

Review of Maternal Health Services

Executive Office of Health and Human Services
Department of Public Health
250 Washington Street, Boston, MA 02108-4619
The Commonwealth of Massachusetts

November 15, 2023

Maura Healey
Governor
Massachusetts State House
24 Beacon St.
Boston, MA 02133

Kim Driscoll
Lieutenant Governor
Massachusetts State House
24 Beacon St.
Boston, MA 02133

Dear Governor Maura Healey,

On September 22, 2023, you instructed Health and Human Services (HHS) Secretary Kate Walsh, Undersecretary for Health Dr. Kiame Mahaniah and Department of Public Health (DPH) Commissioner Dr. Robert Goldstein to conduct a review of maternal health services across the Commonwealth and to develop a plan to support or improve access and quality, where needed.

In response, please find enclosed a report from the Department of Public Health entitled "*Review of Maternal Health Services, 2023.*"

Sincerely,

Robert Goldstein, MD, PhD
Commissioner
Department of Public Health

Review of Maternal Health Services

Governor's Mandate

The following report is hereby issued pursuant to Governor Maura Healey's request issued on September 22, 2023, as follows:

Conduct a review of access to all maternal health services in the Commonwealth and develop a plan to support or improve access and quality, where needed. This will include a review of prenatal, birthing, postpartum, and reproductive health services. It will also include consultation and collaboration with providers and community leaders in the area to ensure that access to high-quality maternal health services is protected following recent closure of inpatient maternity units.

Executive Summary

The Healey-Driscoll administration has identified maternal health and the elimination of racial disparities as top priorities. The purpose of this report is to present a comprehensive review of prenatal, postpartum, and birthing services across the state, through a lens of health equity and health outcomes, with a focus on availability of quality services in rural and other underserved communities and to produce a set of recommendations for ensuring that high quality services are reasonably available to all Massachusetts (MA) communities.

This report synthesizes information and data gathered by the Department of Public Health (DPH) and other agencies from the Executive Office of Health and Human Services (EOHHS), including through listening sessions, legislative Commissions, and ongoing data collection and analysis. This report builds on the recommendations of the [2022 Report of the Special Commission on Racial Inequities in Maternal Health](#), which provided a comprehensive list of recommendations and call to action needed to improve maternal health outcomes and experiences for the historically and currently most vulnerable residents in the state of Massachusetts, with particular attention on racial inequities.

MA is consistently recognized for good health status in national rankings. But good health in MA is not equally shared. Persistent inequities remain in access to services, and also in economic and health outcomes across demographic characteristics, most notably by race and ethnicity. People who remain healthy during pregnancy and after birth are more likely to stay healthy later in life and have better birth outcomes, influencing infancy, childhood, and adulthood. According to recent data, MA has many favorable outcomes for maternal health compared to the national average, however, inequities by race/ethnicity and geography exist and have persisted in MA.

Data show that the rate of severe maternal morbidity (SMM) for all birthing people increased significantly between 2011 and 2020 from 52.3 per 10,000 deliveries in 2011 to 100.4 per 10,000 deliveries in 2020. The most troubling finding was that for Black, non-Hispanic birthing people the rate of SMM in 2011 was twice that of white, non-Hispanic birthing people, and by 2020 it was 2½ times higher, which represents a 25 percent increase in that gap over the decade. Also, Black, non-Hispanic birthing people consistently had the highest rates of SMM across all race and ethnicity groups.

While MA has no maternity service deserts, as defined by national standards,¹ we recognize that with hospital closures, many pregnant patients may have difficulties getting to their prenatal care appointment. Additionally, MA strives to not only prevent maternal service deserts, but to provide high quality accessible care to all residents of the Commonwealth. Distance to a birth facility is an important indicator of maternal health care access. Comparing distances traveled in 2011 to distances traveled in 2021, birthing people in 29 towns have increased their distance traveled by at least 5 miles, and 14 towns have increased their distance

¹ March of Dimes Maternity Care Deserts: <https://www.marchofdimes.org/maternity-care-deserts-report#divMaps>

traveled by at least 10 miles; only two towns have residents whose average travel distance to birthing facilities decreased in the past decade.

DPH has identified 25 action-oriented recommendations to improve maternal health across the state, with a lens of health equity and health outcomes. These include:

Increasing Maternal Care Access and Expansion of Care Delivery Models

- DPH will update the hospital and clinic regulations governing birth centers to better align with national standards set by the American Association of Birth Centers.
- Levels of Maternal Care (LoMC) will be integrated into DPH’s hospital licensure regulation’s perinatal section 105 CMR 130.600.
 - Birth centers should be included as the first level in LoMC in the hospital licensure regulation’s perinatal section.
- DPH, in collaboration with the LoMC Implementation Advisory Committee, should develop a robust public awareness and education campaign describing the LoMC with an explicit message that the levels correspond to “risk-appropriate” care rather than “quality” of care (i.e., lower levels of care do not deliver lower quality of care than higher levels).
- DPH will work with hospitals to implement remote blood pressure monitoring programs across all hospitals in MA. EOHHS will work with public and private interested parties to support health insurance coverage of remote monitoring services.
- EOHHS will work with hospitals, providers, insurance carriers and other interested parties to enhance financial resources for Group Prenatal Care (GPC) that reimburses providers at a rate that is higher than traditional prenatal care, to incentivize providers to offer this model of care.
- DPH will work to ensure that all Federally Qualified Health Centers (FQHCs) in Massachusetts provide prenatal and postnatal care on site.
- EOHHS will work with providers, insurance carriers, and other interested parties to expand the reach of universal postpartum home visiting.²
- DPH will work with local public health to include maternal child health standards in the next version of the local public health Performance Standards.

Improving and Augmenting the Workforce

- DPH will develop a pathway to doula certification in collaboration with the doula community.
- MassHealth will explore opportunities to reimburse midwives equitably as physicians for the same service; private insurers would be encouraged to follow.
- DPH will update birth center regulations to address concerns about physician supervision and staffing requirements that limit scope of practice for Certified Nurse Midwives (CNMs).

² H985/S.672, An act increasing access to maternal postpartum home visiting services, would require insurance carriers to cover home visiting services.

Improving Access to Data

- DPH supports amending the Maternal Mortality and Morbidity Review Committee (MMMRC) statute, G.L. c. 111, § 24O, to statutorily require any public and private agency or individual to provide any relevant information at the request of the chair of the MMMRC.
- DPH will pursue legal authority to conduct active, population-based surveillance for stillbirths, which would provide data to a Fetal and Infant Mortality Review (FIMR) Committee.
- DPH will support an annual Count the Kicks campaign and ensure providers have access to materials.
- DPH will utilize annual reporting and contextualizing of data from the Parenthood and Fatherhood Experiences Survey to support engagement and partnership with families, fathers, and other second parents, to improve maternal and child health services.

Behavioral Health

- DPH will expand and promote existing training to provide support to frontline health care providers on screening, assessment, treatment, and referral for maternal depression and related behavioral disorders. Training will also focus on the importance of maintaining the parent-child dyad.
- DPH will continue to work with MassHealth and other payors to promote increased uptake of evidence-based programs like Moms Do Care and First Steps Together for pregnant members with SUD; services to be covered include peer support, care coordination services, doulas, and case management.
- EOHHS, in collaboration with DPH and DCF, will update guidance for healthcare providers to share best practices and document the establishment of a dual reporting system whereby substance exposed newborns with no indication of neglect or abuse can be identified for support but not investigated for neglect or abuse.
- EOHHS, including MassHealth, DMH, and DPH, will work together to explore the establishment and ongoing implementation of Outpatient Intensive or Partial Hospitalization Programs and foster development of inpatient behavioral health programs where infants are able to board with mom while they are treated.

Reproductive Health

- DPH will improve access to provider training on providing patient-centered contraceptive counseling and to a wide range of contraceptive methods at all post-partum care providers.
- EOHHS will ensure that recent changes to MassHealth reimbursement allowing providers to bill for a long-acting reversible contraception (LARC) device separately from labor and delivery charges are well-publicized and accessible to hospital billers and will encourage private insurers to adopt similar payment policies.
- EOHHS will develop recommendations aimed at increasing access to abortion services for patients under 18 years of age.

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- DPH will provide support and incentives to encourage additional providers to offer abortion services, especially in rural areas and other areas with few abortion providers.

Additional Resources and Support

- DPH will promote awareness of and access to Paid Family and Medical Leave in partnership with the Department of Family and Medical Leave through ongoing public awareness campaigns.

Methodology

This report synthesizes information and data gathered by the Department of Public Health (DPH) and other agencies from the Executive Office of Health and Human Services (EOHHS). This includes recent in-person listening sessions in communities across the state – including Brockton (N=28), Springfield (N=12), Lynn (N=14), Leominster (N=35) – and two virtual sessions (N=70), including one for people with disabilities. Representative quotes from the listening sessions are included throughout the document.

In addition, DPH conducted a thorough review of the information gathered from the Essential Services closure process related to the closure of hospital birthing and maternity units in North Adams Regional Hospital, Harrington Memorial Hospital, Morton Hospital, Southcoast Tobey Hospital, Falmouth Hospital, Holyoke Medical Center, Norwood Hospital, Beverly Hospital, Health Alliance Clinton, Leominster Campus, and Signature Healthcare Brockton.

This report builds on the recommendations of the [2022 Report of the Special Commission on Racial Inequities in Maternal Health](#), which provided a comprehensive list of recommendations and call to action needed to improve maternal health outcomes and experiences for the historically and currently most vulnerable residents in the Commonwealth of Massachusetts, with particular attention on racial inequities. This report also examined the findings of the Title V five-year Needs Assessment, recommendations from the Maternal Mortality and Morbidity Review (MMMRC), work from the Perinatal-Neonatal Quality Improvement Network (PNQIN), and feedback provided by the members of the Maternal Health Task Force, which includes 48 members representing 30 organizations from across Massachusetts.

Introduction

Policy Action by the Healey-Driscoll Administration

The Healey-Driscoll administration has identified maternal health and the elimination of racial disparities as top priorities. This includes a commitment to the following policy actions relevant to maternal health:

- Implementation of strategies from the [Special Commission on Racial Inequities in Maternal Health](#).
 - In 2021, an [Act to Reduce Racial Inequities in Maternal Health](#) was signed into law, establishing a special 28-member Legislative Commission to investigate and study ways to reduce or eliminate racial inequities in maternal mortality and severe maternal morbidity in the Commonwealth. The Commission submitted its final report to the legislature in May 2022 with more than 100 recommendations focused on three domains: family and community engagement, public health infrastructure, and healthcare systems improvement.
- The Healey-Driscoll Administration has taken a number of steps to protect, preserve, and expand access to reproductive healthcare services within the Commonwealth.
 - While other states have criminalized or otherwise restricted access to abortion and other reproductive health services, MA protects access to reproductive health care services in the Commonwealth through both statute and an executive order.
 - Governor Healey signed an executive order on April 2023 clarifying that Chapter 127 of the Acts of 2022, An Act Expanding Protections for Reproductive and Gender-Affirming Care (“Shield Law”), includes protection of access to medical abortions and mifepristone, further ensuring that abortion protections in Massachusetts includes abortion medication amid a nationwide legal fight³ calling the treatment’s authorization into question.
 - The executive order protects reproductive health care providers who serve out of state residents and ensures that MA providers can continue to provide reproductive health care services without concern that the laws of other states may be used to interfere with those services or sanction them for providing services that are lawful in MA.⁴
 - The Healey-Driscoll Administration announced that UMass Amherst ordered 15,000 doses of mifepristone to ensure enough coverage for more than a year.⁵
- The Healey-Driscoll Administration has vocally supported comprehensive, LGBTQ-inclusive, consent-focused, and medically accurate sex education and care.⁶

³ <https://reproductiverights.org/supreme-court-takes-away-right-to-abortion/>

⁴ <https://www.mass.gov/executive-orders/no-609-protecting-access-to-medication-abortion-services-in-the-commonwealth#:~:text=Healey%20issued%20an%20Executive%20Order,abortion%20under%20existing%20state%20law.&text=WHEREAS%2C%20some%20states%20have%20banned,Alliance%20for%20Hippocratic%20Medicine%20v.>

⁵ <https://www.umass.edu/news/article/governor-healey-announces-action-protect-access-medication-abortion-massachusetts>

⁶ <https://www.wbur.org/news/2023/06/21/gov-healey-sex-ed-lgbtq-massachusetts>

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- This includes ensuring every resident can access high quality and affordable health care, including abortion care, contraception, sexually transmitted infections (STIs) testing and treatment, and gender-affirming care.
- EOHHS has promoted and supported state statutes and regulations improving maternal health. These include:
 - Several established and ongoing MassHealth perinatal and maternal health policies, including (but not limited to):
 - Full coverage for undocumented pregnant and postpartum MassHealth members;⁷
 - Expanded postpartum coverage through 12 months following the end of pregnancy, inclusive of all pregnancy outcomes and regardless of immigration status;⁸
 - Forthcoming doula benefit anticipated to launch by the end of 2023 for pregnant and postpartum members;⁹
 - Substantial investment as part of the most recent Medicaid 1115 waiver, including in the quality and equity incentive program and contractual requirements for high-risk pregnant and postpartum members in managed care plans, such as enhanced care coordination and housing and nutrition support services;¹⁰
 - Requirement and reimbursement for postpartum depression screenings at pediatric visits; and¹¹
 - MassHealth coverage of long-acting reversible contraceptive prescribed and administered in the immediate postpartum period as separate from the global delivery fee.¹²
 - Postpartum depression legislation;
 - Paid family and medical leave legislation;¹³
 - Pay equity legislation that clarifies unlawful wage discrimination and makes¹⁴ workplaces fairer and more equal; and
 - [The Pregnancy Workers Fairness Act](#)

State Overview

⁷ <https://www.mass.gov/info-details/masshealth-information-for-noncitizens>

⁸ <https://www.mass.gov/doc/eom-22-12-extension-of-postpartum-coverage-for-eligible-individuals-revised-eligibility-criteria-0/download>

⁹ <https://www.mass.gov/doc/notice-of-public-hearing-484/download>

¹⁰ <https://www.mass.gov/doc/1115-masshealth-demonstration-extension-summary-1/download>

¹¹ <https://www.mass.gov/doc/all-provider-bulletin-301-impact-of-covid-19-on-behavioral-health-and-the-importance-of-0/download>

¹² <https://www.mass.gov/info-details/information-about-masshealth-coverage-for-reproductive-services>

¹³ <https://www.mass.gov/info-details/paid-family-and-medical-leave-pfml-overview-and-benefits>

¹⁴ <https://www.mass.gov/executive-orders/no-609-protecting-access-to-medication-abortion-services-in-the-commonwealth#:~:text=Healey%20issued%20an%20Executive%20Order,abortion%20under%20existing%20state%20law.&text=WHEREAS%2C%20some%20states%20have%20banned,Alliance%20for%20Hippocratic%20Medicine%20v.>

With 6,981,974 residents, MA is the fourth most densely populated state in the U.S. While often thought of as urban because of the dense concentration of people in the metro Boston area and other cities, as of 2017, 160 cities and towns (45%) are considered rural based on the definition set by the DPH Office of Rural Health. Moreover, MA is becoming increasingly diverse in race, ethnicity, and culture (Table 1). Further, immigrants comprise 17% of the state's population; the top countries of origin for immigrants are China (8%), the Dominican Republic (8%), India (7%), Brazil (7%), and Haiti (5%).¹⁵ Between 2016-2020, nearly 24% of MA residents spoke a language other than English at home, most commonly Spanish.¹⁶

People of reproductive age make up a large segment of the state population (45.2%), and of this segment, there is an estimated 12-18% of reproductive-aged birthing people with a disability. MA has seen a decrease in total births between 2019 and 2022, from 69,117 to 68,613. The state's recent decrease in births mirrors the national trend.^{17,18} The percentage of births in 2021 varied across races and ethnicities, with more than 40% of live births among birthing people of color. In 2021, 29.7% of births were to non-US-born birthing people.¹⁹

Overall Health Status

MA is consistently recognized for good health status in national rankings. According to America's Health Rankings 2022 Annual Report,²⁰ MA ranks #2 overall, and is #1 in clinical care, #3 in health outcomes, #4 in social and economic factors, and #8 in behaviors (e.g., nutrition and physical activity, sexual health, sleep health, smoking tobacco use). Massachusetts' strengths include a low premature death rate, high reading proficiency among fourth grade public school students, and a low uninsured rate. Identified challenges include high prevalence of excessive drinking, high income inequality, and a high percentage of housing with lead risk.

