Certified Nurse Midwives and Maternity Care in Massachusetts

Report Findings

October 6, 2021

MASSACHUSETTS
HEALTH POLICY COMMISSION

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INTRODUCTION

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

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 current HPC investment programs.
  - C4SEN: supports development of innovative care models to improve the quality of care for substance-exposed newborns and their caregivers
  - 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 reform for Massachusetts providers.[2] However, SOP reform on its own may be necessary but not 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 Massachusets Health Care Delivery System. May 6, 2020. Avialable 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 MA each year.

1,042

Obstetrician/Gynecologists

- Medical education, residency, and licensure
- Hospitals, offices
- Board of Registration in Medicine

121

Nurse Practitioners with OB/Gyn specialty

- Undergraduate and graduate nursing education, NP certification
- Hospitals, offices
- Board of Registration in Nursing

2,698

Registered Nurses with OB/Gyn specialty

- Undergraduate nursing education, nursing exam
- Hospitals, offices, birth centers
- Board of Registration in Nursing

286*

Certified Nurse Midwives

- Undergraduate and graduate nursing education, midwifery education and certification
- Hospitals, offices, birth centers
- Board of Registration in Nursing

40

Certified Professional Midwives

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

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.

Focus on Certified Nurse Midwives

- CNMs are one of the five types of advanced-practice registered nurses (APRNs) licensed in MA[1,2] and comprise the majority of midwives in Massachusetts.
  - CNMs have had full scope of practice (SOP) in MA since 2012, and do not legally require physician supervision to practice, prescribe, or bill.[3-5]
- CNMs 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.

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 have twice the rate of severe maternal morbidity in MA as White Non-Hispanic women[6]

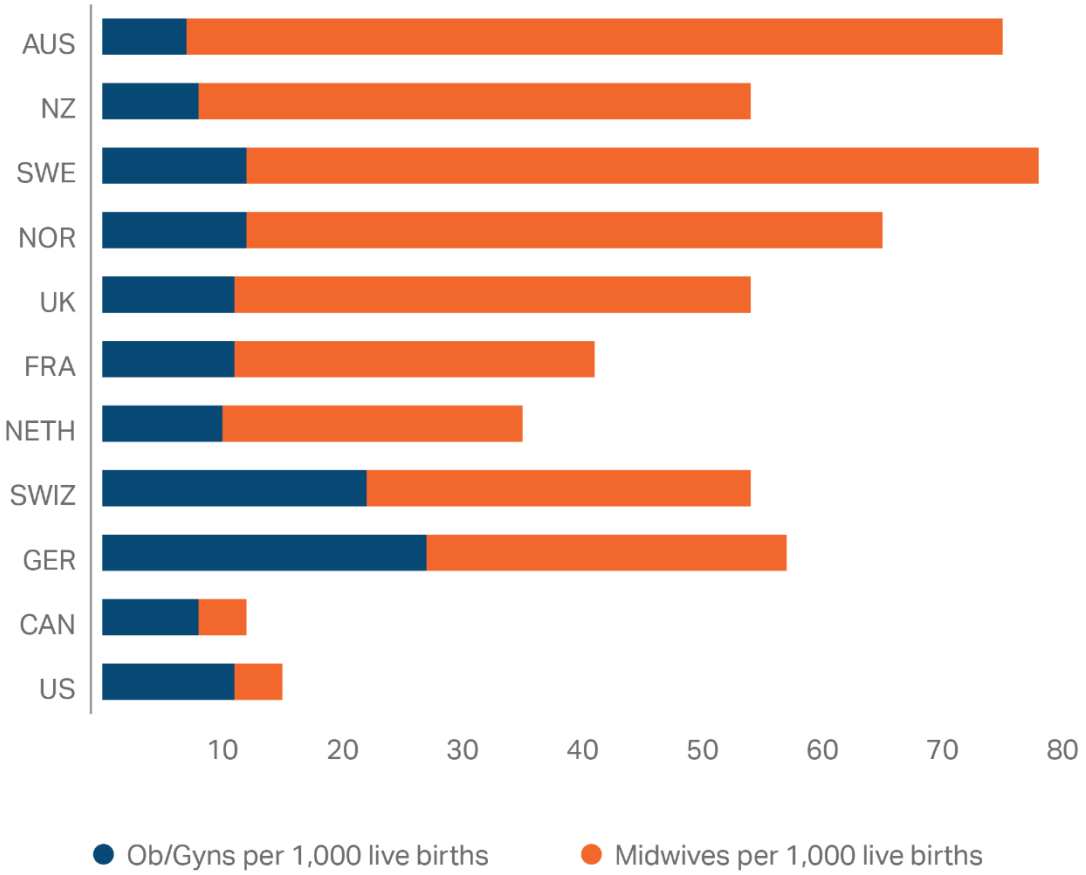
MIDWIFERY

- 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.

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



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-resource countries[2-3]

50%-75%

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/

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

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Data Sources and Methods

APCD 7.0

- 2016-2017 maternity episodes: 6 months before admission for labor-and-delivery inpatient stay, and 3 months after discharge
- 7180 episodes in 2017
- Data on spending, length of stay, and utilization

DPH birth record data

- Census of births in MA
- Data on provider type and patient race/ethnicity by hospital

DPH nurse licensure survey

- Biannual survey of all MA nurses renewing their licenses
- Data on CNM demographics and practice

Leapfrog hospital quality metrics

- Reported to CHIA
- Data on hospital cesarean section and episiotomy rates

Stakeholders

- 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
- Assorted researchers and clinicians

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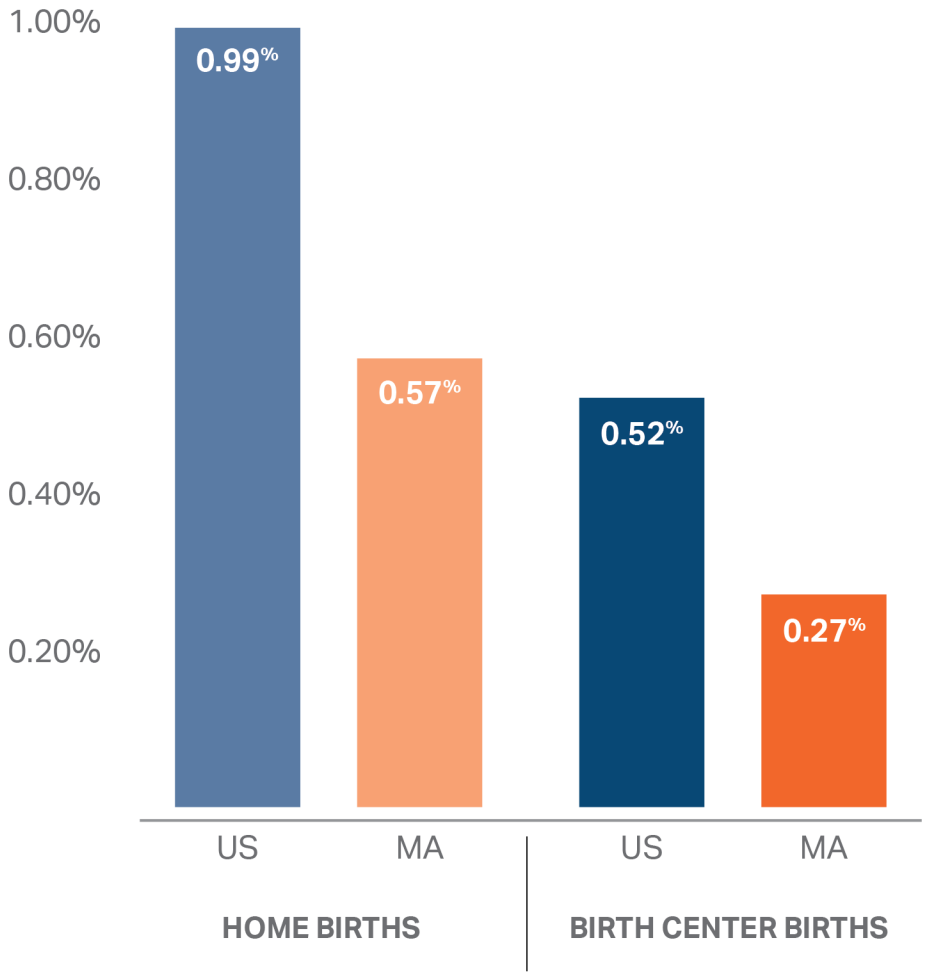
Under 1% of Massachusetts births in 2017 took place outside of hospitals, fewer than in the U.S. as a whole.

