Certified Nurse Midwives and Maternity Care in Massachusetts

January 2022

MASSACHUSETTS
HEALTH POLICY COMMISSION

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HPC

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Executive Summary

Maternity care is the top category of hospital admission for Massachusetts residents under age 65, but continues to exhibit wide variation in spending and quality across hospitals. Equity concerns also persist around birth experiences and outcomes.

Despite favorable outcomes associated with midwifery care, and the potential of midwife-led care to help to address ongoing racial disparities in birth outcomes, rates of midwife-attended births in the U.S. remain low. As of 2017, 17% of Massachusetts births were attended by Certified Nurse Midwives (CNMs). This is a higher rate than the U.S. as a whole (10%), but far below rates of midwife-attended births in other high-income countries (50-75%).

Most Massachusetts hospitals offering maternity care as of 2017 also offered midwifery services. However, the HPC's analysis found substantial variation by hospital: rates of hospital midwifery care ranged from zero to nearly 70%. Likewise, even at hospitals where CNMs had a significant role, hospitals' care models varied substantially. The HPC's analysis also found that hospitals with higher rates of midwifery care saw shorter length of inpatient stay, lower cesarean and episiotomy rates, and lower spending.

Although CNMs received expanded scope of practice authority in 2012, hospital and payer policies and practices can still represent barriers to midwifery practice. Barriers to expanding and diversifying the Massachusetts midwifery workforce also persist.

The HPC's recommendations include increasing and improving use of CNMs with payment models that are neutral to provider mix, modifying hospital and payer policies and practices to align with state law that does not require physician supervision for CNMs, and supporting alternative birth settings by removing barriers to the establishment and operation of birth centers.

Key Findings

HPC

- In 2017, **17% of Massachusetts births** were attended by Certified Nurse Midwives (CNMs).
- 30 of the 44 hospitals that provided obstetric care in Massachusetts as of 2017 also offered midwifery services. However, rates of midwifery care varied substantially by hospital, from **zero to nearly 70%**.
- Hospitals with higher rates of midwifery care saw lower cesarean and episiotomy rates, and lower spending: a **10% increase in midwife-attended births** in Massachusetts would result in **3,560 fewer cesarean births**, **860 fewer episiotomies**, and **$530 less in spending per episode** of maternity care.
- Despite Massachusetts granting full scope of practice authority to CNMs in 2012, hospital and payer policies can limit CNM practice.

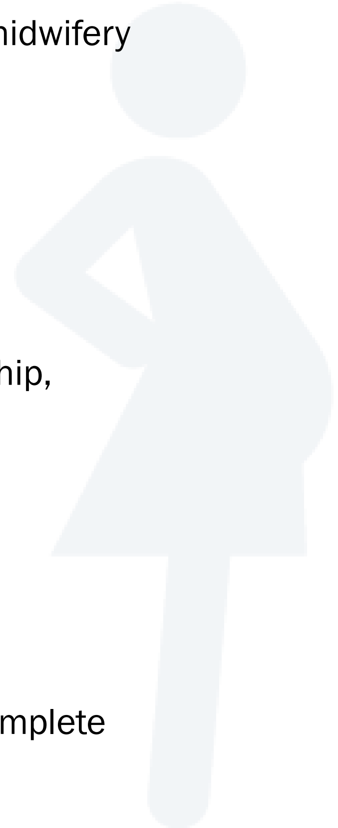
- **INTRODUCTION**
- Maternity Care in Massachusetts
- Variation in Midwifery Care
- Outcomes Associated with Midwives in the Commonwealth
- Barriers to Practice
- Policy Recommendations
- Data and Methods

Why did the HPC examine the role of Certified Nurse Midwives in maternity care in Massachusetts?

- Maternity care is the top category of hospital admission among Massachusetts residents under age 65 and exhibits wide variation in spending and quality.[1]
- The ongoing equity concerns surrounding birthing experiences and maternity care are a key area of focus for a number of current HPC investment programs.
  - Cost-Effective, Coordinated Care for Caregivers and Substance Exposed Newborns (C4SEN): Supports development of innovative care models to improve the quality of care for substance-exposed newborns and their caregivers
  - Birth Equity and Support through the Inclusion of Doula Expertise (BESIDE): Aims to address inequities in maternal health outcomes and improve the care and patient experience of Black birthing people by increasing access to and use of doula services
- The HPC has long advocated for top-of-license practice, team-based care, and scope of practice (SOP) reform for Massachusetts providers.[2] However, SOP reform on its own may not be sufficient to transform and optimize practice.[3-5]
- The HPC focused on Certified Nurse Midwives to understand barriers to full and independent practice beyond legal scope of practice, as well as outcomes associated with the midwifery model of maternity care in the Commonwealth.

1 Health Policy Commission. 2015 Cost Trends Report. Jan. 2016. Available at: https://www.mass.gov/doc/2015-cost-trends-report-1/download ; 2 Health Policy Commission. The Nurse Practitioner Workforce and its Role in the Massachusetts Health Care Delivery System. May 6, 2020. Available at: https://www.mass.gov/doc/policy-brief-the-nurse-practitioner-workforce-and-its-role-in-the-massachusetts-health-care/download ; 3 Pittman P, Leach B, Everett C, Han X, McElroy D. NP and PA Privileging in Acute Care Settings: Do Scope of Practice Laws Matter? Medical Care Research and Review. 2020; 77(2): 112-120. https://doi.org/10.1177/1077558718760333 ; 4 Park J, Athey E, Pericak A, Pulcini J, Greene J. To What Extent Are State Scope of Practice Laws Related to Nurse Practitioners' Day-to-Day Practice Autonomy? Medical Care Research and Review. 2018; 75(1): 66-87. https://doi.org/10.1177/1077558716677826 ; 5 Yang YT, Attanasio LB, Kozhimannil KB. State Scope of Practice Laws, Nurse-Midwifery Workforce, and Childbirth Procedures and Outcomes. Women's Health Issues. 2016; 26(3): 262-267. https://doi.org/10.1016/j.whi.2015.03.006

Many types of providers care for the nearly 70,000 births in Massachusetts each year.



1,042 Obstetrician/Gynecologists
- Medical education, residency, and licensure
- Hospitals, offices
- Board of Registration in Medicine

286* Certified Nurse Midwives
- Undergraduate and graduate nursing education, midwifery education and certification
- Hospitals, offices, birth centers
- Board of Registration in Nursing

121 Nurse Practitioners with OB/Gyn specialty
- Undergraduate and graduate nursing education, NP certification
- Hospitals, offices
- Board of Registration in Nursing

40 Certified Professional Midwives
- Coursework, work experience, and/or apprenticeship, midwifery education and certification
- Homes
- Not licensed in MA

2,698 Registered Nurses with OB/Gyn specialty
- Undergraduate nursing education, nursing exam
- Hospitals, offices, birth centers
- Board of Registration in Nursing

137 Doulas
- Although not required for practice, most doulas complete training or certification
- Homes, birth centers, offices, hospitals
- Not licensed in MA

* HPC analysis of data from the 2018 Health Professions Data Series administered by the Massachusetts Board of Registration in Nursing in collaboration with the DPH Healthcare Workforce Center. For any further data requests or questions regarding the data collection please contact the Massachusetts Department of Public Health Office of Statistics and Evaluation Director, Sanouri Ursprung (sanouri.ursprung@state.ma.us)

Notes: Certified Professional Midwife workforce number is an estimate. See appendix for additional sources and more detail.

Differing paradigms frame provider training and birth care.

Childbirth as a normal life process

- The philosophy that labor and birth are normal life processes uses a model of watchful waiting rather than continuous surveillance[1] and seeks to avoid interventions in the absence of serious complications.
- Emphasizes patient autonomy, centering the birthing person in shared decision-making about their care.
- The philosophy emphasized in midwifery care.[1]

Childbirth as inherently risky

- The philosophy that labor and birth are inherently risky can lead to detailed, highly medicalized surveillance of labor[2] and can result in interventions that are unneeded, non-evidence-based, or premature.[3]
- In this approach, providers' sense of risk may predominate over the birthing person's preferences for their care.[2]

1 American College of Nurse-Midwives. Our Philosophy of Care. Available at: https://www.midwife.org/Our-Philosophy-of-Care

2 Healy S, Humphreys E, Kennedy C. Midwives' and obstetricians' perceptions of risk and its impact on clinical practice and decision-making in labour: An integrative review. Women and Birth. 2016; 29(2):107-116. https://doi.org/10.1016/j.wombi.2015.08.010

3 Miller S, Abalos E, Chamillard M, Ciapponi A, Colaci D, Comandé D, Diaz V, Geller S, Hanson C, Langer A, Manuelli V, Millar K, Morhason-Bello I, Castro CP, Pileggi VN, Robinson N, Skaer M, Souza JP, Vogel JP, Althabe F. Beyond too little, too late and too much, too soon: a pathway towards evidence-based, respectful maternity care worldwide. Lancet. 2016; 388:2176-2192. http://dx.doi.org/10.1016/S0140-6736(16)31472-6

Focus on Certified Nurse Midwives

HPC

- CNMs are one of the five types of advanced-practice registered nurses (APRNs) licensed in Massachusetts[1,2] and comprise the majority of midwives in the state.
  - CNMs have had full scope of practice (SOP) in Massachusetts since 2012, and do not legally require physician supervision to practice, prescribe, or bill.[3-5]
- CNMs are trained to use a care model that emphasizes watchful waiting and patient autonomy,[7] providing a low-intervention model of maternity care for birthing people with low- and moderate-risk pregnancies and deliveries.[8-9]
- CNMs provide obstetric care both collaboratively with and separately from obstetricians.
- Midwives are the predominant providers for maternity care in most high-income countries.[10]
- The role and presence of CNMs varies widely across Massachusetts hospitals.

1 Massachusetts Board of Registration in Nursing. Learn about Advanced Practice Registered Nurses (APRN). Available at: https://www.mass.gov/service-details/learn-about-advanced-practice-registered-nurses-aprn
2 American College of Nurse-Midwives. The Credential CNM and CM. Available at: https://www.midwife.org/The-Credential-CNM-and-CM
3 M.G.L. 112, sections 80 (c) and (g)
4 Massachusetts Affiliate of the American College of Nurse-Midwives. Full Practice Authority. Available at: http://massachusetts.midwife.org/index.asp?bid=35
5 Massachusetts Board of Registration in Nursing. Learn more about prescriptive authority requirements and practice guidelines. Available at: https://www.mass.gov/service-details/learn-more-about-prescriptive-authority-requirements-and-practice-guidelines
6 American College of Nurse-Midwives. Our Philosophy of Care. Available at: https://www.midwife.org/Our-Philosophy-of-Care
7 American College of Nurse-Midwives. Our Philosophy of Care. Available at: https://www.midwife.org/Our-Philosophy-of-Care
8 Johantgen M, Fountain L, Zangaro G, Newhouse R, Stanik-Hutt J, White K. Comparison of Labor and Delivery Care Provided by Certified Nurse-Midwives and Physicians: A Systematic Review, 1990 to 2008. Women's Health Issues. 2012; 22(1): e73-e81. https://doi.org/10.1016/j.whi.2011.06.005
9 Cragin L, Kennedy HP. Linking Obstetric and Midwifery Practice with Optimal Outcomes. Journal of Obstetric, Gynecologic & Neonatal Nursing. 2006: 35:779-785. DOI: 10.1111/J.1552-6909.2006.00106.x
10 Tikkanen R, Gunja MZ, FitzGerald M, Zephyrin L. Maternal Mortality and Maternity Care in the United States Compared to 10 Other Developed Countries. Commonwealth Fund. Nov 18, 2020. Available at: https://doi.org/10.26099/411v-9255

Research finds that increased use of midwifery care is associated with improved patient outcomes and lower spending.