But good health in MA is not equally shared. Persistent health inequities remain in access to services, and also in economic and health outcomes across demographic characteristics, most notably by race and ethnicity. These point to historical and structural systems of oppression that continue to disadvantage people of color in the state. For example, 10.4% of the Massachusetts population lives below poverty level; however, only 7.8% of White residents live below the poverty level compared with 23.6% of Hispanic residents, 17.1% of American Indian and Alaska Native residents, 15.3% of Black residents, and 10.9% of Asian residents.²¹

¹⁵ U.S. Census Bureau QuickFacts: Massachusetts [Internet]. [cited 2023 Sep 25]. Available from: <https://www.census.gov/quickfacts/fact/table/MA/PST045222>

¹⁶ 2022_chna_rreport.pdf [Internet]. [cited 2023 Sep 25]. Available from: https://www.massgeneral.org/assets/mgh/pdf/community-health/cchi/2022_chna_rreport.pdf

¹⁷ Massachusetts Births 2019 Boston, MA: Registry of Vital Records and Statistics, Massachusetts Department of Public Health. February 2022.

¹⁸ Hamilton E. B, Martin A. J, Osterman J.K. M. Births: Provisional Data for 2021 [Internet]. National Center for Health Statistics (U.S.); 2022 May [cited 2023 Sep 25]. Available from: <https://stacks.cdc.gov/view/cdc/116027>

¹⁹ Natality, 2007-2022 Request Form [Internet]. [cited 2023 Sep 25]. Available from: <https://wonder.cdc.gov/controller/datarequest/D66>

²⁰ America's Health Rankings, [2022 Annual Report](#)

²¹ US Census Bureau, 2021 American Community Survey 1-Year Estimates

Overview of Maternal Health and Wellness

A person's health at each period of life affects health at other stages and can have cumulative effects for the next generation.²² People who remain healthy during pregnancy and after birth are more likely to stay healthy later in life and have better birth outcomes, influencing infancy, childhood, and adulthood.²³ Unprecedented levels of coordination, collaboration, and collective action across sectors are necessary to eliminate preventable maternal and perinatal mortality and morbidity and achieve maternal health equity for all.

Maternal health refers to the health of people before and during pregnancy, at the time of delivery, and during the postpartum period.

- Before pregnancy, the overall health and lifestyle choices of parents can affect fertility, maternal health, and an infant's probability of developing chronic conditions later in life. People contemplating pregnancy should be screened for health concerns, so they can be identified and managed.
- During pregnancy, high-quality antenatal care is essential to ensure not only a healthy pregnancy for the pregnant person and the fetus, but also an effective transition to positive labor and delivery. Services should include the provision of education and easily understood information on health care and perinatal services for expectant parents.
- During delivery, high-quality, evidence-based obstetric and neonatal care should be one of the highest priorities to reduce illness and death of parents and their infants.
- In the postpartum period, it is critical to monitor maternal and newborn health as the risk of death is higher during the first week postpartum for both. Timely detection and management of symptoms can reduce the risk of complications and mortality during the postpartum period, which is defined as up to one year postpartum.²⁴

The Pregnancy Risk Assessment Monitoring System (PRAMS), a surveillance project of the Centers for Disease Control and Prevention (CDC) and state health departments, collects jurisdiction-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy. According to PRAMS 2020 data, MA has many favorable outcomes compared to the national average (Table 2). However, inequities by race/ethnicity and geography exist and have persisted in MA.

Experiences of Racism in Maternal Health

Data from MA residents in PRAMS, collected since 2007, are a unique window into the maternal response to racism in the year prior to delivery. According to these data, between 2015 and 2020, the percentage of Black, non-Hispanic birthing people who said that racism contributed to stress in their lives increased from 10.6% in 2015 to 28.4% in 2020 (compared to a range of

²² Organization WH. A healthy start in life: report on the Global Consultation on Child and Adolescent Health and Development, 12-13 March 2002, Stockholm, Sweden. 2002 [cited 2023 Sep 25]; Available from: <https://iris.who.int/handle/10665/67448>

²³ Maternal and newborn health EURO [Internet]. [cited 2023 Sep 25]. Available from: <https://www.who.int/europe/health-topics/maternal-health>

²⁴ Dol J, Hughes B, Bonet M, Dorey R, Dorling J, Grant A, et al. Timing of maternal mortality and severe morbidity during the postpartum period: a systematic review. *JBIM Evid Synth*. 2022 Aug 1;20(9):2119–94.

1.3%-3.4% among white, non-Hispanic birthing people). During the same period, the percentage of Black, non-Hispanic people who said they constantly think about race increased from 14.4% in 2015 to 41.3% in 2020 (among white, non-Hispanic people the range was between 1.2%-4.1%).

The effects of racism are even more pronounced among more educated Black, non-Hispanic birthing people; Black, non-Hispanic birthing people with a college degree reported even more stress due to race than those with less than a high school degree (24.3% vs. 10.8%, from 2019-2020 combined).

In her testimony at the Brockton area listening session held November 2, 2023, a Black, Hispanic woman from the region shared her birthing experience while holding her baby:

“I was supposed to have my baby at Brockton hospital, but of course you know what happened, I had my baby at Good Samaritan Medical Center on a Friday, they ran some tests and the tests came back positive for postpartum preeclampsia and my liver was compromised, I told them I had a history about it and so could you please do something? They said we cannot do anything for you now, all you can do now is go back home (that was Saturday) and wait until Monday to see your OB at the office. No, I said, I already have a history, and this is my 5th child, I am not feeling ok, can you at least give me a pill? No, we cannot do anything for you. If you don't feel okay the next day, come back. I went back home, and of course that whole day my blood pressure was still high, so I went back to the hospital with the same history, I was laying down in bed for a couple of hours because they wanted my blood pressure to go down, then they gave me Tylenol, because I was having headache; also I told them I was having heartburn and they gave me something for that and sent me home again. So I remember on Sunday, my blood pressure was very high, so high that the machine was telling me to go the ER. I called them begging and asking them why you don't want to see me in person, and what they said to me was we are doing what the OB is asking us to do and we cannot do anything else and hang up the phone. I asked my husband to call for me and advocate for me because I was so frustrated. I had to wait the whole weekend until Monday, putting my life on threat, because something could have happened, you know how deadly is that. Thanks God I made it until Monday. And when I saw my OB, she saw right away that my blood pressure was so high, she asked me what are you doing here? And I told her everything. And she said I cannot believe that happen to you. You need to be seen right away because you have a history...”

Geographic Disparities in Maternal Health Care

Geographic disparities across the state's six regions (Figure 1) have been identified across four major maternal health indicators, including the location of births, adverse perinatal outcomes, preterm births and low birth weights, and access to quality prenatal care and substance use disorder treatment.

In 2021, 30.0% of births occurred in a birth facility in the Boston region, 22.9% occurred in the Metro West region, 12.6% in the Northeast region, 11.5% in the Southeast region, 11.7% in the Central MA region, and 10.4% in the Western MA region.

Across MA, ten communities – Fall River, Ware, New Bedford, Pittsfield, Southbridge, North Adams, Webster, Wareham, Orange, and Adams – experience higher than average rates of adverse perinatal outcomes, including less than adequate prenatal care, pregnancy-associated deaths, overweight or obesity during pregnancy, depressive symptoms, smoking, drinking, utilization of illicit substances, preterm births, low birth weights, and becoming pregnant within twelve months of giving birth. These ten communities have higher poverty rates and more significant numbers of residents of color than the state average.

Overall, preterm births (defined as births <37 weeks gestation) in MA are relatively low, accounting for 8.8% of all births, as are low birth weights (defined as infants born <2,500g), accounting for 7.3% of all births. The Metro West region, which is mainly suburban, has the lowest percentages of both preterm births and low birth weights, with 7.9% of all births defined as preterm births and 6.2% of births defined as low birth weight. Boston, the state's largest urban city, has the highest volume of such births, with 8.9% of all births defined as preterm births and 8.1% of births defined as low birth weight.²⁵ Western MA — the state's most rural area — has the highest percentage of both preterm births (10.9%) and low birth weight births (9.1%).

Birthing people who live in MA's rural areas are more likely to have less-than-adequate care, defined as prenatal care starting after the fourth month of pregnancy, or care that includes less than 80% of the recommended number of visits (22.1%), compared to birthing people in urban areas (20.2%).²⁶

Pregnancy-Associated Mortality and Severe Maternal Morbidity

Pregnancy-associated death is defined as the death of a person while pregnant or within one year of termination of pregnancy due to any cause. Pregnancy-associated deaths are divided into three categories:

1. *Pregnancy-related*: the death of a birthing person while pregnant or within one year of termination of pregnancy, from any cause related to or aggravated by pregnancy or its management, but not from accidental or incidental causes (e.g., the death of a person from postpartum hemorrhage or amniotic fluid embolism);
2. *Pregnancy-associated-but-not-pregnancy-related*: the death of a person while pregnant or within one year of termination of pregnancy due to a cause unrelated to pregnancy (e.g., the death of a person from a motor vehicle collision); and

²⁵ Center for Health Information and Analysis. Health Insurance Coverage and Care in MA 2015-2019: A Baseline Assessment of Gaps by Region. <https://www.chiamass.gov/health-insurance-coverage-and-care-in-massachusetts/>

²⁶ Center for Health Information and Analysis. Health Insurance Coverage and Care in MA 2015-2019: A Baseline Assessment of Gaps by Region. <https://www.chiamass.gov/health-insurance-coverage-and-care-in-massachusetts/>

3. *Undetermined if pregnancy-related*: the death of a person while pregnant or within one year of termination of pregnancy from a cause that cannot be determined or conclusively categorized as either pregnancy-related or, not pregnancy-related (e.g., the death of a woman at six months postpartum from a self-inflicted cause with an unknown mental health history).

The Pregnancy-Associated Mortality Ratio (PAMR) is defined as the total number of pregnancy-associated deaths over the total number of live births. In 2020, there were 37 deaths in Massachusetts that met the definition of a pregnancy-associated death, resulting in a PAMR of 55 per 100,000 live births, which is a significant increase compared to the PAMR during 2000-2007 (26 per 100,000 live births). More than 70% of the pregnancy-associated deaths in 2020 (n=26) occurred between 43 days to 1 year postpartum, followed by 19% (n=7) that occurred during pregnancy. The remaining four cases (11%) occurred between delivery and 42 days postpartum. The leading cause of death among the pregnancy-associated deaths was substance use disorder (43%), which includes alcohol, fentanyl, and prescription overdose deaths.

In 2020, seven out of the 37 pregnancy-associated deaths were categorized as pregnancy-related by the Maternal Mortality and Morbidity Review Committee. In 2020 the pregnancy-related mortality ratio was 10.4 per 100,000 live births, which is an increase from 7.9 per 100,000 live births during 2000 to 2007.

For every maternal death, there are about 100 episodes of severe maternal morbidity (SMM), affecting more than 50,000 birthing people in the United States and about 400 birthing people in MA every year.²⁷ SMM is defined as unexpected complications of labor and delivery that result in significant short- or long-term consequences to the birthing person's health. SMM includes life-threatening conditions (such as heart attacks, acute kidney failure, amniotic fluid embolism, disseminated intravascular coagulation, eclampsia, and sepsis), and life-saving procedures used to manage serious conditions (such as the use of a machine to help with breathing, or the removal of the uterus). In 2021, there 563 SMM events in MA, which translates to a rate of 134.9 per 10,000 deliveries.

Data from the MA Public Health Data Warehouse (PHD) show that the rate of SMM for all birthing people increased significantly between 2011 and 2020 from 52.3 per 10,000 deliveries in 2011 to 100.4 per 10,000 deliveries in 2020. The most troubling finding was that for Black, non-Hispanic birthing people the rate of SMM in 2011 was twice that of white, non-Hispanic birthing people, and by 2020 it was 2½ times higher, which represents a 25 percent increase in that gap over the decade. Also, Black, non-Hispanic birthing people consistently had the highest rates of SMM across all race and ethnicity groups. In 2011, for every 10,000 deliveries among Black, non-Hispanic birthing people, there were 94.8 deliveries with severe morbidity, and by 2020, that number had increased to 191 per 10,000 deliveries (an annual average increase of 10.1 percent). Looking further at disparities by race and ethnicity, the average annual increase

²⁷ Diop H, Declercq ER, Liu CL, Cabral HJ, Cui X, Amutah-Onukagha N, et al. Trends and inequities in severe maternal morbidity in Massachusetts: A closer look at the last two decades. *PLoS One*. 2022;17(12):e0279161.

in deliveries with severe morbidity was 7.8 percent for white, non-Hispanic birthing people; 8.2 percent for Hispanic, birthing people; and 10.5 percent for Asian/Pacific Islander, non-Hispanic birthing people (Figure 2).