All Payers

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



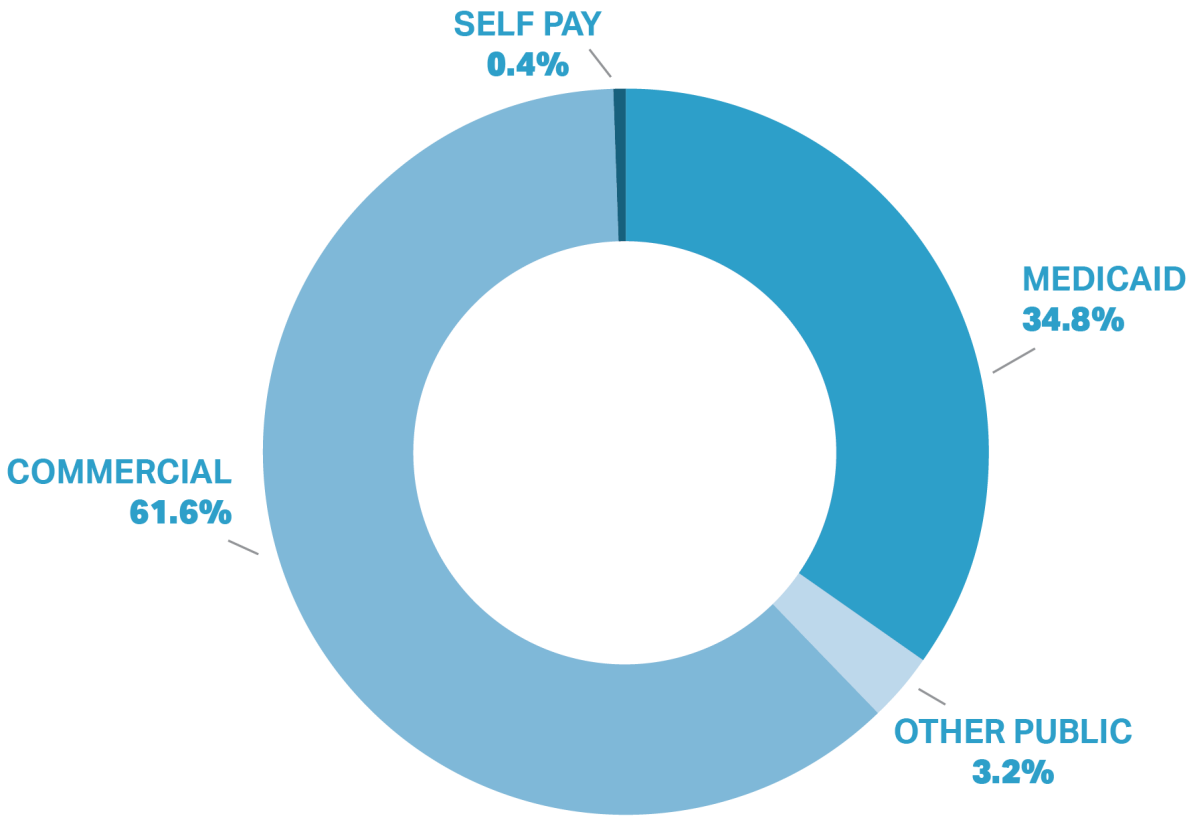
- The U.S. out-of-hospital birth rate as of 2017 was 1.61%.
- The MA out-of-hospital birth rate was 0.90%.
- Home births were more prevalent than birth center births in both the U.S. and MA.

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.

Nearly two-thirds of Massachusetts births in 2017 were commercially insured.

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

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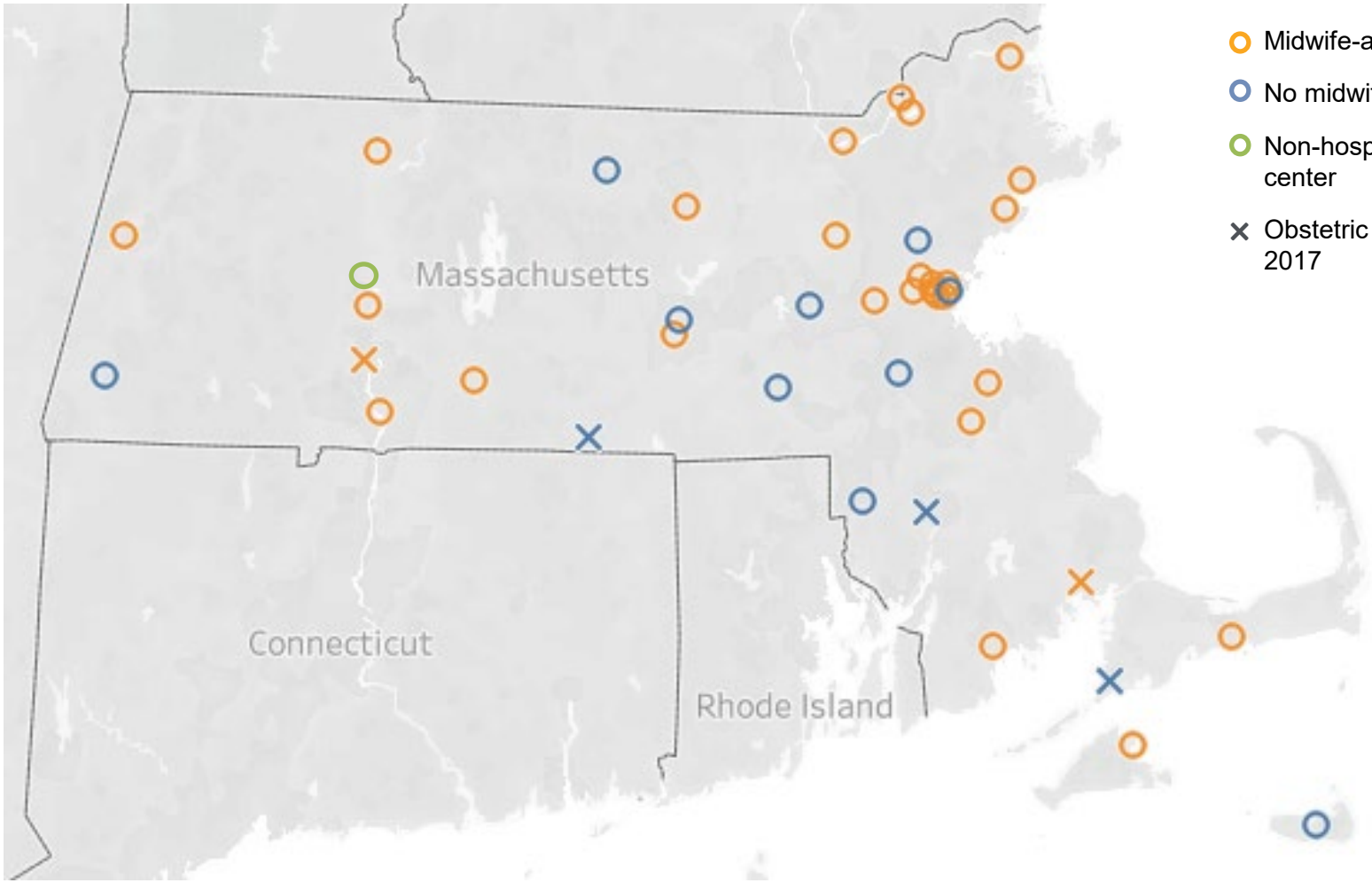
Massachusetts Birth Centers and Hospitals, 2017

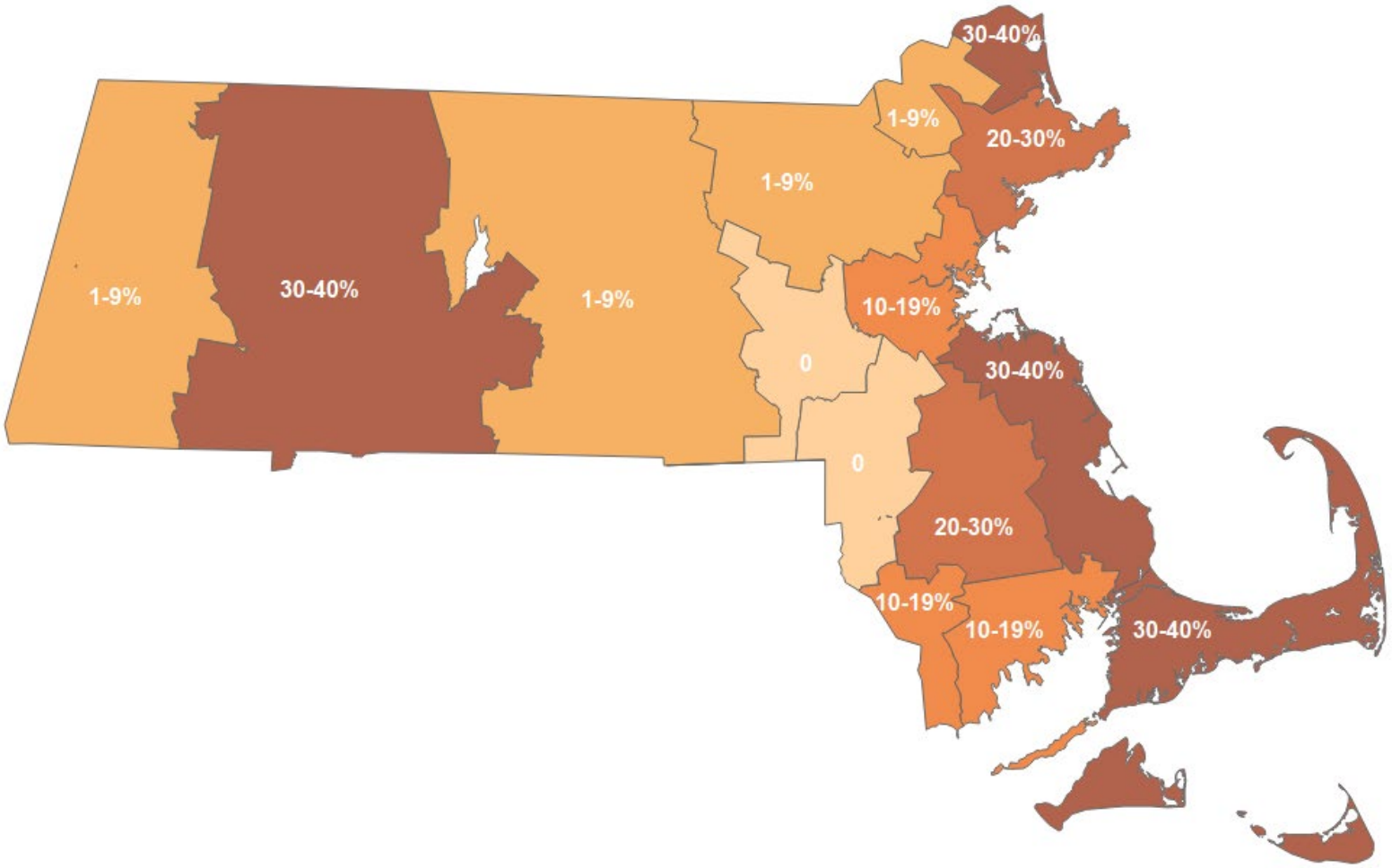
Hospitals reporting and not reporting midwife-attended births in 2017 and obstetric unit closures after 2017



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

The proportion of births attended by midwives varies substantially by region.