HPC

IMPROVED OUTCOMES

- Lower rates of maternal mortality[1,2]
- Lower rates of preterm birth, low birthweight infants, and infant mortality[2-4]
- Lower cesarean and episiotomy rates[3-5]
- Fewer complications, including perineal lacerations and postpartum hemorrhage[3,6,8]
- Fewer interventions, including induction, epidural, and instrumental birth[2,3,5,7]
- Shorter length of inpatient stay[10]

LOWER SPENDING

- Lower overall maternity spending and lower labor-and-delivery cost compared to deliveries attended by physicians[5]
- May be related to the lower intervention rates and lower rates of preterm births associated with midwifery care[11]

1 Altman MR, Murphy SM, Fitzgerald CE, Andersen HF, Daratha KB. The Cost of Nurse-Midwifery Care: Use of Interventions, Resources, and Associated Costs in the Hospital Setting. Women's Health Issues. 2017; 27(4):434-440. https://doi.org/10.1016/j.whi.2017.01.002 ; 2 Attanasio LB, Alarid-Escudero F, Kozhimannil KB. Midwife-led care and obstetrician-led care for low-risk pregnancies: A cost comparison. Birth. 2019; 47(1):57-66. https://doi.org/10.1111/birt.12464 ; 3 Carlson NS, Corwin EJ, Lowe NK. Labor Intervention and Outcomes in Women Who Are Nulliparous and Obese: Comparison of Nurse-Midwife to Obstetrician Intrapartum Care. Journal of Midwifery & Women's Health. 2017; 62(1):29-39. https://doi.org/10.1111/jmwh.12579 ; 4 Hamlin L, Grunwald L, Sturdivant RX, Koehlmoos TP. Comparison of Nurse-Midwife and Physician Birth Outcomes in the Military Health System. Policy, Politics, & Nursing Practice. 2021; 22(2): 105-113. https://doi.org/10.1177/1527154421994071 ; 5 Johantgen M, Fountain L, Zangaro G, Newhouse R, Stanik-Hutt J, White K. Comparison of Labor and Delivery Care Provided by Certified Nurse-Midwives and Physicians: A Systematic Review, 1990 to 2008. Women's Health Issues. 2012; 22(1): e73-e81. https://doi.org/10.1016/j.whi.2011.06.005 ; 6 Repke JT. Comment on McLachlan HL, Forster DA, Davey MA, Farrell T, Gold L, Biro MA, Albers L, Flood M, Oats J, Waldenstro¨m U. Effects of Continuity of Care by a Primary Midwife (Caseload Midwifery) on Cesarean Section Rates in Women of Low Obstetric Risk: The COSMOS Randomized Controlled Trial. Obstetric Anesthesia Digest. 2014; 34(1):39-40. ; 7 Newhouse RP, Stanik-Hutt J, White KM, Johantgen M, Bass EB, Zangaro G, Wilson RF, Fountain L, Steinwachs DM, Heindel L, Weiner JP. Advanced practice nurse outcomes 1990-2008: a systematic review. Nursing Economics. 2011; 29(5):230-250. https://pubmed.ncbi.nlm.nih.gov/22372080/ ; 8 Vedam S, Stoll K, MacDorman M, Declercq E, Cramer R, Cheyney M, Fisher T, Butt E, Yang YT, Kennedy HP. Mapping integration of midwives across the United States: Impact on access, equity, and outcomes. PLoS ONE. 2018;13(2): e0192523. https://doi.org/10.1371/journal.pone.0192523 ; 9 Homer CSE, Friberg IK, Dias MAB, ten Hoope-Bender P, Sandall J, Speciale AM, Bartlett LA. The Projected Effect of Scaling up Midwifery. Lancet. 2014; 384: 1146-1157. http://dx.doi.org/10.1016/S0140-6736(14)60790-X ; 10 Paul J, Jordan R, Duty S, Engstrom JL. Improving Satisfaction with Care and Reducing Length of Stay in an Obstetric Triage Unit Using a Nurse-Midwife-Managed Model of Care. Journal of Midwifery & Women's Health. 2013; 58(2): 175-181. https://doi.org/10.1111/j.1542-2011.2012.00239.x ; 11 Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models of care compared with other models of care for women during pregnancy, birth and early parenting. Cochrane. April 28, 2016. https://www.cochrane.org/CD004667/PREG_midwife-led-continuity-models-care-compared-other-models-care-women-during-pregnancy-birth-and-early

The midwifery model of care may also help to address continuing racial disparities in birth outcomes.

DISPARITIES

- Black and Native American birthing people in the U.S. are more likely to die from pregnancy-related causes than White birthing people.[1-3]
- Black birthing people in the U.S. are twice as likely to experience severe maternal morbidity as White birthing people.[4]
- Experience of racial discrimination is associated with adverse birth outcomes, including preterm birth and low birth weight.[5]
- In Massachusetts, Black Non-Hispanic women were found to have twice the rate of severe maternal morbidity as White Non-Hispanic women.[6]

MIDWIFERY

- Birthing people of color report adverse experiences with pregnancy and birth care when they do not feel heard, when they are denied care, and when providers are dismissive of their needs and concerns.[7,8]
- The model of individualized, person-centered care provided by midwives may help to improve pregnancy and birth care for birthing people of color.[9,7,10]

1 Petersen EE, Davis NL, Goodman D, et al. Racial/Ethnic Disparities in Pregnancy-Related Deaths — United States, 2007–2016. MMWR MorbMortal Wkly Rep 2019;68:762–765. ; 2 Centers for Disease Control and Prevention. Pregnancy Mortality Surveillance System. Available at: https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm ; 3 Ellman, N. Community-Based Doulas and Midwives: Key to Addressing the U.S. Maternal Health Crisis. Center for American Progress. April 14, 2020. https://www.americanprogress.org/issues/women/reports/2020/04/14/483114/community-based-doulas-midwives/ ; 4 Centers for Disease Control and Prevention. Severe Maternal Morbidity after Delivery Discharge among U.S. Women, 2010-2014. Available at: https://www.cdc.gov/reproductivehealth/maternalinfanthealth/smm/smm-after-delivery-discharge-among-us-women/index.htm ; 5 Alhusen JL, Bower KM, Epstein E, Sharps P. Racial Discrimination and Adverse Birth Outcomes: An Integrative Review. Journal of Midwifery & Women's Health. 2016; 61(6): 707-720. https://doi.org/10.1111/jmwh.12490 ; 6 Massachusetts Department of Public Health. Massachusetts State Health Assessment. Boston, MA; October 2017 ; 7 Ellman, N. Community-Based Doulas and Midwives: Key to Addressing the U.S. Maternal Health Crisis. Center for American Progress. April 14, 2020. https://www.americanprogress.org/issues/women/reports/2020/04/14/483114/community-based-doulas-midwives/ ; 8 Vedam S, Stoll K, Taiwo TK, Rubashkin N, Cheyney M, Strauss N, McLemore M, Cadena M, Nethery E, Rushton E, Schummers L, Declercq E, GVtM-US Steering Council. The Giving Voice to Mothers study: inequity and mistreatment during pregnancy and childbirth in the United States. Reproductive Health. 2019; 16. https://doi.org/10.1186/s12978-019-0729-2 ; 9 Altman MR, McLemore MR, Oseguera T, Lyndon A, Franck LS. Listening to Women: Recommendations from Women of Color to Improve Experiences in Pregnancy and Birth Care. Journal of Midwifery & Women's Health. 2020; 659(4): 466-473. https://doi.org/10.1111/jmwh.13102 ; 10 Zephyrin L, Seervai S, Lewis C, Katon JG. Community-Based Models to Improve Maternal Health Outcomes and Promote Health Equity. The Commonwealth Fund. March 4, 2021. https://www.commonwealthfund.org/publications/issue-briefs/2021/mar/community-models-improve-maternal-outcomes-equity

Despite favorable outcomes associated with midwifery care, the U.S. has the lowest proportion of midwives as maternity providers among high-income countries.

HPC

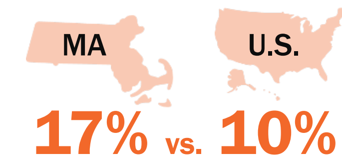
Maternity care providers per 1,000 live births in high-income countries, as measured by Tikkanen et al., 2020

AUS
NZ
SWE
NOR
UK
FRA
NETH
SWIZ
GER
CAN
US

10 20 30 40 50 60 70 80

● OB/GYNs per 1,000 live births ● Midwives per 1,000 live births

The rate of midwife-attended births in MA is above the U.S. average[1]...



17% vs. **10%**

...but far below rates of midwifery care in other high-income countries[2-3]

50%-75%

In Germany, for example, physicians cannot provide birth care without midwife involvement[4]

1 United States Department of Health and Human Services (US DHHS), Centers for Disease Control and Prevention (CDC), National Center for Health Statistics (NCHS), Division of Vital Statistics, Natality public-use data 2007-2019, on CDC WONDER Online Database, October 2020. Accessed at http://wonder.cdc.gov/natality-current.html on May 18, 2021

2 Goodman S. Piercing the veil: The marginalization of midwives in the United States. Social Science & Medicine. 2007; 65(3): 610-621. https://doi.org/10.1016/j.socscimed.2007.03.052

3 Stephenson J. Only Half of Babies in England Now Delivered by Midwives. Nursing Times. November 15, 2016. Available at: https://www.nursingtimes.net/news/hospital/only-half-of-babies-in-england-now-delivered-by-midwives-15-11-2016/

4 Mattern E, Lohmann S, Ayerle GM. Experiences and wishes of women regarding systemic aspects of midwifery care in Germany: a qualitative study with focus groups. BMC Pregnancy and Childbirth. 2017; 17(389). https://doi.org/10.1186/s12884-017-1552-9

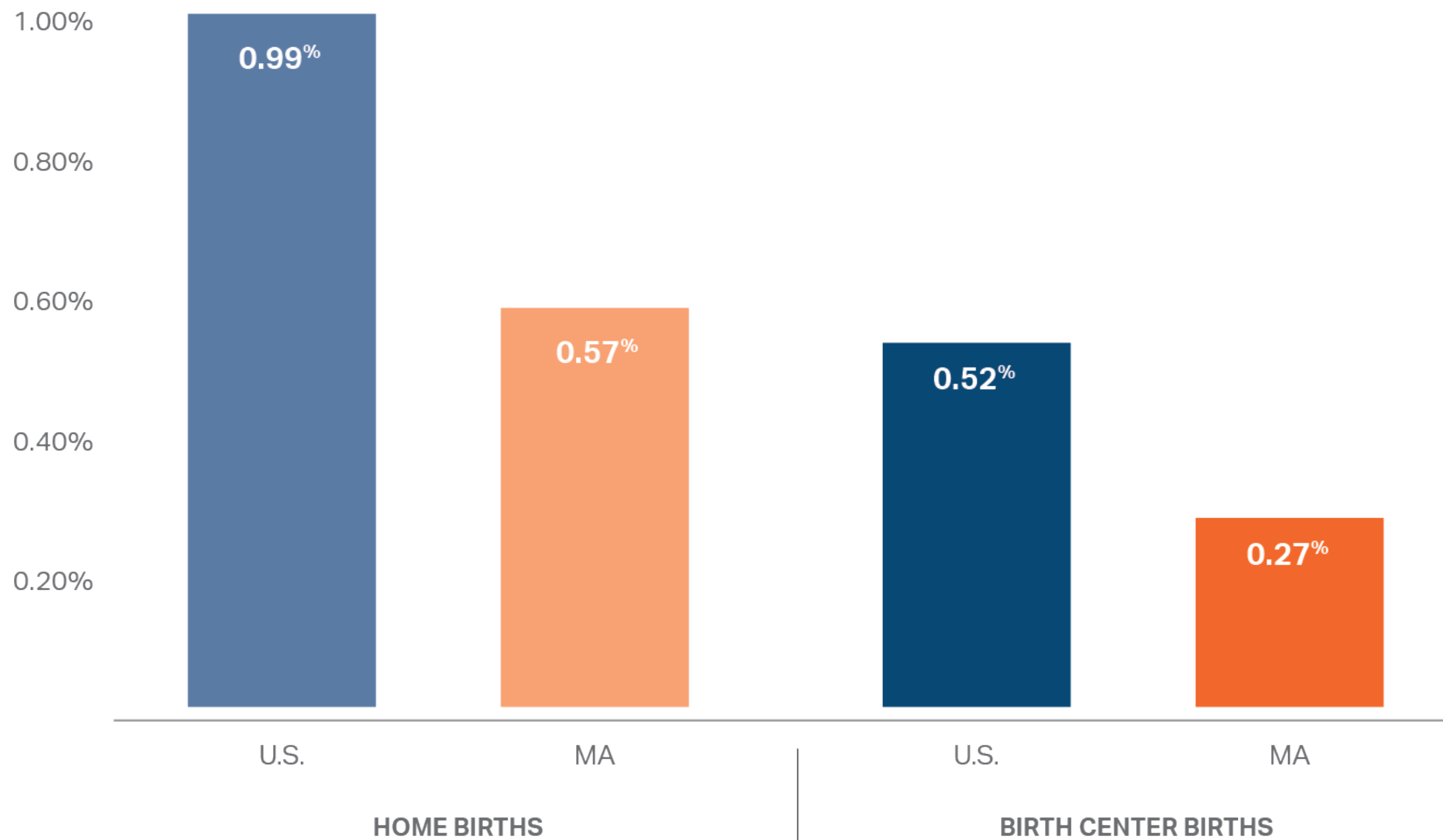
Exhibit source: Tikkanen R, Gunja MZ, FitzGerald M, Zephyrin L. Maternal Mortality and Maternity Care in the United States Compared to 10 Other Developed Countries. Commonwealth Fund. Nov 18, 2020. Available at: https://doi.org/10.26099/411v-9255

- Introduction
- **MATERNITY CARE IN MASSACHUSETTS**
- Variation in Midwifery Care
- Outcomes Associated with Midwives in the Commonwealth
- Barriers to Practice
- Potential Policy Recommendations
- Data and Methods

Under 1% of Massachusetts births in 2017 took place outside of hospitals, fewer than in the U.S. as a whole.

