

132nd LEGISLATURE
JOINT STANDING COMMITTEE ON HEALTH
COVERAGE, INSURANCE AND FINANCIAL SERVICES

Interim Committee Meeting Agenda:
Review of Potential Recommendations Suggested to Address Recent Closures of
Labor and Delivery Units and to Improve Access to Maternal Health Services

September 29, 2026
10:00 am, Room 220, Cross State Office Building

- | | |
|--------------------------|---|
| 10:00 am | Welcome and Committee members and staff introductions
<i>Committee Chairs,</i>
<i>Sen. Donna Bailey and Rep. Kristi Mathieson</i> |
| 10:00 am | Review and Discussion of Potential Recommendations Related to Regulatory Oversight Related to Maternal Health Services
<i>Committee members and staff</i> |
| 11:00 am | Review and Discussion of Potential Recommendations Related to Payment and Delivery of Maternal Health Services, Including Telehealth
<i>Committee members and staff</i> |
| 12:00 pm-12:10 pm | Update from Maine Health in Response to Committee Letter
<i>Representatives of Maine Health</i> |
| 12:10 pm | Lunch Break |
| 1:00 pm | Review and Discussion of Potential Recommendations Related to Workforce and Training, Including Financial Assistance and Loan Repayment
<i>Committee members and staff</i> |
| 2:00 pm | Review and Discussion of Potential Recommendations Related to Licensing and Credentialing of Providers
<i>Committee members and staff</i> |
| 2:50 pm | Updates on other committee-related issues, including reports submitted to Committee Since Adjournment of Second Regular Session
<i>Committee staff</i> |
| 3:00 pm | Adjourn |

Times are approximate and may be adjusted as necessary by the committee chairs

Public access also available through the Maine Legislature's livestream:

<https://legislature.maine.gov/Audio/#220>

**Summary of Potential Policy Recommendations
to Address Recent Closures of Labor and Delivery Units and to Improve Access to Maternal Health Services
(Based on Review of Comments Submitted to HCIFS Committee at Aug. 27 Meeting*)**

1. Proposals Concerning Regulatory Oversight Related to Maternal Health Services

Potential Policy Recommendation	Legislation Needed?	Funding Needed? Has GF Budget Impact?	Committee Comments
<i>Institute moratorium on closures of labor and delivery units</i>	Yes		
<i>Amend certificate of need laws to require review and approval by DHHS before closure of labor and delivery units</i>	Yes		
Condition existing State funding to hospitals on requirement that hospitals maintain labor and delivery units	Yes		
<i>Establish an early-warning, stabilization and recovery process—require notice to DHHS by hospitals when significant indicators related to staffing shortages or budget shortfalls suggest that a birthing unit may become unsustainable within 12-24 months</i>	Yes		
<i>Increase the prior notice requirement from 120 days to 300 days before closure of labor and delivery units</i>	Yes		
<i>Extend prior notice requirement from 120-days to 180 days or longer</i>	Yes		
Require a public hearing within 30 days after notice of closure of a labor and delivery unit	Yes		
<i>Require a mandatory closure impact study to be completed and published before closure of a labor and delivery unit (focus on community-impact and cost analysis</i>	Yes		
<i>Require hospitals that are closing a maternity unit to submit a formal transition plan to DHHS</i>	Yes		

**Summary of Potential Policy Recommendations
to Address Recent Closures of Labor and Delivery Units and to Improve Access to Maternal Health Services
(Based on Review of Comments Submitted to HCIFS Committee at Aug. 27 Meeting*)**

Potential Policy Recommendation	Legislation Needed?	Funding Needed? Has GF Budget Impact?	Committee Comments
Require hospitals who have closed labor and delivery units to fund additional clinical staff at other hospitals that absorb increased caseload from closures	Yes		
Exempt birth centers from certificate of need program requirements	Yes		
Require hospitals to offer sale to local government before selling/merging with other entities	Yes		
Require enhanced review by Attorney General of mergers and acquisitions involving hospitals			
Limit compensation of hospital executive pay	Yes		
Enable municipalities to collect property taxes from hospitals	Yes		

**Summary of Potential Policy Recommendations
to Address Recent Closures of Labor and Delivery Units and to Improve Access to Maternal Health Services
(Based on Review of Comments Submitted to HCIFS Committee at Aug. 27 Meeting*)**

2. Proposals Concerning Payment Models for Maternal Health Services

Potential Policy Recommendation	Legislation Needed?	Funding Needed? Has GF Budget Impact?	Committee Comments
<i>Establish “standby perinatal services” model for rural hospitals unable to sustain 24/7 labor and delivery units</i>	Yes	Yes	
<i>Establish a rural care maternity stabilization program to provide targeted support to geographically essential maternity services</i>	Yes	Yes	
<i>Establish multipayer payment model for obstetrical services at geographically necessary birthing hospitals, e.g. prospective monthly payment or annual capacity payment plus payment for care delivered</i>	Yes	Yes	
<i>Develop alternative payment models for maternity care</i>	Yes	Yes	
<i>Provide enhanced MaineCare reimbursement for rural birthing units</i>		Yes	
<i>Increase MaineCare reimbursement to reflect actual cost of obstetric care</i>		Yes	
<i>Increase MaineCare reimbursement rates for maternity services (prenatal, delivery and postpartum)</i>		Yes	
<i>Require MaineCare and commercial health insurance reimbursement for birth centers</i>	Yes	Yes	
<i>Provide sustainable funding for community-based maternal services (home visits, doulas and community health workers, perinatal behavioral health services)</i>		Yes	
<i>Preserve prenatal and postpartum care access close to home by supporting alternative payment models for these services</i>		Yes	

**Summary of Potential Policy Recommendations
to Address Recent Closures of Labor and Delivery Units and to Improve Access to Maternal Health Services
(Based on Review of Comments Submitted to HCIFS Committee at Aug. 27 Meeting*)**

3. Proposals Concerning Delivery of Maternal Health Services

Potential Policy Recommendation	Legislation Needed?	Funding Needed? Has GF Budget Impact?	Committee Comments
<i>Support rural hospitals to partner with federally qualified health centers (FQHCs) to staff obstetric units and provide prenatal care</i>		Yes	
Provide funding to support model of care through FQHC's primary care providers, e.g. Greater Portland Health (prenatal care until 32 weeks, transition to OB through delivery, resume postpartum care)		Yes	
Establish State-funded birth centers in rural areas without hospital-based obstetrical care	Yes	Yes	
Provide labor and delivery services in rural areas through public health care centers/hospitals	Yes	Yes	
Establish a state-funded public health insurance option	Yes	Yes	
<i>Consider development of mobile maternal health units</i>		Yes	
Create State-based traveling provider pool or regional "float pool" to cover staffing gaps at rural hospitals on a short-term basis		Yes	

**Summary of Potential Policy Recommendations
to Address Recent Closures of Labor and Delivery Units and to Improve Access to Maternal Health Services
(Based on Review of Comments Submitted to HCIFS Committee at Aug. 27 Meeting*)**

4. Proposals Related to Telehealth

Potential Policy Recommendation	Legislation Needed?	Funding Needed? Has GF Budget Impact?	Committee Comments
<i>Expand digital technology and mobile health centers</i>		Yes	
<i>Allocate funding to expand telehealth access for rural providers to high-risk pregnancy and newborn specialists</i>		Yes	
<i>Develop a statewide real-time emergency telehealth OB consultation program</i>		Yes	
Establish a state-wide network for perinatal telehealth programming to serve patients regardless of health system, insurance coverage or delivery site		Yes	

**Summary of Potential Policy Recommendations
to Address Recent Closures of Labor and Delivery Units and to Improve Access to Maternal Health Services
(Based on Review of Comments Submitted to HCIFS Committee at Aug. 27 Meeting*)**

5. Proposals Concerning Training of Providers, Including Financial Assistance and Loan Repayment

Potential Policy Recommendation	Legislation Needed?	Funding Needed? Has GF Budget Impact?	Committee Comments
<i>Support fellowships to expand workforce of trained family and medicine doctors who can perform C-sections</i>	Yes	Yes	
<i>Explore training programs for family physicians to perform C-sections</i>	Yes	Yes	
<i>Explore models to expand training opportunities for certified nurse midwives, e.g. fellowship model, transition to practice model</i>	Yes	Yes	
Establish programs for OB nurses at low-volume hospitals to participate in clinical immersions at State's busiest obstetric units			
<i>Ensure that emergency department staff at hospitals without obstetric units and emergency medical services personnel in those areas receive regular training for handling birth emergencies</i>			
<i>Provide ongoing funding for training for obstetrical emergencies in rural hospitals, emergency departments and low-volume birthing units</i>		Yes	
<i>Expand perinatal care training for health care professionals (EMTs, doulas, community health workers, public health nurses)</i>			
<i>Expand loan repayment for family physicians with advanced obstetrical training and certified nurse midwives</i>	Yes	Yes	
<i>Expand funding for loan repayment and housing assistance for OB providers in rural areas</i>	Yes	Yes	

**Summary of Potential Policy Recommendations
to Address Recent Closures of Labor and Delivery Units and to Improve Access to Maternal Health Services
(Based on Review of Comments Submitted to HCIFS Committee at Aug. 27 Meeting*)**

Potential Policy Recommendation	Legislation Needed?	Funding Needed? Has GF Budget Impact?	Committee Comments
<i>Establish loan repayment and tax credit programs targeted at OB-credentialed nurses, OBGYNs, family physicians with obstetrical training and certified nurse anesthetists in rural areas</i>	Yes	Yes	
Provide continued support for the Doctors for Maine's Future program	Yes	Yes	

**Summary of Potential Policy Recommendations
to Address Recent Closures of Labor and Delivery Units and to Improve Access to Maternal Health Services
(Based on Review of Comments Submitted to HCIFS Committee at Aug. 27 Meeting*)**

6. Proposals Related to Licensing and Credentialing of Providers

Potential Policy Recommendation	Legislation Needed?	Funding Needed? Has GF Budget Impact?	Committee Comments
<i>Standardize credentialing process across all hospitals to facilitate credentialing for family physicians with obstetrical training and remove barriers to credentialing</i>			
<i>Eliminate barriers to hospital privileges for family physicians delivering babies in private practice</i>			
<i>Expand workforce of certified nurse midwives and ensure they are able to practice to full extent of license to practice</i>			
<i>Remove requirements for physician supervision or contractual agreements for certified nurse midwives and other licensed providers</i>			
Enable certified nurse midwives to admit and discharge patients to hospitals			
Streamline interstate/multistate licensure to make locum and per diem coverage more feasible in rural areas	Yes		
Align reimbursement rates so that midwives are paid at 100% of physician services within their scope of practice			
Expand licensure for certified midwives (non-nurse midwives)	Yes		
Expand opportunities for doulas—reimbursement for doula services in MaineCare and commercial health insurance	Yes	Yes	
<i>Consider ways to negotiate lower malpractice rates for family doctors performing C-sections and other providers of obstetrical services</i>			

**Summary of Potential Policy Recommendations
to Address Recent Closures of Labor and Delivery Units and to Improve Access to Maternal Health Services
(Based on Review of Comments Submitted to HCIFS Committee at Aug. 27 Meeting*)**

7. Other proposals

Potential Policy Recommendation	Legislation Needed?	Funding Needed? Has GF Budget Impact?	Committee Comments
<i>Support and strengthen work of regional planning for maternal health services being developed through the State's Transforming Maternal Health (TMaH) initiative</i>			
Convene a statewide Maternity Care Summit among Governor, Legislature and stakeholders to develop solutions			
Engage consultant or establish specific State position to develop plan to preserve labor and delivery units in hospitals, particularly in rural areas	Yes	Yes	
Advocate for change in federal rules to lift 15% cap on direct provider payments under federal Rural Health Transformation program grant			
Establish a program to provide funding to rural perinatal patients to subsidize costs associated with traveling, e.g. transportation, accommodations	Yes	Yes	
Establish coordinated maternal and neonatal transfer framework to address deliveries in rural areas without hospitals providing labor and delivery services			

*Proposals noted in italics were suggested by 3 or more commenters

**Excerpt from ACOG Document:
Levels of Maternal Care Obstetric Care Consensus
(updated 2019)**

Levels of Maternal Care Definitions

Like the previous guidance, each level of maternal care reflects required minimal capabilities, physical facilities, and medical and support personnel. Each higher level of care includes and builds on the capabilities of the lower levels.