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

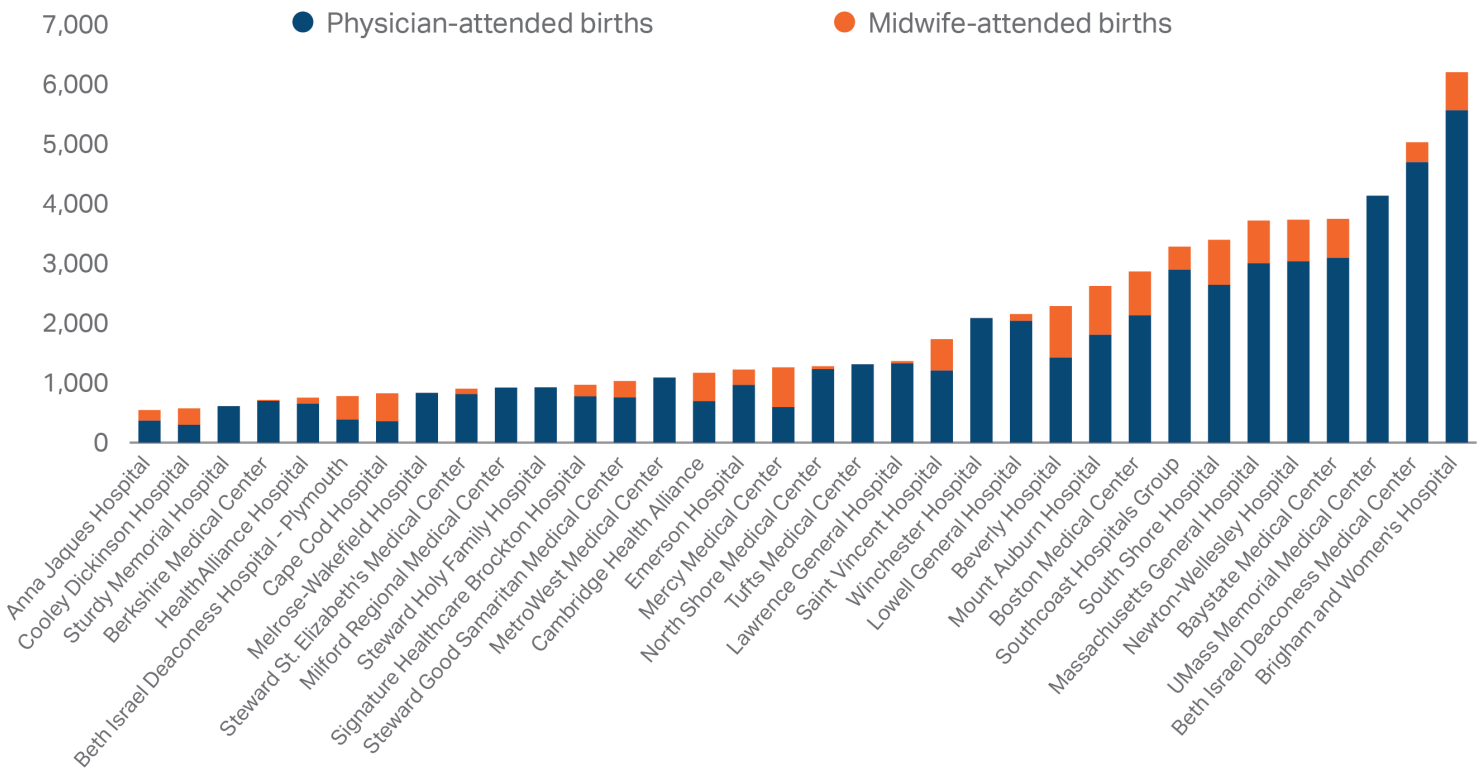


Note: Mean midwife-attended births across all hospitals per region.
Source: HPC analysis of Massachusetts Department of Public Health birth record data for 2017.

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

All Payers

Births attended by physicians and midwives per hospital, 2017



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

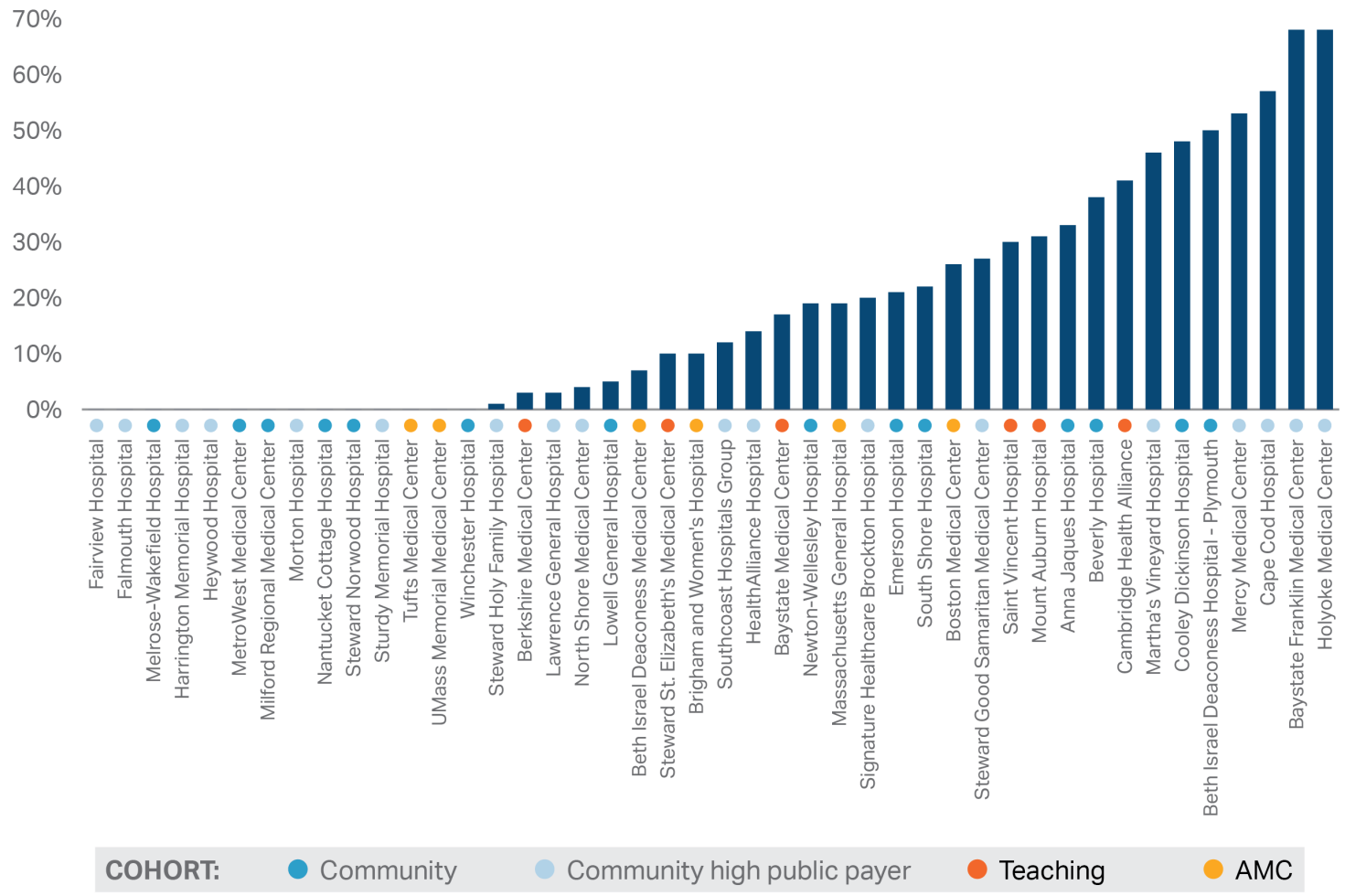
Notes: Beverly Hospital and Cambridge Health Alliance include hospitals and their associated birth centers. Hospitals reporting <500 births in 2017 excluded for readability: Baystate Franklin Medical Center, Fairview Hospital, Falmouth Hospital, Harrington Memorial Hospital, Heywood Hospital, Holyoke 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 midwife-attended births by hospital varies from 0 to nearly 70%.