All Payers

U.S. and MA out-of-hospital births in 2017 as measured by MacDorman & Declercq, 2019



- The U.S. out-of-hospital birth rate as of 2017 was 1.61%.
- The MA out-of-hospital birth rate was 0.90%.
- Home births were more prevalent than birth center births in both the U.S. and MA.

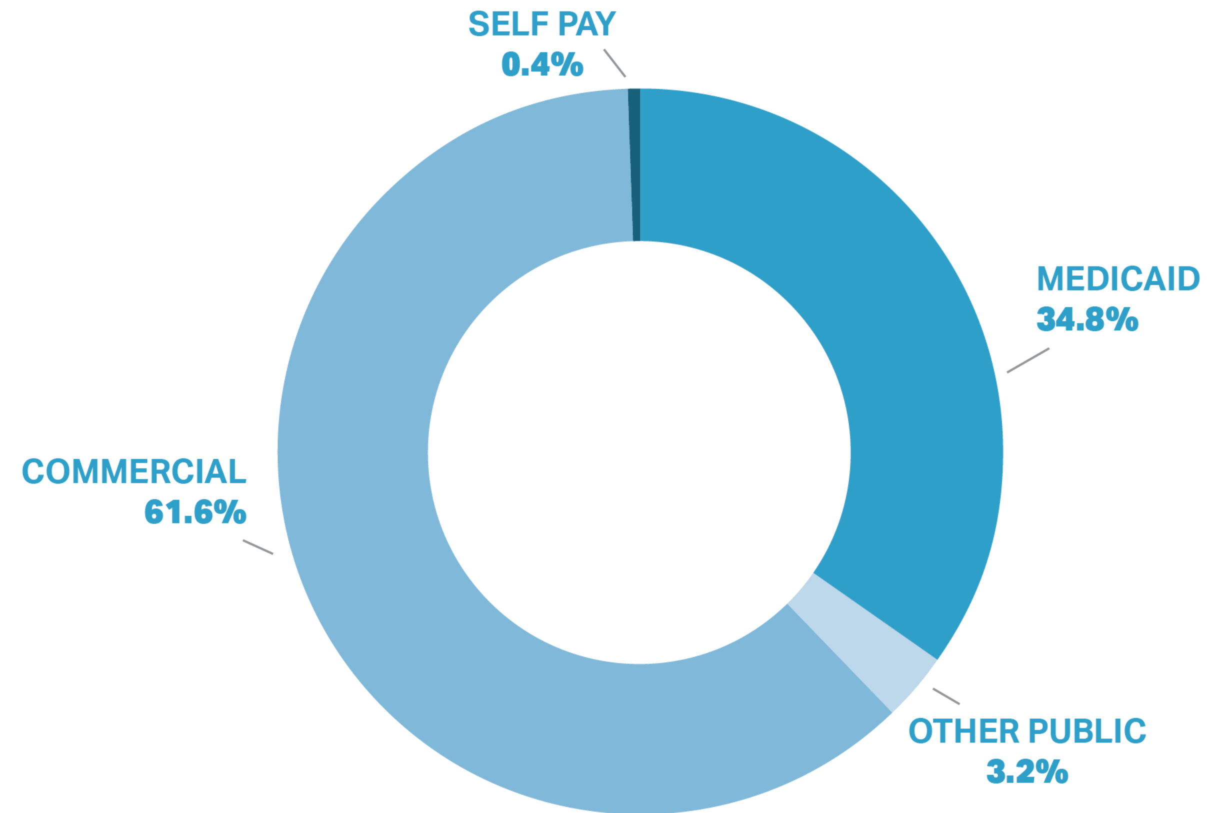
Source: MacDorman M , Declercq E. Trends and state variations in out-of-hospital births in the United States, 2004-2017. Birth. 2019; 46(2):279-288.

Over 60% of Massachusetts births in 2017 were commercially insured.

HPC

All Payers

Proportion of all births by payer, 2017



Notes: Free care omitted from this exhibit. Free care represented 0.01% of all births in 2017.
Source: HPC analysis of Massachusetts Department of Public Health birth record data, 2017

- Introduction
- Maternity Care in Massachusetts
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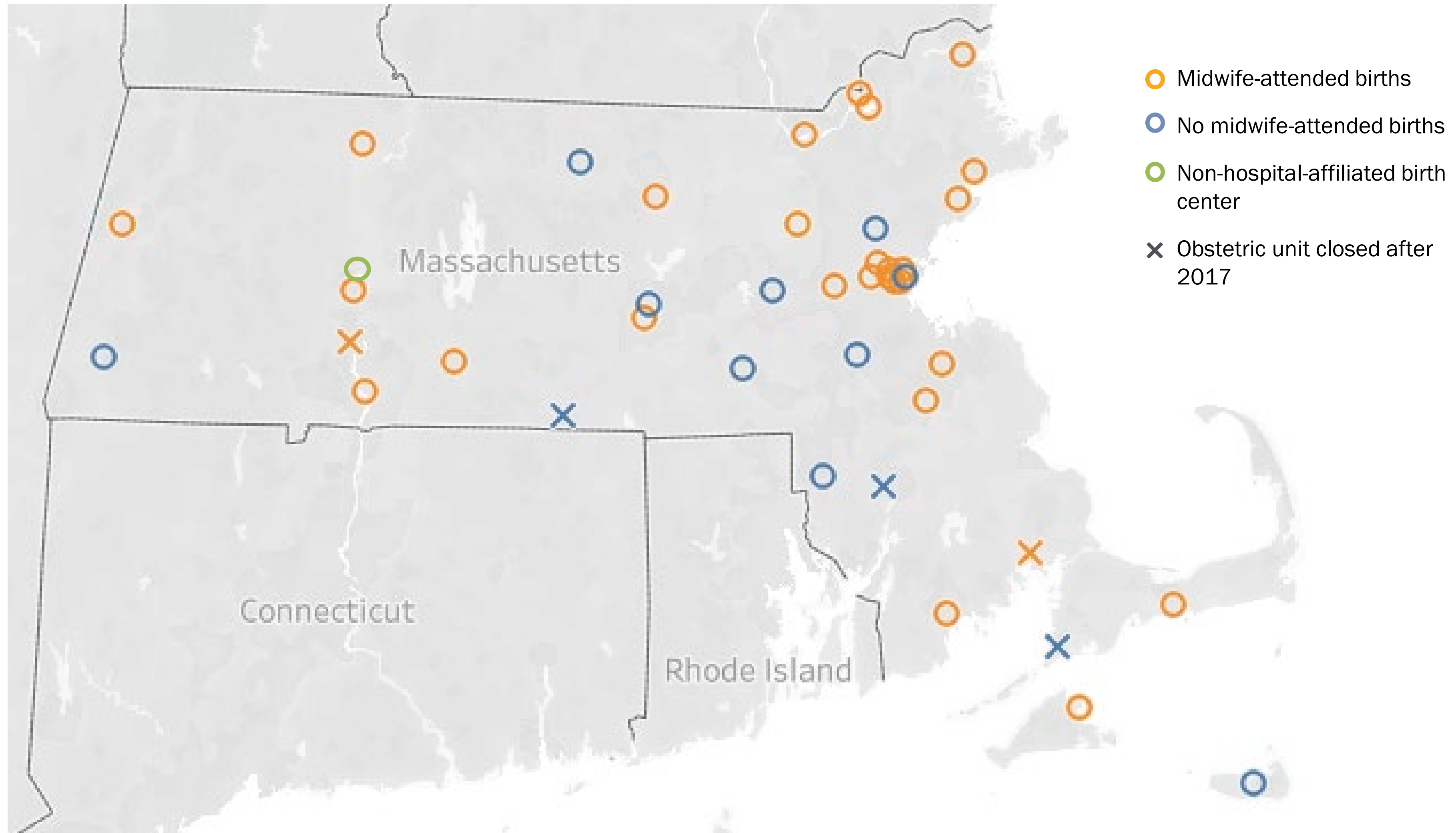
Massachusetts Birth Centers and Hospitals



Midwife-attended births

No midwife-attended births

Non-hospital-affiliated birth center

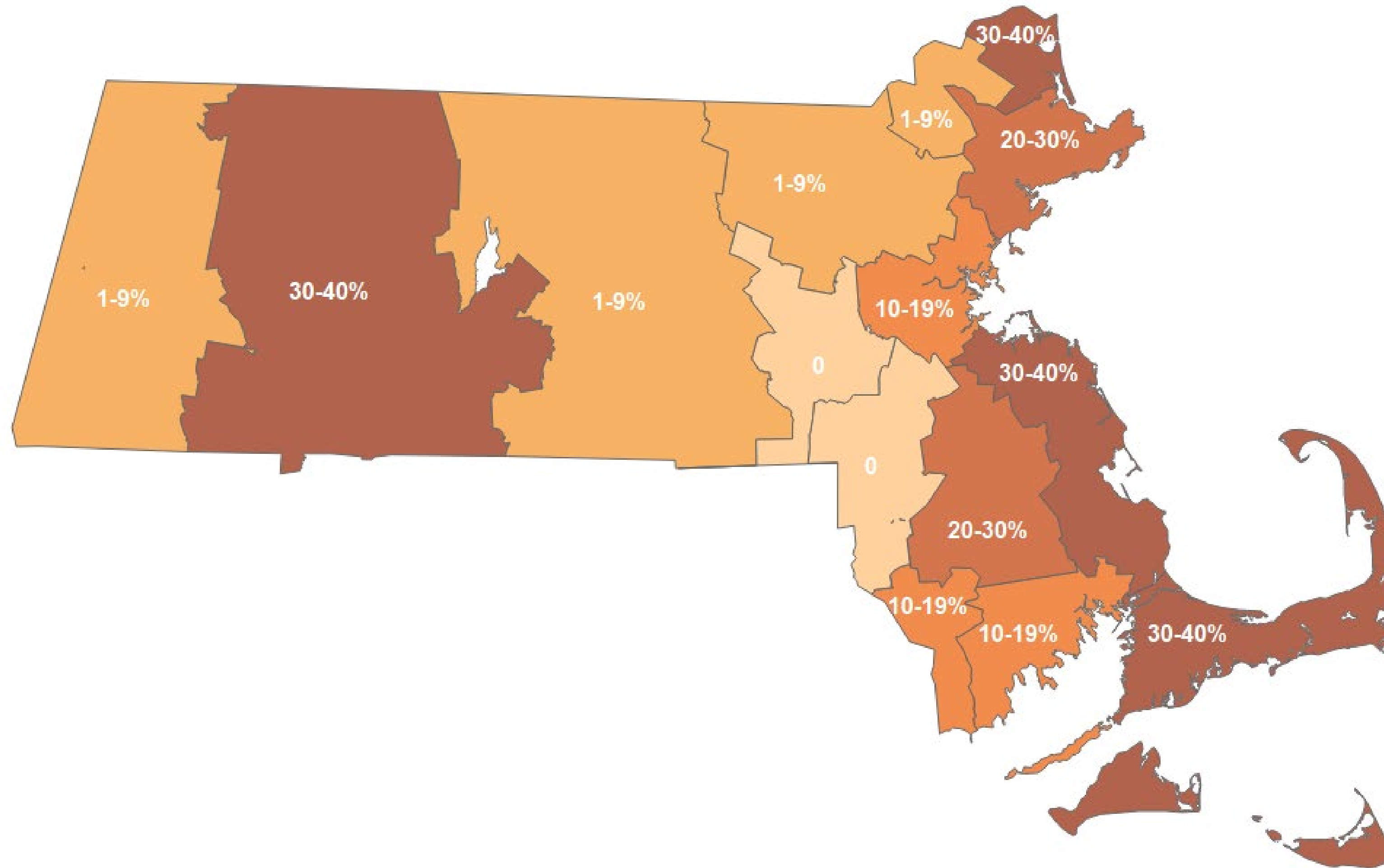
Obstetric unit closed after 2017

Source: HPC analysis of Massachusetts Department of Public Health birth record data for 2017.