Level	Definition
Accredited Birth Center	Care for low-risk women with uncomplicated singleton term vertex pregnancies who are expected to have an uncomplicated birth
Level I (Basic Care)	Care of low- to moderate-risk pregnancies with ability to detect, stabilize, and initiate management of unanticipated maternal-fetal or neonatal problems that occur during the antepartum, intrapartum, or postpartum period until the patient can be transferred to a facility at which the specialty maternal care is available
Level II (Specialty Care)	Level I facility plus care of appropriate moderate- to high-risk antepartum, intrapartum, or postpartum conditions
Level III (Subspecialty Care)	Level II facility plus care of more complex maternal medical conditions, obstetric complications, and fetal conditions
Level IV (Regional Perinatal Health Care Centers)	Level III facility plus on-site medical and surgical care of the most complex maternal conditions and critically ill pregnant women and fetuses throughout antepartum, intrapartum, and postpartum care

**Excerpt from ACOG Document:
Levels of Maternal Care Obstetric Care Consensus
(updated 2019)**

Table 3. Examples (Not Requirements) of Appropriate Patient by Level*

Level	Example (Not Requirement)
Accredited birth center	Women with an uncomplicated term singleton vertex fetus who are expected to have an uncomplicated birth
Level I	Low-risk women with uncomplicated pregnancies and women with higher-risk conditions such as the following: • uncomplicated twin gestation • labor after cesarean • uncomplicated cesarean delivery • preeclampsia[†] • well-controlled gestational diabetes
Level II	Any patient appropriate for level I care, plus higher-risk conditions such as the following: • placenta previa with no previous uterine surgery • maternal medical conditions that require additional monitoring such as pregestational diabetes, poorly controlled asthma, or poorly controlled or complicated chronic hypertension • anticipated complicated cesarean delivery
Level III	Any patient appropriate for level II care, plus higher-risk conditions or complications such as the following: • moderate maternal cardiac disease • suspected placenta accreta or placenta previa and previous uterine surgery • suspected placenta percreta • adult respiratory distress syndrome or other conditions that require ventilatory support antepartum or postpartum • acute fatty liver of pregnancy • coagulation disorders • complex hematologic or autoimmune disorders • expectant management of preeclampsia with severe features remote from term
Level IV	Any patient appropriate for level III care, plus higher-risk conditions or complications such as the following: • severe maternal cardiac conditions • severe pulmonary hypertension • pregnant women who require neurosurgery or cardiac surgery • pregnant women in unstable condition and in need of an organ transplant

*This list provides a series of examples and is not intended to serve as a comprehensive or definitive list of conditions appropriate to manage at each level. Some conditions present across a range of severity and, depending on the severity, geography, and available resources, it may be appropriate to care for some patients at a level different from what is listed above. Facilities, with input from their obstetric care providers, should individualize the types of conditions or complications that they are capable of caring for based on the actual resources available for their level of care, as well as other considerations such as location, availability of transport, access to readily available resources in the local or regional area, and coordination with other centers.

[†]Preeclampsia with severe features may warrant transfer to a higher-level facility. Delivery or expectant management of a woman with preeclampsia with severe features is best accomplished in a setting with resources appropriate for maternal and neonatal care.

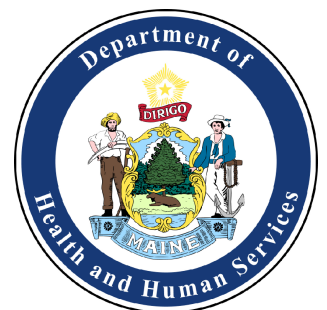
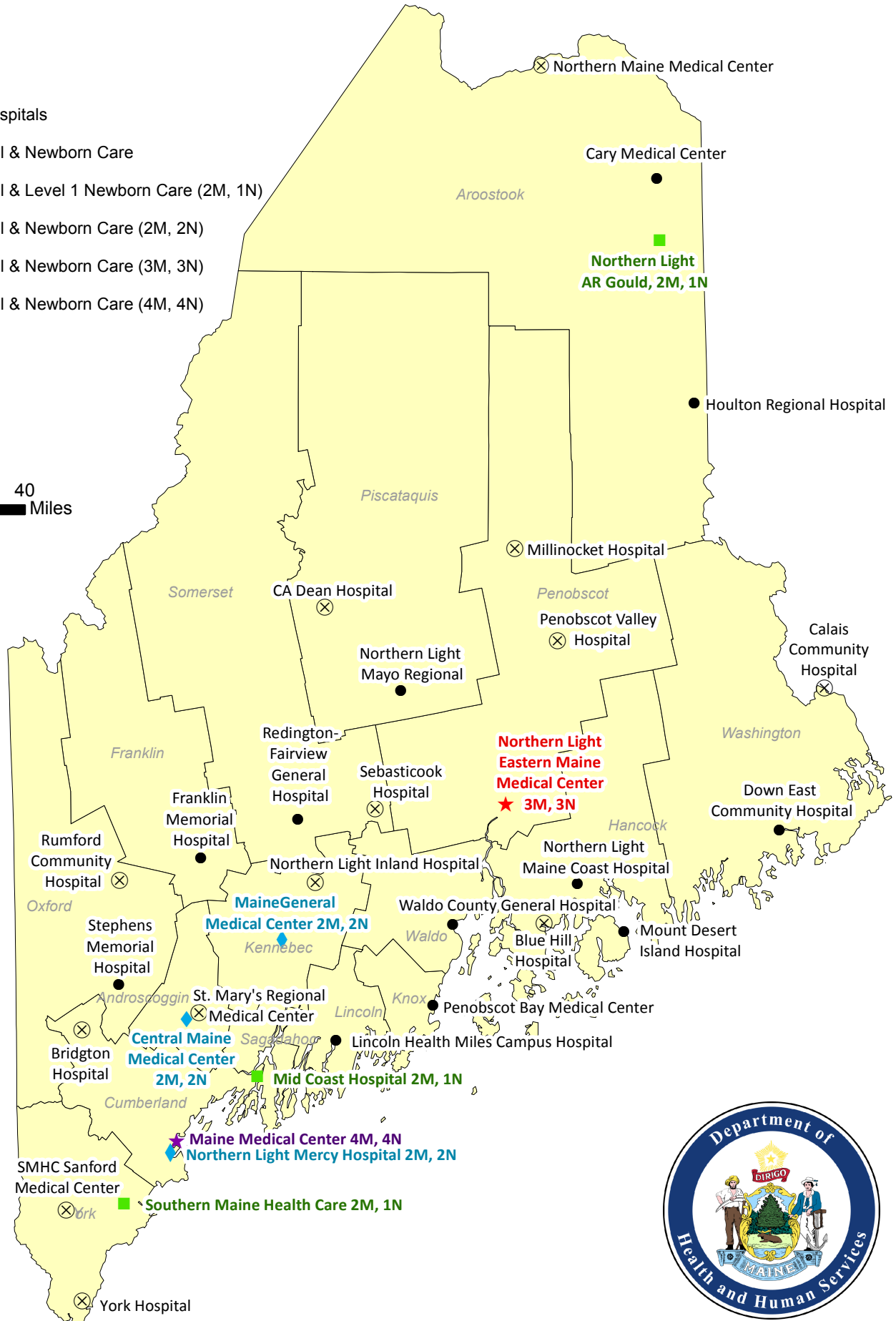
Maine Hospitals by Level of Maternal & Newborn Care 2025

Map Legend:

- Maine Counties
- Non-Birthing Hospitals
- Level 1 Maternal & Newborn Care
- Level 2 Maternal & Level 1 Newborn Care (2M, 1N)
- Level 2 Maternal & Newborn Care (2M, 2N)
- Level 3 Maternal & Newborn Care (3M, 3N)
- Level 4 Maternal & Newborn Care (4M, 4N)



0 5 10 20 30 40
Miles



Birthing Hospital Name	Map Icon	Newborn Level of Care	Maternal Level of Care	OB Phone Number	Hospital Phone Number
Cary Medical Center	●	1	1	207-498-1179	207-498-3111
Central Maine Medical Center	◆	2	2	207-795-2530	207-795-0111
Down East Community Hospital	●	1	1	207-255-0242	207-255-3356
Franklin Memorial Hospital	●	1	1	207-779-2295	207-778-6031
Houlton Regional Hospital	●	1	1	207-521-2130	207-532-2900
Lincoln Health - Miles Campus	●	1	1	207-563-4536	207-563-1234
Maine General Medical Center - Alford	◆	2	2	207-248-5230	207-626-1000
Maine Medical Center	★	4	4	207-662-2589	207-662-0111
Mid Coast Hospital	■	1	2	207-373-6500	207-373-6000
Mount Desert Island Hospital	●	1	1	207-288-5082 Ext. 1352	207-288-5081
Northern Light AR Gould Hospital	■	1	2	207-768-4330	207-768-4000
Northern Light Eastern Maine Medical Center	★	3	3	207-973-8730	207-973-7000
Northern Light Maine Coast Hospital	●	1	1	207-664-5464	207-664-5311
Northern Light Mayo Hospital	●	1	1	207-564-4293	207-564-8401
Northern Light Mercy Hospital	◆	2	2	207-553-6300	207-879-3000
Penobscot Bay Medical Center	●	1	1	207-301-8343	207-301-8000
Redington-Fairview General Hospital	●	1	1	207-858-2405	207-474-5121
Southern Maine Health Care Medical Center - Biddeford	■	1	2	207-283-7350	207-283-7000
Stephens Memorial Hospital	●	1	1	207-744-6151	207-743-5933
Waldo County General Hospital	●	1	1	207-505-4140	207-338-2500

Phone numbers for consultations/transfers for Level 3 and Level 4 hospitals in Maine

- MMC MFM and Neonatology (One Call): 207-662-6632
- NL-EMMC OB via Northern Light Health Integrated Transfer Center: 973-9000 and NLH EMMC Neonatology: 207-275-1082 (EMMC NICU)

Non-Birthing Hospitals

- Bridgton Hospital
- Calais Community Hospital
- Millinocket Regional Hospital
- Northern Light Blue Hill Hospital
- Northern Light CA Dean Hospital
- Northern Light Inland Health
- Northern Light Seabcoook Valley Hospital
- Northern Maine Medical Center
- Penobscot Valley Hospital
- Rumford Community Hospital
- St. Joseph Healthcare
- St. Mary's Regional Medical Center
- York Hospital

24/7 Free Standing ED only (not a birthing facility)

- Maine General - Thayer
- Southern Maine Health Care Medical Care - Sanford



September 29, 2026

To: Joint Standing Committee on Health Coverage, Insurance and Financial Services
Fr: Katie Fullam Harris
Re: Response to Questions Raised at Public Hearing

On behalf of MaineHealth, thank you again for the opportunity in August to share the circumstances that led to the decision to transition Labor and Delivery services at MaineHealth Lincoln Hospital. We appreciate the Committee's thoughtful discussion and questions.

Response to Committee's Letter

While we stand by the data, evidence, and clinical analysis conducted by our team – and the difficult decision made by the Lincoln Hospital Board, Coastal Region Board, and MaineHealth Board of Trustees – we recognize that trust is essential to our relationship with the Lincoln County community. In response to the Committee's letter of September 1, as well as the previous communications we have received from elected officials, we are in the process of identifying a neutral third party to review the recommendation to regionalize maternity care, including moving labor and delivery services from Lincoln Hospital to Mid Coast Hospital or another hospital of a patient's choosing. Any report and recommendations that result from this assessment will be provided to the Boards listed above, and it is our intention that it be made available to the HCIFS Committee, as well.

We also want to address the Committee's recommendation that MaineHealth pause the transition while an independent assessment is conducted. Any decision to pause the transition would require approval by the Lincoln Hospital Board, Coastal Region Board, and MaineHealth Board of Trustees. More importantly, a pause would have negative consequences for the clinical workforce at Lincoln Hospital.

After nearly six years of recruitment, MaineHealth has successfully recruited two new OB/GYN physicians to an integrated Lincoln Hospital–Mid Coast Hospital practice. Both are Maine Track graduates with prior experience in rural Maine.

Their recruitment was made possible by a regional practice model that combines the benefits of practicing in a smaller community with the clinical volume, call structure, and support of a larger OB/GYN team. Neither physician was willing to accept a position limited to Lincoln Hospital coverage alone. The integrated model allows them to provide gynecologic and prenatal/postpartum care at Lincoln while participating in Labor and Delivery call at Mid Coast. This structure provides appropriate delivery volume, sustainable call expectations, and meaningful collaboration with a larger team of OB/GYN physicians and midwives, while

allowing them to maintain a significant clinical presence at Lincoln. Most importantly, this model will bring two highly qualified OB/GYNs to our community.

Maintaining the integrated model is important to the success of their recruitment and to expanding access to OB/GYN care in Lincoln County. Requiring these physicians to provide Labor and Delivery coverage at Lincoln would materially alter the practice model and call responsibilities under which they were recruited. Prolonged uncertainty also risks destabilizing the existing clinical team at a time when we are working to strengthen and grow OB/GYN services across the region.