The data also revealed troubling inequities for birthing people with intellectual, vision, and mobility-related disabilities. For every 10,000 deliveries, there were 131.6 deliveries with severe morbidity among those with intellectual disabilities; 108.4 among people with a vision disability; and 94.6 among those with a mobility disability. These rates are significantly higher than for non-disabled birthing people who have a rate of severe maternal morbidity of 66.1 per 10,000 deliveries.²⁸

Insurance Coverage and Health Care Access

According to the 2021 Massachusetts Health Insurance Survey (MHIS),²⁹ published in July 2022, the uninsurance rate in MA remained low at 2.4% (well below the national rate based on estimates from the National Health Interview Survey), and Massachusetts had the highest concentration of primary care physicians in the country (247 physicians for every 100,000 residents).³⁰ However, access to primary care physicians is inconsistent across the state. According to the 2023 County Health Rankings, while there was one physician per 670 people in Suffolk County, ratios increase to 1:1,580 in Plymouth County, 1:1,930 people in Bristol County, and 1:2,280 people in Nantucket County.³¹

MA children aged 0-18 years had an uninsurance rate of 0.7%. A higher percentage (8.6%) of the Hispanic population was uninsured compared with other racial/ethnic groups (Black, non-Hispanic 5.8%, Other/multiple races, non-Hispanic 4.7%, Asian, non-Hispanic 1.9%, White, non-Hispanic 0.9%).

Most respondents to the 2021 MHIS reported a usual source of care other than the emergency department (88.1%, including 92.9% of children) and a visit to a general doctor in the past 12 months (81.3%). This represents a decrease in both estimates from 2019 (91.0% of respondents, including 95.4% of children, reported a usual source of care and 86.4% reported a visit to a general doctor in the past 12 months in 2019). In addition, 17.5% of respondents visited a mental health professional over the past 12 months. Hispanic (81.3%), Black (81.2%), and Asian (82.1%) residents were less likely to report having a usual source of care than White residents (90.8%).

²⁸ DATA BRIEF: An Assessment of Severe Maternal Morbidity in Massachusetts: 2011-2020 [Internet]. Available from: <https://www.mass.gov/doc/an-assessment-of-severe-maternal-morbidity-in-massachusetts-2011-2020/download>

²⁹ Center for Health Information and Analysis, [Findings from the 2021 MA Health Insurance Survey](#)

³⁰ allstatesummaries-ahr22.pdf [Internet]. [cited 2023 Sep 25]. Available from: <https://assets.americashealthrankings.org/app/uploads/allstatesummaries-ahr22.pdf>

³¹ [Massachusetts | County Health Rankings & Roadmaps](https://www.countyhealthrankings.org/explore-health-rankings/massachusetts?year=2023&measure=Primary+Care+Physicians&tab=1) <https://www.countyhealthrankings.org/explore-health-rankings/massachusetts?year=2023&measure=Primary+Care+Physicians&tab=1>

Despite the high rate of insurance coverage, health care access and costs remain a concern for many families. Forty-one percent (41%) of 2021 MHIS respondents reported affordability issues over the past 12 months. Almost a third (31.2%) reported experiencing any family unmet need for health care in the past 12 months because of the cost of care and almost a quarter (23.3%) had a family member receive a medical bill where the health insurance plan paid much less than expected or did not pay at all.

Maternal Health Care Access

As of October 2023, Massachusetts has 39 open birth hospitals with 967 maternal beds. Signature Healthcare Brockton Hospital is temporarily closed, with 20 maternal beds. Since 2014, 11 hospitals have closed or filed to close their maternity service. Additionally, two birth centers have closed (in Beverly and Holyoke). Massachusetts currently has one open *free-standing* birth center: Seven Sisters Midwifery and Community Birth Center in Northampton (Table 3, Figure 3).

While MA has no maternity service deserts as defined by March of Dimes (counties with no hospitals or birth centers offering obstetric care and no obstetric providers),³² we recognize that with hospital maternity service closures, many pregnant patients may have difficulties getting to the setting where they plan to give birth, and may have difficulty getting to their prenatal and postpartum care appointments. Additionally, MA strives to not only prevent maternal service deserts, but to provide high quality accessible care to all residents of the Commonwealth.

At the Brockton Listening Session on November 2, 2023, a white, non-Hispanic nurse from the region who is currently pregnant noted:

“I am a labor and delivery nurse at Good Samaritan Medical Center and also someone who is currently seeking maternity care for myself, and I am a person who have access to transportation and have resources, and I still have a hard time managing prenatal care. I have a two-year-old at home, I have to drive 30 minutes to get to my appointment, wait however long that takes, I have several high-risk medical problems to my pregnancy, which requires a weekly appointment at the hospital for a minimum of two hours, add the 30-minutes drive each way, that three hours once a week. I have to figure out childcare and drive myself to the hospital, which I am able to do. Many women do not have that option, they don’t have a vehicle, they don’t have transportation, they don’t have any familial help in the area, they don’t have a village...”

HRSA has defined Maternity Care Health Professional Target Areas (MCTA) as areas within an existing Primary Care Health Professional Shortage Areas (HPSA) that are experiencing a shortage of maternity health care professionals. MA has four geographic HPSAs which have

³² March of Dimes, 2002. *Nowhere to Go: Maternity Care Desert across the US.*
<https://www.marchofdimes.org/maternity-care-deserts-report>

MCTA scores ranging from 8-12 (of a possible 0-25)³³ Gateway Hampshire Regional HPSA, (Hampden and Hampshire Counties), Nantucket County, Dukes County, and North Quabbin (Franklin and Worcester Counties).

Adequacy of Prenatal Care Utilization

The Kotelchuck Index, also called the Adequacy of Prenatal Care Utilization Index, is a measure of the timing when prenatal care began (initiation) and the total number of prenatal visits. The Kotelchuck Index classifies the adequacy of initiation, with the underlying assumption that the earlier prenatal care begins the better. To classify the adequacy of received services, the number of prenatal visits is compared to the expected number of visits for the period between when care began and the delivery date. The expected number of visits is based on the ACOG prenatal care standards for uncomplicated pregnancies and is adjusted for the gestational age when care began and for the gestational age at delivery. A ratio of observed to expected visits is calculated and grouped into four categories: inadequate, intermediate, adequate and adequate plus. The final Kotelchuck Index measure combines these two dimensions into a single summary score. Figure 4, which defines adequate prenatal care as a score of 80% or greater on the Kotelchuck Index,³⁴ shows the percentage of births with adequate prenatal care by town of residence.

The map shows all 351 towns and birthing hospitals. Darker colors show a lower percentage of births with adequate prenatal care. Communities that have hospitals within their borders still show great variation in percent of births with adequate prenatal care as evidenced by Boston Metro-West communities still showing areas with <60% and 60-70% adequate prenatal care, suggesting that physical proximity alone is insufficient to guarantee adequate prenatal care. Other barriers, including availability of obstetricians and midwives, availability of appointments, transportation, access to childcare, language barriers, and ability to take time from work or family obligations to receive prenatal care must be addressed as well. In the Leominster area, among births in 2022 only three towns had >90% of births with adequate prenatal care. Two of those towns are adjacent to Heywood Hospital and Emerson Hospital respectively. With the closure of birth services at Health Alliance Hospital Clinton in Leominster, there is concern that the percent of births with adequate prenatal care will decrease throughout the area. Notably, even with Health Alliance Leominster having an open maternity unit, access to prenatal services was poor in the community surrounding Leominster.

Average Distance from Maternal Residence to Birth Facility

Distance to a birth facility is an important indicator of maternal health care access (Figure 5). Comparing distances traveled in 2011 to distances traveled in 2021, birthing people in 29 towns have increased their distance traveled by at least 5 miles, and 14 towns have increased their

³³Health Resources & Service Administration (HRSA) Health Workforce Shortage Designations: <https://bhwh.hrsa.gov/workforce-shortage-areas/shortage-designation/scoring#mcta-scoring>

³⁴ Kotelchuck, M., The Adequacy of Prenatal Care Utilization Index: its US distribution and association with low birthweight. *Am J Public Health*, 1994. 84(9): p. 1486-9.

distance traveled by at least 10 miles; only two towns have residents whose average travel distance to birthing facilities decreased in the past decade (Figure 6).

Postpartum Visits by Race and Ethnicity

Whether a pregnancy results in a live birth, fetal death/stillbirth, or miscarriage, the postpartum visit is crucial to assess the birthing parent's physical, social, and psychological well-being, including the following domains: mood and emotional well-being; sexuality, contraception, and birth spacing; sleep and fatigue; physical recovery from birth; chronic disease management; health maintenance; and if appropriate infant care and feeding.

Postpartum people with chronic medical conditions (such as hypertensive disorders, obesity, diabetes, thyroid disorders, renal disease, and mood disorders and those whose pregnancies were complicated by preterm birth, gestational diabetes, or hypertensive disorders of pregnancy) need to be followed closely as these are associated with a higher lifetime risk of cardiometabolic disease.³⁵

MA PRAMS 2021 data highlight the inequities in postpartum visits, with Black, non-Hispanic and Hispanic birthing people having lower percentage of postpartum visit (89.1% and 84.9%, respectively), compared to White non-Hispanic and Asian non-Hispanic birthing people (95.5% and 95.4%, respectively). Given that Black, non-Hispanic and Hispanic birthing people are more likely to experience pregnancy and delivery complications including SMM, they are more at risk from long-term chronic health conditions going untreated or under-treated if they are unable to have a postpartum visit.

Additional Statewide Maternal Health Resources and Support

1. Women, Infant, and Children (WIC) Programs

WIC provides free healthy foods, nutrition and health assessment and counseling, breastfeeding support, and referrals to health-related social services to children under five and pregnant, postpartum and breastfeeding individuals. Applicants can access WIC services as soon as they believe they are pregnant and do not need to have had an OB visit prior to WIC certification.

WIC services are provided by 31 local WIC programs (120 sites) statewide; the program currently serves approximately 127,000 people each month. WIC programs are embedded in community health and antipoverty agencies and maintain strong collaborative relationships with other programs and initiatives targeting the perinatal population. Extensive breastfeeding services include a statewide breastfeeding peer counseling program that offers linguistically and culturally appropriate care prenatally and postpartum; WIC participants also have access to board-certified lactation consultants for complex lactation care.

MA WIC served 43.2% of all infants born in MA in 2022, and in state fiscal year 2023, it served 194,994 unique individuals according to internal unpublished programmatic WIC data. During

³⁵ ACOG. Presidential Task Force on Redefining the Postpartum Visit Optimizing Postpartum Care, ACOG Committee Opinion No. 736. *Obstetrics & Gynecology*. 2018;(131):e140-50.

state fiscal year (SFY) 2023, 55,324 unique pregnant, breastfeeding, or non-breastfeeding postpartum people participated in WIC, an increase of 2,669 adults from the SFY22 52,655 participants. WIC services are available to all who are financially eligible, regardless of immigration or citizenship status, and WIC does not collect information on immigration status. In the past 12 months the percentage of WIC participants who are experiencing homelessness or who are at high risk of homelessness has more than doubled, from 1.6% in September 2022 to 3.5% in September 2023, representing 4,448 women and children experiencing homelessness or are at high risk of homelessness in September 2023.

Massachusetts WIC caseloads have grown by more than 20% since the beginning of the pandemic but the program has faced significant workforce challenges; in the past fiscal year, one fifth of the local program staff positions experienced turnover. Additionally, food cost inflation, the need to increase staff salaries to align with the high cost of living in Massachusetts, and the recent increases in immigrant families seeking WIC benefits continue to put pressure on limited state and federal WIC funds used to support Massachusetts residents accessing program services.

2. DPH Breastfeeding Initiative

DPH continues to prioritize breastfeeding promotion and support led by efforts through the Bureau of Family Health and Nutrition. As the state Title V Maternal and Child Health agency, BFHN is committed to assuring access to quality maternal and child health care services to mothers and children, with access to prenatal and postpartum care including breastfeeding services and supports. Program staff within the Bureau (including public health nurses, WIC staff, and home visitors) work to make breastfeeding education and support available to families throughout the Commonwealth. DPH is completing work on a breastfeeding needs assessment, which will inform the development of a statewide breastfeeding strategic plan. Additionally, DPH maintains a strong partnership with the [Massachusetts Breastfeeding Coalition](#) and the [Massachusetts Baby Friendly Hospital Collaborative](#) to promote maternity care practices supportive of breastfeeding.

Evidence-Based Practices and Actionable Recommendations

Increasing Maternal Care Access and Expansion of Care Delivery Models

1. Birth Centers

Birth centers are stand-alone facilities that provide prenatal, labor, and delivery care to low-risk pregnancies. In MA, birth centers must be licensed under a hospital or clinic. They offer an alternative to hospital-based birth, which may be more expensive and include more interventions than a birth center birth.

Birth centers emphasize relationship building between providers and pregnant people, and patient-centered birth planning and labor. The centers are midwifery-led and typically do not employ anesthesiologists. While current MA regulations require birth centers to have a Director of Medical Affairs that is either an obstetrician or gynecologist, obstetricians are not typically available for deliveries.

Evidence has shown that birth centers reduce the number of interventions used during labor and delivery while improving patient experience and lowering costs—saving more than \$1,000 per birth. A comprehensive review showed that 32 studies of birth centers found positive health outcomes for women including lower rates of cesarean deliveries compared with birthing persons delivering in hospitals.³⁶

Research suggests that Black-owned, culturally competent birth centers have the means to reduce racial disparities in maternal morbidity and mortality, thereby demonstrating the capacity to advance equity.^{37,38} Of the 400 birth centers in the United States, only about 20 are led by people of color. Limitations to accessing capital and resources is a significant barrier to people of color in creating and owning birth centers. According to the Heat Map of Freestanding Birth Centers by State, Massachusetts has fallen behind in the number of birth centers available in the state compared to other states (Figure 7). As noted, Massachusetts currently has only one licensed operating birth center in Florence: Seven Sisters Midwifery and Community Birth Center.

At the listening session in Lynn on October 24, 2023, a registered clinical nurse midwife noted the following in her testimony:

“Birth center care specifically is associated with markedly better outcomes. But Massachusetts ranks 32nd in the nation for integration of midwives and in the bottom quarter for access to birth centers. By denying people access to midwives and

³⁶ Alliman, Jill, and Julia C Phillippi. “Maternal Outcomes in Birth Centers: An Integrative Review of the Literature.” *Journal of midwifery & women's health* vol. 61,1 (2016): 21-51. doi:10.1111/jmwh.12356

³⁷ Sakala C, Hernández-Cancio S, Wei R. Improving Our Maternity Care Now Through Community Birth Settings. *J Perinat Educ.* 2022 Oct 1;31(4):184-187. doi: 10.1891/JPE-2022-0015. PMID: 36277227; PMCID: PMC9584101.

³⁸ Hardeman, Rachel R et al. “Roots Community Birth Center: A culturally-centered care model for improving value and equity in childbirth.” *Healthcare (Amsterdam, Netherlands)* vol. 8,1 (2020): 100367. doi:10.1016/j.hjdsi.2019.100367

community birth (i.e., birth center and home birth), Massachusetts is for the vast majority of birthing people denying them the care that will give them and their babies the best outcomes, the best experience and save millions of dollars in health spending.”