All Payers

Percent of births attended by midwives per hospital, 2017

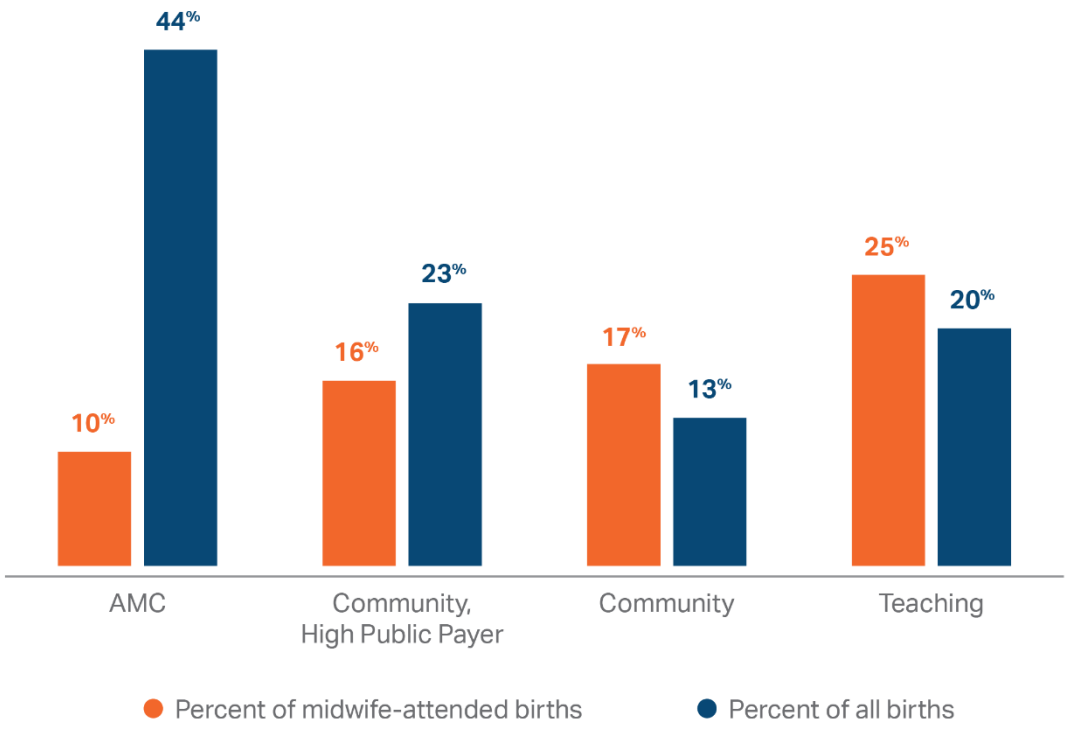


Notes: Beverly Hospital and Cambridge Health Alliance include hospitals and their associated birth centers.
Source: HPC analysis of Massachusetts Department of Public Health birth record data.

44% of Massachusetts births in 2017 took place in academic medical centers, which have 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

Factors Contributing to Variation in Midwifery Care

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

- **Hospital history** of offering midwifery care or having a shortage of OBs.
- **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 vary widely.

The HPC reviewed models at **four hospitals with 30-70% midwife-attended births**.

- At two hospitals, **prenatal care includes patient education** about provider options at many offices, with opportunities for patients to select physician or midwifery care.
- At one hospital, prenatal care is provided exclusively by OBs, while **midwives are on call as laborists** and are primary providers for all inpatient labor and delivery care, except for high-risk labors or patients who request a physician.
- At another hospital, **midwives care for all deliveries** except for scheduled cesareans.
- One hospital offered their lowest-risk patients the option of **birth center delivery** prior to the COVID pandemic and aims to restart in the future.
- At two hospitals, higher-risk patients or those who develop complications may receive **collaborative OB and midwifery care** or shift to physician-led care.
- **Definitions of obstetric risk** and which patients are appropriate for midwifery care vary by hospital.

Notes: for more detail on variation in hospital midwifery care models, see appendix.

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

- 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 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-attended 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 their 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

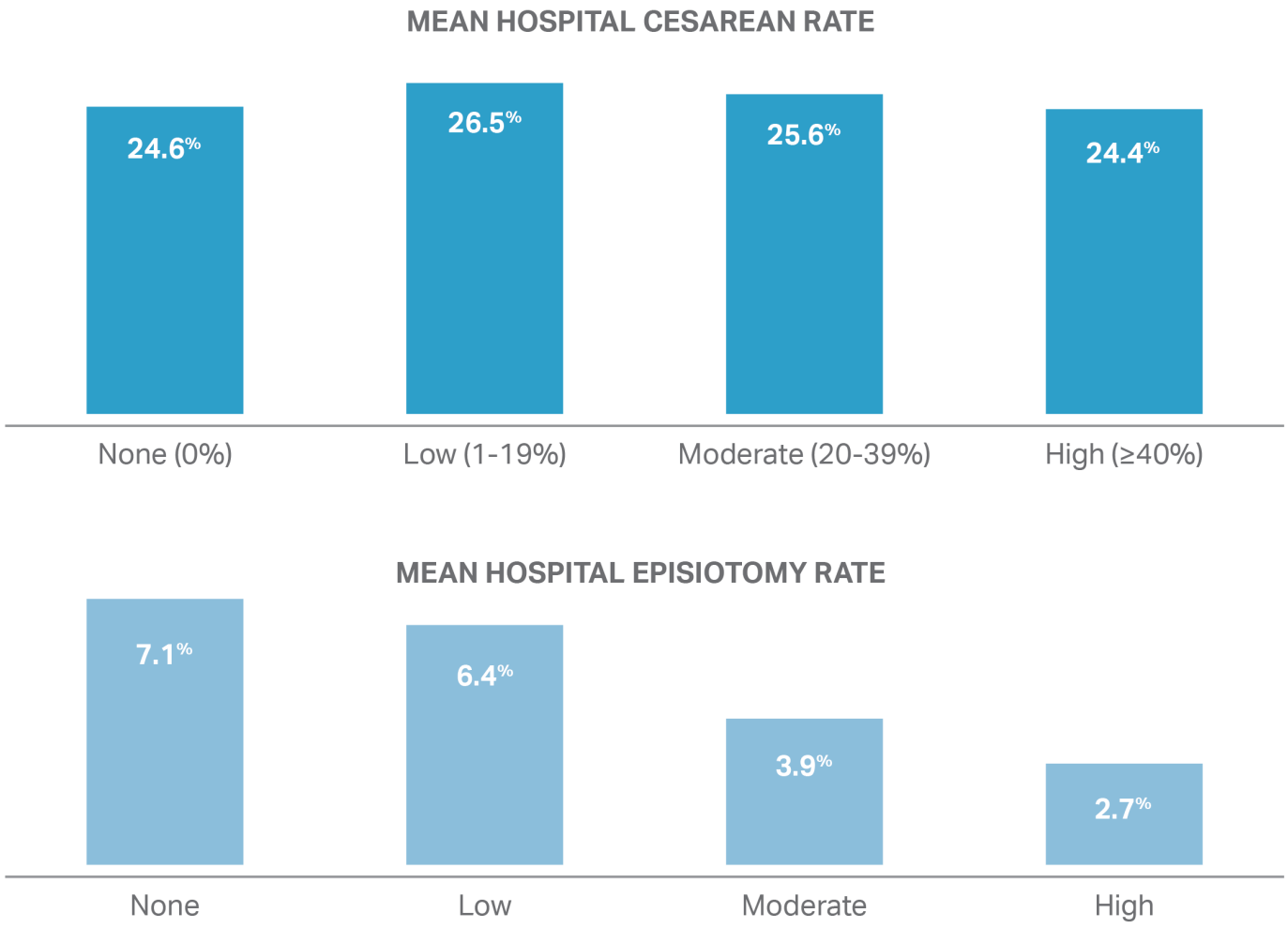
2 Cragin L, Kennedy HP. Linking Obstetric and Midwifery Practice with Optimal Outcomes. Journal of Obstetric, Gynecologic & Neonatal Nursing. 2006: 35:779-785. DOI: 10.1111/J.1552-6909.2006.00106.x

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 lower cesarean and episiotomy rates.