Response to Questions Raised at Public Hearing

“This is First Step Towards Closing our Hospital”

MaineHealth has made significant investments in Lincoln Hospital, and we are committed to ensuring that Lincoln Hospital has the services and resources needed to meet the unique health care needs of the oldest county in Maine, in the oldest state in the country for the foreseeable future. The decision to transition Labor and Delivery services should not be interpreted as a broader reduction in our commitment to Lincoln Hospital or its future.

In fact, we continue to invest in growing and strengthening the hospital. The most recent example of this commitment is the new Infusion Center and Oncology & Blood Disorder Practice, which opened on August 31. In addition, we are expanding our operating room capacity to meet current needs. These expansions respond to a clear and growing need in the community and allow patients to receive more oncology and infusion care sooner and closer to home.

Labor and Delivery presented a fundamentally different challenge. The issue was not whether we were willing to invest in the service or whether the team providing care was delivering high-quality care, but rather whether we could reliably provide the clinical team necessary to operate Labor and Delivery safely every hour of every day. Despite significant recruitment efforts, we could no longer confidently answer yes.

We understand why the decision might be difficult to reconcile with the investments MaineHealth is making elsewhere at Lincoln, but the two are not inconsistent. We will continue to invest in Lincoln Hospital and in services that meet the needs of the community, but we also have a duty to ensure that the care we are providing is safe, sustainable and reliable.

Use of Family Medicine Physicians

We also want to address questions raised during the hearing about whether family medicine physicians with obstetric training could provide a sustainable model for Labor and Delivery at Lincoln Hospital. We currently have two FM-OB physicians on staff at Lincoln Hospital, one of whom is surgically trained to do C-Sections. Although there are hospitals in the United States that rely entirely on surgical FM-OBs, there is no other hospital in Maine that operates without OB/GYN support available. Even if it were the standard in MaineHealth facilities, not all surgical FM-OBs would feel comfortable practicing in an unsupported model. **Very**

importantly, we worked to recruit an additional FM-OB at Lincoln, but she ultimately declined, citing low birth volumes.

To be clear, we recognize the important role FM-OB physicians play in providing maternity care and believe that they are a critically important component in our efforts to sustain labor and delivery in rural areas. To that end, we have successfully developed a new family medicine residency program at Franklin Hospital in Farmington. Importantly, however, surgical FM-OB fellowship programs currently exist in only 16 states, and none are located in New England.

It is also important to recognize that the number of family medicine physicians practicing obstetrics has been steadily declining. In 1988, approximately 29% of family medicine physicians delivered babies. By 2021, that figure had fallen to 7%, and it continued to decline to just 2.1% in 2023. This is an important consideration when assessing the availability of this specialized workforce in Maine and the feasibility of relying on surgical FM-OB physicians as the primary staffing model for a rural Labor and Delivery program.

MaineHealth, like hospitals across Maine and the country, also has specific credentialing and privileging requirements for physicians, including those providing obstetric and surgical obstetric care. Each MaineHealth hospital's Medical Staff is independently governed and establishes clinical privileging criteria through its Medical Staff governance processes. As a result, though privileging requirements vary somewhat among MaineHealth hospitals, we are exploring opportunities to further standardize these requirements. These requirements are intended to demonstrate that physicians have the education, training, experience, and demonstrated competency necessary to provide the care for which they are seeking privileges.

For Family Medicine Obstetric physicians, we have explicit pathways to provide obstetric care, including requirements related to obstetric training and recent delivery experience or, at some hospitals, more specifically, 20 deliveries in the prior 24 months. Alternative criteria are also available for recent residency graduates and, depending on the hospital and privileges requested, experience reflective of the scope of privileges requested. Surgical obstetric privileges have additional training and experience requirements, including requirements related to cesarean delivery.

MaineHealth's current privilege criteria expressly provide pathways for appropriately trained Family Medicine physicians to obtain obstetric privileges, including surgical obstetric privileges at several MaineHealth hospitals. These criteria are used to evaluate whether an individual physician has the education, training, experience, and demonstrated competency necessary for the privileges requested. Additionally, all MaineHealth hospitals review credentialing and privileging criteria to ensure requirements align with current practice standards.

Data Clarification

We also want to clarify the birth-volume information brought to the Committee by former Rep. Les Fossel. Importantly, Rep. Fossel's data is the same data that was used in the MaineHealth analysis. As Cindy Wade explained in her remarks to the Committee, in Fiscal Year (FY) 2025, Lincoln Hospital delivered 131 births. Of those, 70 were to mothers residing in Lincoln County.

Overall, there were 218 births to Lincoln County mothers during FY2025. This means that approximately 32% of Lincoln County mothers chose to deliver at Lincoln Hospital, while approximately 68% delivered at other hospitals (Maine Health Data Organization Hospital Encounter Data, 2020-2025). Rep. Fossel's analysis failed to take into account that 61 women residing outside Lincoln County gave birth at Lincoln Hospital in 2025, thus making up the difference.

Travel Time Analysis

Additionally, we conducted an analysis of the impact of the transition on travel time for patients. Our analysis found that, on average, the transition would add approximately 18 minutes of travel time for patients who would otherwise have delivered at Lincoln Hospital. Approximately 86 percent of patients would have a drivetime of roughly 39 minutes. This was a standard analysis and does not account for factors such as weather or traffic.

Loss of Trust in Community

We recognize that the process and resulting decision on labor and delivery services at Lincoln Hospital have resulted in a fracture between members of the Lincoln County community and Lincoln Hospital and MaineHealth. As a result, we are developing a plan to engage key community members in ways to move forward to work together to meet the needs of our community. We recognize that trust takes time to build, and we are committed to doing all that we can to rebuild the collaborative relationship between our hospital and the communities it is part of – and that it serves.

We appreciate the Committee's willingness to continue the discussion about how Maine can strengthen maternal health care, address the workforce challenges facing rural communities, and ensure that patients have access to safe, high-quality care.

MaineHealth remains committed to being part of that work and to continuing our investment in Lincoln Hospital and the communities it serves.

Please let us know how we can be of assistance as the Committee's work continues.

SENATE

DONNA BAILEY, DISTRICT 31, CHAIR
JOSEPH M. BALDACCI, DISTRICT 9
DAVID G. HAGGAN, DISTRICT 10

COLLEEN MCCARTHY REID, PRINCIPAL LEGISLATIVE ANALYST
EDNA CAYFORD, COMMITTEE CLERK



HOUSE

KRISTI MICHELE MATHIESON, KITTERY, CHAIR
POPPY ARFORD, BRUNSWICK
ANNE-MARIE MASTRACCIO, SANFORD
MICHELLE NICOLE BOYER, CAPE ELIZABETH
SALLY JEANE CLUCHEY, BOWDOINHAM
ROBERT A. FOLEY, WELLS *
JOSHUA MORRIS, TURNER
ROLF A. OLSEN, JR., RAYMOND
PAUL R. FLYNN, ALBION
MARYGRACE CAROLINE CIMINO, BRIDGTON

STATE OF MAINE
ONE HUNDRED AND THIRTY SECOND LEGISLATURE
COMMITTEE ON HEALTH COVERAGE, INSURANCE AND FINANCIAL SERVICES

September 1, 2026

Dr. Andrew T. Mueller
Chief Executive Officer
Maine Health
110 Free Street
Portland, Maine 04101

VIA EMAIL

Dear Dr. Mueller:

We are writing to follow up after the August 27th presentation you and your colleagues made to the Joint Standing Committee on Health Coverage, Insurance and Financial Services about the factors that have led to the planned closure of the Labor and Delivery Unit at Lincoln Hospital in Damariscotta, which you have announced will occur on December 18, 2026. We understand that Maine Health conducted its own analysis and considered several factors, including potential alternatives, before notifying the Lincoln County community of the pending closure. On August 27th, the committee also heard from many members of the Lincoln County community and other stakeholders strongly opposed to the closure who raised concerns about the veracity of the data and analysis used by Maine Health as rationale for the closure and about Maine Health's failure to meaningfully consider alternatives to the closure. The committee believes that Maine Health should do more to address the lack of trust in the Lincoln County community surrounding the decision to remove access to labor and delivery services at Lincoln Hospital.

We are writing to strongly recommend that Maine Health delay the closure at Lincoln Hospital until such time as it can engage independent consultants to conduct an assessment that fully considers the relevant factors contributing to the closure decision and all potential alternatives, including those suggested by community members. The committee believes a short-term pause of the closure to allow for an independent assessment will benefit all parties and, if the closure is supported by that independent assessment, may help to restore Maine Health's relationship with the Lincoln County community.

The committee is also firmly committed to developing long-term policy solutions to prevent further closures of labor and delivery units in Maine hospitals and to preserve access to maternal health care services. The committee will continue to discuss these issues in future meetings and welcomes your commitment to participate in those discussions.

Thank you for your consideration of the committee's request.

Sincerely,

Donna Bailey
Sen. Donna Bailey
Senate Chair

Kristi M. Mathieson
Rep. Kristi Michele Mathieson
House Chair

cc: Katie Fullam Harris, Chief Government Affairs Officer, Maine Health
Members, Joint Standing Committee on Health Coverage, Insurance and Financial
Services

FOR HCIFS REVIEW

McCarthyReid, Colleen

From: Florence V. Dasrath <FDasrath@rfgh.net>
Sent: Friday, September 25, 2026 6:52 AM
To: McCarthyReid, Colleen
Cc: Marya Goettsche Spurling
Subject: RE: HCIFS document

9/29

This message originates from outside the Maine Legislature.

Good morning,

I forgot to mention that I am on the Board of Directors of the Maine Academy of Family Physicians and this document was review prior to sending on behalf of the Academy. Thank you!

Best,
Florence

From: Florence V. Dasrath
Sent: Thursday, September 24, 2026 12:10 PM
To: 'colleen.mccarthyreid@legislature.maine.gov' <colleen.mccarthyreid@legislature.maine.gov>
Cc: Marya Goettsche Spurling <marya.spurling@gmail.com>
Subject: HCIFS document

Good morning,

I am a family medicine doctor in Skowhegan, Maine. In regards to the recent hospital closures I have drafted a document of things hospitals may need to prove before they decide to go forward with closure given that right now they don't have any parameters to follow before closing other than giving a 120 day notice. This would hopefully incentivize hospitals to keep their units including labor and delivery units open. I was hoping this could be presented during the 9/29/26 meeting. If you need any other information please let me know and thank you for your time.

Best,
Florence Dasrath

Disclaimer

The information contained in this communication from the sender is confidential. It is intended solely for use by the recipient and others authorized to receive it. If you are not the recipient, you are hereby notified that any disclosure, copying, distribution or taking action in relation of the contents of this information is strictly prohibited and may be unlawful.

This email has been scanned for viruses and malware, and may have been automatically archived by Mimecast, a leader in email security and cyber resilience. Mimecast integrates email defenses with brand protection, security awareness training, web security, compliance and other essential capabilities. Mimecast helps protect large and small organizations from malicious activity, human error and technology failure; and to lead the movement toward building a more resilient world. To find out more, visit our website.

Demonstrations Required Prior to Hospital Closure

The purpose of this document is to ensure that hospitals meet appropriate standards aimed at preventing unnecessary service closures, particularly in rural and underserved communities.

Since 2020, Maine has experienced significant healthcare service reductions, including the closure of multiple labor and delivery units and other essential services. Notable examples include Houlton Regional Hospital in Houlton, Northern Light Inland Hospital in Waterville, MaineHealth Waldo Hospital in Belfast, and Mount Desert Island Hospital in Bar Harbor. Each of these facilities closed labor and delivery in 2025. Additionally, St. Mary's Regional Medical Center in Lewiston suspended its ICU services and closed its maternity and women's health unit in 2022. Northern Light Health (Bangor) reduced its workforce and closed two walk-in clinics in 2025. Northern Light Inland Hospital in Waterville also closed in 2025.

These closures disproportionately affect rural and underserved populations, increasing travel times for care, limiting access to essential services, and placing additional strain on remaining healthcare facilities. By implementing stronger oversight and requiring a formal review process prior to service closures, this policy aims to ensure that hospitals carefully evaluate the community impact of such decisions. These measures are intended to mitigate the rate of closures and preserve access to critical healthcare services (adult and pediatric inpatient services, emergency departments, labor and delivery units and operating rooms), necessary for vulnerable populations.