Recommendations

- DPH will update the hospital and clinic regulation on birth centers to better align with national standards set by the American Association of Birth Centers.

2. Levels of Maternal Care

Studies have demonstrated that timely access to risk-appropriate neonatal and obstetric care can reduce perinatal mortality.^{39,40} The American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal-Fetal Medicine (SMFM) developed and published a framework for levels of maternal care guidelines in 2015. Both the American Association of Birth Centers and the Commission for the Accreditation of Birth Centers endorse these guidelines. The guidelines are designed to promote collaboration among maternal facilities and health care providers with the goal that pregnant patients receive care at a facility appropriate for their risk.

In 1985, regulations for perinatal services were developed and implemented in MA to ensure safe and appropriate care was provided at the appropriate location; these regulations were updated in 2006 and 2017.⁴¹ As they currently stand, these hospital regulations focus primarily on newborn care, which means that we currently do not have a framework that defines maternal levels of care.

Maternal care refers to all aspects of antepartum, intrapartum, and postpartum care of the pregnant patient. The Levels of Maternal Care (LoMC) are designed as a tiered system (Levels I–IV), defining personnel and resources for the provision of maternal care at each level. Hospital capacity to treat individuals with (or at high risk for) severe illness increases with a higher level.

LoMC establish a common understanding of each facility’s level of care and are intended to promote a collaborative system of care, building relationships in a state or region that facilitate maternal transport, outreach, and education. This classification system is analogous to risk-appropriate neonatal care (also called perinatal regionalization), which has existed since the

³⁹ March of Dimes . Toward improving the outcome of pregnancy III: enhancing perinatal health through quality, safety and performance initiatives . White Plains (NY) : March of Dimes ; 2010 . Available at: <https://www.marchofdimes.org/toward-improving-the-outcome-of-pregnancy-iii.pdf> . Retrieved April 2, 2019.

⁴⁰ ACOG Obstetric Care Consensus No. 9: Levels of Maternal Care: Correction.” *Obstetrics and gynecology* vol. 141,4 (2023): 864. doi:10.1097/AOG.0000000000005128

⁴¹ 105 CMR 130.601 - 130.669.

1970s,⁴² supported by evidence that high-risk neonates born at higher level facilities experience improved outcomes.⁴³

LoMC are defined based on both facility characteristics (e.g., standard ultrasound equipment, availability of a blood bank to initiate a massive transfusion protocol, certified registered nurse anesthetists present all the times) and the type of patients that are appropriate for each level.

LoMC are categorized as follows:

- Less than Level I, which is appropriate for patients with an uncomplicated term singleton vertex fetus who are expected to have an uncomplicated birth (in Massachusetts we would interpret this level as a birth center);
- Level I, which is appropriate for low-risk patients with uncomplicated pregnancies and patients with higher risk conditions such as uncomplicated twin pregnancy, labor after cesarean, uncomplicated cesarean delivery, preeclampsia and well-controlled gestational diabetes;
- Level II, which is appropriate for any patients with care appropriate at a level I, plus patients with higher risk conditions such as placenta previa with no prior uterine complication, maternal medical condition that requires additional monitoring such as pregestational diabetes, poorly controlled asthma, poorly controlled and complicated hypertension, and anticipated complicated cesarean delivery;
- Level III, which is appropriate for any patients with care appropriate at a level II, plus patients with higher risk conditions such as moderate maternal cardiac disease, suspected placenta accreta or placenta previa and previous uterine surgery, suspected placenta percreta, adult respiratory distress syndrome or other conditions that require ventilatory support antepartum or postpartum, acute fatty liver of pregnancy, coagulation disorders, complex hematologic or autoimmune disorders, expectant management of preeclampsia with severe features remote from term; and
- Level IV, which is appropriate for any patients with care appropriate at a level III, plus patients with higher risk conditions such as severe maternal cardiac conditions, severe pulmonary hypertension, pregnant patients who require neurosurgery or cardiac surgery, and pregnant patients in unstable condition and in need of an organ transplant.

Birth centers (freestanding facilities that are not hospitals) are an integral part of many regionalized care systems and are, therefore, included in the discussion; however, capabilities and health care providers are not delineated in the ACOG guidelines because well-established standards governing birth centers in the United States are already available.⁴⁴

⁴² March of Dimes Committee on Perinatal Health. *Toward Improving the Outcome of Pregnancy: Recommendations for the Regional Development of Maternal and Perinatal Health Services*. March of Dimes National Foundation; 1976.

⁴³ Lasswell SM, Barfield WD, Rochat RW, Blackmon L. Perinatal regionalization for very low-birth-weight and very preterm infants a meta-analysis. *JAMA - J Am Med Assoc*. 2010;304(9):992-1000. doi:10.1001/jama.2010.1226

⁴⁴ American Association of Birth Centers . *Standards for birth centers* . Perkiomenville (PA) : AABC ; 2017 . Available at: <http://www.birthcenters.org/resource/resmgr/AABC-STANDARDS-RV2017.pdf> . Retrieved April 2, 2019.

DPH, in collaboration with the Perinatal Neonatal Quality Improvement Network (PNQIN) and the Betsy Lehman Center for Patient Safety and Medical Error Reduction, has been engaged over the past five years in an effort to determine whether and how to implement LoMC in MA as a tool to support safer maternal care. The impetus has been the continued climb in SMM in MA, with Black birthing patients experiencing twice the level of SMM as white, non-Hispanic patients; these data were reinforced by recent findings that patients are more likely to experience a SMM event if they deliver at a hospital that does not have the capacity to meet their individual needs.

This effort culminated in a meeting of a LoMC implementation Advisory Committee on September 12-13, 2023, during which the group reached a consensus recommendation that Massachusetts take a regulatory, mandated approach to LoMC implementation. The group also made a strong recommendation that LoMC implementation include a public awareness and education campaign with resources to help hospitals achieve their desired levels of care.

Recommendations

- LoMC will be integrated into DPH’s hospital licensure regulation’s perinatal section 105 CMR 130.600.
 - Birth centers should be included as the first level in LMOC in the hospital licensure regulation’s perinatal section.
- DPH, in collaboration, should develop a robust public awareness and education campaign describing the Levels of Maternal Care with an explicit message that the levels correspond to “risk-appropriate” care rather than “quality” of care (i.e., lower levels of care do not deliver lower quality of care than higher levels).

3. Innovating through Telehealth and Remote Blood Pressure Monitoring

Hypertensive disorders of pregnancy complicate approximately 10% of all pregnancies, and include chronic hypertension, gestational hypertension, and preeclampsia/eclampsia among patients with hypertensive disorders in the postpartum period. Complications from hypertensive disorders of pregnancy are a leading cause of SMM and postpartum readmissions; almost half of all people with preeclampsia in pregnancy remain hypertensive at one year postpartum.

More than half of maternal deaths occur during the postpartum period, defined as up to a year after delivery. From 2014 to 2017, 35% of pregnancy-associated deaths with medical causes had documented hypertensive disorders, and Black, non-Hispanic birthing people had the highest percentage of deaths due to a medical cause at 70.6% and the highest percent of documented hypertension on birth and death certificates at 47%.

With funding from the Health Resources and Services Administration (HRSA), DPH is supporting two pilot projects to implement remote blood pressure monitoring at Baystate Medical Center (using Babyscripts), and at Brigham and Women’s Hospital (using a Bluetooth-enabled monitoring device) to improve awareness of obstetric warning signs and address hypertension.

As both pilots enter Year 2 and expand to more hospitals in their network, data are being collected to determine if this has an impact on SMM, readmissions, and patient experience.

Preliminary data from Baystate show that the post-partum follow-up rate was 87.2%, with the majority (65%) doing so through the telehealth program. Enrollment in Baystate's remote monitoring program did not differ significantly between Black, non-Hispanic (68.3%) and white, non-Hispanic (65.3%) patients, nor was it significantly different between Hispanic (70.9%) compared to non-Hispanic (64.2%) patients. Baystate has also been collecting patient experience data as a part of this program with an overwhelming number of patients reporting positive experiences. Patients have shared the following feedback:

- "Monitoring health while at home was convenient while taking care of a newborn."
- "The Care Team was amazing! [The team] saved my life and our baby's life. Thank you!"
- "It was extremely convenient. The hospital I birthed at is an hour away from my home, so it made it easy to give them accurate BP measurements post-partum."
- "I felt safe knowing I had a reliable machine to check my blood pressures and they could be directly communicated to my care team if highly dangerous."
- "Cambiar nada, todo perfecto. Solamente darla las gracias a todos." ["Change nothing, everything is perfect. Just say thank you to everyone."]

Recommendation

- DPH will work with hospitals to implement remote blood pressure monitoring programs across all hospitals in MA. EOHHS will work with public and private interested parties to support health insurance coverage of remote monitoring services.

4. Maternity Medical Homes and/or Group Prenatal Care

Group Prenatal Care (GPC) is an alternative model of care facilitated by a trained health care provider and delivered in a group setting that integrates health assessments, education, skill building, and peer support. GPC provides pregnant people (typically with low-risk pregnancies not requiring individual monitoring) with 15 to 20 hours of prenatal care over the course of their pregnancies, compared to approximately 2 to 4 hours in traditional individual care. Each GPC visit is scheduled for 90 to 120 minutes, compared to 10 to 15 minutes for each individual prenatal care visit.⁴⁵

In one study, Dr. Amutah-Onukagha and colleagues assessed group prenatal care in a high-risk community. Their study showed that participation in the GPC program rendered optimal

⁴⁵ Catling CJ, Medley N, Foureur M, Ryan C, Leap N, Teate A, Homer CSE. Group versus conventional antenatal care for women. *Cochrane Database of Systematic Reviews* 2015, Issue 2. Art. No.: CD007622. DOI: 10.1002/14651858.CD007622.pub3.

results; none of the participants delivered pre-term or low birthweight babies. Additionally, they reported high rates of breastfeeding.⁴⁶

CenteringPregnancy, created by the Centering Healthcare Institute, is the most prominent and widely studied model of GPC; most often, alternative models of GPC are adapted from CenteringPregnancy. Each CenteringPregnancy group includes approximately 8 to 10 individuals at similar gestational ages who participate in their own health care by taking their weight and blood pressure before their short visit with a credentialed medical provider. Afterward, the provider and group facilitators lead a discussion, along with educational activities, to address common health topics and concerns. GPC is designed to include opportunities for social support and to improve the quality of patient education, in addition to the usual physical examinations and risk assessments.

Similarly, medical homes are associated with improved pregnancy outcomes. In a pilot of pregnancy medical homes in Texas, enrollees experienced fewer ED visits, NICU admissions, and cesarean delivery; medical home members were also more like to attend both prenatal and postpartum visits. A similar pilot in Wisconsin yielded increased postpartum visit uptake and a pilot in North Carolina observed a decrease in low birth weight.⁴⁷ Several pregnancy medical home pilots have demonstrated significant cost savings by decreasing hospitalizations and ED visits.^{48,49,50,51,52,53}

Recommendations:

- EOHHS will work with hospitals, providers, insurance carriers and other interested parties to enhance financial resources for Group Prenatal Care (GPC) that reimburses providers at a rate that is higher than traditional prenatal care, to incentivize providers to offer this model of care.

⁴⁶ Amutah, N. Gifuni, J. Navin, L. Gallus, P. (2017). Group Prenatal Care to Improve Birth Outcomes in a High Risk Community: Results of an Evaluation Study. American Public Health Association 2017 Annual Meeting & Expo (Nov 4-Nov 8).

⁴⁷ Zephyrin, L. Seervai, S. Lewis, C. Katon, J.(2021). Community-based models to improve maternal health outcomes and promote health equity. The Commonwealth Fund.
<https://www.commonwealthfund.org/publications/issue-briefs/2021/mar/community-models-improvematernal-outcomes-equity>

⁴⁸Rakover, J. "The Maternity Medical Home: The Chassis for a More Holistic Model of Pregnancy Care" Institute for Healthcare Improvement (blog), March 22, 2016

⁴⁹Texas Health and Human Services, *Pregnancy Medical Home Pilot Program Final Evaluation Report* (THHS, Sept. 2017)

⁵⁰ Wisconsin's Obstetric Medical Home Program Promotes Improved Birth Outcomes (National Academy for State Health Policy, Sept. 2017)

⁵¹ Berrien, K. et al., "Pregnancy Medical Home Care Pathways Improve Quality of Perinatal Care and Birth Outcomes," *North Carolina Medical Journal* 76, no. 4 (Sept. 2015): 263–66.

⁵² Health Care Transformation Task Force. July 2019. Expanding Access to Outcomes-Driven Maternity Care Through Value-Based Payment [https:// hcttf.org/outcomes-driven-maternitycare-vbp/](https://hcttf.org/outcomes-driven-maternitycare-vbp/)

⁵³ Hill, I. et al., *Strong Start for Mothers and Newborns Evaluation: Year 1 Annual Report* (Urban Institute, Oct. 2014)

5. Community Health Centers

Massachusetts has the benefit of many federally qualified health centers (FQHCs) located throughout the state. All FQHCs are required to offer prenatal care on site or by referral; only 24 of the 37 health centers that are members of the state's primary care association, the Mass League of Community Health Centers, offer prenatal care on site. While most FQHCs report that they will prioritize a new pregnant patient that needs a prenatal care appointment, many FQHCs have long waiting lists for primary care appointments.

Recommendations:

- DPH will work to ensure that all FQHCs in Massachusetts provide prenatal and postnatal care on site.

6. Home Visiting Programs

The *Report of the Special Commission on Racial Inequities in Maternal Health* elevated home visiting as a resource that supports population health. Home visiting provides voluntary, strengths-based, flexible, and individualized support to pregnant and parenting families to identify families' strengths and needs, offer parenting education, provide material support and connections to community systems of care, and promote health equity by removing early barriers to health care and services.^{54,55} Evidence suggests that home visiting programs are highly effective in promoting the health of pregnant and newly parenting people and infant development, particularly for families experiencing risk factors for unfavorable outcomes.^{56,57,58} In addition, home visiting can promote maternal and child health, including favorable impacts on birth outcomes, health care access and utilization, immunizations, child hospitalizations and emergency department visits, and maternal mental health.^{59,60,61}

DPH provides a variety of home visiting services throughout the state. While each home visiting model has its own duration of services and specific eligibility requirements, they all promote improved maternal/parental and child health and well-being. Home-based service delivery mitigates the impact of typical barriers to office-based services, including lack of transportation

⁵⁴ Azzi-Lessing L. Home visitation programs: Critical issues and future directions. *Early Childhood Research Quarterly*. 2011;26(4):387-398.

⁵⁵ Goldberg J, Winestone JG, Fauth R, Colón M, Mingo MV. Getting to the warm hand-off: A study of home visitor referral activities. *Matern Child Health J*. 2018;22(1):22-32.