All Payers

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

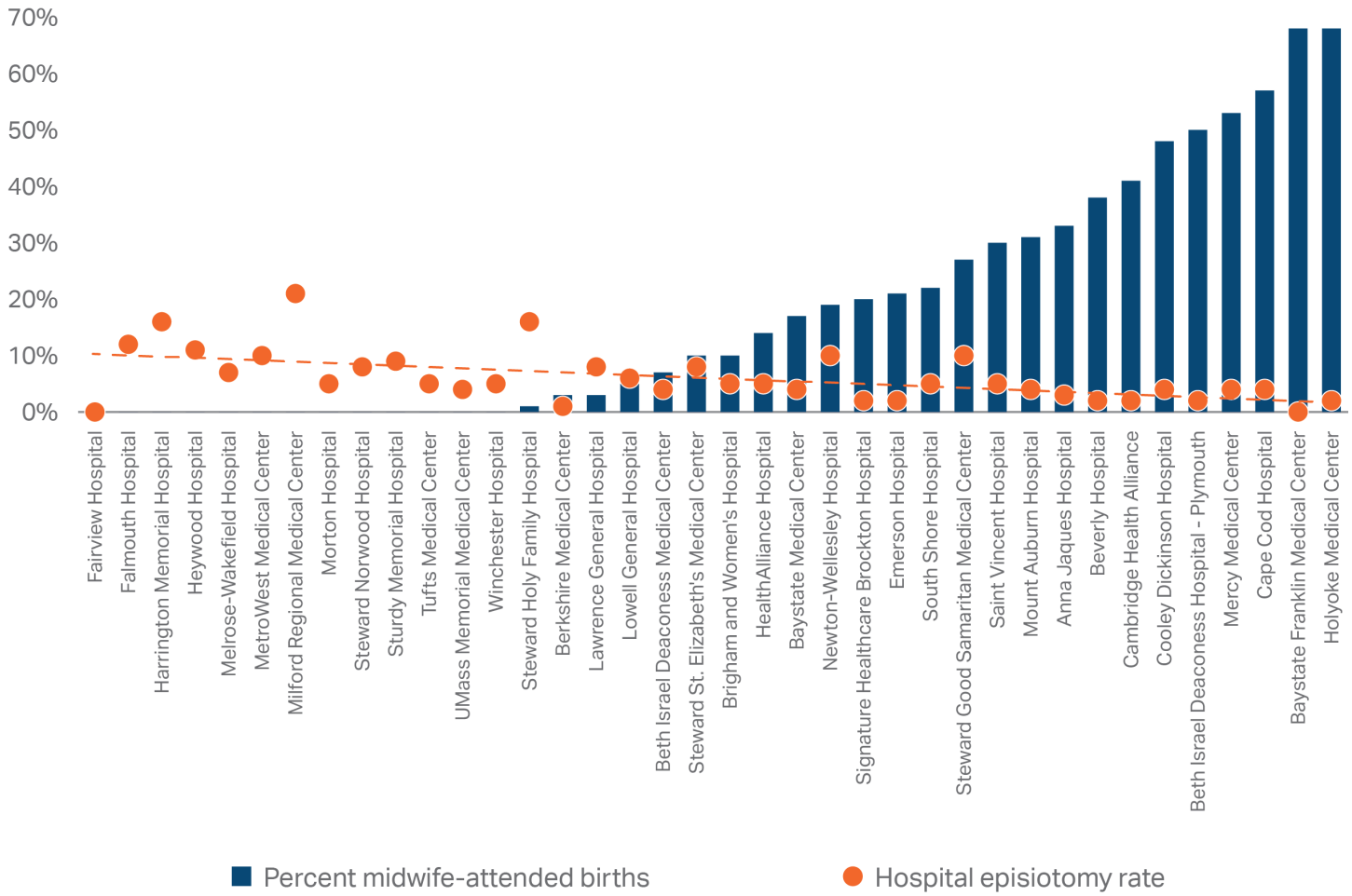


Sources: HPC analysis of Massachusetts Department of Public Health birth record data for 2017 and Leapfrog hospital quality metrics as reported to the Center for Health Information and Analysis.

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



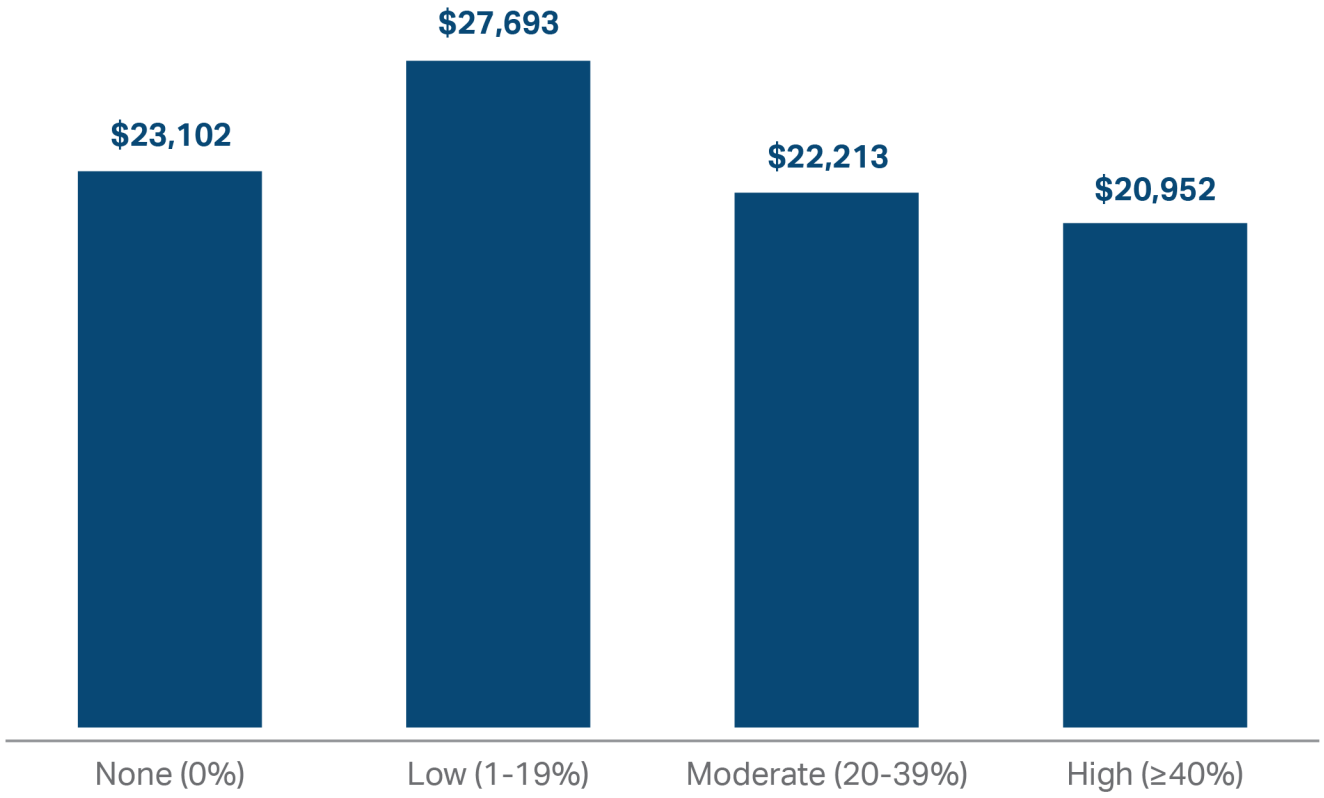
Notes: Beverly Hospital and Cambridge Health Alliance include hospitals and their associated birth centers. Hospitals not reporting Leapfrog quality metrics excluded from this analysis: Boston Medical Center, Martha's Vineyard Hospital, Massachusetts General Hospital, Nantucket Cottage Hospital, North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



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

Data suggest that greater CNM involvement leads to lower costs and better outcomes in the Commonwealth, mirroring national research findings.

A 10 percentage-point increase (from 17% to 27%) in the proportion of CNM-attended births is 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 percentage 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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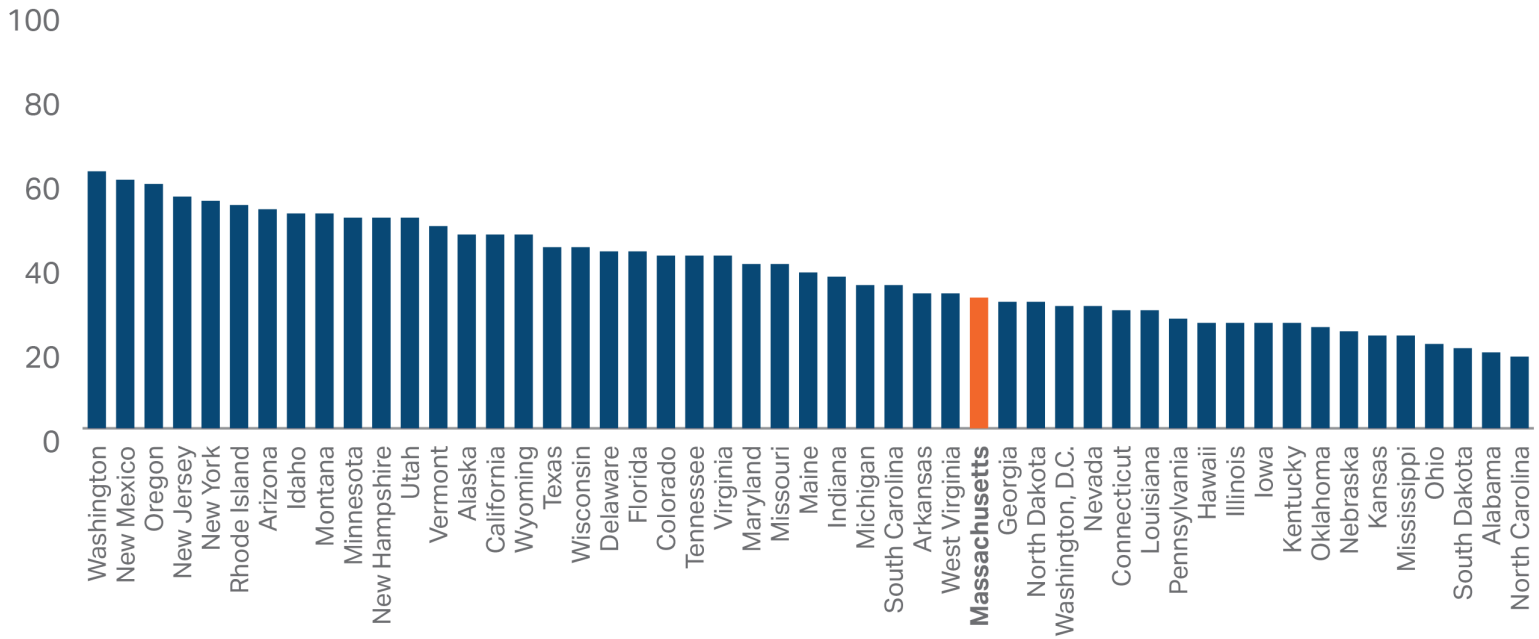
- Potential Policy Recommendations

Massachusetts ranks 32nd on the degree to which all types of midwives are integrated into the health system and ranks 14th for CNM integration.