- I. Purpose
 - a. Ensure hospitals exhaust all reasonable options before closure
 - b. Promote transparency and accountability
 - c. Protect access to essential healthcare services, especially in rural or underserved areas
- II. Workforce Recruitment and Retention Efforts
 - a. General Recruitment
 - i. Documentation of active recruitment efforts for all critical staff positions
 - ii. Use of incentives (sign-on bonuses, loan repayment, housing support, etc.)
 - iii. Partnerships with staffing agencies and academic institutions
 - b. Specialized Recruitment (if applicable)
 - i. For hospitals with Labor & Delivery units:
 1. Demonstrated recruitment of family medicine physicians with obstetrical training to fill the gaps
 2. Efforts to retain existing specialized staff
- III. Regional Collaboration and Staffing Strategies
 - a. Evidence of collaboration with nearby hospitals or health systems
 - b. Cross-coverage agreements to address staffing shortages
 - c. Use of telehealth or shared-service models where applicable
 - d. Participation in regional care networks or transfer agreements
- IV. Financial Transparency and Stewardship
 - a. Financial Documentation
 - i. Submission of financial statements for the past 2 years, if significant deficits are found, evidence of efforts to relocate finances to the most severely affected units
 - ii. Evidence of declining revenue, increasing costs, or other financial pressures
 - b. Resource Allocation Efforts
 - i. Demonstration of efforts to reallocate funding to sustain critical services
 - ii. Attempts to reduce non-essential costs before considering closure

- iii. Exploration of alternative funding sources (grants, state/federal aid, partnerships)
- V. Operational Flexibility and Staff Utilization
 - a. Evidence of cross-training clinical staff: Example: OB nurses trained to float to other departments
 - b. Implementation of flexible staffing models
 - c. Use of per diem or traveling staff as interim solutions
- VI. Crisis Management and Mitigation Planning
 - a. Financial Crisis Planning
 - i. Documentation of a financial recovery or stabilization plan implemented prior to closure decision
 - ii. Evidence of efforts to manage deficits and improve sustainability
 - b. Staffing Crisis Planning
 - i. Contingency plans for workforce shortages
 - ii. Strategies for maintaining essential services during staffing gaps
 - c. Operational Continuity
 - i. Plans to preserve critical services as long as possible
 - ii. Prioritization of essential departments (e.g., emergency, maternal care)
- VII. Timeline of Efforts (Pre-Notice Period)
 - a. Clear timeline demonstrating that all mitigation efforts occurred before the 120-day closure notice
 - b. Ideally includes actions taken well in advance (e.g., 12–24 months prior)
- VIII. Community Impact Consideration
 - a. Assessment of closure impact on the community
 - b. Documentation of communication with local stakeholders
 - c. Exploration of alternatives to full closure (e.g., service line reduction, affiliation, conversion to outpatient or critical access model)
- IX. Transition and Continuity Planning (If Closure Proceeds)
 - a. Plans for patient care transition
 - b. Coordination with nearby facilities to absorb patient volume
 - c. Staff transition support (placement, severance, retraining)



Information Provided by the Maine Hospital Association Maternal Health & Access
Committee
Health Coverage, Insurance & Financial Services Committee Meeting
September 22, 2026

Senator Bailey, Representative Mathieson and members of the Health Coverage, Insurance and Financial Services Committee, my name is Sally Weiss and I am providing information for your consideration from the MHA Maternal Health & Access Committee as you continue your important conversation regarding hospital labor and delivery care challenges and consider recommendations.

As I noted in my September testimony, MHA convened hospital leaders through the MHA Maternal Health & Access Committee in 2024, and the group continues to meet focused on strategic solutions and regional partnerships to support rural perinatal care in Maine. After the September public hearing, hospital colleagues and I reviewed the public comment recommendations provided to this committee and identified that many of the recommendations provided by interested stakeholders have support from our members. We thought it would be helpful for the committee to have this information as you continue your work today.

We believe the solutions needed to support rural perinatal care—including prenatal, labor and delivery, and postpartum care—should be guided by three distinct goals:

1. Sustaining rural hospitals with labor and delivery units;
2. Supporting all hospitals that provide perinatal and obstetric emergency care, including those without labor and delivery services; and
3. Ensuring access to safe, high-quality perinatal care for all Maine communities.

We have organized our comments on the proposed recommendations around these three goals.

Lastly, we want to acknowledge the work already underway through the Transforming Maternal Health (TMaH) grant, which provides \$17 million over 10 years, and the recently awarded Rural Health Transformation Program (RHTP) grant, which provides approximately \$190 million annually over five years. Both programs are funded by CMS. We understand that these funding opportunities have already helped launch numerous initiatives. For policy and planning purposes, however, it may be helpful to understand the extent to which

Maine DHHS can incorporate these recommendations and topics into its broader rural health planning efforts and report back to the committee and interested stakeholders.

Recommendations specific to Hospitals with Labor & Delivery Units

Funding

- Adequately fund obstetrical reimbursement through MaineCare. Between 2021 and 2023, 55% of all rural births in Maine were covered by MaineCare, with some rural hospitals as high as 66% of all births.
- Implement a multi-payer rural obstetric readiness model, with participation from MaineCare and commercial insurers, that reflects that cost of being ready 24/7 to provide care.
 - Geographically necessary birthing hospitals should receive a prospective monthly or annual capacity payment in addition to reimbursement for the care they deliver.
 - The formula should recognize minimum staffing and call coverage, anesthesia and operating-room capability, newborn stabilization, training, and transfer readiness.
 - It should be transparent, region-specific, and tied to access, quality, and coordination.
- Provide targeted support to geographically essential maternity services.
 - Eligibility could take into account distance and travel time to the next birthing hospital, financial vulnerability, regional need and the consequences of closure for patients, EMS, surrounding hospitals and communities.
 - Funding could be tied to participation in regional planning and a willingness to explore collaborative staffing, alternative workforce models and other approaches to maintaining safe care.

Medical Malpractice Insurance

- Negotiate with Medical Mutual, Maine's largest medical malpractice insurer, to adapt malpractice insurance coverage to meet the realities of rural hospitals, reducing both expense and extensive staffing requirements that complicate care delivery.

Hospital Stress/Closure Support:

- Create a confidential early-warning system and provide support before closure becomes inevitable. Hospitals and health systems could be required or strongly encouraged to notify DHHS or an appropriate statewide collaborative body when significant indicators suggest that a birthing unit may become unsustainable within

the following 12-24 months. Provide stabilization resources and preserve the possibility of restoring services when closure cannot be avoided.

Recommendations for all Hospitals, including those without Labor & Delivery Units:

Workforce

- Develop state programs focused on rural perinatal workforce incentives: including loan repayment/forgiveness, tuition reimbursement, recruitment incentives, rural workforce grants, clinical immersion programs, residency / fellowship programs focused on rural practice.
- Expand the training opportunities to increase the workforce of:
 - Certified Nurse-Midwives
 - Family medicine physicians with additional obstetrical training, including those who can perform c-sections.
 - Home visiting nurses, doulas and community health workers
- Direct state agencies, licensing boards, hospitals, health systems and professional organizations to develop a consistent, transparent and competency-based framework for obstetric credentialing and privileging.
- Streamline multistate licensure and reciprocity for obstetrical nurses and physicians to make locum and cross-border coverage more feasible for rural hospitals.
- Expand use of experienced L&D nurse pool from closed units to support obstetric training, simulations, & emergency preparedness, to provide care coordination for pregnant patients in the community and that present to Emergency Departments, or to staff remote fetal monitoring hubs.

Funding:

- Direct payers to reimburse telehealth and virtual support care models, such as virtual tele-obstetrical consultations, remote patient monitoring (such as fetal heart monitoring), remote prenatal care, and remote ultrasound image review and consultation to keep care close to home and reduce barriers to access.
- Establish a state fund that allows rural perinatal patients to apply for funds to subsidize the costs associated with traveling to the nearest appropriate birthing unit (transportation, accommodations, etc.)
- Sustainable funding for
 - Emergency department and EMS readiness for low occurrence, high-risk obstetric conditions. Funding could include simulation equipment, train the trainer education for running drills, and interdisciplinary mock codes.

- Broad perinatal care training opportunities for EMS, Public Health Nurses, Community Health Workers, and Doulas
- Support regional planning efforts that ensure all providers, including community-based providers, EMS, and hospitals, have clear communication pathways and understand the role each plays in the provision, coordination, and transfer of care.

Recommendations that Support Every Maine Community

Develop and Implement New Models of Care Delivery

- Strengthen the regional work already underway through the Maine's Transforming Maternal Health (TMaH) initiative and create a structure in which hospitals, clinicians, EMS, community providers and the state identify problems and develop solutions together.
 - Maintain prenatal, postpartum, behavioral health and community-based services locally even when delivery must occur elsewhere.
 - Support collaborative, rural maternity care models that allow low-risk patients to receive care close to home while ensuring higher-risk pregnancies have timely access to specialized regional care when needed.
 - Improve access to perinatal behavioral health services; and better connections between community providers and clinical maternity care.
 - Expand phone/video access for rural providers (EMS, Emergency Departments, community-based providers) to high-risk pregnancy and newborn specialists
 - Provide real-time emergency maternal teleconsultation, EMS and maternal transport systems appropriate to increasing distances from birthing hospitals.
- Establish state-wide perinatal telehealth programming that serves patients regardless of health system affiliation, delivery site, or insurance coverage
- Support partnerships with Federally Qualified Health Centers (FQHCs) and expand FQHC prenatal, postpartum, and pediatric services
- Provide ongoing, sustainable funding for successful obstetric and maternal health grant programs after current funding ends, such as those started under the HRSA funded Rural Maternity & Obstetric Management Strategies (RMOMs) Grant.
- Create a Maine-based, traveling-provider program and/ or regional 'float pool' to cover staffing gaps at rural hospitals on a short-term basis.
- Create a maternal transport framework with clear regional transfer relationships, rapid access to accepting facilities, appropriate EMS training and reimbursement, and mechanisms for consultation during difficult transfer decisions.

I will be attending the committee meeting on September 29th and can address any questions the committee has regarding our support for recommendations.

Thank you,

Sally Weiss, M.Sc.

V.P., Workforce Policy & Strategic Initiatives

Maine Hospital Association

sweiss@themha.org



Maine Hospital Association

MAINE'S LEADING
VOICE FOR HEALTHCARE

Analysis of MaineCare Rates

Labor & Delivery

September 29, 2026

Proposal.

Maine should provide add-on payments of 25% for every Medicaid birth at a PPS Maine hospital at an approximate General Fund cost of \$1.5-\$2.5 M per year.

Background.

Doing an analysis of what MaineCare pays for L & D services is complicated. MaineCare uses the Medicare DRG system (Diagnosis Related Group) to identify what the hospital rate is for a particular service. There are DRG codes for Cesarean delivery and for vaginal delivery. There are codes for various complications for the mother, or the baby or both. Then there are provisions based on the type of hospital smaller (CAH) v. larger (PPS); and if the hospital is a PPS there are provisions if it is a teaching hospital. There is no simple answer to the question: *What does MaineCare pay for a delivery?*

Smaller hospitals (Critical Access Hospitals or CAH) are essentially reimbursed their costs. On average, the cost to deliver at a CAH is roughly \$14,000. This includes all types of deliveries. We also believe there are higher costs at CAHs than at PPS hospitals due to lower volumes of births (e.g., lack of scale).

Analysis.

This analysis looks at the most common codes at larger (PPS) hospitals which are not teaching hospitals.

Medicaid Reimbursement Maine v New Hampshire v Vermont							
	Maine	NH			Vermont	Less than	Less than
		Base	Add-on	Total		NH	VT
MS DRG 788 (Cesarean w/o complications)	\$6,295	\$6,713	\$1,611	\$8,324	\$6,445	-\$2,029	-\$150
MS DRG 807 (Vaginal w/o complications)	\$4,426	\$4,720	\$1,133	\$5,853	\$5,759	-\$1,427	-\$1,333

Note: The above-chart does not include the physician reimbursement.

Proposal.

If the state were to provide a 25% add-on payment for each Medicaid birth at a PPS hospital, similar to what NH does, the cost to the General Fund budget would be: \$1.5 - \$2.5 million. For the most common codes listed above, the add-on payment would be in \$1,000-\$2,000 range.

The MaineCare rate would still be well-below the cost of care, but it would be more comparable to VT and NH.

Conclusion.

MaineCare reimbursement is both below the cost of care and below comparable rates in the Northern New England states of New Hampshire and Vermont.

NH has an add-on payment for L&D services. Maine should consider one as well.

Submitted by MDAC
Karen Kleinkopf
(Miles Delivers Action
Committee)

FULL TEXT LINKS



> *Obstet Gynecol.* 2022 Nov 1;140(5):812-819. doi: 10.1097/AOG.0000000000004960.
Epub 2022 Oct 5.

Association of Driving Distance to Maternity Hospitals and Maternal and Perinatal Outcomes

Sarah C Minion¹, Elizabeth E Krans, Maria M Brooks, Dara D Mendez, Catherine L Haggerty

Affiliations

PMID: 36201778 DOI: 10.1097/AOG.0000000000004960

Abstract

Objective: To assess whether there are associations between driving distance from the patient residence to the delivery hospital and adverse maternal and perinatal health outcomes.