The proportion of births attended by midwives varied substantially by region across the Commonwealth.

HPC

Proportion of births at hospitals located in each region that were midwife-attended, 2017



Note: Mean midwife-attended births across all hospitals per region.
Source: HPC analysis of Massachusetts Department of Public Health birth record data for 2017.

Most Massachusetts hospitals with maternity beds reported some midwife-attended births.

All Payers

Births attended by physicians and midwives per hospital, 2017

● Physician-attended births ● Midwife-attended births

7,000
6,000
5,000
4,000
3,000
2,000
1,000
0

Anna Jaques Hospital
Cooley Dickinson Hospital
Sturdy Memorial Hospital
Berkshire Medical Center
HealthAlliance Hospital
Beth Israel Deaconess Hospital - Plymouth
Cape Cod Hospital
Melrose-Wakefield Hospital
Steward St. Elizabeth's Medical Center
Milford Regional Medical Center
Steward Holy Family Hospital
Signature Healthcare Brockton Hospital
Steward Good Samaritan Medical Center
MetroWest Medical Center
Cambridge Health Alliance
Emerson Hospital
Mercy Medical Center
North Shore Medical Center
Tufts Medical Center
Lawrence General Hospital
Saint Vincent Hospital
Winchester Hospital
Lowell General Hospital
Beverly Hospital
Mount Auburn Hospital
Boston Medical Center
Southcoast Hospitals Group
South Shore Hospital
Massachusetts General Hospital
Newton-Wellesley Hospital
Baystate Medical Center
UMass Memorial Medical Center
Beth Israel Deaconess Medical Center
Brigham and Women's Hospital

68,834
in-hospital births in 2017

11,373
attended by CNMs

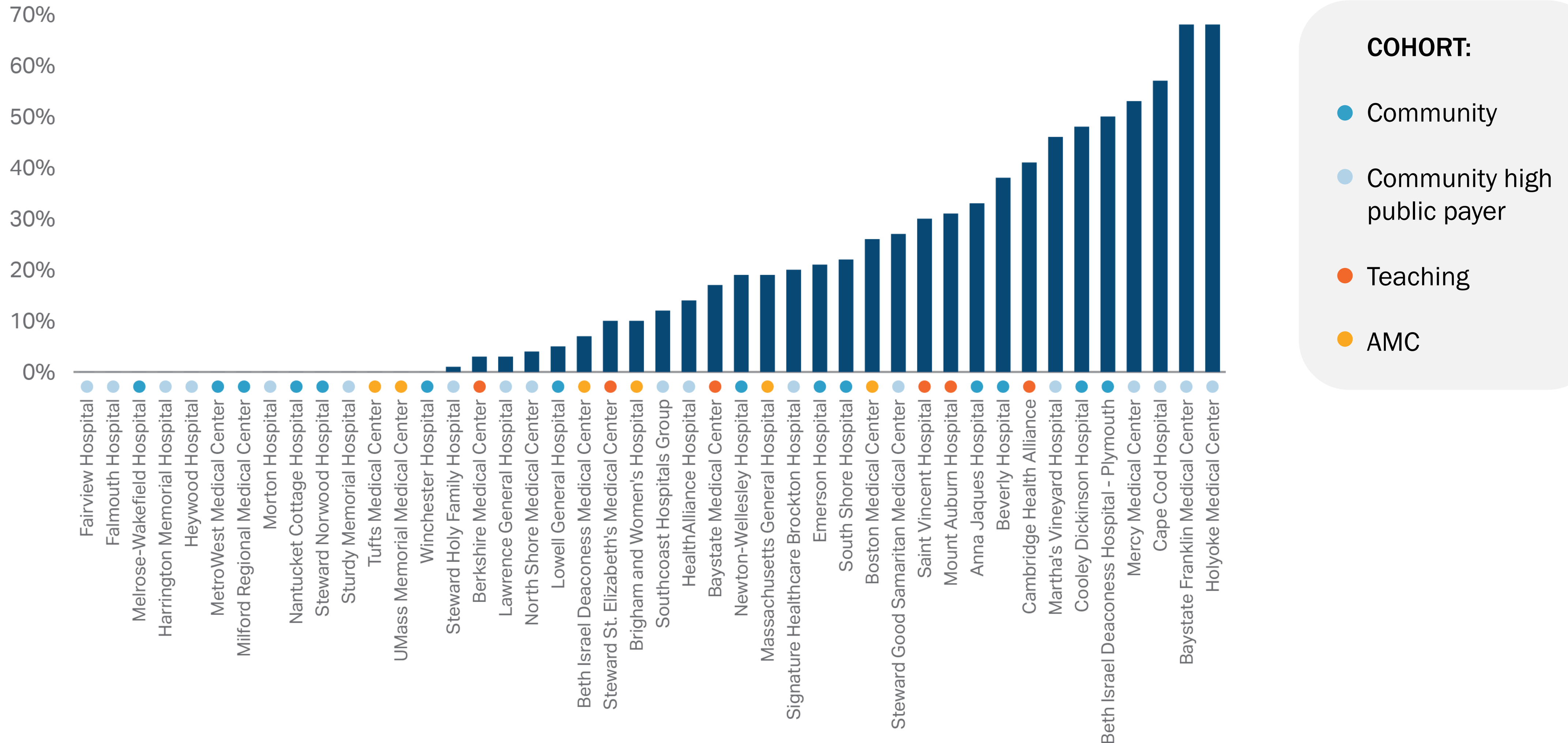
30
of the Commonwealth's **44** hospitals with maternity beds reported midwife-attended births

Notes: Beverly Hospital and Cambridge Health Alliance include hospitals and their associated birth centers. Hospitals reporting <500 births in 2017 excluded for readability: Baystate Franklin Medical Center, Fairview Hospital, Falmouth Hospital, Harrington Memorial Hospital, Heywood Hospital, Holyoke Medical Center, Martha's Vineyard Hospital, Morton Hospital, Nantucket Cottage Hospital, Steward Norwood Hospital. See appendix for detail on hospital exclusions.

Source: HPC analysis of Massachusetts Department of Public Health birth record data for 2017.

The proportion of births attended by midwives varied by hospital from 0 to nearly 70%.

All Payers

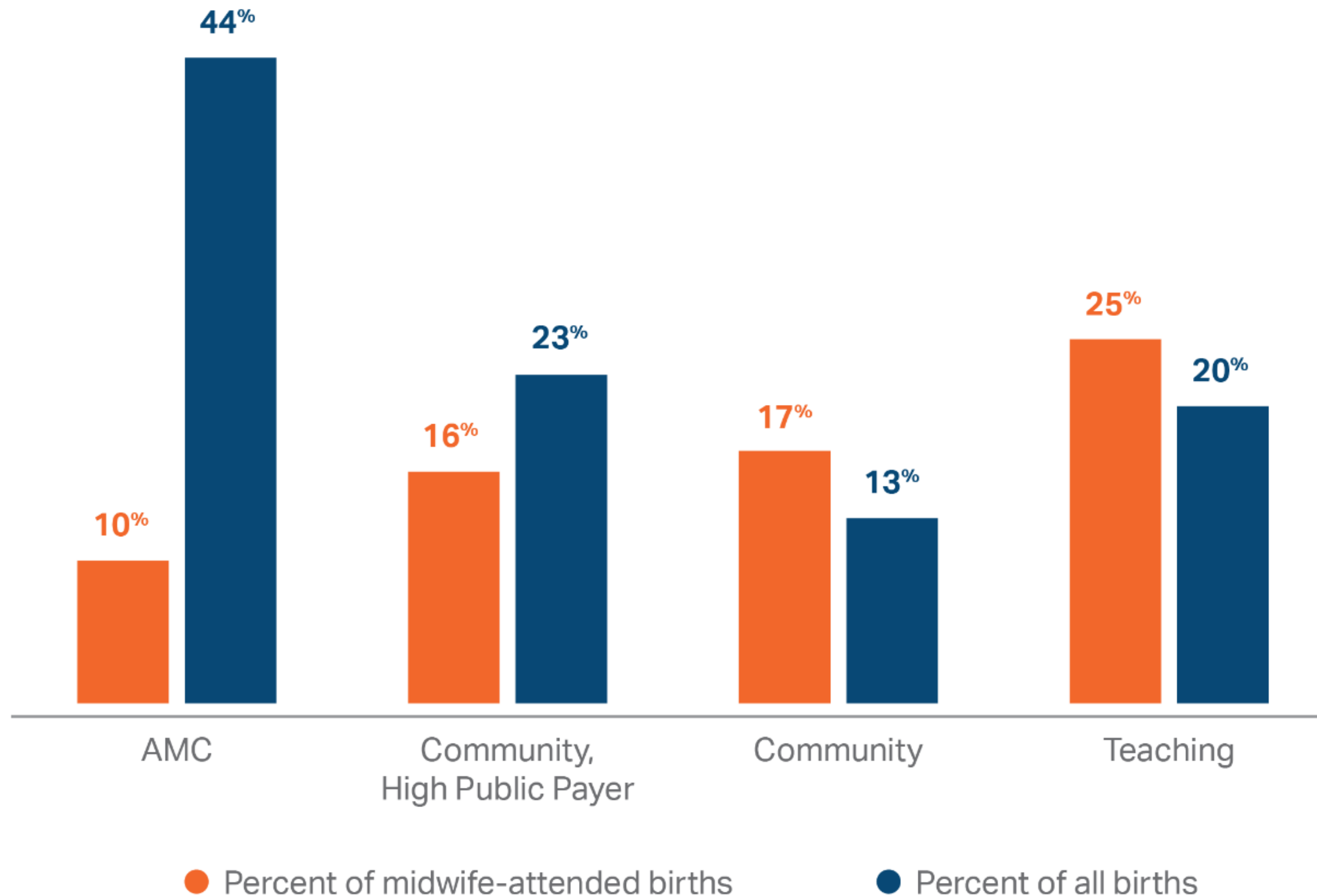


Notes: Beverly Hospital and Cambridge Health Alliance include hospitals and their associated birth centers.
Source: HPC analysis of Massachusetts Department of Public Health birth record data.

44% of Massachusetts births in 2017 took place in academic medical centers, which had the lowest rates of midwife-attended births.

All Payers

Total birth volume and proportion of midwife-attended births by hospital cohort, 2017



The share of deliveries taking place in community hospitals declined by 2.5 percentage points from 2016-2019 as deliveries have become increasingly concentrated in academic medical centers.