⁵⁶ Avellar SA, Supplee LH. Effectiveness of home visiting in improving child health and reducing child maltreatment. *Pediatrics*. 2013;132(Supplement 2):S90-S99.

⁵⁷ Peacock S, Konrad S, Watson E, Nickel D, Muhajarine N. Effectiveness of home visiting programs on child outcomes: a systematic review. *BMC Public Health*. 2013;13(1):1

⁵⁸ Duffee JH, Mendelsohn AL, Kuo AA, Legano LA, Earls MF. Early childhood home visiting. *Pediatrics*. 2017;140(3):e20172150.

⁵⁹ Filene JH, Kaminski JW, Valle LA, Cachat P. Components associated with home visiting program outcomes: A meta-analysis. *Pediatrics*. 2013;132(Supplement 2):S100-S109.

⁶⁰ Michele Issel L, Forrestal SG, Slaughter J, Wiencrot A, Handler A. A review of prenatal home-visiting effectiveness for improving birth outcomes. *Journal of Obstetric, Gynecologic & Neonatal Nursing*. 2011;40(2):157-165.

⁶¹ Avellar SA, Supplee LH. Effectiveness of home visiting in improving child health and reducing child maltreatment. *Pediatrics*. 2013;132(Supplement 2):S90-S99.

and childcare, and strengthens services by working with families in their natural environments. Home visiting services and supports specifically for birthing people include (but are not limited to):

- Delivery of culturally and linguistically appropriate health information and guidance during pregnancy and after delivery;
- Facilitate connections to health care providers and other services and supports;
- Linkage to treatment facilities for mental health and substance issues; and
- Promotion of infant feeding information and supports including the benefits of breastfeeding, access to lactation supports, referrals to WIC.

The home visiting system in MA includes programs of varying intensity and foci to address emerging needs of pregnant and parenting families. The following provides a high-level overview of the types of home visiting programs available through DPH designed to support the diverse population of birthing people in the state. The National Home Visiting Resource Center estimates that in 2022, there were 340,100 pregnant people and families with children under 6 years old in Massachusetts not yet in kindergarten who could benefit from home visiting⁶². In state fiscal year 2023, approximately 6000 pregnant and parenting families received MDPH supported home visiting services, representing less than 2% of the eligible population. Expanding access to home visiting services that support birthing people throughout pregnancy and well into the postpartum period will ensure that families have the resources and supports to thrive. The following provides a high-level overview of the types of home visiting services that could be expanded.

Currently, DPH manages the implementation of three evidence-based intensive home visiting programs (Parents as Teachers, Healthy Families America, and Healthy Families Massachusetts) that serve 3,543 families per year. These programs are charged with addressing and reporting on multiple maternal health topics, including preterm births, breastfeeding, postpartum visit completion, tobacco use, screening for depression and intimate partner violence and referrals to services.

The evidence-informed Early Intervention Parenting Partnerships (EIPP) home visiting program serves expectant parents and families with infants who experience challenges to their health and well-being due to socioeconomic barriers, structural racism, inadequate prenatal care, and emotional and behavioral health challenges. EIPP provides individualized support to pregnant and postpartum parents and families aimed at improving access to and utilization of health care services; improving nutrition, physical activity, and breastmilk feeding initiation and duration rates; and ensuring a safe and healthy social, emotional, and physical environment. The multidisciplinary home visiting team includes a Community Health Worker (CHW), a licensed mental health clinician or social worker, and a nurse. A recent evaluation of EIPP demonstrated that EIPP participation was associated with 50% increased odds of receiving a postpartum visit

⁶² *Massachusetts 2023*. (n.d.). National Home Visiting Resource Center. Retrieved October 23, 2023, from https://nhvrc.org/state_profile/massachusetts-2023/

between 21 and 60 days postpartum and 35% greater odds of receiving a postpartum visit between 61-90 days postpartum relative to a matched comparison group.

Universal Postpartum Home Visiting can reach a broader range of families and reduce the stigma associated with participation in eligibility-based programs, thereby identifying needs that might otherwise go undetected. Welcome Family is a universal, one-time home visit by a nurse for anyone residing in or delivering in the following six communities: Fall River, Lowell, Holyoke, Springfield, New Bedford, and Boston. During a Welcome Family visit, the nurse identifies and responds to family needs by screening for physical and emotional health and well-being (e.g., maternal blood pressure, depression, substance use, domestic violence); providing counseling, education, and support, facilitating connections to clinical services (e.g., postpartum visits); and making referrals to community resources (e.g., WIC/ SNAP, Early Intervention). As a universal program, Welcome Family serves an entry point into perinatal and early childhood systems of care for families with newborns. In a recent evaluation, Welcome Family participants were more likely than a matched comparison group to enroll in evidence-based home visiting programs and receive Early Intervention services, indicating that universal, short-term home visiting may be an effective method of identifying, engaging, and enrolling families in more intensive early childhood services.⁶³ Currently, Welcome Family is able to serve 2,412 families per year, or 20% of eligible births in the communities they serve.

Recommendation:

- EOHHS will work with providers, insurance carriers, and other interested parties to expand the reach of universal postpartum home visiting.⁶⁴

7. Support to Local and Regional Health

Local public health in MA provides a variety of public health services across the state's 351 municipalities. As of October 2023, Massachusetts established Performance Standards for local public health, which includes relevant, established statutes and regulations, and workforce standards.⁶⁵ No established statutes and regulations require local public health to engage in maternal and child health work. Due to this, maternal and child health is not currently included in MA local public health Performance Standards and work that may currently occur at the local level is rare and not sustainably funded.

The Office of Local and Regional Health at DPH works closely with the Bureau of Family Health and Nutrition and local public health and will include maternal child health in the next version of the local public health Performance Standards. This is aligned with moving local public health to implementing the Foundational Public Health Services, as required under MGL c. 111, s. 27D. Adding maternal child health to the Performance Standards will place maternal child health as

⁶³ Kotake C, Fauth RC, Stetler K, Goldberg JL, Silva CF, Manning SE. Improving connections to early childhood systems of care via a universal home visiting program in Massachusetts. *Children and Youth Services Review* 2023; <https://doi.org/10.1016/j.chilyouth.2023.106995>.

⁶⁴ H985/S.672, An act increasing access to maternal postpartum home visiting services, would require insurance carriers to cover home visiting services.

⁶⁵ <https://www.mass.gov/resource/performance-standards-for-local-public-health>.

one of the core functions of local public health. To do this, DPH will need to work with local public health to identify capacity and workforce needs, and collaborate with organizations already engaged in this work. DPH will utilize the Public Health Excellence for Shared Services infrastructure to implement maternal child health work. This infrastructure brings together 321 municipalities (91% of municipalities) into 51 shared services arrangements, allowing for a more efficient and equitable structure to advance maternal child health programs and services.

Recommendations:

- DPH will work with local public health to include maternal child health in the next version of the local public health Performance Standards

Improving and Augmenting the Workforce

1. Doula Services

A doula is a trained professional who provides continuous emotional and physical support to families before, during, and after birth based on evidence-based practices and with cultural humility. Doulas improve maternal and infant health outcomes, including a 39% reduction in cesarean deliveries, reduced use of pain medications, higher Apgar scores for newborns, increased breastfeeding rates, and better postpartum connections to resources.⁶⁶ Community-based doulas may help mitigate some of the maternal health inequities birthing people of color, especially Black birthing people, face.

Currently in Massachusetts, the doula workforce requires investment and policy changes to achieve these improved birth and postpartum outcomes. There are many barriers to working as a doula, and earning a living wage in Massachusetts, such as the reliance on private pay models for doula services, the lack of doula integration into hospital birth settings, and the lack of free-standing birth centers in Massachusetts limiting choices for doulas looking to serve birthing people. As such the doula workforce in Massachusetts is largely white, which undermines the major goal of an expanded doula workforce – ensuring culturally congruent care for all birthing people.

There are several efforts underway in Massachusetts to address these barriers. MassHealth is developing a doula coverage benefit for MassHealth members. This benefit will be rolled out in late 2023 and will allow doulas who serve MassHealth members to be reimbursed for their work. The goal is that by removing out-of-pocket costs, more Black and Brown birthing people and low-income people will be able to access doula services.

MassHealth covers only 40% of births in Massachusetts, leaving the remaining 60% of births without access to coverage for doula services. Insurance providers largely turn to the state to validate competencies and trainings completed by health care providers. As more payers begin exploring coverage of doula services, a certification pathway managed by DPH would allow

⁶⁶ Laurie Zephyrin et al., Community-Based Models to Improve Maternal Health Outcomes and Promote Health Equity (Commonwealth Fund, Mar. 2021). <https://doi.org/10.26099/6s6k-5330>

private payers to identify a group of doulas who meet DPH's core competency standards and for doulas to have one centralized system to navigate instead of multiple payor-specific systems.

The Massachusetts Association of Health Plans written testimony submitted to the Joint Committee on Healthcare Financing provided that "the development of a uniform certification process for doulas providing services in the Commonwealth could facilitate health plan contracting and reimbursement of doulas, as health plans traditionally contract with and credential providers licensed and certified by the state." It is within DPH's role to establish a certification program that will support insurance coverage and will likely expand the doula workforce. Moreover, a voluntary certification program would enable all birthing people to select doulas who have been vetted by a trusted state agency.

Massachusetts is currently engaging doulas and other stakeholders to build consensus around the certification model that best fits the doula workforce and developing a model for doula-healthcare facility partnership through the Massachusetts Doula Initiative. The Doula Initiative seeks to align efforts, identify strategic priorities, and promote collaboration to support and expand the doula profession across the Commonwealth. In addition, the Doula Initiative is working alongside doulas to develop a model for a statewide doula workforce that includes subsidized professional development, technical assistance, recruitment and retention efforts, healthcare system accountability and expansion of community-based doula programs. State funding is essential to expand the doula workforce and ensure access for all birthing people to doula care, especially birthing people of color.

Recommendations:

- DPH will develop a pathway to doula certification in collaboration with the doula community

2. Midwifery Workforce Expansion and Improved Integration

There are over 400 Certified Nurse Midwives (CNMs) practicing in 30 locations in the Commonwealth. CNMs provide full spectrum reproductive and sexual health care in hospitals, federally qualified health centers, Planned Parenthood sites, and birth centers and participate in home births. CNMs are qualified to provide prenatal care, attend births, postpartum care, gynecologic care across the lifespan, family planning, STI screening and treatment, newborn care. In addition, many CNMs have further specializations in abortion care, gender affirming care, medication for opioid use disorder (MOUD), and perinatal mental health.

Certified Professional Midwives (CPMs) are midwives that primarily provide maternity care for low-risk pregnancies and the majority of home births in the country. They are accredited by a national organization (National Commission for Certifying Agencies) and are eligible for licensure in 38 states, though not Massachusetts. Demand for out-of-hospital birth options has increased nationally and in Massachusetts, with the highest increases among Black birthing people.

In 2022, there were 48 Certified Professional Midwives (CPM) in Massachusetts. CPMs in MA provide prenatal, labor and delivery, and postpartum care. A 2021 Health Policy Commission report outlines the difference between CNMs and CPMs. As outlined in this report and the Report of the Special Commission on Racial Inequities in Maternal Health, Massachusetts underutilizes CNMs, in spite of better outcomes and cost savings.

MA is the only state in the Northeast to not require reimbursement equity – that is, require that payers pay midwives the same rate as physicians for the same service⁶⁷ – and it means midwifery services are consistently undervalued. Equitable reimbursement impacts access when health systems refuse to open or expand midwife practices or preclude midwives from providing gynecologic and family planning care. It makes midwifery-led services financially unstable and vulnerable to closure; this was highlighted during maternal services closures at Holyoke Hospital, the North Shore Birth Center, and the Cambridge Birth Center.

At the listening session in Springfield on October 23, 2023 a registered CNM shared the following:

“I was born in Springfield at Baystate, raised and educated including my midwifery degree. I have the honor to give back to Springfield and the surrounding community. We are in need of midwives and midwives of color. We want people to see people who are of racial affinity and culture like us. We need enough funding for education, and not just for a nursing degree, but for these women to become providers. And enough funding for the cost of living or support during higher education—most students work a full-time job while going to school. For better outcomes we work very well with our physician collaboratively. Doulas are also proven to help improve outcomes for our women.”

Recommendations:

- MassHealth will explore opportunities to reimburse midwives equitably as physicians for the same service; private insurers would be encouraged to follow
- As noted above, DPH will update birth center regulations to address concerns about physician supervision and staffing requirements that limit scope of practice for CNMs
- EOHHS and DPH will continue to explore ways to support CPMs and develop pathways to expand the settings in which they can be part of pregnancy and birthing care and coverage for that care in Massachusetts

Improving Access to Data

1. Maternal Mortality and Review Committee (MMMRC)

Since 1997, DPH has convened the multidisciplinary Maternal Mortality and Morbidity Review Committee (MMMRC) to review pregnancy-associated deaths, study the incidence of

⁶⁷ <https://nashp.org/midwife-medicare-reimbursement-policies-by-state/>

pregnancy complications, and make recommendations to improve maternal outcomes and eliminate preventable maternal death, protected under M.G.L. c. 111, section 24A and 24B. Understanding the causes of these deaths provides insight into the factors that contributed to both maternal morbidity and mortality, which can inform strategies to reduce the incidence of these tragic events.

This year, a statute was enacted that established an authorized MMMRC that assures the confidentiality of all records and proceedings and allocated \$350,000 in funding (FY24) for its implementation to ensure timely review of deaths and make recommendations for changes in law, policy, and practice that will prevent maternal mortality and severe maternal morbidity. The \$350,000 supports data collection, analysis, convening of the committee, compiling the report and disseminating the report.⁶⁸

The current statute does not contain specific language to authorize the MMMRC to access critical data to conduct a thorough case review (e.g., to access records that include prenatal care records from private practices, Community Health Centers, fire related events, police related events, primary care, Prescription Monitoring Program, All Payer Claims Database, EMS data, COVID-19 cases and vaccination, and mental health care). In addition, CDC recommends collecting oral and written statements from key stakeholders to collect information that provides greater context around the events leading to a maternal death.

Recommendations

- DPH supports amending the MMMRC statute, G.L. c. 111, § 24O, to statutorily require any public and private agency or individual to provide any relevant information at the request of the chair of the MMMRC.

2. Fetal Death Surveillance and Review

Research has shown that SMM is five times more common among people whose pregnancies ended in a stillbirth than those who had a live birth.⁶⁹ In addition, the loss of a baby in utero (i.e., a stillbirth) or after delivery (i.e., neonatal or infant death) can have devastating impacts on maternal mental health; studies have found that following a perinatal loss, mothers have significantly higher rates of psychological distress,⁷⁰ lower self-esteem⁷¹ and significantly elevated levels of anxiety and depression.⁷²

⁶⁸ <https://budget.digital.mass.gov/summary/fy24/outside-section/section-43-maternal-mortality-and-morbidity-review-committee/>

⁶⁹ Wall-Wieler E, Carmichael SL, Gibbs RS, Lyell DJ, Girsan AI, El-Sayed YY, Butwick AJ. Severe maternal morbidity among stillbirth and live birth deliveries in California. *Obstetrics and gynecology*. 2019 Aug;134(2):310.