Methods: We performed a retrospective cohort study using 2011–2015 Pennsylvania birth records of live births at 20 weeks of gestation or more, excluding inpatient hospital transfers or implausible distances. The shortest driving distance from patient residence to the delivery hospital was calculated in ArcGIS and was evaluated in association with a composite of adverse maternal outcomes (blood transfusion, unplanned operation, ruptured uterus, unplanned hysterectomy, or intensive care unit admission) and neonatal intensive care unit (NICU) admission. Multivariable-adjusted Poisson models were used to estimate relative risks with 95% CIs with a referent difference of 1 km distance to the delivery hospital.

Results: A total 662,245 birth records were included, and the median driving distance to the hospital was 11.3 km (interquartile range 5.4–21.6 km). The overall rate of the composite maternal outcome was 0.6% and of NICU admission was 8.4%. Compared with the referent distance, increasing driving distance was significantly associated with increased adjusted risks of the maternal composite outcome (adjusted relative risk [aRR] 1.22, 95% CI 1.07–1.36 for 60 km; aRR 1.36, 95% CI 1.19–1.53 for 70 km; and 1.53, 95% CI 1.31–1.75 for 80 km) and NICU admission (aRR 1.70, 95% CI 1.65–1.76 for 60 km; aRR 1.96, 95% CI 1.90–2.02 for 70 km; and aRR 2.25, 95% CI 2.18–2.33 for 80 km).

Conclusion: Longer distances to the delivery hospital were associated with greater risk of adverse maternal outcomes and NICU admission. Whether these findings reflect health care delivery deficits or simply serve as a marker of social deprivation requires further study.

Copyright © 2022 by the American College of Obstetricians and Gynecologists. Published by Wolters Kluwer Health, Inc. All rights reserved.

[PubMed Disclaimer](#)

Related information

[MedGen](#)

LinkOut – more resources

Full Text Sources



Search for...



OBSTETRICS • OBSTÉTRIQUE • Volume 44, Issue 8, P886-894, August 2022



Download Full Issue

Travel Time to Delivery, Antenatal Care, and Birth Outcomes: A



Get Access



Outline



Share



More

[Sabrina Luke, PhD¹](#) • [Amy Hobbs, MSc²](#) • [Janny Mak, MSc³](#) • [Kenny Del, MSc⁴](#)
[Ann Pederson, PhD^{1,4}](#) • [Laura Schummers, ScD⁵](#)
[Affiliations & Notes](#) ▾ [Article Info](#) ▾

Abstract

Abstract Language: English



Objective

Health policy and system leaders need to know whether long travel time to a delivery facility

adversely affects birth outcomes. In this study, we estimated associations between travel time to delivery and outcomes in low-risk pregnancies.

Methods

This population-based cohort included all singleton births without obstetric comorbidities or intrapartum facility transfers in British Columbia, Canada, from 2012 to 2019. Travel time was measured from maternal residential postal code to delivery facility using road network analysis. We estimated associations between travel time and severe maternal morbidity, stillbirth, pre-term birth, and small-for-gestational age (SGA) and large-for-gestational age (LGA) status using logistic regression, adjusted for confounders (adjusted odds ratios [aORs]). To examine variations in associations between travel time and outcomes by antenatal care utilization, we stratified models by antenatal care categories.

Results

Of 232 698 births, 3.8% occurred at a facility ≥ 60 minutes from the maternal residence. Obesity, adolescent age, substance use, inadequate prenatal care, and low socioeconomic status were more frequent among those traveling farther for delivery. Travel time ≥ 120 minutes was associated with increased risk of stillbirth (aOR 1.8; 95% CI 1.2–2.8), pre-term birth (aOR 2.3; 95% CI 2.1–2.5), LGA (aOR 1.5; 95% CI 1.4–1.6), and severe maternal morbidity (aOR 1.5; 95% CI 1.2–1.8), but not SGA (aOR 1.0; 95% CI 0.8–1.1), when compared with a travel time of 1–29 minutes. Risk of stillbirth was greatest with inadequate and intensive (adequate plus) antenatal care but persisted for severe maternal morbidity, pre-term birth, and LGA across categories.

Conclusion

Longer travel time to delivery was associated with increased risk of adverse outcomes in low-risk pregnancies after adjusting for confounding factors. Associations were stronger among those with inadequate antenatal care.

Keywords

delivery, obstetric • pregnancy outcome • travel

Get full text access

Association Between Loss of Hospital-Based Obstetric Services and Birth Outcomes in Rural Counties in the United States

Katy B. Kozhimannil, PhD, MPA; Peiyin Hung, PhD, MSPH; Carrie Henning-Smith, PhD, MPH, MSW; Michelle M. Casey, MS; Shailendra Prasad, MBBS, MPH

IMPORTANCE Hospital-based obstetric services have decreased in rural US counties, but whether this has been associated with changes in birth location and outcomes is unknown.

OBJECTIVE To examine the relationship between loss of hospital-based obstetric services and location of childbirth and birth outcomes in rural counties.

DESIGN, SETTING, AND PARTICIPANTS A retrospective cohort study, using county-level regression models in an annual interrupted time series approach. Births occurring from 2004 to 2014 in rural US counties were identified using birth certificates linked to American Hospital Association Annual Surveys. Participants included 4 941 387 births in all 1086 rural counties with hospital-based obstetric services in 2004.

EXPOSURES Loss of hospital-based obstetric services in the county of maternal residence, stratified by adjacency to urban areas.

MAIN OUTCOMES AND MEASURES Primary outcomes were county rates of (1) out-of-hospital births; (2) births in hospitals without obstetric units; and (3) preterm births (<37 weeks' gestation).

RESULTS Between 2004 and 2014, 179 rural counties lost hospital-based obstetric services. Of the 4 941 387 births studied, the mean (SD) maternal age was 26.2 (5.8) years. A mean (SD) of 75.9% (23.2%) of women who gave birth were non-Hispanic white, and 49.7% (15.6%) were college graduates. Rural counties not adjacent to urban areas that lost hospital-based obstetric services had significant increases in out-of-hospital births (0.70 percentage points [95% CI, 0.30 to 1.10]); births in a hospital without an obstetric unit (3.06 percentage points [95% CI, 2.66 to 3.46]); and preterm births (0.67 percentage points [95% CI, 0.02 to 1.33]), in the year after loss of services, compared with those with continual obstetric services. Rural counties adjacent to urban areas that lost hospital-based obstetric services also had significant increases in births in a hospital without obstetric services (1.80 percentage points [95% CI, 1.55 to 2.05]) in the year after loss of services, compared with those with continual obstetric services, and this was followed by a decreasing trend (−0.19 percentage points per year [95% CI, −0.25 to −0.14]).

CONCLUSIONS AND RELEVANCE In rural US counties not adjacent to urban areas, loss of hospital-based obstetric services, compared with counties with continual services, was associated with increases in out-of-hospital and preterm births and births in hospitals without obstetric units in the following year; the latter also occurred in urban-adjacent counties. These findings may inform planning and policy regarding rural obstetric services.

JAMA. 2018;319(12):1239-1247. doi:10.1001/jama.2018.1830
Published online March 8, 2018.

Viewpoint page 1193 and Editorial page 1203

Supplemental content

Author Affiliations: University of Minnesota Rural Health Research Center, Division of Health Policy and Management, University of Minnesota School of Public Health, Minneapolis (Kozhimannil, Henning-Smith, Casey, Prasad); Yale School of Public Health, New Haven, Connecticut (Hung); Department of Family Medicine and Community Health, University of Minnesota Medical School, Minneapolis (Prasad).

Corresponding Author: Katy B. Kozhimannil, PhD, MPA, Division of Health Policy and Management, University of Minnesota School of Public Health, 420 Delaware St SE, MMC 729, Minneapolis, MN 55455 (kbk@umn.edu).

In 2010, nearly 18 million reproductive-age women lived in rural counties in the United States.¹ The percentage of rural counties with hospital-based obstetric services declined from 55% to 46% between 2004 and 2014,^{2,3} with less-populated rural counties experiencing more rapid declines.^{3,4} Very little is known about whether the loss of rural obstetric services is associated with changes in location of childbirth or outcomes of care. Such information is needed to inform policy and clinical responses to obstetric services loss.

Loss of hospital-based obstetric care may exacerbate existing maternal health challenges in rural communities.⁵⁻⁸ Data from 2000 to 2012 showed that women and infants in the most remote rural areas, compared with their urban counterparts, had higher rates of delayed prenatal care initiation, pregnancy-related hospitalizations, low birth weight, preterm births, and infant mortality.⁹ Loss of hospital-based obstetric services in rural areas may prolong travel distances and affect access to and outcomes of care during pregnancy and at the time of childbirth.^{5,6,8,10,11} Decreases in care and increases in stress that may accompany loss of nearby obstetric care could influence risk of preterm birth, the leading cause of infant mortality.^{9,11-13} Hospital obstetric unit closures may also affect location of childbirth. When labor progresses quickly, rural women may give birth at the closest hospital or have an unplanned out-of-hospital birth; others may plan an out-of-hospital birth at or close to home.¹¹ Successful management of these births requires preparation and readiness on the part of local clinicians and health care systems.^{14,15}

Rural counties vary considerably in their proximity to urban centers, and the consequences of loss of hospital-based obstetric services may differ based on adjacency to an urban area. Distinguishing rural counties based on adjacency to urban areas, this study examined the relationship between losing hospital-based obstetric services and location of childbirth and birth outcomes.

Methods

This study was designated exempt from review by the University of Minnesota institutional review board.

Data and Study Population

Nationwide data came from the 2004-2014 Natality Detail Data maintained by the National Center for Health Statistics. These data included maternal age, race and ethnicity, educational attainment, residence county, pregnancy complications (multiple gestation, diabetes, hypertension, eclampsia, malpresentation, and preterm delivery), gestational age, birth occurrence county, birth weight, parity, and whether the birth occurred in a hospital or not. Race and ethnicity data were self-reported based on fixed categories and were included because maternal and infant outcomes differ by race and ethnicity, as does the racial and ethnic composition of counties.

American Hospital Association Annual Survey data were used to identify all rural counties' availability of hospital-based obstetric services each year, using a previously documented definition.³ Specifically, we noted hospitals' self-reports of (1) provision of obstetric services, (2) level 1 or higher maternity care,

Key Points

Question In rural US counties, was loss of hospital-based obstetric services associated with changes in location of childbirth or birth outcomes?

Findings This retrospective cohort study included 4 941 387 births in 1086 rural US counties. Loss of hospital-based obstetric care in rural counties not adjacent to urban areas was significantly associated with increases in births in hospitals without obstetric units (3.06 percentage points), and preterm births (0.67 percentage points), compared with counties with continual obstetric services.

Meaning In rural US counties not adjacent to urban areas, obstetric services loss was associated with increased risk of birth in hospitals without obstetric units and preterm birth.

(3) at least 1 dedicated obstetric bed, and (4) at least 10 births per year. Hospitals that met all 4 criteria were included. The 56 cases in which there were discrepancies among the 4 indicators were validated against the Centers for Medicare & Medicaid Services' Provider of Services file. Loss of obstetric services included any circumstance whereby all in-county hospital-based obstetric services ceased, including full hospital closures as well as closure of obstetric units in hospitals that remained open.⁴ No hospitals reinstated obstetric services during the study period. Rural counties were based on the Federal Office of Management and Budget nonmetropolitan classification, with adjacency to urban areas based on the US Department of Agriculture definition of physically adjoining 1 or more metropolitan counties and having at least 2% of employed residents commuting to metropolitan counties.¹⁶

Outcomes

Primary and secondary outcomes were identified based on a priori hypotheses formulated from prior literature as well as the strength of available measures of these data.^{6,7,10,11,17} The 3 primary outcomes were (1) out-of-hospital birth, including births in freestanding birth centers or home births that were planned or unplanned; (2) hospital births that occurred in counties that did not have any hospitals that provided obstetric care (eg, births in hospitals without obstetric services); and (3) preterm birth (<37 weeks' gestation).

Secondary outcomes were (1) low prenatal care use (having ≤ 10 prenatal visits),¹⁸ (2) cesarean delivery, and (3) low infant Apgar score (<7 at 5 minutes).^{7,19} Secondary outcomes were limited to measures available in birth certificate data throughout the study period. Each has notable limitations, including variation in the quality of prenatal care and in the required number of visits, no consistent assessment of medical necessity of cesarean delivery, and substantial interrater variability in Apgar scores.^{7,20-24}

Statistical Analysis

Pearson χ^2 tests were used to compare differences in maternal and birth characteristics based on whether the counties lost hospital-based obstetric services or had continual services, stratified by adjacency to urban areas.