Source: HPC analysis of Massachusetts Department of Public Health birth record data, 2017 and HPC analysis of Center for Health Information and Analysis Hospitals Inpatient Discharge Database, 2010-2019

CNMs attended a higher proportion of Medicaid-covered births than commercially-insured births.

All Payers

Proportion of midwife-attended births by payer, 2017

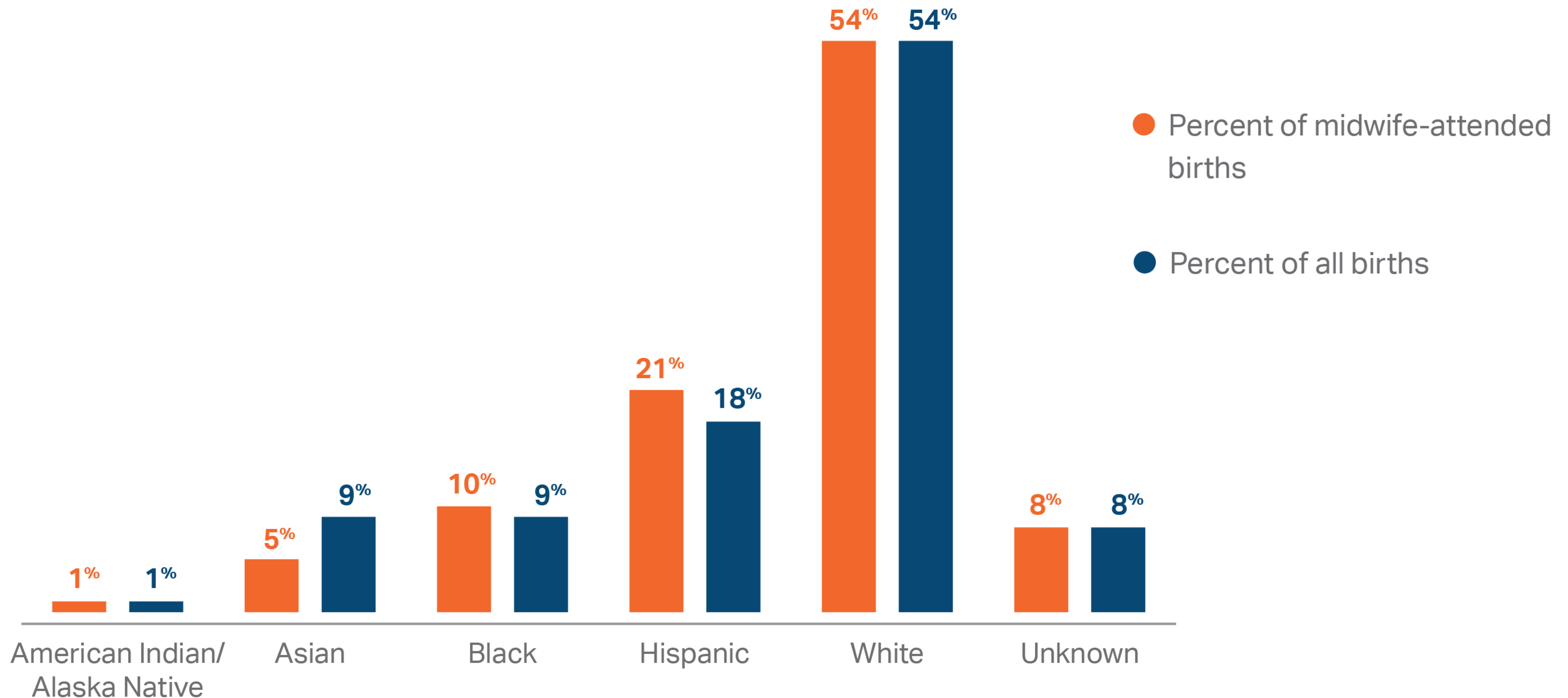
Payer	Proportion
Self pay	13.0%
Commercial	14.6%
Medicaid	19.8%
Other public	19.9%

Notes: Free care omitted from this exhibit. Free care represented 0.01% of all births and no midwife-attended births in 2017.
Source: HPC analysis of Massachusetts Department of Public Health birth records,

Birthing people with midwife-attended births did not differ markedly by race/ethnicity.

All Payers

Proportion of midwife-attended births and proportion of all births by patient race and ethnicity, 2017



Note: Terminology for racial and ethnic groups are those used in the original data source
Source: HPC analysis of Massachusetts Department of Public Health birth records,

Factors Contributing to Variation in Midwifery Care

HPC

According to stakeholders, variation in the extent to which hospitals incorporate nurse midwives in maternity care can be related to several factors.

- **Hospital history** of offering midwifery care or having a shortage of obstetricians.
- **Physician or leadership understanding of midwifery** care and willingness to collaborate across provider types.
- **Hospital definition of obstetric risk** and which patients are appropriate for midwifery care.
- **Care model** that includes patient education about midwifery or positions midwives as primary providers, offering patients the opportunity to choose their provider type.
- **Patient awareness** of or interest in midwifery.

Even in hospitals where CNMs have a significant role in childbirth, hospitals' care models and midwives' roles varied widely.

	Hospital 1	Hospital 2	Hospital 3	Hospital 4
Staffing	Employs a mix of 9 OBs and 7 CNMs	Employs 10 full-time and 5 part-time midwives and 5 OBs	Employs 12 CNMs and 4 OBs, a mix of full-time and part-time providers	27 full- and part-time midwives and 25 OBs, a mix of employed and contracted providers
Patient Education		Prenatal care includes patient education about provider options, and patients can opt into midwifery or physician care		Prenatal care includes patient education about provider options at some office locations, and patients can opt into midwifery or physician care
Prenatal Care	Patients are assigned an OB early in pregnancy; OBs are the main prenatal care providers	Both CNMs and OBs provide prenatal care	Both CNMs and OBs provide prenatal care	Both CNMs and OBs provide prenatal care; OBs provide prenatal care collaboratively with NPs
CNM Role in Labor and Delivery	CNMs primarily provide inpatient labor and delivery care and are on-call	CNMs provide labor and delivery care in birth center and inpatient settings	CNMs are primary providers for inpatient labor and delivery care, and care for all births except scheduled cesareans	CNMs provide inpatient labor and delivery care, and care for their patients through postpartum
Risk Considerations	OBs directly care for high-risk labors and for any patients who request an MD/DO delivery, and serve as backup and as needed	Only the lowest-risk patients are eligible for birth center care	Higher-risk patients receive collaborative CNM and OB care	Higher-risk patients or those who develop complications may receive collaborative care or shift to physician-led care

Source: HPC meetings with hospitals, August-September 2021. Each of the hospitals had 30-70% midwife-attended births as of 2017, based on HPC analysis of Massachusetts Department of Public Health birth record data.

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Considerations for Exploring Outcomes and Spending Associated with Midwifery Care in Massachusetts

HPC

- Observed associations between midwives and birth outcomes can be complicated by the fact that midwives tend to care for low- and moderate-risk pregnancies.[1,2] The highest-risk pregnancies (approximately 6-8% of pregnancies) are generally not appropriate for midwife care and are more likely to occur in AMCs.[3]
  - *Academic researchers and the HPC control for numerous factors in seeking to understand associations between use of CNMs and birth outcomes across Massachusetts.*
- It is difficult to ascertain CNM involvement in birth from claims data because CNMs are often not listed as billing providers, even when they are directly involved in delivery.
  - *For spending outcomes which are derived from claims data, the HPC uses hospital-level birth record data from the Massachusetts Department of Public Health to estimate rates of midwifery care by hospital.*
- Ultimately, the observed associations between rates of midwifery care and outcomes are validated by the fact that the variation in hospitals' use of midwives is idiosyncratic and not directly related to the characteristics of the people who give birth at each hospital

1 Johantgen M, Fountain L, Zangaro G, Newhouse R, Stanik-Hutt J, White K. Comparison of Labor and Delivery Care Provided by Certified Nurse-Midwives and Physicians: A Systematic Review, 1990 to 2008. Women's Health Issues. 2012; 22(1): e73-e81. https://doi.org/10.1016/j.whi.2011.06.005

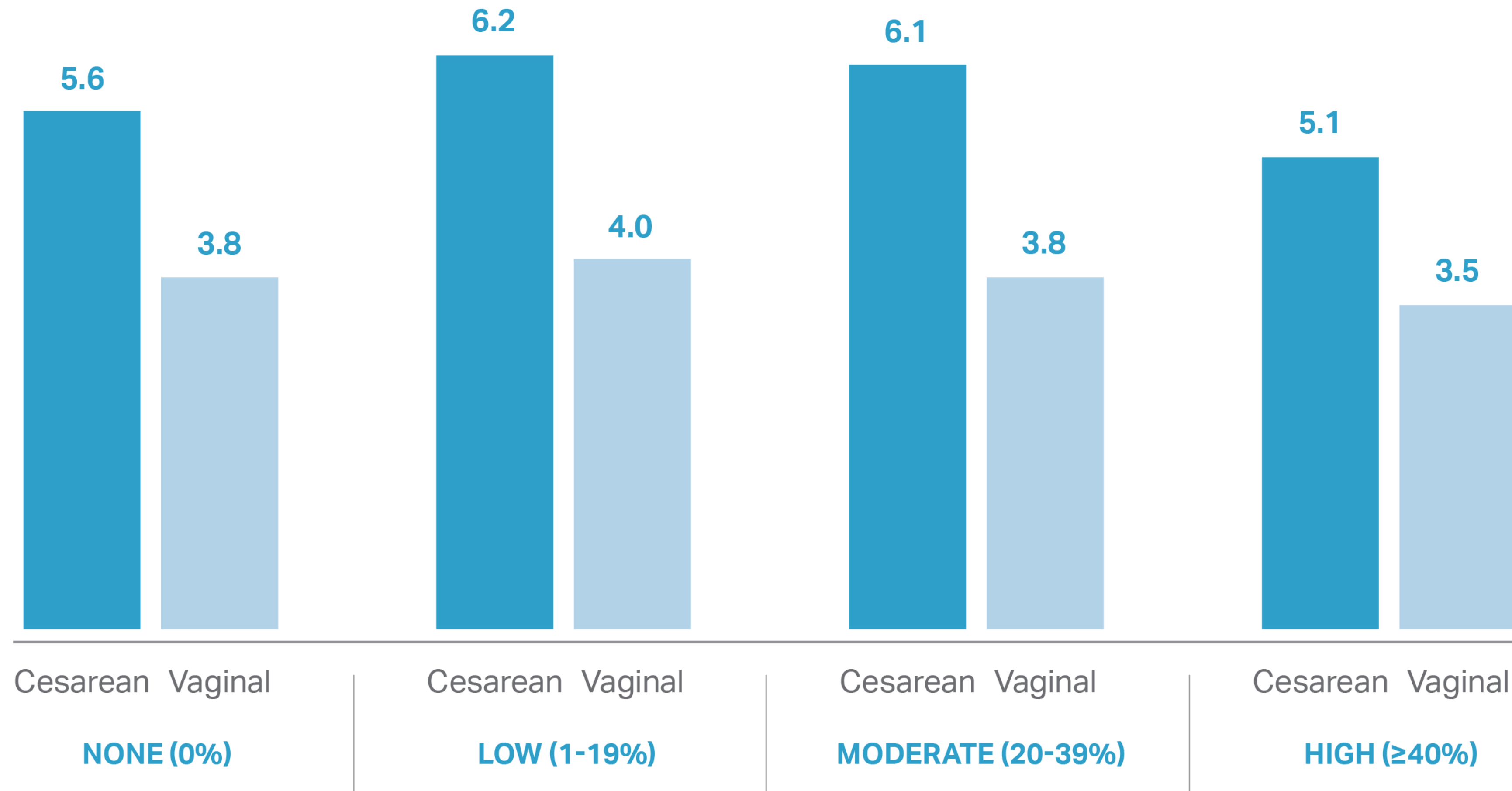
2 Cragin L, Kennedy HP. Linking Obstetric and Midwifery Practice with Optimal Outcomes. Journal of Obstetric, Gynecologic & Neonatal Nursing. 2006: 35:779-785. DOI: 10.1111/J.1552-6909.2006.00106.x

3 University of California San Francisco Health. High Risk Pregnancy. Available at: https://www.ucsfhealth.org/conditions/high-risk-pregnancy

Hospitals with a higher proportion of midwife-attended births had a shorter length of inpatient stay.