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.
- MA 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/

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.

- **There is only one midwifery education program in MA** at Baystate Medical Center in Springfield.[1]
- **Most CNMs in MA 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

- 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, including lower rates for commercial reimbursement for midwifery care.
  - MassHealth has confirmed coverage of 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 in the form of 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 state 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 MA 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.

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- Barriers to Practice
- **POTENTIAL POLICY RECOMMENDATIONS**

Summary

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.

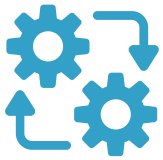
3. Barriers persist in both expanding and diversifying the midwifery workforce in Massachusetts.

Potential Policy Recommendations

INCREASE AND IMPROVE USE OF CNMs

- Improve public understanding and awareness of midwifery care and increase opportunities for patients to choose their provider type
- Use payment models that are neutral towards provider mix

FACILITATE CNM PRACTICE



- By hospitals and payers amending their policies to align with state law that does not require CNMs to practice or bill under physician supervision or admit patients under a physician's name

SUPPORT ALTERNATIVE BIRTH SETTINGS

- Re-evaluate regulatory and other barriers to the establishment and operation of birth centers

Key Findings

- **17% of Massachusetts births** in 2017 were attended by Certified Nurse Midwives.
- 30 of the 44 hospitals that provided obstetric care in Massachusetts also offered midwifery care as of 2017. However, rates of midwifery care vary substantially by hospital, from **zero to nearly 70%**.
- Hospitals with higher rates of midwifery care see 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 impose barriers to full CNM practice.

Appendix

Appendix: Cost Challenge Areas and Awardee Care Models

Health-Related Social Needs

- **Behavioral Health Network**
  Addressed medical, behavioral, and health-related social needs for families impacted by housing insecurity.
- **Boston Health Care for the Homeless Program**
  Integrated care and shared data across medical providers, shelters, and advocacy organizations to enable case managers to coordinate care and address patients' needs.
- **Boston Medical Center**
  Deployed community health advocates who worked with civil legal aid attorneys and staff to help address patients' health-related social needs.
- **Hebrew SeniorLife**
  Coordinated care for residents by embedding wellness teams in affordable senior housing sites.

Serious Illness and End of Life

- **Care Dimensions**
  Integrated palliative care staff into primary care sites to facilitate referrals to palliative care and hospice.

Appendix: Cost Challenge Areas and Awardee Care Models

Site and Scope of Care

- **Commonwealth Care Alliance**
  Created high-acuity ambulatory care programs to provide integrated primary, behavioral health, dental, palliative care, and chronic disease management
- **Lynn Community Health Center**
  Deployed community health workers to coordinate complex care services for patients with serious mental illness

Behavioral Health Integration

- **Berkshire Medical Center**
  Co located behavioral health teams at primary care practices and provided telepsychiatry services
- **Brookline Community Mental Health Center**
  Implemented a multidisciplinary care management team to integrate behavioral health, primary care, and community services

Care Transitions and Post-Acute Care

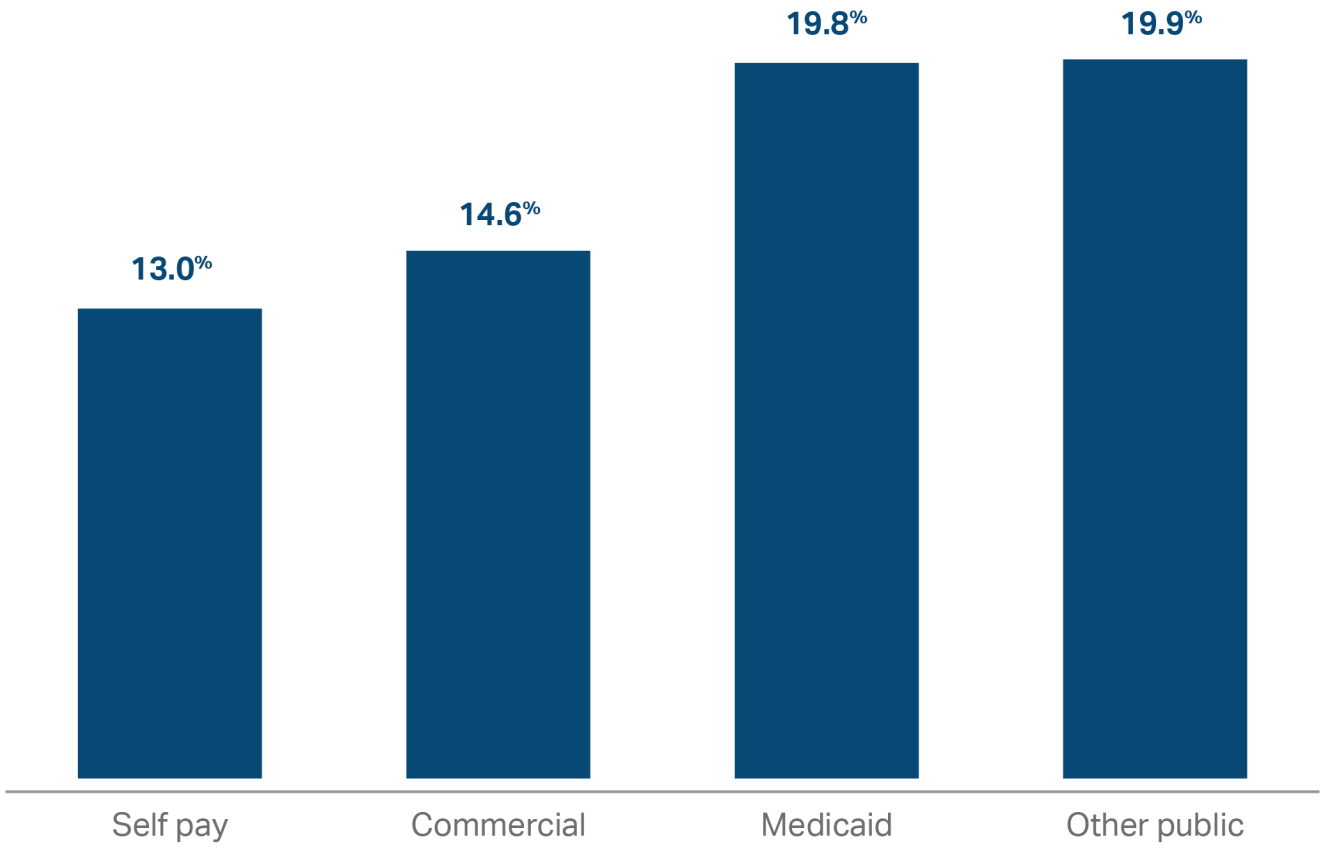
- **Spaulding Hospital Cambridge**
  Provided cross-setting case management and for chronically critically ill patients