To assess the relationship between loss of hospital-based obstetric services and study outcomes in urban-adjacent rural

counties and non-urban-adjacent rural counties, this study used multivariable linear regression models in an interrupted time series approach, applying the Bonferroni method to control for multiple comparisons (12 comparisons for 6 outcomes in both urban-adjacent and non-urban-adjacent rural counties).^{25,26} This approach measured changes in the level of study outcomes as well as changes in annual trends (slopes) that occurred following loss of hospital-based obstetric services. To do so, we compared outcomes in rural counties that lost hospital-based obstetric services with rural counties that had continual hospital-based obstetric services. The study period comprised 2004 to 2014, and for interrupted time series models, we assessed the association between services loss and outcomes for the counties that lost hospital-based obstetric services between 2006 and 2012, in order to allow at least 2 years prior to and 2 years following closures to assess trends.

Outcomes were assessed for a 1-year period at the county level; thus, we measured annual trends prior to obstetric services loss, changes in the year immediately following closure, and changes in the annual trend that followed closure in counties that experienced services loss compared with those with continual services. Model coefficients produced estimates of the percentage point changes in level or annual trends in study outcomes following services loss. Models were calculated separately for rural counties that were adjacent to urban areas and those that were not adjacent, and statistical differences between rural counties based on adjacency were not assessed. We included all births with complete data on maternal characteristics, maternal clinical conditions, and outcomes. Overall, 109 233 births (2.2%) were missing data on 1 or more measures and were excluded; no one variable had more than 1.6% missing data.

Interrupted time series models adjusted for the following: county-level means of maternal age, race and ethnicity, and educational attainment; maternal clinical conditions (multiple gestation, diabetes, hypertension, eclampsia, and breech); primiparity; and state fixed effects. The model assumed that baseline differences between counties that experienced services loss and those with continual services were accounted for by these measures; unmeasured confounding remains a potential risk. The structure we used assumed that annual trends can be modeled as linear; criteria for this assumption were met. The model also assumed an independent normally distributed residual, which might be violated by autocorrelation: when a county's outcome in a given year is correlated with the value of that outcome in a prior year. In this analysis, controlling for annual trends reduced the risk of potentially underestimating standard errors.

For all analyses, $P < .05$ (2-sided) was considered statistically significant. Analyses were performed using Stata version 13 (StataCorp).

Results

This analysis included 4 941 387 births, occurring between 2004 and 2014, to women who resided in all 1086 rural US counties where hospital-based obstetric services existed in 2004. Across the study population, the mean (SD) maternal age was 26.2 (5.8) years. A mean (SD) of 75.9% (23.2%) of

women who gave birth were non-Hispanic white, and 49.7% (15.6%) were college graduates. Table 1 shows descriptive characteristics. During 2004-2014, 179 rural counties lost hospital-based obstetric services, including 103 urban-adjacent rural counties (17.2% of the 599 counties in this category, in which 330 815 births occurred during the study period) and 76 non-urban-adjacent rural counties (15.6% of the 487 counties in this category, in which 112 301 births occurred during the study period). On average, women living in rural counties that lost obstetric services were slightly younger, more likely to be white, and less likely to have a college or graduate degree compared with residents of counties with continual obstetric services.

Figure 1 and Figure 2 show observed data trends and 95% CIs in counties that lost hospital-based obstetric services; specific trend slopes before and after services loss, as well as overall trend slopes in counties with continual services, are shown in Table 2 and Table 3. For rural non-urban-adjacent and urban-adjacent counties, the rates of out-of-hospital birth were 1.2% and 1.3%, respectively, in the year preceding obstetric services loss, and the overall trend without loss was increasing by 0.07 and 0.10 percentage points annually, respectively (Figure 1A; Table 2 and Table 3, column 1). For counties that lost hospital-based obstetric services, the observed rate was higher than expected in the absence of services loss. In non-urban-adjacent counties, the rate increased to 1.6% in the year following services loss. For urban-adjacent counties, there was a small increase in out-of-hospital births (to 1.5%) in the year following services loss.

Births in hospitals without obstetric care were 0.01% in urban-adjacent and 0.40% in non-urban-adjacent counties in the year before services loss; non-urban-adjacent counties had an increasing annual trend of 0.10 percentage points per year prior to services loss (Figure 1B; Table 2, column 2). Following services loss, the rate of births in hospitals without obstetric care was above the trend prior to services loss. Non-urban-adjacent counties had an immediate increase of 2.1 percentage points, from 0.37% to 2.47%. Urban-adjacent counties that lost services had an immediate increase of 1.9 percentage points, from 0.01% to 1.88%.

In the year prior to services loss, preterm birth rates were 11.6% in non-urban-adjacent and 13.0% in urban-adjacent rural counties (Figure 2). The trends in counties with continual obstetric services showed 0.14-percentage point and 0.16-percentage point annual declines over the study period in non-urban-adjacent and urban-adjacent counties, respectively (Table 2 and Table 3, column 1). Raw data showed a 0.40-percentage point increase in preterm birth in the year following services loss in non-urban-adjacent rural counties and a 0.20-percentage point increase in urban-adjacent counties, followed by a 0.19-percentage point average annual decreasing trend in preterm births in both non-urban-adjacent and urban-adjacent counties (Table 2 and Table 3, column 3).

Unadjusted trends in secondary outcomes (low prenatal care use, cesarean delivery, and low Apgar scores) are shown in the eFigure in the Supplement. Non-urban-adjacent counties that lost services had a 46.7% rate of low prenatal care use prior to services loss, and an immediate increase of 2.8 percentage points in low prenatal care use after services loss. Non-urban-adjacent counties had a 31.2% cesarean delivery rate prior to services loss,

Table 1. Maternal Characteristics by Hospital Obstetric Services Status (2004-2014) in County of Residence (Non-Urban-Adjacent and Urban-Adjacent Areas)

	Non-Urban-Adjacent Counties			Urban-Adjacent Counties		
	Continual Hospital Obstetric Services (n = 411 Counties; 1 618 110 Births), %	Loss of Hospital Obstetric Services (n = 76 Counties; 112 301 Births), %	P Value Between Continual Services and Loss ^a	Continual Hospital Obstetric Services (n = 496 Counties; 2 880 161 Births), %	Loss of Hospital Obstetric Services (n = 103 Counties; 330 815 Births), %	P Value Between Continual Services and Loss ^a
Maternal age, y						
<20	12.1	12.8	<.001	11.8	12.5	<.001
20-24	31.0	32.5	<.001	31.0	32.0	<.001
25-29	29.4	29.0	.02	29.3	29.4	.33
30-34	18.4	17.3	<.001	18.5	17.5	<.001
≥35	9.2	8.3	<.001	9.4	8.6	<.001
Maternal race and ethnicity						
Non-Hispanic white	70.9	77.1	<.001	74.2	75.0	<.001
Non-Hispanic black	7.6	5.2	<.001	9.3	11.2	<.001
Asian	2.3	0.6	<.001	1.1	0.7	<.001
Hispanic	14.0	9.0	<.001	11.9	10.4	<.001
Other ^b	4.4	6.9	<.001	3.0	2.1	<.001
Maternal educational attainment						
0-11th grade	20.1	20.3	<.001	20.2	20.3	<.001
High school graduate	30.8	33.9	<.001	33.9	30.8	<.001
College	43.9	41.8	<.001	41.8	45.0	<.001
Graduate degree	5.3	4.0	<.001	4.0	3.9	<.001
Parity						
Primipara	38.0	37.1	<.001	38.3	37.8	<.001
Multipara	61.7	62.6	<.001	61.3	61.6	.01
Gestation period, wk						
<32	2.0	2.0	.68	2.1	2.2	<.001
32-33	1.7	1.8	.006	1.7	1.7	.02
34-36	9.2	9.3	.21	9.0	9.3	<.001
37-39	56.3	56.9	.001	56.0	56.9	<.001
40-41	27.4	26.4	<.001	27.6	26.4	<.001
≥42	3.5	3.7	<.001	3.6	3.6	.20
Maternal clinical conditions						
Multiple gestation	2.9	3.0	.08	3.0	3.1	.13
Diabetes	4.9	5.2	<.001	5.0	5.0	.72
Hypertension	6.5	7.0	<.001	6.6	6.7	.07
Eclampsia	0.3	0.3	.93	0.3	0.2	<.001
Breech	5.1	4.8	<.001	5.2	4.9	<.001
Birth weight, g						
≤1499	1.3	1.3	.97	1.4	1.5	.007
1500-2499	6.8	6.8	.85	6.7	6.8	.002
≥2500	91.8	91.8	.84	91.8	91.6	.002

^a P values were derived from Pearson χ^2 tests for differences in maternal and birth characteristics by maternal residence counties' hospital obstetric service status.

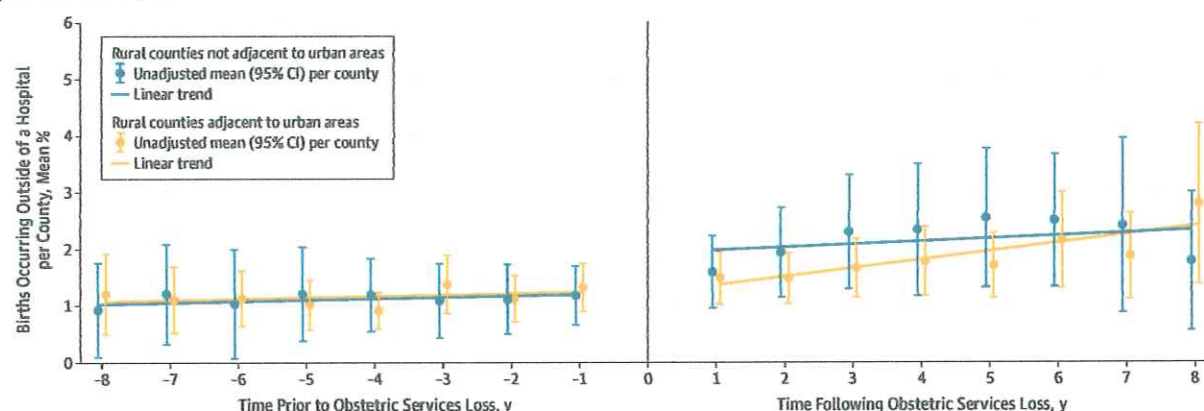
^b "Other" maternal race/ethnicity category included Native Hawaiian and other Pacific Islander, American Indian and Alaska Native, and non-Hispanic of more than 1 race.

and an immediate increase of 1.7 percentage points. For non-urban-adjacent counties, low Apgar scores were at 2.17% 1 year prior to services loss and followed an increasing trend of 0.15 percentage points annually after services loss (Table 2, column 3). Urban-adjacent counties that lost hospital-based obstetric services had comparable levels vs non-urban-adjacent counties prior to services loss and saw similar patterns, except that there was a declining trend in cesarean delivery use of 0.81 percentage points per year prior to services loss and a decline in low Apgar

scores of 0.06 percentage points per year following services loss (Table 3, columns 2 and 3). Associations between loss of hospital-based obstetric services and study outcomes, controlling for relevant covariates and statistically comparing counties that lost services against those with continual obstetric care, are shown in the multivariable analysis in Table 2 and Table 3. Many observed trends in the raw data did not change in multivariable models, but other patterns (eg, changes in cesarean delivery use and infant Apgar scores) were mitigated when covariates and

Figure 1. Trends in Birth Location in Rural US Counties That Lost Hospital-Based Obstetric Services in the Years Prior to and Following Services Loss

A Out-of-hospital births



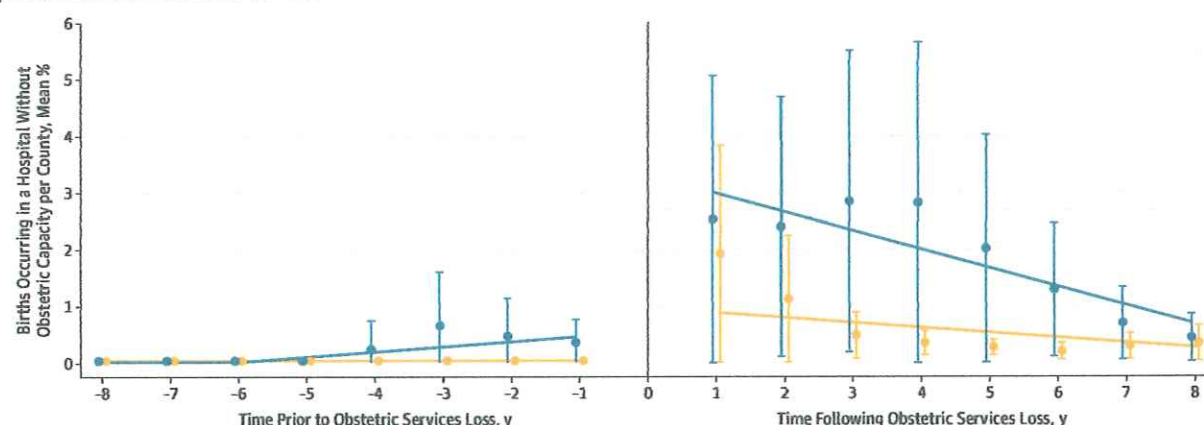
Rural counties not adjacent to urban areas, No.