Commercial

Inpatient length of stay for cesarean and vaginal births at hospitals with differing proportions of midwife-attended births, 2017

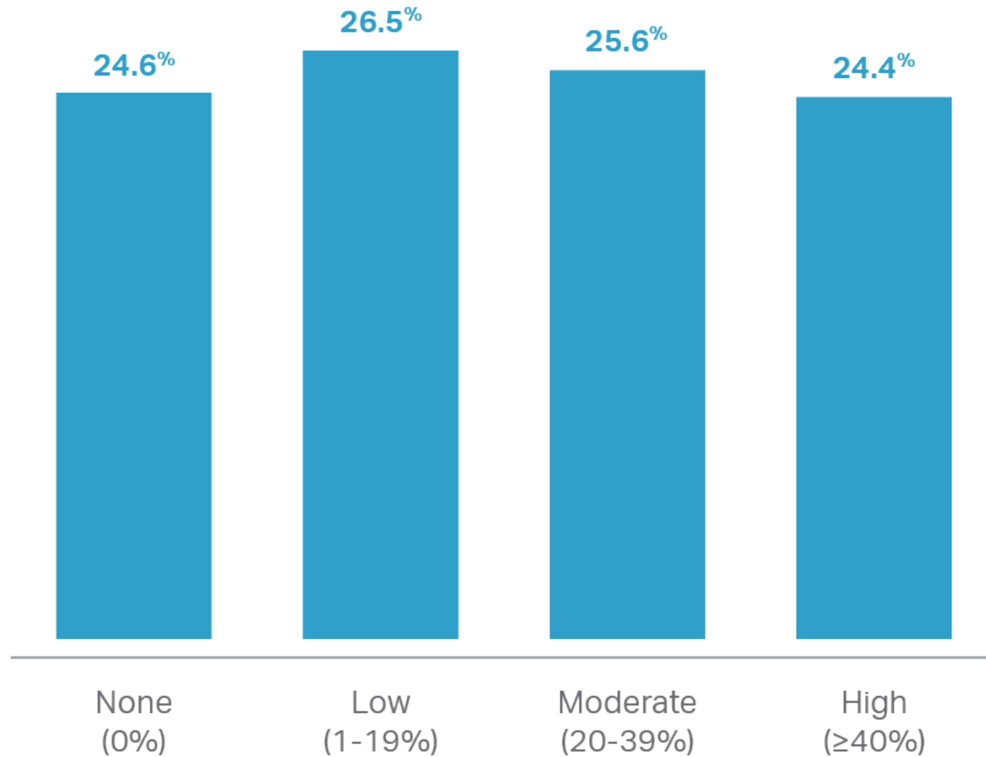


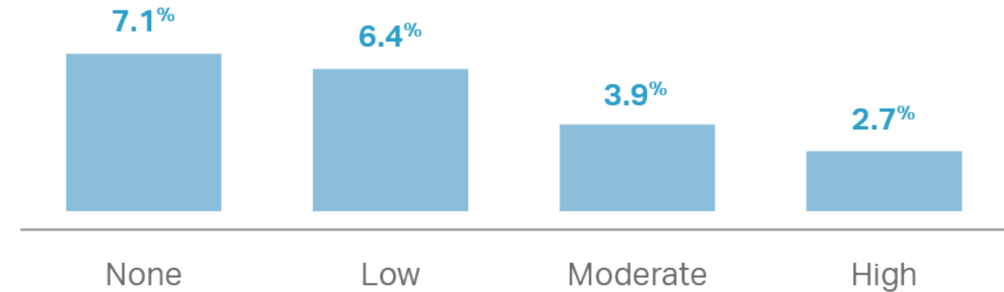
Source: HPC analysis of All-Payer Claims Database 7.0 Massachusetts Department of Public Health birth record data for 2017.

Hospitals with a higher proportion of midwife-attended births had lower cesarean and episiotomy rates.

All Payers

Cesarean and episiotomy rates at hospitals with differing proportions of midwife-attended births, 2017





Sources: HPC analysis of Massachusetts Department of Public Health birth record data for 2017 and Leapfrog hospital quality metrics as reported to the Center for Health Information and Analysis.

Hospitals with a higher proportion of midwife-attended births had lower episiotomy rates.

All Payers

Proportion of midwife-attended births and episiotomy rates by hospital, 2017

Notes: Beverly Hospital and Cambridge Health Alliance include hospitals and their associated birth centers. Hospitals not reporting Leapfrog quality metrics excluded from this analysis: Boston Medical Center, Martha's Vineyard Hospital, Massachusetts General Hospital, Nantucket Cottage Hospital, North Shore Medical Center, Southcoast Hospitals Group. See appendix for detail on exclusions.

Sources: HPC analysis of Massachusetts Department of Public Health birth record data for 2017 and Leapfrog hospital quality metrics as reported to the Center for Health Information and Analysis.

Hospitals with a higher proportion of midwife-attended births had lower maternity spending.

All Payers

Mean maternity episode spending at hospitals with differing proportions of midwife-attended births, 2017

None (0%)	Low (1-19%)	Moderate (20-39%)	High (≥40%)
$23,102	$27,693	$22,213	$20,952

Notes: Episodes include prenatal, delivery, and postpartum care, comprising 6 months before admission for a labor-and-delivery inpatient hospital stay, during the inpatient stay, and for 3 months after discharge.

Source: HPC analysis of All-Payer Claims Database 7.0 and Massachusetts Department of Public Health birth record data for 2017

Hospitals with a higher proportion of midwife-attended births had lower maternity spending.

Commercial

Mean maternity episode spending and percent midwife-attended births per hospital, 2017

70%
60%
50%
40%
30%
20%
10%
0%

$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$0

Falmouth Hospital
Heywood Hospital
Melrose-Wakefield Hospital
MetroWest Medical Center
Milford Regional Medical Center
Morton Hospital
Steward Norwood Hospital
Sturdy Memorial Hospital
Tufts Medical Center
UMass Memorial Medical Center
Winchester Hospital
Berkshire Medical Center
Steward Holy Family Hospital
North Shore Medical Center
Brigham and Women's Hospital
Lowell General Hospital
Steward Good Samaritan Medical Center
Steward St. Elizabeth's Medical Center
Lawrence General Hospital
Beth Israel Deaconess Medical Center
Massachusetts General Hospital
HealthAlliance Hospital
Southcoast Hospitals Group
Baystate Medical Center
Newton-Wellesley Hospital
Signature Healthcare Brockton Hospital
Emerson Hospital
South Shore Hospital
Boston Medical Center
Mount Auburn Hospital
Saint Vincent Hospital
Anna Jaques Hospital
Beverly Hospital
Cooley Dickinson Hospital
Beth Israel Deaconess Hospital - Plymouth
Mercy Medical Center
Cambridge Health Alliance
Cape Cod Hospital
Baystate Franklin Medical Center

Percent midwife-attended commercially-insured births

Maternity episode spending

COHORT:

- Community
- Community high public payer
- Teaching
- AMC

Notes: Episodes include prenatal, delivery, and postpartum care, comprising 6 months before admission for a labor-and-delivery inpatient hospital stay, during the inpatient stay, and for 3 months after discharge. Beverly Hospital and Cambridge Health Alliance include hospitals and their associated birth centers. Hospitals with <20 births observed in APCD 7.0 excluded from this analysis: Fairview Hospital, Harrington Memorial Hospital, Holyoke Medical Center, Martha's Vineyard Hospital, Nantucket Cottage Hospital. See appendix for detail on exclusions

Source: HPC analysis of All-Payer Claims Database 7.0 and Massachusetts Department of Public Health birth record data for 2017.

The HPC's findings suggest that greater CNM involvement could lead to lower costs and better outcomes in the Commonwealth.

HPC

A 10 percentage-point increase (from 17% to 27%) in the proportion of CNM-attended births would be associated with:

A $530 reduction in maternity spending per maternity episode.

A reduction in the Cesarean rate from 26.0% to 24.4% (approximately 3560 fewer cesarean births).

A reduction in share of births in which episiotomies are performed from 6.0% to 4.5% (approximately 860 fewer episiotomies).

Notes: Spending model excludes highest 5% of spending, patients with hypertension or diabetes diagnosis, and hospitals reporting no midwife-attended births. Model adjusts for births in academic medical centers, length of inpatient stay, patient age, and cesarean birth, accounting for hospital-level clustering. Quality metric models exclude patients with hypertension or diabetes diagnoses and hospitals reporting no midwife-attended births. Models adjust for births in academic medical centers and patient age, accounting for hospital-level clustering. Reported coefficients statistically significant at $p \leq 0.05$. Baseline number of cesarean births and episiotomies was calculated using average statewide Leapfrog rates and total births reported to DPH at hospitals reporting Leapfrog metrics.

Source: HPC analysis of All-Payer Claims Database 7.0, Massachusetts Department of Public Health birth record data, and Leapfrog hospital quality metrics as reported to the Center for Health Information and Analysis.

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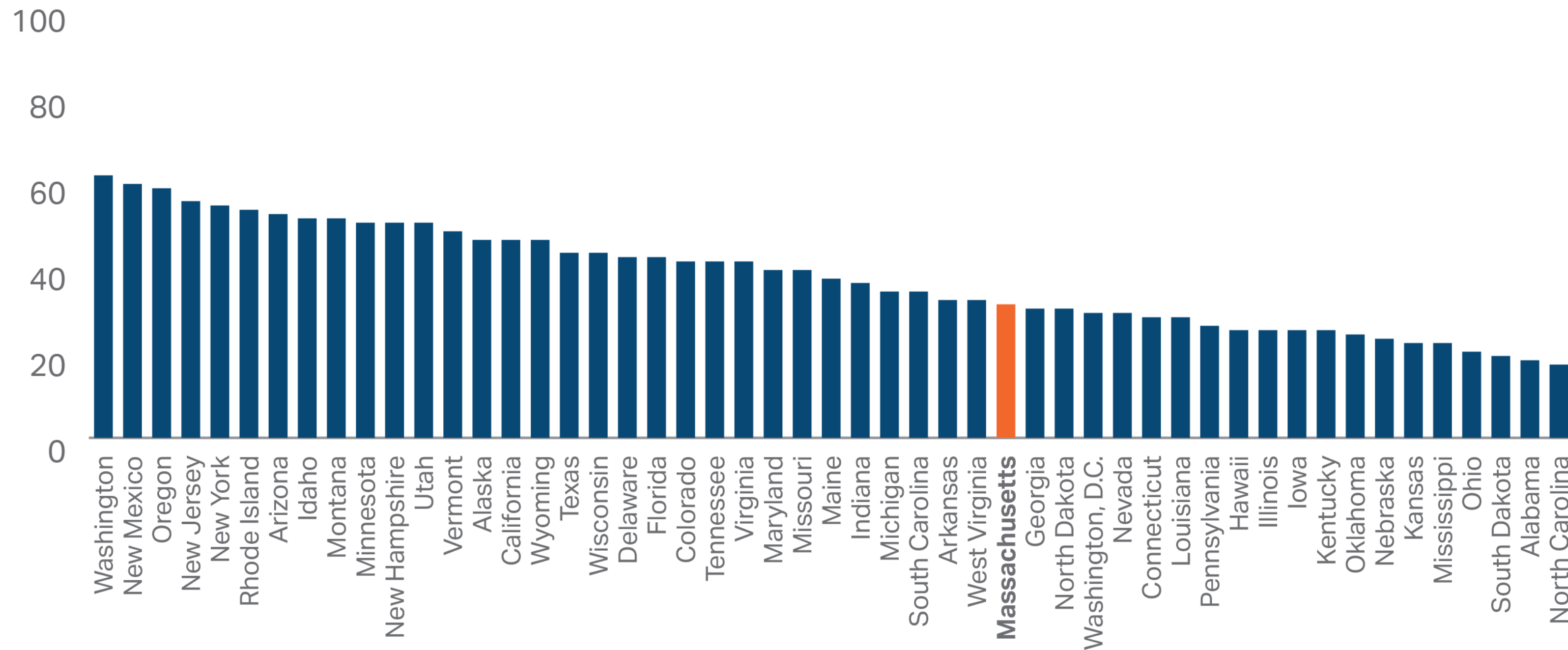
Massachusetts ranks 32nd on the degree to which all types of midwives are integrated into the health system.