⁷⁰ Boyle FM, Vance JC, Najman JM, Thearle MJ. The mental health impact of stillbirth, neonatal death or SIDS: prevalence and patterns of distress among mothers. *Social science & medicine*. 1996 Oct 1;43(8):1273-82.

⁷¹ Wonch Hill P, Cacciatore J, Shreffler KM, Pritchard KM. The loss of self: The effect of miscarriage, stillbirth, and child death on maternal self-esteem. *Death Studies*. 2017 Apr 21;41(4):226-35.

⁷² Herbert D, Young K, Pietrusińska M, MacBeth A. The mental health impact of perinatal loss: A systematic review and meta-analysis. *Journal of Affective Disorders*. 2022 Jan 15;297:118-29.

Review of Maternal Health Services

There is a significant racial and ethnic disparity, with the rate of stillbirth being more than twice as likely among Black, non-Hispanic birthing people and Native Hawaiian/Other Pacific Islander, non-Hispanic birthing people.

To prevent fetal and infant losses and the devastating impact on families, MA needs to understand the causes and factors that led to the loss. Similar to a MMMRC, a Fetal and Infant Mortality Review (FIMR) Committee reviews individual cases to make recommendations and implement actions that improve systems of care, services, and resources for women, infants, and families. MA does not have a FIMR Committee, nor does it have an active, population-based surveillance system for stillbirths, meaning that in-depth data are not available to feed into a FIMR Committee.

While Child Fatality Review Teams exist across MA, for years members of both Local and State Child Fatality Review Teams have expressed concerns that many infant deaths are not adequately reviewed due to the lack of expertise readily available to the teams or the belief that many such deaths are not preventable. Recently, the State Child Fatality Review Team recommended that MA establish a FIMR to provide the appropriate expertise to review fetal and infant deaths in order to improve maternal and infant health.

In 2023, DPH's Bureau of Family Health and Nutrition (BFHN) implemented the Count the Kick campaign, which aims to prevent stillbirths by educating expecting parents to track their baby's fetal movements. Through Count the Kicks, BFHN aims to reach over 25% of the birthing population in the state. Count the Kicks is an evidence-based way to promote maternal and infant health: in Iowa, through the support of Count the Kicks, the stillbirth rate dropped nearly 32% in 10 years and stillbirth rates for Black families dropped 39% in the first five years of the campaign.

In addition to prevention efforts, families who have experienced a fetal or infant loss need appropriate support to prevent pathological grieving or long-term psychosocial morbidity. One such support that can be provided is the use of cuddle cots. A cuddle cot is a cooling device embedded in a cradle that enables families to preserve their baby who has died and allows them more time to grieve. Cuddle cots can be an integral part of bereavement services but may not be available due to their cost and accessibility.

Recommendations

- DPH will pursue legal authority to conduct active, population-based surveillance for stillbirths, which would provide data to a FIMR.
- DPH will support an annual Count the Kicks campaign and ensure providers have access to materials.

3. MA Parenthood and Fatherhood Experiences Survey

Research has shown that maternal health is highly influenced by paternal health and paternal involvement and by same-sex partner health and wellbeing.^{73,74} However, information on fathers' and same-sex partners' experiences during the perinatal period is largely absent in Massachusetts.⁷⁵ Just as for mothers, the transition to parenthood is a time of increased physical and mental health risk including an increase in depression and BMI.⁷⁶

Massachusetts currently implements the CDC PRAMS survey for mothers and is currently using CDC funding to pilot the MA Parenthood and Fatherhood Experiences Survey, which will establish a new surveillance system to better understand pregnancy and birth experiences and behaviors among new fathers and same-sex parents. The new survey asks a set of questions on attitudes towards becoming a parent as well as if respondents felt they had a place to go for information specific to parenthood and on the sources of information they would seek (e.g., family, friends, formal peer support groups, social media, health care provider, etc.) as well as what type of information they would like to have (e.g., expectations throughout the perinatal period, advice on parenting, help supporting themselves, partners, or children, or substance use support).

Further, the MA Partner Parenthood Experiences survey includes an extensive section on experiences of racial discrimination and intersectional discrimination that will allow for the inclusion of equity in the analysis as well as design of the programs. Questions ask about the health status, social determinants of health, mental health, and racism as well as behaviors, and experiences of new fathers and same-sex parents before, during, and after the birth of their child.

Recommendations:

- DPH will utilize annual reporting and contextualizing of data from the Parenthood and Fatherhood Experiences Survey to support engagement and partnership with families, fathers, other second parents, and youth to improve maternal and child health services.

Behavioral Health

1. Substance Addiction Services

Across the United States, overdose is a leading cause of mortality among pregnant people and substance use disorders during pregnancy (particularly use of alcohol, opioids, amphetamines,

⁷³ Hammond C. Exploring same sex couples' experiences of maternity care. *British Journal of Midwifery*. 07/02/2014 2014;22(7)

⁷⁴ Kotelchuck M. The Impact of Father's Health on Reproductive and Infant Health and Development. In: Grau Grau M, las Heras Maestro M, Riley Bowles H, eds. *Engaged Fatherhood for Men, Families and Gender Equality: Healthcare, Social Policy, and Work Perspectives*. Springer International Publishing; 2022:31-61.

⁷⁵ Bond MJ. The missing link in MCH: paternal involvement in pregnancy outcomes. *Am J Mens Health*. Dec 2010;4(4):285-6. doi:10.1177/1557988310384842

⁷⁶ Kotelchuck M. The Impact of Father's Health on Reproductive and Infant Health and Development. In: Grau Grau M, las Heras Maestro M, Riley Bowles H, eds. *Engaged Fatherhood for Men, Families and Gender Equality: Healthcare, Social Policy, and Work Perspectives*. Springer International Publishing; 2022:31-61.

and cocaine) may contribute to severe maternal morbidity.^{77,78} As with other risk factors, including hypertension and diabetes, this highlights the need to identify and reduce the harm of substance use through intervention, recovery services, and evidence-based treatment.

Stigma associated with substance use disorders and rigid policies can cause pregnant, postpartum and parenting individuals to have difficulty accessing services, and cause those with a substance use disorder to be more likely to isolate, skip treatment appointments, or avoid treatment altogether.⁷⁹ Both nationally and in Massachusetts, pregnant individuals with a substance use disorder (SUD) are at heightened risk of being screened for substance use, referred to child welfare services, and having their parental rights taken away, with disproportionate risk falling on individuals of color.^{80,81} When separated from their children, the risk of fatal overdose in parents increases.⁸² In Massachusetts, over 50% of postpartum individuals with SUD are involved in the Department of Children and Families (DCF) at the time of enrollment in Bureau of Substance Addiction Services (BSAS) care - four times more than pregnant enrollees. Regulatory and statutory requirements that result in providers reporting to DCF and the fear of child separation among pregnant individuals using substances or taking medications for addiction treatment negatively impacts willingness to initiate or maintain behavioral health treatment and delays entry to prenatal care.

High-quality, accessible, and timely recovery-oriented clinical and public health services can mitigate negative impacts of substance use on developmental, health, and social outcomes for family members. Early identification of substance use and mental health conditions is another critical component in ensuring individuals receive the support and necessary treatments for healthy pregnancies. Providing enhanced support services (including care coordination services, doulas, and case management) for pregnant persons with behavioral health conditions during the perinatal and postpartum period can also help improve health outcomes and birth experiences and promote health equity.

⁷⁷ Gemmill, Alison, Mathew V. Kiang, and Monica J. Alexander. "Trends in pregnancy-associated mortality involving opioids in the United States, 2007–2016." *American Journal of Obstetrics & Gynecology* 220.1 (2019): 115-116.

⁷⁸ Jarlenski, Marian, et al. "Substance use disorders and risk of severe maternal morbidity in the United States." *Drug and alcohol dependence* 216 (2020): 108236.

⁷⁹ Stone, Rebecca. "Pregnant women and substance use: fear, stigma, and barriers to care." *Health & Justice* 3.1 (2015): 1-15.

⁸⁰ Identification of Substance-Exposed Newborns and Neonatal Abstinence Syndrome Using ICD-10-CM — 15 Hospitals, Massachusetts, 2017

⁸¹ Lloyd Sieger MH. [Reunification for young children of color with substance removals: an intersectional analysis of longitudinal national data](#). *Child Abuse Negl.* 2020; White House Office of National Drug Control Policy, [Substance Use Disorder in Pregnancy: Improving Outcomes for Families](#) (2021).

⁸² Thumath, Meaghan, et al. "Overdose among mothers: The association between child removal and unintentional drug overdose in a longitudinal cohort of marginalised women in Canada." *International Journal of Drug Policy* 91 (2021): 102977.

The BSAS service system provides substance use services for perinatal people across the treatment continuum. In the past three years, four programs specifically serving women, including pregnancy enhanced and family residential programs, closed due to staffing constraints and low client census. Compared to 2020, the number of pregnant people accessing BSAS services in 2023 decreased from 857 to 510 individuals (40% reduction). Similarly, the number of postpartum people accessing BSAS services also decreased from 686 to 478 individuals (30% reduction), respectively. Providers continue to report obstacles to offering comprehensive and sustainable early identification, enhanced support services, and other treatment services to pregnant and parenting individuals due to insufficient/inaccessible payment mechanisms, stigma, and ongoing workforce challenges.

There have been more than 1800 admissions since 2018 of pregnant and parenting individuals with substance use disorders into two programs funded with federal dollars from the State Opioid Response (SOR) grant. Access to services vary by geography due to funding constraints.

- BSAS's *Moms Do Care* medical and behavioral health teams co-located in 11 medical sites. These teams provide trauma-informed primary and obstetrical health care, SUD treatment and recovery services, parenting support, and case management for persons who are pregnant or parenting a child 5 or under.
- The Bureau of Family Health and Nutrition's *FIRST (Families in Recovery Support) Steps Together* 7-site home visiting program that provides recovery and parenting supports to families affected by parental substance use, who are either expecting a child or have a child aged five or under. Services include peer recovery and parenting support, clinical services (for parents and the dyad), and care coordination. Ninety five percent of participants have current or past DCF involvement and more than 50% do not have custody of their children. Program-specific challenges include waitlists due to insufficient capacity, 2-year grant-funded cycles, and large catchment areas.

Recommendations

- DPH will expand and promote existing training to provide support to frontline health care providers on screening, assessment, treatment, and referral for maternal depression and related behavioral disorders and the importance of maintaining the parent-child dyad.
- DPH will continue to work with MassHealth and other payors to promote increased uptake of evidence-based programs like *Moms Do Care* and *First Steps Together* for pregnant members with SUD; services to be covered include peer support, care coordination services, doulas, and case management.
- EOHHS, in collaboration with DPH and DCF, will update guidance for healthcare providers to share best practices and document the establishment of a dual reporting system whereby substance exposed newborns with no indication of neglect or abuse can be identified for support but not investigated for neglect or abuse.
- Massachusetts has been selected to receive In-Depth Technical Assistance (IDTA) from the National Center on Substance Abuse and Child Welfare (NCSACW) to support the implementation of a statewide strategy supporting families impacted by substance use.

Through this project, MA will receive guidance to support collaborative practice between DCF and DPH, specifically on development and implementation of *Plans of Safe Care* and system improvements to move toward a public health approach.

2. Mental Health Services

About one in eight American birthing parents experiences depressive symptoms after delivery. Untreated postpartum depression (PPD) has negative consequences for both children and birthing parents. In addition, research shows that there is a constellation of mental health conditions that can manifest during pregnancy and the postpartum period in addition to depression, including anxiety (12% - 20%), obsessive compulsive disorder (4% - 11%) and post-traumatic stress disorder (1% -2%).

To promote the health and well-being of birthing parents, children, and family, on August 19, 2010, Chapter 313 of the Acts of 2010, *An Act Relative to Postpartum Depression*, was signed into law in Massachusetts. Pursuant to this law, a PPD Special Legislative Commission was established, and the PPD Regulations (105 CMR 271.000) were promulgated in December 2014 requiring data reporting by both carriers and providers for routine clinical appointments in which medical services are provided to a person who has given birth within the previous six months.

To further improve PPD screening data reporting and to investigate the status of perinatal mental health and its impacts on birthing parents and their children, DPH adopted depressive symptom questions in the Pregnancy Risk Assessment Monitoring System (PRAMS) in FY11 and, starting in FY14, funded PPD screening at community health centers and home visiting programs serving pregnant and parenting families.

Based on 2021 MA PRAMS data (N=1,321 survey participants), an estimated 10.4% of birthing parents in Massachusetts experienced Postpartum Depression (PPD) symptoms always or often, 25.6% experienced PPD symptoms sometimes, and 64.0% experienced PPD symptoms rarely or never. PRAMS data from 2021 also suggest that some Massachusetts birthing parents are more likely to report experiencing PPD symptoms than others. Compared to white, non-Hispanic birthing parents (8.6%), Black, non-Hispanic birthing parents (15.0%) and Asian, non-Hispanic birthing parents (15.7%) were more likely to experience PPD symptoms always or often, although these differences were not statistically significant. Statistically higher prevalence of PPD symptoms was observed among birthing parents with a high school education (16.4%) compared to birthing parents with a college education (7.5%). Birthing parents with Medicaid had a significantly higher prevalence of reporting experiencing PPD symptoms compared to parents with private insurance (14.3% vs 7.4%). Those who self-identified as having a disability reported significantly higher PPD symptoms compared to those who reported having no disability (34.4% vs 7.1%). Although higher prevalence of PPD symptoms was observed among those who are not married (14.7%) compared to birthing parents who are married (8.4%), and those whose nativity was non-US-born reported higher PPD symptoms compared to birthing parents born in the US (12.0% vs 9.6%), these differences were not statistically significant.

PPD Screening Programs: Since FY14, the MA state budget has included funding to support universal PPD Screening programs in select communities. This funding allowed Community Health Centers in these communities to employ part-time Community Health Workers (CHWs) to assist with PPD screening and referral activities.

Home Visiting Programs: Depression screening is conducted with all program participants in home visiting programs and data are analyzed on a quarterly basis. Screens are conducted within three months of enrollment and are updated in compliance with model fidelity respective to each evidence-based home visiting program.

Psychiatric Consultation Program: The Massachusetts Child Psychiatry Access Program for Moms (MCPAP for Moms) is a statewide service available to any obstetric, pediatric, primary care, psychiatric, and Medication for Addiction Treatment (MAT) prescribing providers with questions about addressing the mental health and substance use concerns of pregnant or postpartum women. Increased workforce development for behavioral health providers, therapists, and prescribers – with a focus on engagement of underrepresented and historically marginalized identities with the goal of providing culturally and racially concordant and responsive care – is needed. Increased workforce development around trauma responsive therapeutic expertise (beyond trauma-informed universal training) and enhanced access to inpatient psychiatric services for pregnant people are needed. Massachusetts currently has no inpatient services for a birthing person-infant dyad to stay together while the birthing person receives care.