Counties	16	23	28	38	47	53	65	79	76	81	74	70	63	58	48	39	33
Births	1501	2670	3263	4720	6217	6586	7993	9754	10139	9920	9176	8633	7634	6917	5518	4105	3625

Rural counties adjacent to urban areas, No.

Counties	28	35	48	57	67	81	92	100	103	97	89	81	74	61	52	42	28
Births	7725	10031	13908	17101	21747	25289	27934	29325	29910	27428	23817	21944	19730	15674	13040	8541	5172

B Births in hospital without obstetric services



Rural counties not adjacent to urban areas, No.

Counties	14	21	26	36	45	51	63	77	76	79	72	68	61	56	46	37	31
Hospital births	1484	2651	3241	4677	6157	6529	7902	9648	9987	9774	9022	8472	7500	5766	5399	4019	3568

Rural counties adjacent to urban areas, No.

Counties	25	32	45	54	64	78	89	97	103	94	86	78	71	58	49	39	25
Hospital births	7648	9938	13756	16939	21533	24990	27629	28947	29502	27012	23448	21608	19370	15409	12750	8379	5042

The graphs show the trend lines for mean unadjusted values of out-of-hospital births and births in a hospital without obstetric units in rural US counties that lost hospital-based obstetric services as well as 95% CIs in the years prior to and

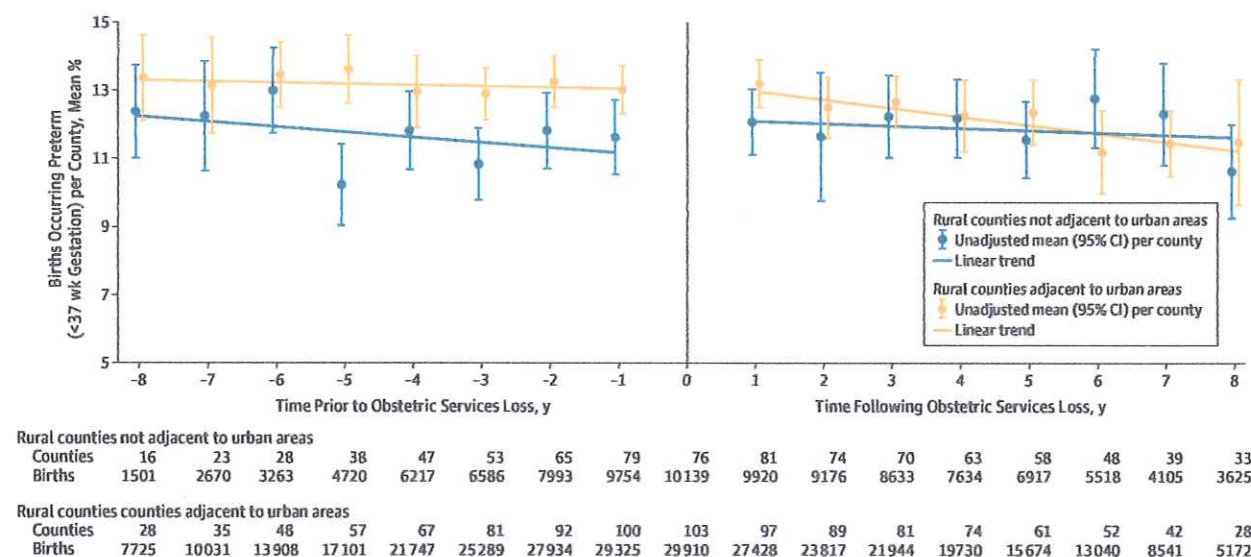
following services loss. The graphs do not include data from rural US counties with continual obstetric services over the study period.

underlying trends (ie, outcomes in counties with continual services) were accounted for.

The results of multivariable time series models are shown as adjusted marginal changes, presented as percentage points per year, for the associations between services loss and study outcomes in rural counties not adjacent to urban areas and adjacent to urban areas compared with counties with continual obstetric services (Table 2 and Table 3). Table 1 and Table 2 also present unadjusted mean annual trends prior to and following

services loss in counties that lost hospital-based obstetric services, as well as overall annual trends in counties with continual services. Among rural counties not adjacent to urban areas, those that lost hospital-based obstetric services experienced significant changes in all 3 primary outcomes and 1 secondary outcome compared with non-urban-adjacent counties with continual obstetric services (Table 2). In the year after loss of services, out-of-hospital births increased (0.70 percentage points [95% CI, 0.30 to 1.10]); births in a hospital without an

Figure 2. Trend in Preterm Births in Rural US Counties That Lost Hospital-Based Obstetric Services in the Years Prior to and Following Services Loss



The graph shows the trend lines for mean unadjusted values of preterm births (<37 weeks' gestation) in rural US counties that lost hospital-based obstetric services as well as 95% CIs in the years prior to and following services loss.

The graph does not include data from rural US counties with continual obstetric services over the study period.

Table 2. Estimated Percentage Point Changes in Birth Outcomes Among Rural Counties That Are Not Adjacent to Urban Areas (1730 411 Births in 487 Counties From 2004 to 2014)

	Descriptive Analysis ^a			Multivariable Analysis ^{a,b}			
	Overall Annual Trend in Counties With Continual Services	Annual Trend Before the Loss of Hospital-Based Obstetric Services in Counties With Services Loss	Annual Trend After the Loss of Hospital-Based Obstetric Services in Counties With Services Loss	Changes 1 y After the Loss of Hospital-Based Obstetric Services (vs Counties With Continual Services)	Bonferroni-Corrected P Value ^c	Differential Changes in Annual Trend Following Services Loss (vs Counties With Continual Services)	Bonferroni-Corrected P Value ^c
Primary Outcomes							
Out-of-hospital births	0.07 (0.04 to 0.10)	0.09 (-0.01 to 0.19)	0.11 (-0.01 to 0.22)	0.70 (0.30 to 1.10)	<.001	0.02 (-0.06 to 0.09)	>.99
Births in hospital without obstetric unit	0.01 (-0.01 to 0.03)	0.10 (0.01 to 0.19)	0.15 (-0.32 to 0.53)	3.06 (2.66 to 3.46)	<.001	-0.07 (-0.15 to -0.01)	.08
Preterm births (<37 wk gestation)	-0.14 (-0.18 to -0.11)	-0.06 (-0.29 to 0.17)	-0.19 (-0.34 to -0.04)	0.67 (0.02 to 1.33)	.04	-0.07 (-0.22 to 0.08)	.16
Secondary Outcomes							
≤10 Prenatal care visits	-0.06 (-0.19 to 0.07)	0.09 (-0.24 to 0.42)	0.15 (-0.33 to 0.62)	4.37 (2.33 to 6.41)	<.001	-0.03 (-0.71 to 0.05)	.90
Cesarean delivery	-0.16 (-0.26 to -0.07)	-0.07 (-0.48 to 0.35)	0.20 (-0.14 to 0.53)	0.89 (-0.97 to 2.74)	.43	0.10 (-0.24 to 0.46)	.98
5-min Apgar score <7	0.11 (0.09 to 0.12)	0.17 (0.05 to 0.29)	0.15 (0.07 to 0.22)	0.15 (-0.02 to 0.32)	.90	0.03 (-0.03 to 0.08)	.36

^a Estimates (95% CIs) were percentage point changes, annually, of each variable from models comparing counties that lost obstetric services with those with continual obstetric services during 2004-2014. A positive change in the year immediately following closure and a positive change in the annual trend that followed services loss refer to the relative increases in outcomes in counties that experienced services loss compared with those with continual services. Bold text indicates corrected P values <.05.

^b Multivariable models were adjusted for county-level means of maternal age, race and ethnicity (percentage of births to mothers who were non-Hispanic black, Hispanic, Asian, and other; non-Hispanic white was the reference

category), educational attainment (percentage of births to mothers whose education levels were 0-11th grades, high school graduate, and college but not a degree; college graduate was the reference category), maternal clinical condition (preterm delivery, multiple gestation, diabetes, hypertension, eclampsia, breech, and primiparity), and maternal residence state fixed effects. Models for Apgar and cesarean delivery measures also controlled for whether there were 10 or fewer prenatal care visits and out-of-hospital births.

^c P values applied the Bonferroni method to control for multiple comparisons (12 comparisons for 6 outcomes in both urban-adjacent and non-urban-adjacent rural counties).

obstetric unit increased (3.06 percentage points [95% CI, 2.66 to 3.46]) and preterm births increased (0.67 percentage points [95% CI, 0.02 to 1.33]). Low prenatal care (4.37 percentage points [95% CI, 2.33 to 6.41]) also increased (Table 2).

Among rural counties adjacent to urban areas, those that lost hospital-based obstetric services experienced significant changes in 1 primary outcome and 1 secondary outcome compared with urban-adjacent counties with continual obstetric

Table 3. Estimated Percentage Point Changes in Birth Outcomes Among Rural Counties That Are Adjacent to Urban Areas (3 210 976 Births in 599 Counties From 2004 to 2014)

	Descriptive Analysis ^a			Multivariable Analysis ^{a,b}			
	Overall Annual Trend in Counties With Continual Services	Annual Trend Before the Loss of Hospital-Based Obstetric Services in Counties With Services Loss	Annual Trend After the Loss of Hospital-Based Obstetric Services in Counties With Services Loss	Changes 1 y After the Loss of Hospital-Based Obstetric Services (vs Counties With Continual Services)	Bonferroni-Corrected P Value ^c	Differential Changes in Annual Trend Following Services Loss (vs Counties With Continual Services)	Bonferroni-Corrected P Value ^c
Primary Outcomes							
Out-of-hospital births	0.10 (0.06 to 0.14)	0.06 (-0.01 to 0.13)	0.04 (-0.03 to 0.11)	0.08 (-0.24 to 0.39)	>.99	-0.02 (-0.08 to 0.05)	.31
Births in hospital without obstetric unit	0.00 (0.00 to 0.00)	0.00 (-0.01 to 0.00)	-0.15 (-0.31 to 0.01)	1.80 (1.55 to 2.05)	<.001	-0.19 (-0.25 to -0.14)	<.001
Preterm births (<37 wk gestation)	-0.16 (-0.18 to -0.13)	-0.06 (-0.24 to 0.12)	-0.19 (-0.31 to -0.08)	0.23 (-0.16 to 0.61)	>.99	-0.10 (-0.18 to -0.03)	.004
Secondary Outcomes							
≤10 Prenatal care visits	-0.04 (-0.15 to 0.07)	0.03 (-0.41 to 0.47)	-0.06 (-0.49 to 0.37)	2.50 (0.71 to 4.03)	.001	-0.08 (-0.39 to 0.23)	.70
Cesarean delivery	-0.09 (-0.18 to -0.01)	-0.81 (-1.14 to -0.49)	0.31 (-0.02 to 0.64)	0.53 (-1.01 to 2.07)	>.99	-0.013 (-0.32 to 0.31)	>.99
5-min Apgar score <7	0.08 (0.07 to 0.10)	0.07 (0.01 to 0.13)	-0.06 (-0.12 to -0.01)	0.03 (-0.33 to 0.39)	>.99	-0.03 (-0.10 to 0.04)	.89

^a Estimates (95% CIs) were percentage point changes, annually, of each variable over all counties from models comparing counties that lost obstetric services to those with continual obstetric services during 2004-2014. A positive change in the year immediately following closure and a positive change in the annual trend that followed services loss refer to the relative increases in outcomes in counties that experienced services loss compared with those with continual services. Bold text indicates corrected P values <.05.

^b Multivariable models were adjusted for county-level means of maternal age, race and ethnicity (percentage of births to mothers who were non-Hispanic black, Hispanic, Asian, and other; non-Hispanic white was the reference

category), educational attainment (percentage of births to mothers whose education levels were 0-11th grades, high school graduate, and college but not a degree; college graduate was the reference category), maternal clinical condition (preterm delivery, multiple gestation, diabetes, hypertension, eclampsia, breech, and primiparity), and maternal residence state fixed effects. Models for Apgar and cesarean delivery measures also controlled for whether there were 10 or fewer prenatal care visits and out-of-hospital births.