State-level practice environment scores regarding midwife integration into the overall health system as measured by Vedam et al, 2018. Higher score indicates greater involvement. Optimal score is 100.



- Researchers rated all states on scope of practice regulations, prescriptive authority, and practice autonomy **for CNMs, CMs, and CPMs**, and created a composite 100-point scoring system for midwife integration into health systems.
- Massachusetts falls short on use of non-CNM midwives and use of alternative birth sites. CNM-specific limitations include **lack of hospital admitting privileges.**
- In separate analyses, higher scores were associated with higher rates of **vaginal delivery**, and lower rates of **cesarean birth**, **preterm birth**, and **low birth weight infants.**

Vedam S, Stoll K, MacDorman M, Declercq E, Cramer R, Cheyney M, Fisher T, Butt E, Yang T, Kennedy HP. Mapping integration of midwives across the United States: Impact on access, equity, and outcomes. PLoS ONE. 2018;13(2): e0192523
Exhibit data source: BirthPlace Lab. State Ranking of Midwifery Integration Scores 2014-2015. Available at: https://www.birthplacelab.org/how-does-your-state-rank/

Massachusetts scores higher when considering integration and autonomy for CNMs alone, but barriers remain.

Massachusetts ranks 14th highest on CNM-specific measures, reflecting high scores on some measures of autonomous practice, but limitations include:

- Lack of access to hospital privileging or physician referral
- Physician referral/consultation difficult to access for birth centers
- Some prescription limitations

Vedam S, Stoll K, MacDorman M, Declercq E, Cramer R, Cheyney M, Fisher T, Butt E, Yang T, Kennedy HP. Mapping integration of midwives across the United States: Impact on access, equity, and outcomes. PLoS ONE. 2018;13(2): e0192523
Exhibit source: BirthPlace Lab. State Ranking of Midwifery Integration Scores 2014-2015. Available at: https://www.birthplacelab.org/how-does-your-state-rank/

Expanded scope of practice does not necessarily translate to hospital policies that permit autonomous practice for CNMs.

1. **Hospital bylaws,** not regulated by state SOP,[1,2] can exclude CNMs and other APRNs from their medical staff, require physician supervision for APRNs, and require nurses to admit patients under a physician's name.[3]

2. **Commercial payer policy** may constrain practice with additional credentialing requirements or by requiring CNMs to list a supervising physician to bill. Payer policy can also incentivize "incident-to billing" practices that distort care patterns and reduce CNM autonomy.

3. **Cultural and practice barriers also remain.** Definitions of obstetric risk, which often drive which patients can receive midwifery care, vary by hospital, and CNMs are often excluded from decision-making around risk. Likewise, physicians may be reluctant to cede influence over the hospital practice environment.[1]

1 Pittman P, Leach B, Everett C, Han X, McElroy D. NP and PA Privileging in Acute Care Settings: Do Scope of Practice Laws Matter? Medical Care Research and Review. 2020; 77(2): 112-120. https://doi.org/10.1177/1077558718760333
2 Park J, Athey E, Pericak A, Pulcini J, Greene J. To What Extent Are State Scope of Practice Laws Related to Nurse Practitioners' Day-to-Day Practice Autonomy? Medical Care Research and Review. 2018; 75(1): 66-87. https://doi.org/10.1177/1077558716677826
3 Yang YT, Attanasio LB, Kozhimannil KB. State Scope of Practice Laws, Nurse-Midwifery Workforce, and Childbirth Procedures and Outcomes. Women's Health Issues. 2016; 26(3): 262-267. https://doi.org/10.1016/j.whi.2015.03.006

Further barriers persist in both expanding and diversifying the midwifery workforce.

HPC

- **There is only one midwifery education program in Massachusetts** at Baystate Medical Center in Springfield.[1]
- **Most CNMs in Massachusetts are White non-Hispanic/Latino** (86%),[2] and prospective midwives of color face particular barriers to workforce entry.
- **Experiences of racism in midwifery education may hinder prospective midwives of color** in completing educational programs or participating in professional organizations for midwives, thereby impeding their entry into the profession.[3]

1 Massachusetts Affiliate of the American College of Nurse Midwives. Become a Midwife. Available at: https://www.massmidwife.org/become-a-midwife/

2 HPC analysis of data from the 2018 Health Professions Data Series administered by the Massachusetts Board of Registration in Nursing in collaboration with the DPH Healthcare Workforce Center. Based on self-reported data, 86% of CNMs are White, non-Hispanic/Latino/Spanish; 4% are Hispanic/Latino/Spanish

3 Serbin JW, Donnelly E. The Impact of Racism and Midwifery's Lack of Racial Diversity: A Literature Review. Journal of Midwifery & Women's Health. 2016; 61(6): 694-706 https://doi.org/10.1111/jmwh.12572

Alternative Birthing Sites

HPC

- Birth centers can offer a more patient-centric, lower-intervention model of care, with care led by CNMs.
- Providers seeking to open and operate non-hospital-affiliated birth centers may experience policy and regulatory barriers, as well as lower rates for commercial reimbursement for midwifery care.
  - MassHealth covers services at non-hospital-affiliated birth centers.[1]
- Birth centers tend to be paid less than hospitals for labor and delivery care because much of the payment for childbirth comes through hospital facility fees, and non-hospital affiliated birth centers are not eligible to receive facility fees.
- Birth centers could provide more options for local births in areas of the Commonwealth where relatively low birth volume creates access challenges.
  - Obstetric care is typically a low- or negative-margin service line for hospitals, particularly in low-birth-volume areas.
  - Low-birth-volume areas such as Southeastern or Western Massachusetts have seen five hospital obstetric units close since 2017.[2-6]

1 Commonwealth of Massachusetts Executive Office of Health and Human Services Office of Medicaid. MassHealth Freestanding Birth Centers Bulletin 1. April 2021. Available at: https://www.mass.gov/doc/freestanding-birth-centers-bulletin-1-provider-participation-requirements-and-service-codes-and-descriptions-1/download

2 Román E. Holyoke Birthing Center closure highlights community concerns about medical services. MassLive. Aug 26, 2020. Available at: https://www.masslive.com/news/2020/08/holyoke-birthing-center-closure-highlights-community-concerns-about-medical-services.html

3 Winokoor C. Steward Health Care defends plan to shut maternity ward at Taunton hospital. The Enterprise. Feb 17, 2018. Available at: https://www.enterprisenews.com/news/20180217/steward-health-care-defends-plan-to-shut-maternity-ward-at-taunton-hospital

4 Tobey Hospital's Maternity Unit to Close in a Few Weeks. CapeCod.com. Dec 12, 2019. Available at: https://www.capecod.com/newscenter/legislative-effort-launched-in-wake-of-tobey-hospital-maternity-closure/#:~:text=WAREHAM%20%E2%80%93%20The%20maternity%20unit%20at,t%20happen%20in%20the%20future

5 McCormick C. Falmouth Hospital to Shut Maternity, Pediatric Units. Cape Cod Times. Mar 31, 2020. Available at: https://www.capecodtimes.com/news/20200331/falmouth-hospital-to-shut-maternity-pediatric-units

6 Hanson M. Harrington HealthCare is closing its birthing center and sending patients to UMass Memorial Medical Center. MassLive. Jan 7, 2019. Available at: https://www.masslive.com/news/worcester/2017/05/harrington_healthcare_is_closi.html#:~:text=Worcester-,Harrington%20HealthCare%20is%20closing%20its%20birthing%20center%20and,to%20UMass%20Memorial%20Medical%20Center&text=The%20Board%20of%20Directors%20of,President%20and%20CEO%20Edward%20H.

Payment models may also impact use of midwives and alternative birth sites.

HPC

- Commercial payment policies tend to favor the medicalized birth paradigm and increase administrative complexity.
- Commercial payers typically reimburse CNMs at 85% or less of the rate of physicians, encouraging providers to use “incident-to billing” practices.
  - Under this practice, CNMs bill under a supervising physician’s ID, which **reinforces reduced autonomy** for CNMs, and can create **billing difficulties** for patients.
  - This practice also can **disincentivize the expansion of midwifery programs.**
- **Bundled payment models** for pregnancy and birth episodes – with the same payment rate whether a CNM or OB leads care – provide financial incentives for health systems to have CNMs lead care where appropriate.
  - The Purchaser Business Group on Health (PBGH), for example, is working with payers and multi-stakeholder groups to develop episodic / bundled payments to “control costs and encourage high-value care throughout pregnancy, childbirth and the postpartum period.”[1]

1 Purchaser Business Group on Health. Value-Based Payments. Available at: https://www.pbgh.org/initiative/spread-value-based-payment/

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Summary of Findings

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1. Increased rates of midwifery care in the Commonwealth would lead to lower costs and improved outcomes and could help to address longstanding disparities.

2. Despite Massachusetts granting full scope of practice authority to CNMs in 2012, hospital and payer policies may restrict autonomous practice.

3. Barriers persist in both expanding and diversifying the midwifery workforce in Massachusetts.

Policy Recommendations

INCREASE AND IMPROVE USE OF CERTIFIED NURSE MIDWIVES

- Reimburse for obstetric care with payment models that are neutral to birth setting and provider mix and rebalance payment towards labor costs and away from facility fees to incentivize use of CNMs and alternative sites, where appropriate.
- Improve public understanding and awareness of midwifery care and increase opportunities for patients to choose their provider type.
- Increase CNM and patient role in determining patient risk and deciding on appropriate interventions.

FACILITATE CERTIFIED NURSE MIDWIFE PRACTICE

- Modify hospital and payer policies and practices to align with state law that does not require CNMs to practice under physician supervision.
- Modify hospital bylaws and billing practices to permit APRNs to be part of hospital medical staff, admit their own patients, and bill directly.

SUPPORT ALTERNATIVE BIRTH SETTINGS

- Allow patients to seek safe and supportive non-hospital settings for birth based on their preferences and risk determinations.
- Re-evaluate regulatory and other barriers to the establishment and operation of non-hospital settings such as birth centers, especially in underserved communities.
- Support shared decision-making between patients and providers, and improve patients' ability to make informed choices about their birth care.

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Data Sources and Methods

HPC

APCD 7.0

- 2016-2017 maternity episodes, which include 6 months before admission for a labor-and-delivery inpatient stay that took place during 2017, the inpatient stay, and 3 months after discharge, capturing 7180 maternity episodes
- Data on spending and length of stay for commercially-insured individuals
  - Included claims for individuals with 12 months of coverage in both 2016 and 2017
  - Excluded repeating services (e.g., physical therapy or psychotherapy) from spending analyses

DPH BIRTH RECORD DATA

- Census of births in Massachusetts
- Data on birth volume, provider type, and patient race/ethnicity by hospital, 2017

DPH NURSE LICENSURE SURVEY

- Biannual survey of all Massachusetts nurses renewing their licenses
- Data on CNM demographics and practice, 2018

LEAPFROG HOSPITAL QUALITY METRICS

- Reported to the Center for Health Information and Analysis (CHIA)
- Data on hospital cesarean section and episiotomy rates, 2017

Stakeholders Consulted

HPC

- American College of Nurse Midwives Massachusetts Affiliate
- Baystate Franklin Medical Center
- Cambridge Health Alliance
- Cape Cod Hospital
- Massachusetts chapter of the American College of Obstetricians and Gynecologists
- Mass Midwives Alliance
- Midwives Alliance of North America
- Mount Auburn Hospital
- Seven Sisters Midwifery and Community Birth Center
- South Shore Hospital
- Researchers and clinicians

About the Health Policy Commission

The Massachusetts Health Policy Commission, an independent state agency, strives to advance a more transparent, accountable, and innovative health care system through independent policy leadership and investment programs. The HPC's goal is better health and better care – at a lower cost – for all people across the Commonwealth.

