calculated as: number of mothers reported by facilities in that county as having above ICD codes/ total number of births, living or dead, where the gestational age is estimated to be 24 weeks or greater as reported by facilities in that county.
 Created by: Bureau of Health Care Safety & Quality
 Updated on: November 4, 2022
 Data Sources: 1. Health Care Facility Reporting System, Monthly Opioid Reports - extracted 11/02/2022
 2. MA Counties and Hospital Shapefiles - MassGIS

Figure 1. In Bristol County, had the second highest percentage of mothers who used opioids or benzodiazepines during pregnancy. Between 2021 and our most recent quarter there was a decrease of 20% between 2021 and the first nine months of 2022 (from 9.3% to 7.4%). Berkshire County, the county with the highest percentage of mothers who used opioids or benzodiazepines during pregnancy, remained stable with a 7% increase (from 7.5% to 8.0%).

Percent of Infants Born that are Exposed to Controlled Substances By County, Massachusetts, 2017-2022



Percent of Infants Exposed to Controlled Substances

0-1%

2-3%

4-5%

6-7%

1-2%

3-4%

5-6%

Note: County based on birth hospital, not county of residence.

Infants with exposure to Controlled Substances is reported using ICD-10-CM codes (P96.1: Neonatal withdrawal symptoms, P04.49: Infant affected by maternal use of Controlled Substances). These ICD-10 codes can include opioids (including medications for opioid use disorder), benzodiazepines, methamphetamine, barbiturate, cocaine, hallucinogens, or cannabis. Percent of infants with exposure to Controlled Substances was calculated as: number of infants reported by facilities in that county as having above ICD codes / total number of births, living or dead, where the gestational age is estimated to be 24 weeks or greater as reported by facilities in that county.

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Figure 2. As of September 2022, the three counties with the highest rates of infants born exposed to controlled substances were Bristol, Berkshire, and Barnstable. The results for Bristol County remained stable with an increase of 3% from 2021 to the first 9 months of 2022 (2.8% to 2.9%), and Berkshire County decreased slightly by 5% (4.0% to 3.8%). In the same period, Barnstable County decreased by 36% from 2.8% to 1.8%.