Recommendations:

- EOHHS, including MassHealth, DMH, and DPH, will work together to explore the establishment and ongoing implementation of Outpatient Intensive or Partial Hospitalization Programs and foster development of inpatient behavioral health programs where infants are able to board with mom while they are treated.

Reproductive Health

1. Access to Contraception

Access to contraception after the conclusion of a pregnancy is an important intervention to prevent pregnancy-associated mortality and SMM related to short interpregnancy intervals⁸³ and poor maternal health prior to conception.⁸⁴ Unfortunately, MA continues to have racial and ethnic inequities in use of contraception after pregnancy and use of highly effective methods of contraception. MA PRAMS 2021 data show that Asian, non-Hispanic and Black, non-Hispanic postpartum people were least likely to use contraception (38.8% and 32.7%,

⁸³ Wise J. Short interpregnancy interval is associated with increased risks to the mother and fetus BMJ 2018; 363 :k4536 doi:10.1136/bmj.k4536

⁸⁴ Johnson K, et al. Recommendations to Improve Preconception Health and Health Care --- United States. MMWR April 21, 2006 / 55(RR06);1-23. <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5506a1.htm>

respectively). No contraception includes postpartum people who report not having sex and those who are trying to conceive again.

MA PRAMS 2021 data also show higher utilization of long-acting reversible contraception (LARC), which includes intrauterine devices and hormonal implants, among Hispanic postpartum people (31.0%) compared with White, non-Hispanic, Black non-Hispanic and Asian non-Hispanic postpartum people (16.4%, 19.8% and 12.8% respectively). LARC methods are the most effective reversible contraception, with annual failure rates <1%.⁸⁵ However, LARC methods are only one of several effective contraceptive methods and may not be desired by all people seeking to contracept. While providers are encouraged to counsel all individuals about their postpartum contraceptive options, they should also take care to ensure that counseling is patient-centered and non-coercive.⁸⁶

Recommendations

- DPH will improve access to provider training on providing patient-centered contraceptive counseling and to a wide range of contraceptive methods at all post-partum care providers.
- EOHHS will ensure that recent changes to MassHealth reimbursement allowing providers to bill for a long-acting reversible contraception (LARC) device separately from labor and delivery charges are well-publicized and accessible to hospital billers and will encourage private insurers to adopt similar payment policies.

2. Access to Abortion Services

Access to abortion is an important element of services for pregnant people and, in cases where an abortion is desired, helps to protect the mental and physical health of the person seeking an abortion.^{87,88} While Massachusetts has taken considerable steps to protect access to abortion in light of *Dobbs vs. Jackson Women's Health Organization* and other efforts to limit abortion access, gaps in access remain.

Access to abortion is limited in rural areas, including western Massachusetts and the Cape and Islands. Not all abortion providers offer abortion services at more advanced gestational ages, and Massachusetts requires parental consent or judicial bypass for individuals under age 16, further limiting access for young people.

⁸⁵ Effectiveness of Long-Acting Reversible Contraception. B. Winner, J. F. Peipert, Q. Zhao, C. Buckel, T. Madden, J. E. Allsworth, et al. *New England Journal of Medicine* 2012 Vol. 366 Issue 21 Pages 1998-2007 DOI: 10.1056/NEJMoa1110855 <https://doi.org/10.1056/NEJMoa1110855>

⁸⁶ Boydell V, Smith RD; Global LARC Collaborative (GLC). Hidden in plain sight: A systematic review of coercion and Long-Acting Reversible Contraceptive methods (LARC). *PLOS Glob Public Health*. 2023 Aug 18;3(8):e0002131. doi: 10.1371/journal.pgph.0002131. PMID: 37594941; PMCID: PMC10437997.

⁸⁷ Gerdts C, Dobkin L, Foster DG, Schwarz EB. Side effects, physical health consequences, and mortality associated with abortion and birth after an unwanted pregnancy. November 2015. *Women's Health Issues*, 26(1):55-59.

⁸⁸ Ralph LJ, Schwarz EB, Grossman D, Foster DG. Self-reported physical health of women who did and did not terminate pregnancy after seeking abortion services: A cohort study. August 2019. *Annals of Internal Medicine*, 171(4):238-247.

Massachusetts also has many anti-abortion centers, often known as “crisis pregnancy centers,” which attempt to convince pregnant people not to access abortion services by providing fear-based and inaccurate information about abortion services. DPH has significant concerns with the information and services that these centers provide, and will continue to issue public service messages warning the public to avoid these centers. DPH will also continue to educate the public about medically appropriate services that licensed sexual and reproductive health service locations provide.

Similarly, the Attorney General’s Office has issued warnings that emphasize the lack of complete services and misinformation crisis pregnancy centers provide. DPH encourages individuals to file complaints with both DPH and the AGO for further investigation and potential action against a facility and/or an individual practitioner’s license.

Recommendations

- EOHHS will develop recommendations aimed at increasing access to abortion services for patients under 18 years of age.
- DPH will provide support and incentives to encourage additional providers to offer abortion services, especially in rural areas and other areas with few abortion providers.

Additional Resources and Support

1. Paid Family and Medical Leave (PFML)

Massachusetts’s PFML is overseen by the Department of Family and Medical Leave and provides temporary income replacement (paid leave) to eligible workers who are welcoming a new child into their family, managing their own serious health condition, caring for a family member with a serious health condition, and caring for a family member who is on active duty. Specific to maternal, child, and family health, PFML provides paid leave to recover from birth, bond with a new child in the family, or care for a loved one with a serious health condition. Moreover, eligible parents or legal guardians of any gender identity may take paid leave, including foster and adoptive parents.

Additionally, it is important to acknowledge that pregnant and birthing person may be eligible not only for family leave but also for medical leave. For example, a birthing person could be eligible to take medical leave during or after pregnancy if they are unable to work due to a serious health condition, such as pre-eclampsia, miscarriage, perinatal depression, or stillbirth. They could also be eligible for medical leave to recover from childbirth, as approved by their physician. A typical duration of medical leave for recovery from childbirth is 6-8 weeks, and 12 weeks of family leave to bond with their new child. Furthermore, most Massachusetts employees are eligible for up to 26 weeks of combined family and medical leave per benefit year.

Recommendations:

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- DPH will promote awareness of and access to Paid Family and Medical Leave in partnership with the Department of Family and Medical Leave through ongoing public awareness campaigns.

Summary

Despite enjoying better health outcomes when compared to the nation at large, MA faces multiple challenges with respect to improving maternal health. In particular, there are alarming maternal health disparities among people of color across most maternal health indicators.

MA is experiencing the consequences of fragmented systems of care, including healthcare facilities closure in rural parts of the state and the impact of the opioid epidemic on maternal health outcomes. Additionally, the state faces workforce challenges; a sustainable and diverse workforce pipeline and career pathways that result in a highly-skilled, culturally responsive, and diverse workforce that is justly compensated for their training and experience and effectively integrated across the state's perinatal care systems will be required for high quality, accessible maternal health.

Geographic disparities have also been identified across four major maternal health indicators, including the location of births, adverse perinatal outcomes, preterm births and low birth weights, and access to prenatal care and substance use disorder treatment. For those communities with increased risk for adverse maternal health outcomes, there is a higher incidence of poverty and systemic and structural barriers that disproportionately impact residents of color. Additionally, rurality is an important factor; birthing people who live in MA's rural areas are more likely to have less-than-adequate prenatal care (22.1%) than birthing people in urban areas (20.2%).⁸⁹

While there are no maternity service deserts in the state, as defined by March of Dimes, compared to other states, MA has fallen behind in the number of birth centers available. Evidence has shown that birth centers reduce the number of interventions used during labor and delivery while improving patient experience and lowering costs.

MA can – and must – do better. Through this comprehensive review of maternal health in the state, DPH has identified 25 action-oriented recommendations to recommend to the Governor. If implemented, these recommendations have the potential to address the known and unknown barriers that result in lack of access and utilization of high-quality maternal health services.

DPH is committed to work with EOHHS and the entire Healey-Driscoll Administration to improve care, address access, and sustain improvements in maternal health.

⁸⁹ Registry of Vital Records and Statistics. Massachusetts Births 2020 [Internet]. Massachusetts Department of Public Health; Available from: <https://www.mass.gov/doc/2020-birth-report/download>

Tables and Figures

Table 1. Massachusetts residents by race and ethnicity, 2022.

Race & Ethnicity	Residents
Total residents	6,981,974
White	79.4%
Black	9.5%
Asian	7.7%
American Indian/Alaska Native	0.5%
Other Pacific Islander	0.1%
Two or More Races	2.7%
Hispanic or Latino	13.1%

Source: U.S. Census Bureau quick facts: Massachusetts [Internet]. United States Census Bureau; 2022 Available from: <https://www.census.gov/quickfacts/fact/table/MA/PST045222>

Table 2. Prevalence of critical maternal child health outcomes in Massachusetts vs United States, 2020.

Substance use	2020 MA PRAMS (%)	2020 National PRAMS (%)
Any cigarette smoking		
During the 3 months before pregnancy	9.1	1.0
During the last 3 months of pregnancy	3.9	6.5
Postpartum	6.4	8.8
Any e-cigarette use		
During the 3 months before pregnancy	3.9	5.2
During the last 3 months of pregnancy	1.0	1.5
Hookah use in the last 2 years	5.5	4.4
Heavy drinking (≥8 drinks a week) during the 3 months before pregnancy	3.7	3.0
Depression		
Self-reported depression in the 3 months before pregnancy	12.6	15.5
Self-reported depression during pregnancy	13.4	15.2
Self-reported postpartum depressive symptoms	10.0	13.4
Health Care Utilization		
Health care visit in the 12 months before pregnancy	79.6	66.0
Began prenatal care in the 1 st trimester	89.7	87.1

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Had a flu shot in the 12 months before delivery	79.7	60.9
Had maternal postpartum checkup	90.3	88.1
Family Planning		
Mistimed	13.5	17.7
Unwanted pregnancy	3.5	6.3
Unsure whether wanted pregnancy	12.7	15.5
Intended pregnancy	70.3	60.4

Table 3. Birth Hospitals and Licensed Beds by EOHHS Regions

EOHHS Region	Number of Birth Hospitals	Maternal Beds	2020 Census	Maternal Beds per 10,000
Region 1: Western	6	123	834,448	1.47
Region 2: Central	4	118	922,563	1.28
Region 3: Northeastern	7	161	1,404,454	1.46
Region 4: Metro Boston	13	432	2,494,826	1.73
Region 5: Southeast/Cape*	9	133	1,373,626	0.97
MA State-wide	39	967	7,029,917	1.38

Data source: Facility Master File, October 2023

Note: region 5 does not include Signature Healthcare Brockton Hospital, though they plan to reopen maternity services after repairs are completed in 2024.

Figure 1. Executive Office of Health and Human Services Regions

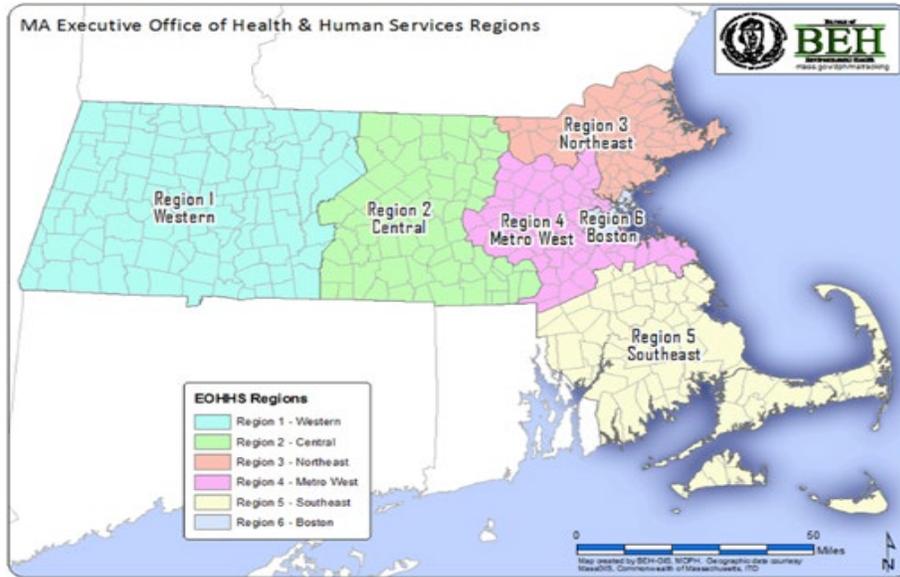


Figure 2. Severe Maternal Morbidity by Race and Hispanic Ethnicity, 2011-2020.