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Appendix

Maternity Provider Landscape Detail and Sources

Provider	# in MA	Education & Training	Licensed in MA by	Settings of Care in MA	Sources
Obstetrician/ Gynecologists	1042	Pre-medical undergraduate education, medical education, and postgraduate medical residency or fellowship. Complete medical licensing examinations, including specialty-specific examinations for certification by American Board of Medical Specialties.	Board of Registration in Medicine	Hospitals, offices	1-3
Nurse practitioners with OB/Gyn specialty	121	Undergraduate degree and graduate nursing education. Complete nursing licensure examination. Complete authorization as an Advanced Practice Registered Nurse.	Board of Registration in Nursing	Hospitals, offices	4,9
Registered nurses with OB/Gyn specialty	2698	Undergraduate nursing education. Complete nursing licensure examination.	Board of Registration in Nursing	Hospitals, offices	5,9
Certified Nurse Midwives	286	Bachelors degree and Registered Nurse licensure. Complete authorization as an Advanced Practice Registered Nurse. Midwifery education program, including clinical precepting. Graduate degree required for certification by American Midwifery Certification Board.	Board of Registration in Nursing	Hospitals, birth centers, offices	6,7
Certified Professional Midwives	40	Applicable coursework, work experience, and/or apprenticeship. Midwifery education program, including supervised clinical work. Certification based on demonstrated competencies.	Not licensed	Homes	7,8
Doulas	137	Many doulas complete training or certification programs, though neither is required for practice.	Not licensed	Hospitals, birth centers, offices, homes	10

1 Association of American Medical Colleges. Massachusetts Physician Workforce Profile. 2019. Available at: https://www.aamc.org/media/37941/download
2 American Board of Medical Specialties. Board Certification Requirements. Available at: https://www.abms.org/board-certification/board-certification-requirements/
3 Massachusetts Board of Registration in Medicine. Physician Licensing Fees and Eligibility Requirements. Available at: https://www.mass.gov/service-details/physician-licensing-fees-and-eligibility-requirements
4 Massachusetts Board of Registration in Nursing. Apply for APRN authorization. Available at: https://www.mass.gov/how-to/apply-for-aprn-authorization
5 Massachusetts Board of Registration in Nursing. About Board approved prelicensure nursing programs. Available at: https://www.mass.gov/service-details/about-board-approved-prelicensure-nursing-programs
6 HPC analysis of data from the 2018 Health Professions Data Series administered by the Massachusetts Board of Registration in Nursing in collaboration with the DPH Healthcare Workforce Center. For any further data requests or questions regarding the data collection please contact the Massachusetts Department of Public Health Office of Statistics and Evaluation Director, Sanouri Ursprung (sanouri.ursprung@state.ma.us)
Certified Professional Midwives Clarifying the Distinctions Among Professional Midwifery Credentials in the U.S. Available at: https://www.midwife.org/acnm/files/ccLibraryFiles/FILENAME/000000006807/FINAL-ComparisonChart-Oct2017.pdf
8 Massachusetts Affiliate of American College of Nurse-Midwives. About Midwives. Available at: http://massachusetts.midwife.org/index.asp?sid=10
9 HPC analysis of Health Resources & Services Administration (HRSA) National Sample Survey of Registered Nurses (NSSRN) data, 2018. Data source: https://bhw.hrsa.gov/data-research/access-data-tools/national-sample-survey-registered-nurses
10 Betsy Lehman Center for Patient Safety. Expanding Access to Doula Support Services in Massachusetts: Considerations for Successful Implementation. Forthcoming, October 2021.

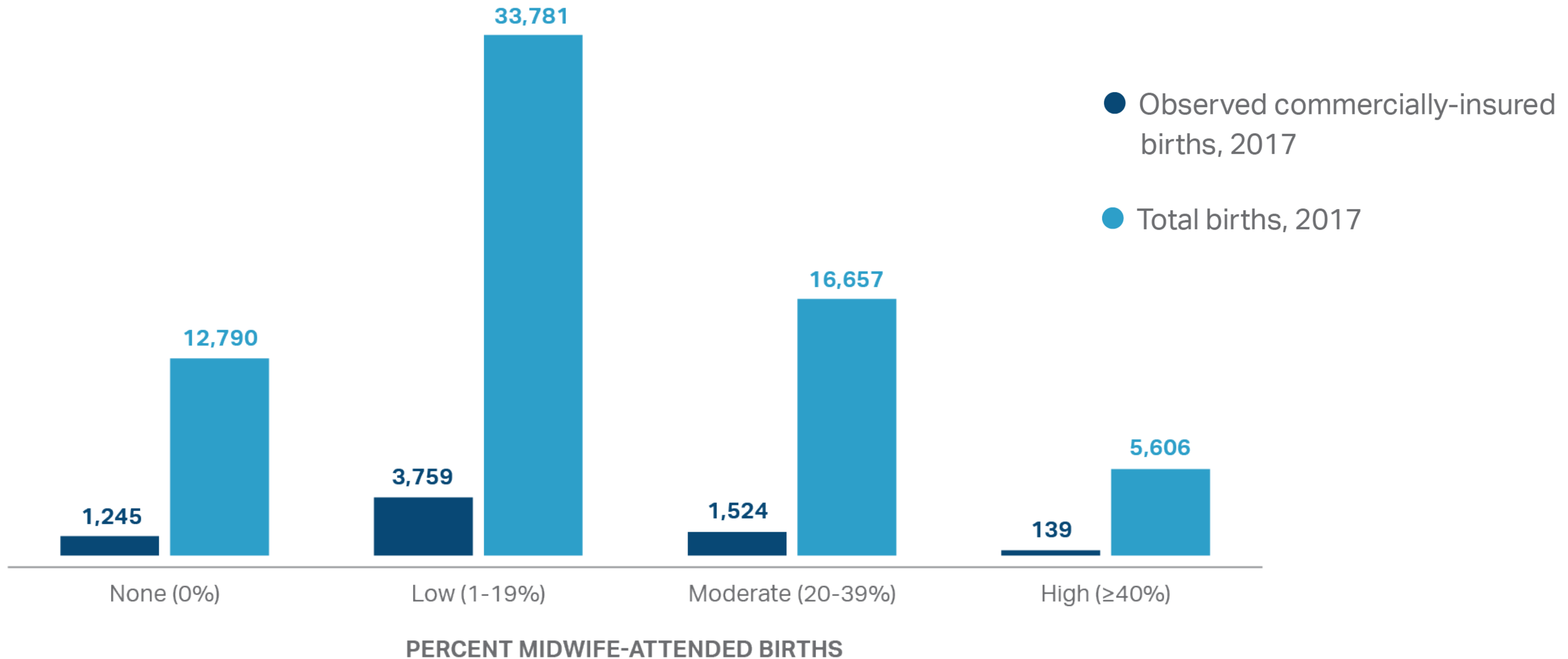
Hospitals Excluded From Analyses

Hospital	<500 births reported to DPH in 2017 (Slide 19)	Does not report Leapfrog quality metrics (Slide 30)	<20 observed births in APCD 7.0 (Slide 32)
Baystate Franklin Medical Center	x		
Boston Medical Center		x	
Fairview Hospital	x		x
Falmouth Hospital	x		
Harrington Memorial Hospital	x		x
Heywood Hospital	x		
Holyoke Medical Center	x		x
Martha's Vineyard Hospital	x	x	x
Massachusetts General Hospital		x	
Morton Hospital	x		
Nantucket Cottage Hospital	x	x	x
North Shore Medical Center		x	
Southcoast Hospitals Group		x	
Steward Norwood Hospital	x		

Commercially-insured births observed in the APCD had similar patterns of midwife involvement as all births.

All Payers

All births and observed commercially-insured births at hospitals with differing proportions of midwife-attended births, 2017

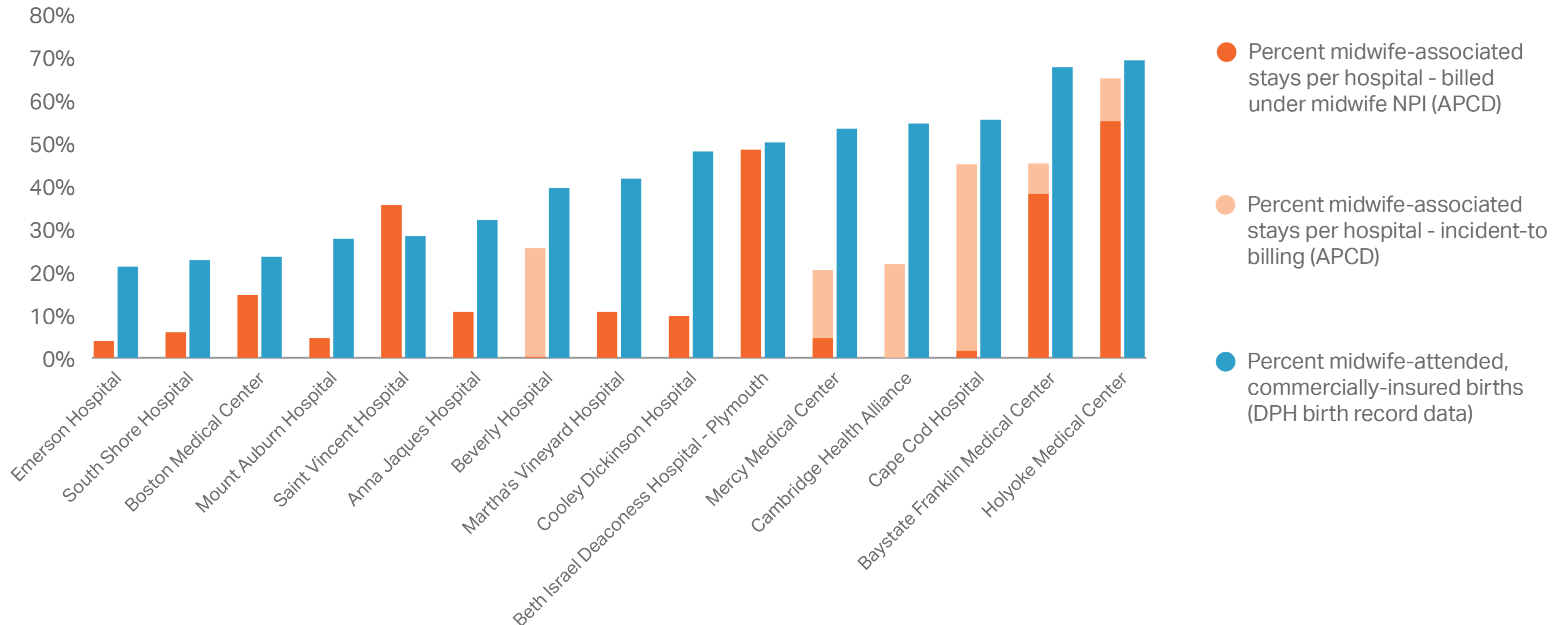


Notes: Commercially-insured births observed in the APCD include births January 1 – September 30, 2017.
Source: HPC analysis of All-Payer Claims Database 7.0 and Massachusetts Department of Public Health birth record data.

Commercial claims data does not accurately capture midwife-attended births, which may obscure provider quality of care measures.

Commercial

Percent of midwife-attended births per DPH birth record data and percent of labor-and-delivery stays with at least one midwife claim line per APCD, at the 15 hospitals with the highest proportion of midwife-attended births, 2017



Notes: Midwifery care in the APCD is measured as a percent of all labor-and-delivery stays per hospital that include any claim, for any type of service, billed using either a midwife NPI or billed incident-to an obstetrician NPI using modifier SA or SB. Beverly Hospital and Cambridge Health Alliance include hospitals and their associated birth centers.

Source: HPC analysis of All-Payer Claims Database 7.0 and Massachusetts Department of Public Health birth record data for 2017.