HPC

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

All Payers

Proportion of midwife-attended births by payer, 2017

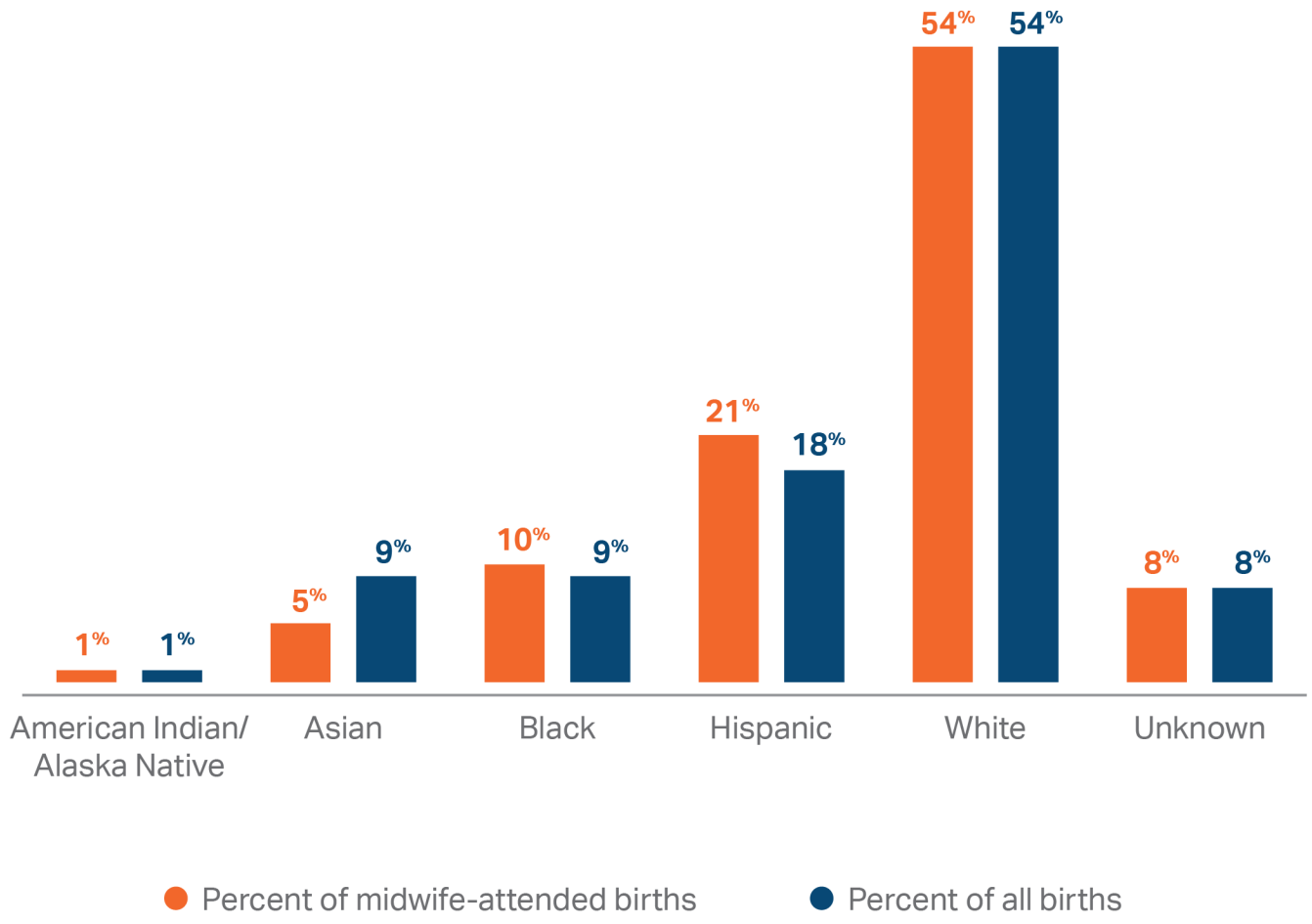


Notes: Free care omitted from this exhibit. Free care represented 0.01% of all births and no midwife-attended births in 2017.
Source: HPC analysis of Massachusetts Department of Public Health birth records,

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

All Payers

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

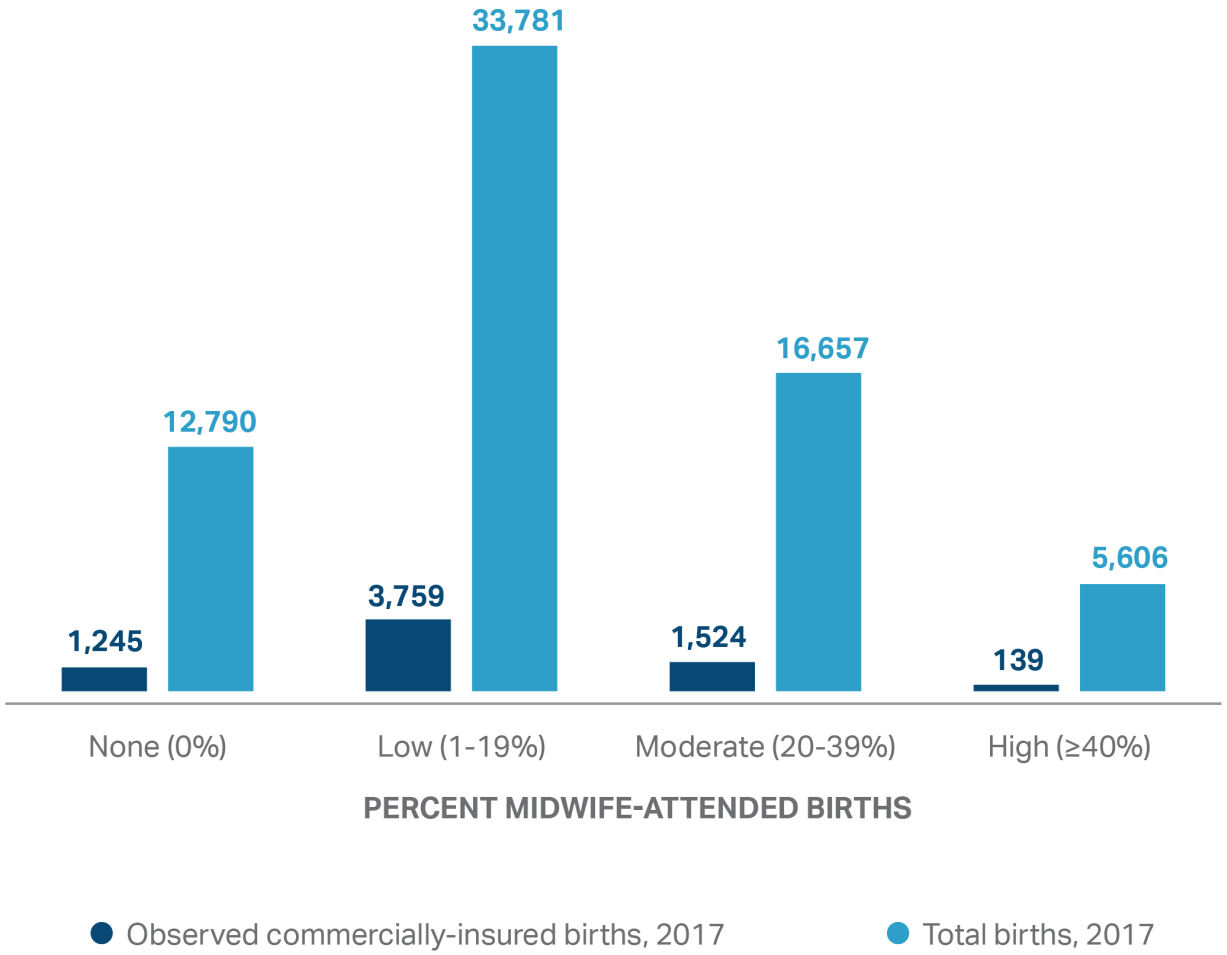


Note: Terminology for racial and ethnic groups are those used in the original data source
Source: HPC analysis of Massachusetts Department of Public Health birth records,

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

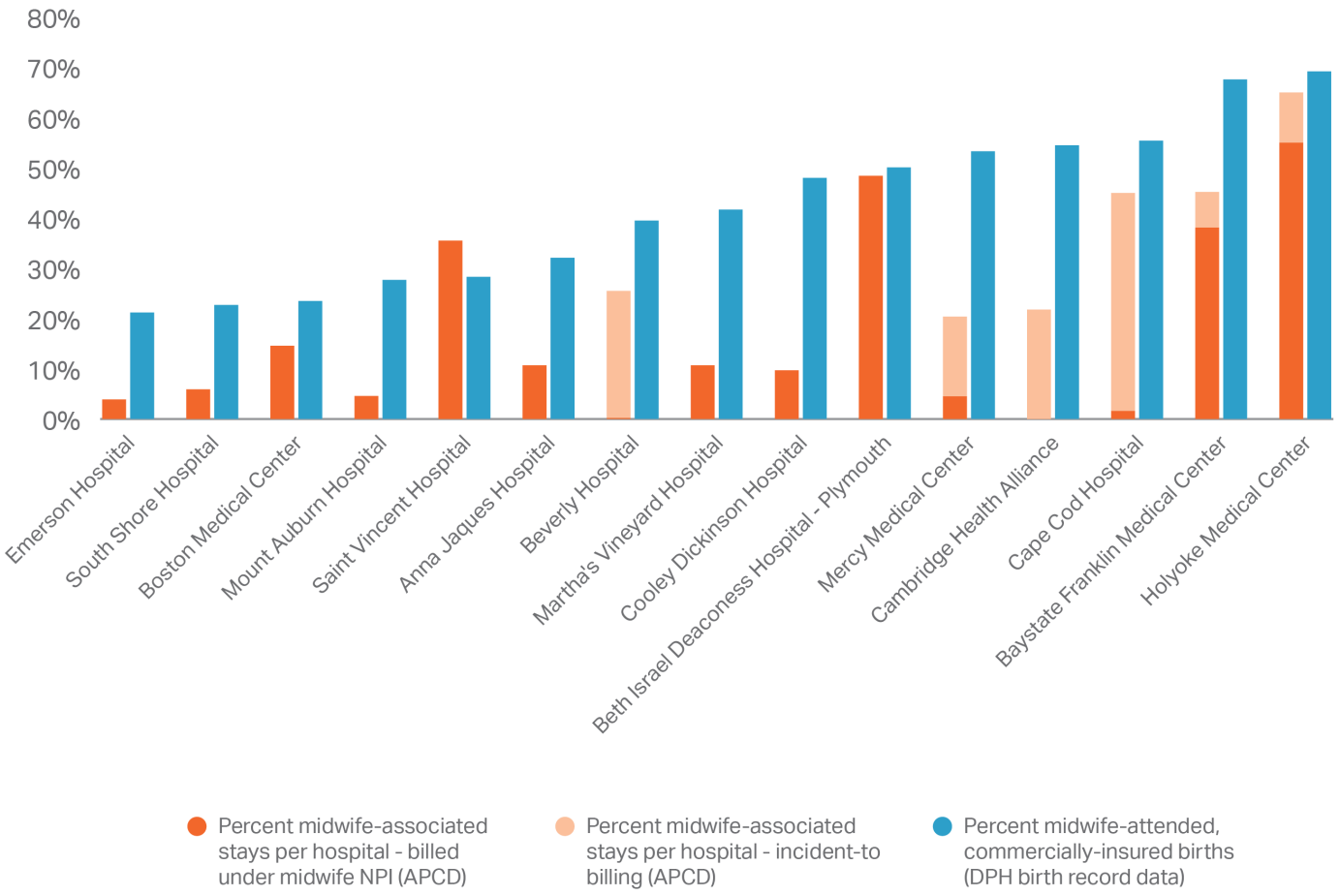


Notes: Commercially-insured births observed in the APCD include births January 1 – September 30, 2017.
Source: HPC analysis of All-Payer Claims Database 7.0 and Massachusetts Department of Public Health birth record data.