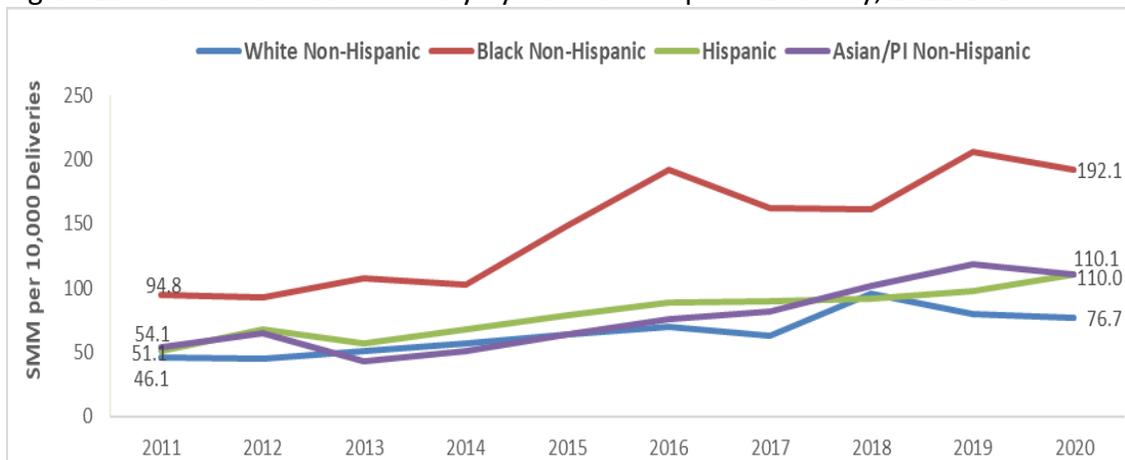


Figure 3. Massachusetts Birth Hospitals



Massachusetts Birth Hospitals, Thirty-nine hospitals currently offer L&D services

As of October 2023

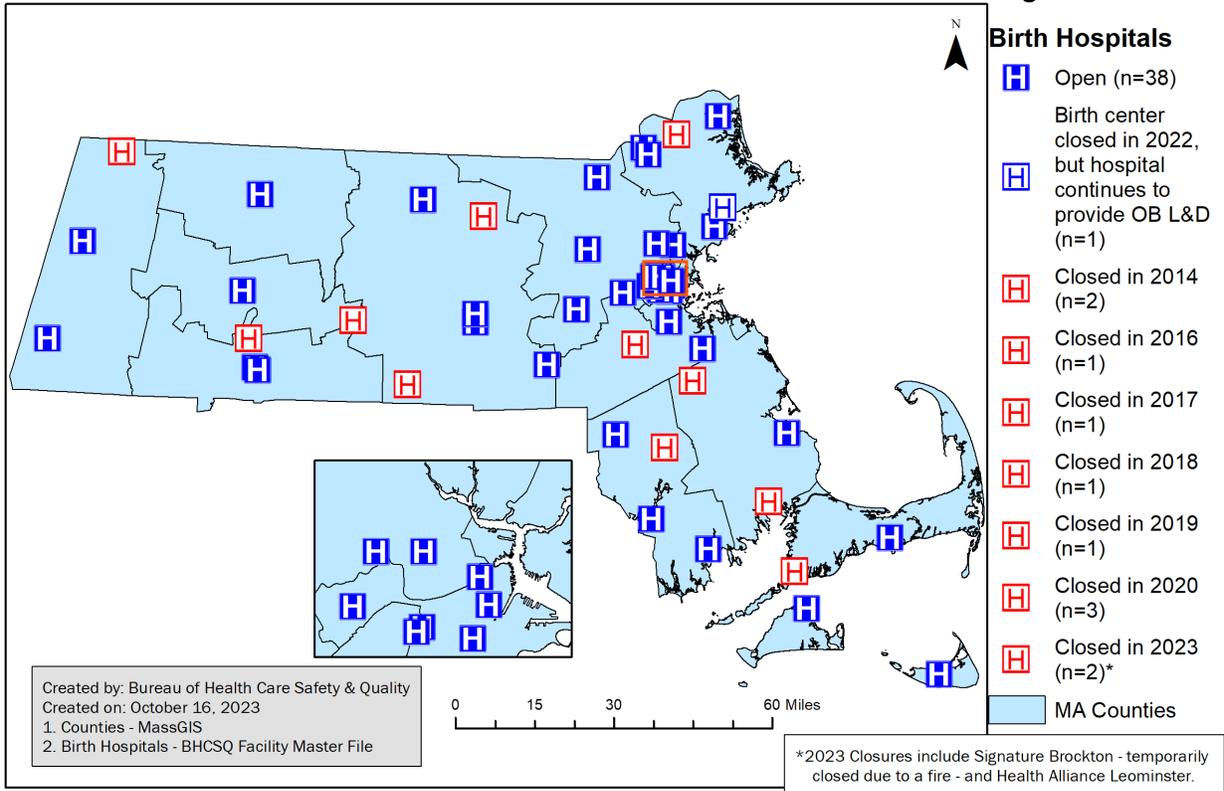


Figure 4. Percent of Births Where Birth Person received Adequate Prenatal Care by Town of Residence

Percent of Births Where Birthing Person Received Adequate Prenatal Care by Town of Residence
 Calendar Year 2022 (Preliminary Data)

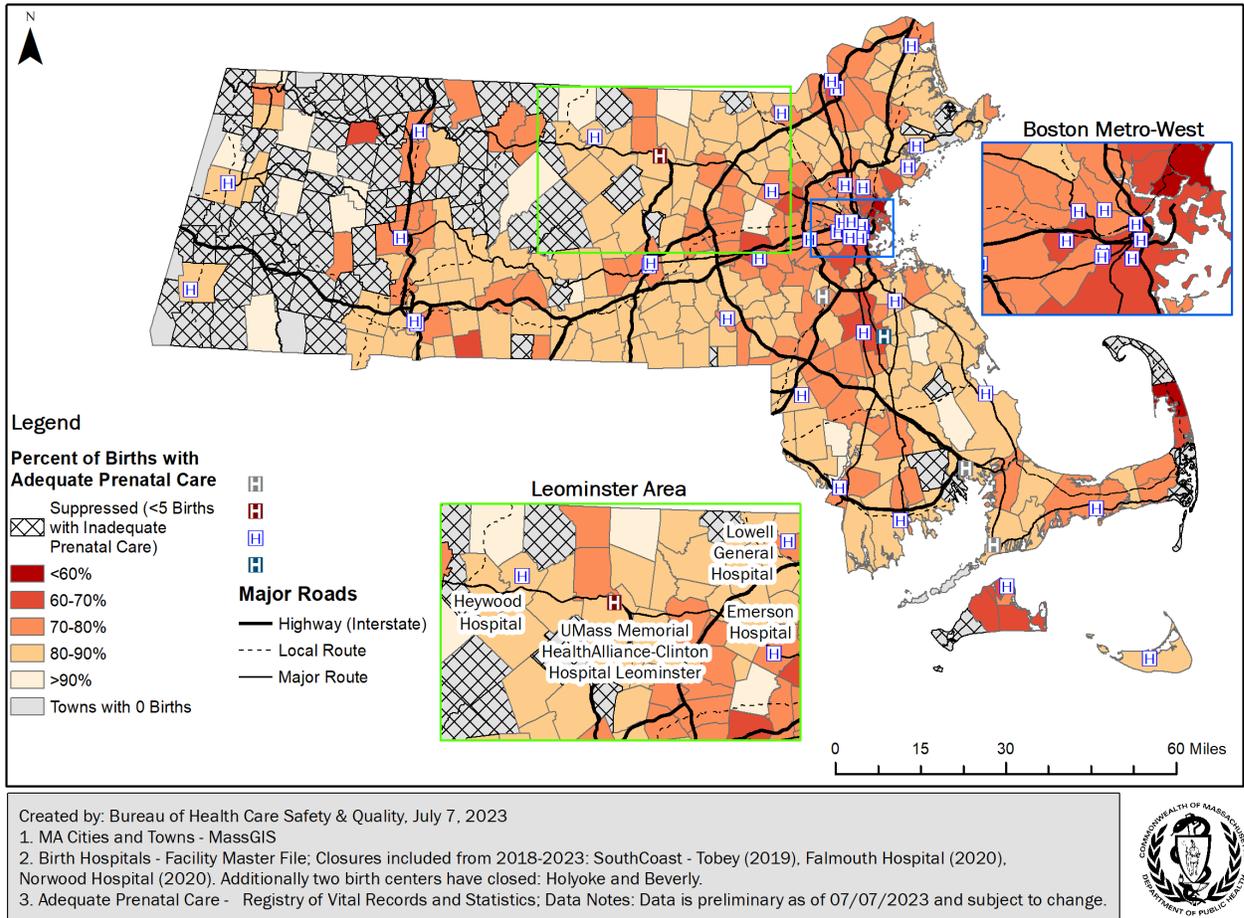


Figure 5. Distance from residential address to birth facility.

Distance from residential address to birth facility

Massachusetts in-state resident births, 2011 & 2021

Author: Massachusetts Department of Public Health - Bureau of Family Health and Nutrition
Data Sources: Office of Geographic Information (MassGIS), Commonwealth of Massachusetts, MassIT;
Registry of Vital Records and Statistics (RVRS), Commonwealth of Massachusetts
October 2023

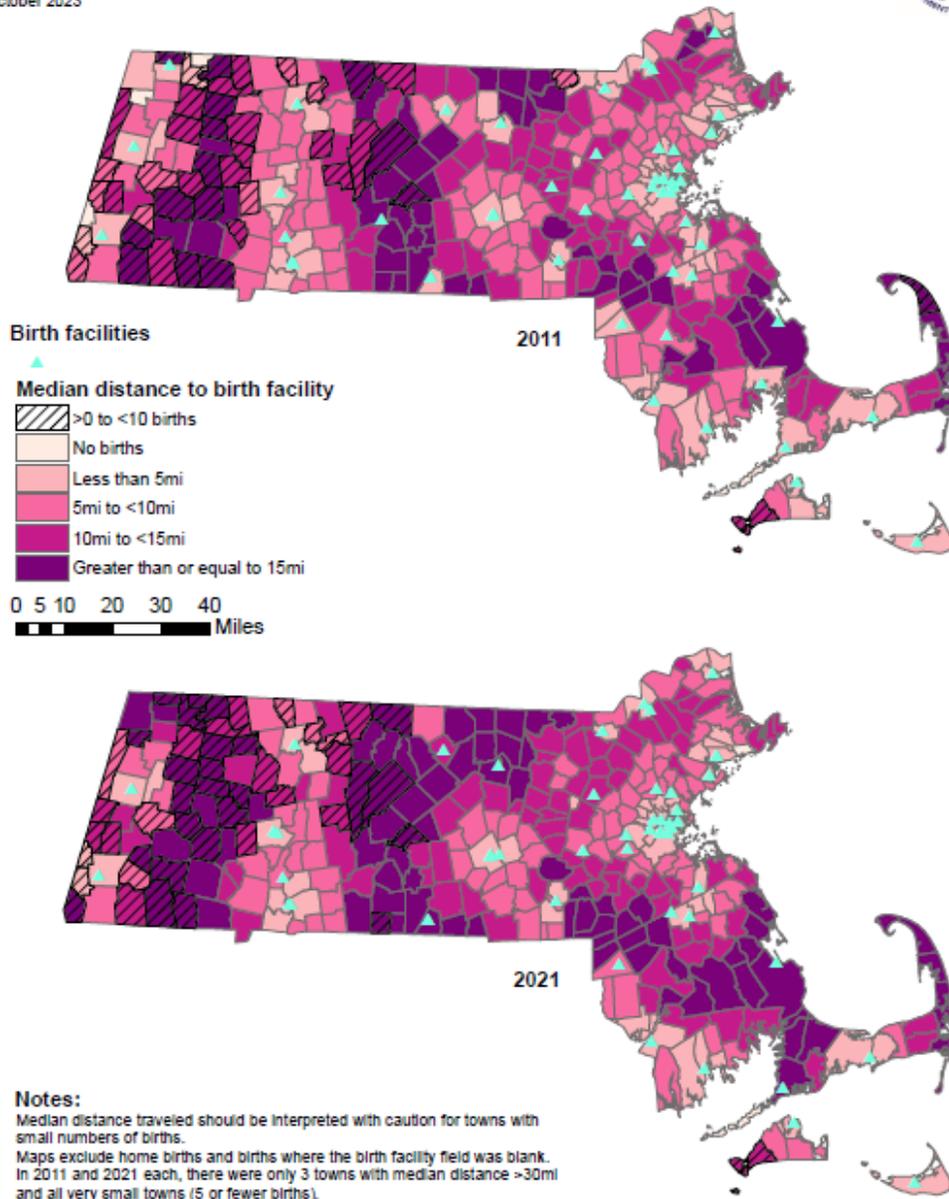


Figure 6. Change in median distance traveled to birth facility, by town, 2011 to 2021.

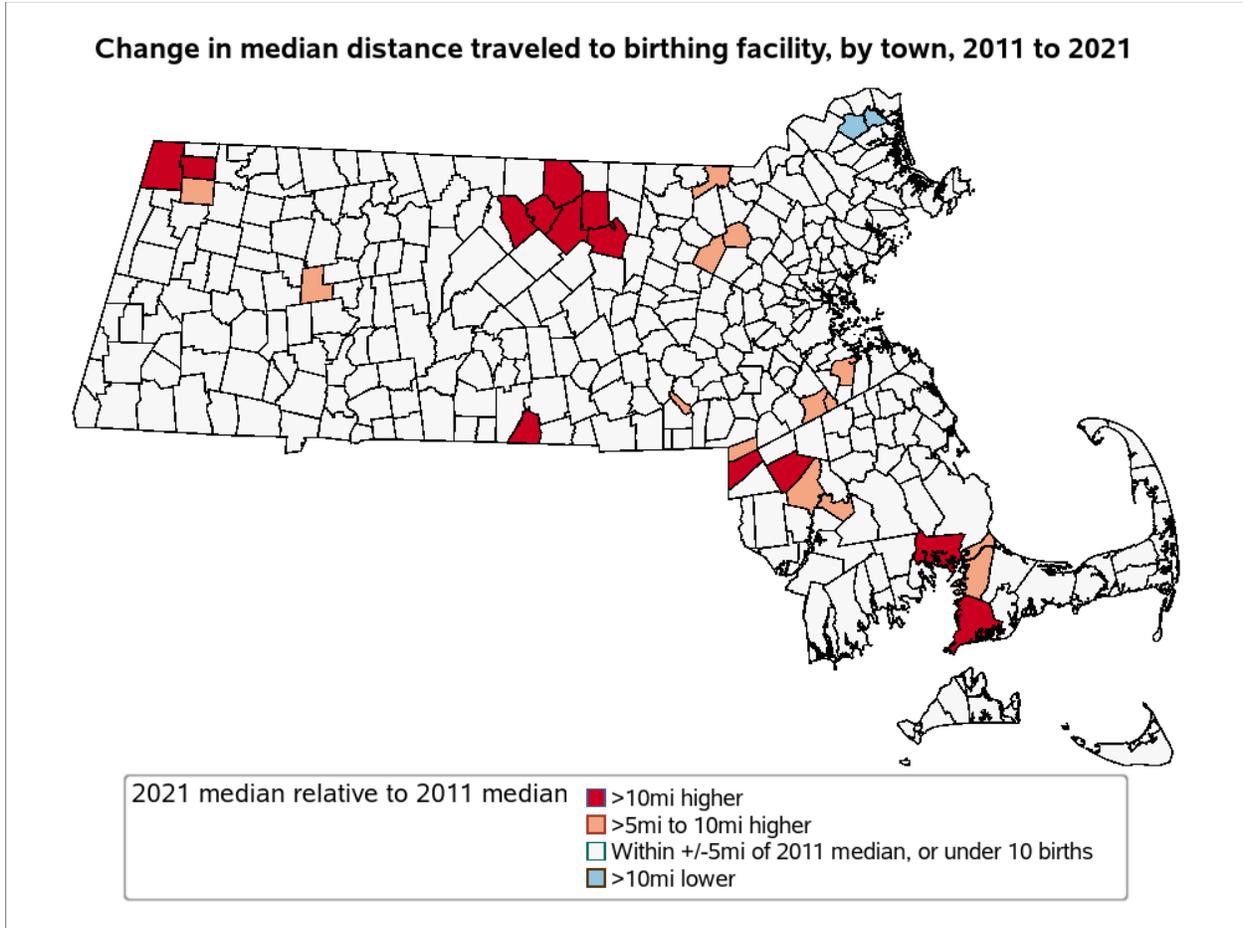


Figure 7. Heat Map of Freestanding Birth Centers by State (source: 2021 AABC report)