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



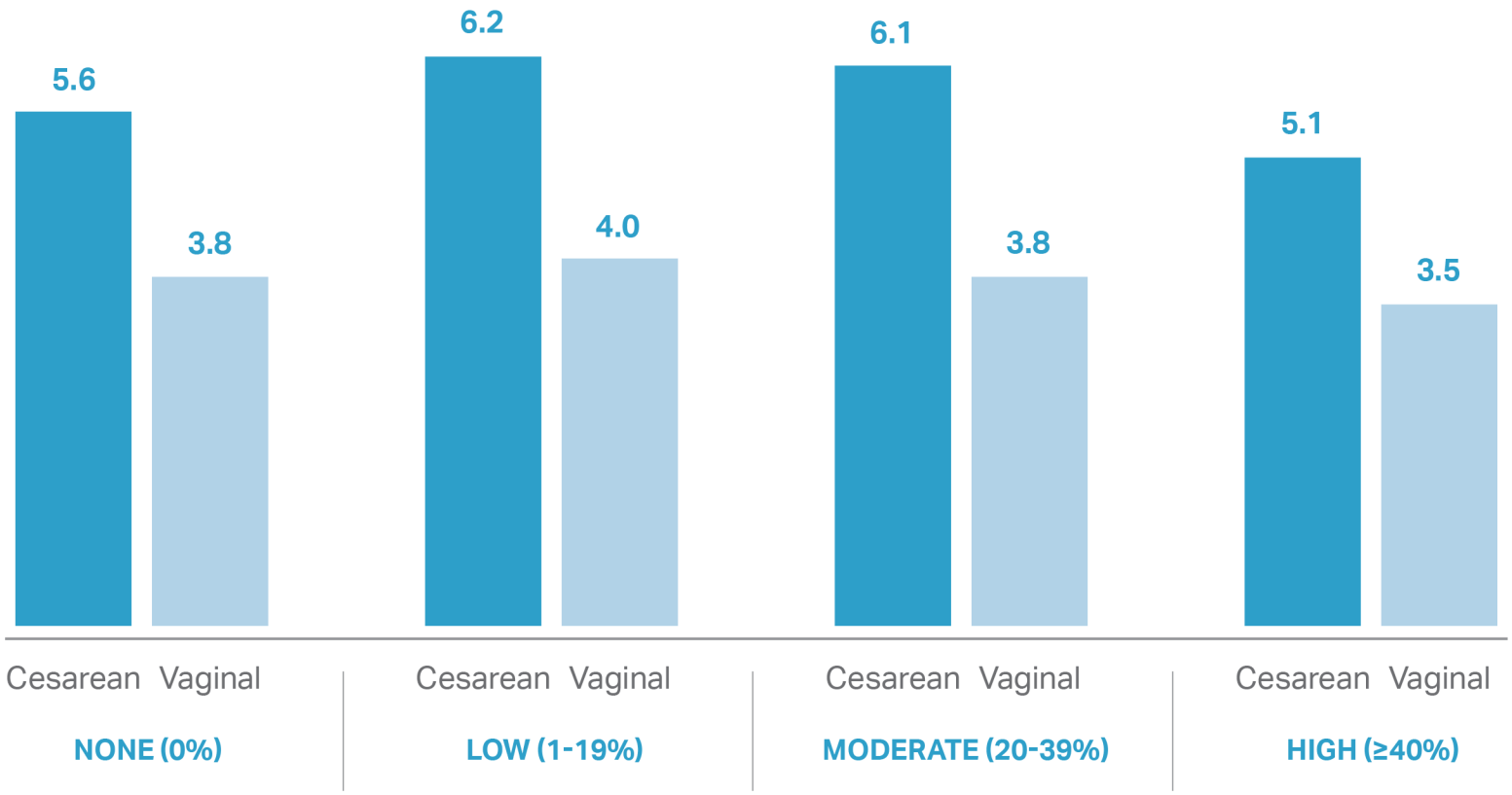
Notes: Beverly Hospital and Cambridge Health Alliance include hospitals and their associated birth centers

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

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

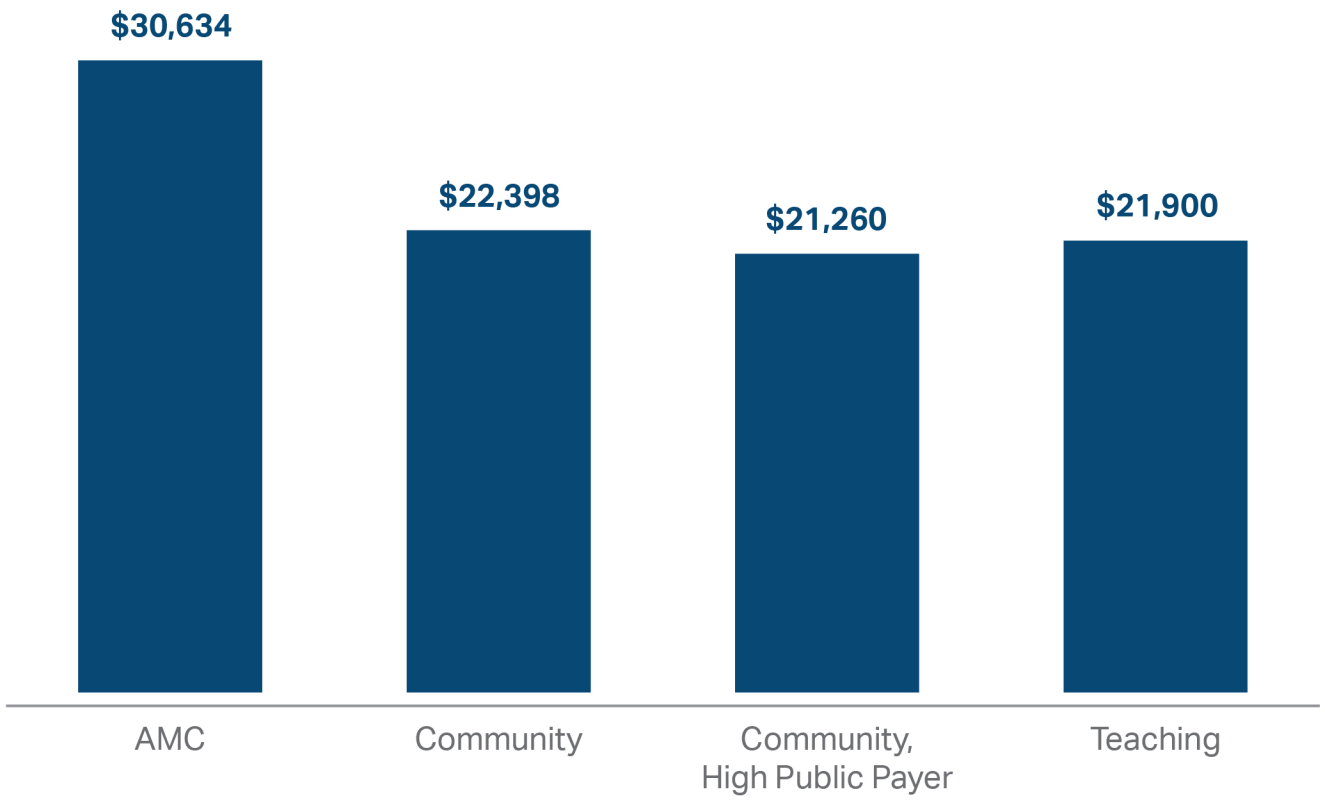


Notes: Source: HPC analysis of All-Payer Claims Database 7.0 Massachusetts Department of Public Health birth record data for 2017.

Academic medical centers had the highest maternity spending.

Commercial

Maternity episode spending by hospital cohort, 2017



Source: HPC analysis of All-Payer Claims Database 7.0

Maternity Provider Landscape

Provider	# in MA	Education & Training	Licensed in MA by	Settings of care in MA	Prenatal	L&D	Postpartum	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	X	X	X	1-3
Nurse practitioners	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	X	?	?	4,9
Registered nurses specializing in maternity	2698	Undergraduate nursing education. Complete nursing licensure examination.	Board of Registration in Nursing	Hospitals, offices	?	X	?	5,9
Certified Nurse Midwives	286	Bachelors degree and Registered Nurse licensure. 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	X	X	X	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	X	X	X	7,8
Doulas	137	Many doulas complete training or certification programs, though neither is required for practice.	Not licensed	Hospitals, birth centers, offices, homes	X	X	X	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.

Exclusions

Hospital	<500 births reported to DPH in 2017 (Slide 16)	Does not report Leapfrog quality metrics (Slide 35)	<20 observed births in APCD 7.0 (Slide 39)
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		