^c P values applied the Bonferroni method to control for multiple comparisons (12 comparisons for 6 outcomes in both urban-adjacent and non-urban-adjacent rural counties).

services (Table 3). In the year after loss of hospital-based obstetric services, births in a hospital without obstetric services increased (1.80 percentage points [95% CI, 1.55 to 2.05]), as did low prenatal care use (2.50 percentage points [95% CI, 0.71 to 4.03]). The differences between urban-adjacent counties with services loss and those with continual services in births in a hospital without obstetric services became smaller over time (-0.19 percentage points per year [95% CI, -0.25 to -0.14]), as did rates of preterm birth (-0.10 [95% CI, -0.18 to -0.03]).

Discussion

During the study period, loss of hospital-based obstetric services in rural counties not adjacent to urban areas was associated with an increase in rates of out-of-hospital births, births in a hospital without obstetric services, and preterm births, as well as an increase in low prenatal care use. For rural counties adjacent to urban areas, loss of hospital-based obstetric services was associated with an increase in births in a hospital without obstetric services and low prenatal care use, followed by a decrease over time in the gap between counties with services loss and those with continual services in births in a hospital without obstetric services as well as preterm births.

Altogether, the results of this study indicate significant changes in birth location and outcomes immediately following rural obstetric unit closures, with sustained changes over time in rural counties that are not adjacent to urban areas. Such changes may affect clinical care in an already-challenging con-

text. When a rural hospital stops providing obstetric care or closes entirely, the risks associated with the clinical management of childbirth shift from the hospital to local clinics and staff that may not be equipped to provide obstetric services or to distant communities, with whom rural residents may have little connection.

After losing access to local hospital-based obstetric services, some rural women still gave birth close to home: either at hospitals without obstetric capacity or in out-of-hospital settings, planned or unplanned. The clinical management of care in these situations differs tremendously. In particular, births in hospitals without obstetric capacity and unplanned home births may require substantial unanticipated clinical support from local hospitals, clinics, and emergency medical services.^{14,27,28} Because this study detected an increase in out-of-hospital births following loss of hospital-based obstetric services in rural non-urban-adjacent counties, particular attention to plans for backup care (should transfer be required) is especially relevant in these communities. Strengthening relationships between home birth clinicians and local hospital-based clinicians following obstetric closures may facilitate collaboration and appropriate transfers of care, when needed.²⁹

In most rural counties in this study, birth in a hospital without obstetric services was extremely rare or nonexistent prior to services loss. In rural counties with 100 births a year that lose obstetric services, there may be 2 or 3 births per year that occur in hospitals without obstetric capacity in urban-adjacent and non-urban-adjacent counties, respectively. The health care facilities and clinicians that remain in communities where hospitals close obstetric units may not be equipped to care for

patients during labor and delivery, and the clinicians at these facilities do not regularly attend deliveries or identify and manage complications of childbirth. Global data indicate that lacking this care exposes pregnant patients to greater risk of morbidity, mortality, and poor infant outcomes.³⁰

Changes in slope in the years following services loss in urban-adjacent counties indicated a reduction over time in births in hospitals without obstetric services, which may suggest a learning curve on the part of patients and delivery systems as they adjust to the loss of hospital-based obstetric care locally. This initial change, followed by a reduced association over time, occurred only in urban-adjacent rural counties. A similar pattern in study outcomes was observed in a 2013 study of obstetric service closures in the Philadelphia metropolitan area.³¹ However, in non-urban-adjacent rural counties, the increase in births in hospitals without obstetric units that followed services loss did not decline over time. This difference based on urban adjacency may relate to the distance rural residents must travel to reach a hospital that provides obstetric care.

Loss of hospital-based obstetric services was also associated with an increased risk of preterm birth in non-urban-adjacent rural counties. National Healthy People goals strive for a 10% decline per decade in preterm birth rates.³² The measured association in this study represents a 5% increase in preterm birth over baseline rates. Preterm birth has lifelong health effects; its predictors are not fully characterized but may include lack of health services as well as psychosocial stress and structural inequities.³³ In the context of obstetric services loss in non-urban-adjacent rural communities, the association with preterm birth may derive in part from reductions in prenatal care, as observed in this study, as well as stress and anxiety experienced by rural residents who lack local access to childbirth services,^{10,12} and particular challenges faced by residents of remote areas.³⁴

The percentage of women with low prenatal care use increased in both urban-adjacent and non-urban-adjacent rural counties that lost hospital-based obstetric services, which is consistent with prior studies showing that increased travel time is associated with fewer prenatal care visits.³⁵ While the clinical consequences of the change are not clear from this or other studies,⁶ there is consensus on the need for adequate prenatal care as a means of ongoing assessment, early detection of problems, and creation of a positive pregnancy experience.³⁶

Routinely, rural hospital administrators cite staffing needs, financial concerns, and low birth volume as contributing factors to a decision to stop providing obstetric services.^{37,38} These

constraints are frequently unavoidable, but new innovative models of organizing and financing care provide opportunities to consider regionalization strategies, partnerships with larger health care systems or tertiary care centers, and the use of telehealth services.^{39,40}

Limitations

This study has several limitations. First, counties were the only available unit of analysis, but rural counties vary considerably in size and in the spatial distribution of residents. These were factors that could not be accounted for in this analysis. While not currently feasible with national data, future work should assess associations between obstetric services loss and individual outcomes. Second, additional data constraints include the lack of national data during the study period on (1) the intentionality of out-of-hospital births; (2) whether births occurred in emergency departments or whether the birth occurred in a planned location; (3) women's insurance status and networks, which influence birth setting choices; and (4) timing of prenatal care initiation or use of labor induction, which would have been relevant outcomes to investigate.

Third, the data do not include clinical records, which could contain more details on intended birth location, complications, and outcomes, and the effects on obstetric services loss on individuals could not be determined. Fourth, there were not enough observations within each county to control for correlation among births in counties, and as such, estimates may indicate greater precision than truly exists. Fifth, the analyses were limited to rural counties that had hospital-based obstetric services in 2004 to detect changes after closure. However, this excluded 45% of rural counties where hospital-based obstetric services were not available² and where issues of access may be long-standing and exacerbated. Sixth, this was an observational design study, and findings could be explained by residual or unmeasured confounding.

Conclusions

In rural US counties not adjacent to urban areas, loss of hospital-based obstetric services, compared with counties with continual services, was associated with increases in out-of-hospital and preterm births and births in hospitals without obstetric units in the following year; the latter also occurred in urban-adjacent counties. These findings may inform planning and policy regarding rural obstetric services.

ARTICLE INFORMATION

Accepted for Publication: February 21, 2018.

Published Online: March 8, 2018.

doi:10.1001/jama.2018.1830

Author Contributions: Drs Kozhimannil and Hung had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: All authors.

Acquisition, analysis, or interpretation of data:

Kozhimannil, Hung, Henning-Smith, Casey.

Drafting of the manuscript: All authors.

Critical revision of the manuscript for important intellectual content: Hung, Henning-Smith, Casey, Prasad.

Statistical analysis: Hung.

Obtained funding: Kozhimannil, Casey.

Administrative, technical, or material support:

Kozhimannil, Hung, Henning-Smith, Prasad.

Supervision: Kozhimannil.

Conflict of Interest Disclosures: All authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest.

Dr Kozhimannil reported receiving grants from the

Federal Office of Rural Health Policy, Health Resources and Services Administration, Department of Health and Human Services. No other disclosures were reported.

Funding/Support: The research reported in this article was supported by the Federal Office of Rural Health Policy, Health Resources and Services Administration, Department of Health and Human Services (cooperative agreement No. UICRHO3717-13-00).

Role of the Funder/Sponsor: The funder provided input on the study design and had an opportunity

to provide feedback on the draft manuscript, as part of the cooperative agreement that funded the research. The funder had no role in the data collection, analysis, and interpretation of data, or decision to submit the manuscript for publication.

Disclaimer: The information, conclusions, and opinions expressed are those of the authors, and no endorsement by the Federal Office of Rural Health Policy, Health Resources and Services Administration, or Department of Health and Human Services is intended or should be inferred.

Additional Contributions: We gratefully acknowledge the assistance of Alex Evenson, MA, in the preparation of the figures and editing of this manuscript; Alexandra Ecklund, MPH, in reviewing and editing the manuscript; and Ira Moscovice, PhD, for the guidance, comments, and input provided. Dr Moscovice, Ms Ecklund, and Mr Evenson are affiliated with the Rural Health Research Center, University of Minnesota School of Public Health and received salary support from the above-named grant (cooperative agreement No. UICRHO3717-13-00). We also thank the mothers, clinicians, clinic administrators, and staff in a rural community that lost hospital-based obstetric services for the insights provided during focus group discussions, which helped contextualize study findings.

REFERENCES

- US Census Bureau. American Community Survey 5-year estimates: table DP05. American FactFinder website. <http://factfinder2.census.gov>. Accessed February 24, 2018.
- Hung P, Kozhimannil K, Casey M, Henning-Smith C. State variability in access to hospital-based obstetric services in rural US counties. University of Minnesota Rural Health Research Center. http://rhrc.umn.edu/wp-content/files_mf/1491503846UMRHRCOBstatevariability.pdf. Published April 2017. Accessed January 29, 2018.
- Hung P, Henning-Smith CE, Casey MM, Kozhimannil KB. Access to obstetric services in rural counties still declining, with 9 percent losing services, 2004-14. *Health Aff (Millwood)*. 2017;36(9):1663-1671.
- Hung P, Kozhimannil K, Henning-Smith C, Casey M. Closure of hospital obstetric services disproportionately affects less-populated rural counties. University of Minnesota Rural Health Research Center. http://rhrc.umn.edu/wp-content/files_mf/1491501904UMRHRCOBdosuresPolicyBrief.pdf. Published April 2017. Accessed January 29, 2018.
- American College of Obstetricians and Gynecologists. ACOG committee opinion No. 586: health disparities in rural women. *Obstet Gynecol*. 2014;123(2 pt 1):384-388.
- Sontheimer D, Halverson LW, Bell L, Ellis M, Bunting PW. Impact of discontinued obstetrical services in rural Missouri: 1990-2002. *J Rural Health*. 2008;24(1):96-98.
- Lisonkova S, Haslam MD, Dahlgren L, Chen I, Synnes AR, Lim KI. Maternal morbidity and perinatal outcomes among women in rural versus urban areas. *CMAJ*. 2016;188(17-18):E456-E465.
- Rayburn WF, Richards ME, Elwell EC. Drive times to hospitals with perinatal care in the United States. *Obstet Gynecol*. 2012;119(3):611-616.
- Liu L, Oza S, Hogan D, et al. Global, regional, and national causes of child mortality in 2000-13, with projections to inform post-2015 priorities: an updated systematic analysis. *Lancet*. 2015;385(9966):430-440.
- Grzybowski S, Stoll K, Kornelsen J. Distance matters: a population based study examining access to maternity services for rural women. *BMC Health Serv Res*. 2011;11(1):147.
- Pillington H, Blondel B, Carayol M, Breart G, Zeitlin J. Impact of maternity unit closures on access to obstetrical care: the French experience between 1998 and 2003. *Soc Sci Med*. 2008;67(10):1521-1529.
- Kornelsen J, Stoll K, Grzybowski S. Stress and anxiety associated with lack of access to maternity services for rural parturient women. *Aust J Rural Health*. 2011;19(1):9-14.
- Callaghan WM, MacDorman MF, Rasmussen SA, Qin C, Lackritz EM. The contribution of preterm birth to infant mortality rates in the United States. *Pediatrics*. 2006;118(4):1566-1573.
- Schorn MN, Wilbeck J. Unexpected birth in the emergency department: the role of the advanced practice nurse. *Adv Emerg Nurs J*. 2009;31(2):170-177.
- Danilack VA, Nunes AP, Phipps MG. Unexpected complications of low-risk pregnancies in the United States. *Am J Obstet Gynecol*. 2015;212(6):809.e1-809.e6.
- Parker T. Urban Influence Codes: documentation. USDA Economic Research Service. <https://www.ers.usda.gov/data-products/urban-influence-codes/documentation/>. Published May 2013. Accessed February 24, 2018.
- Hutcheon JA, Riddell CA, Strumpf EC, Lee L, Harper S. Safety of labour and delivery following closures of obstetric services in small community hospitals. *CMAJ*. 2017;189(11):E431-E436.
- Carter EB, Tuuli MG, Caughey AB, Odibo AO, Macones GA, Cahill AG. Number of prenatal visits and pregnancy outcomes in low-risk women. *J Perinatol*. 2016;36(3):178-181.
- Carter EB, Tuuli MG, Odibo AO, Macones GA, Cahill AG. Prenatal visit utilization and outcomes in pregnant women with type II and gestational diabetes. *J Perinatol*. 2017;37(2):122-126.
- O'Donnell CPF, Kamlin COF, Davis PG, Carlin JB, Morley CJ. Interobserver variability of the 5-minute Apgar score. *J Pediatr*. 2006;149(4):486-489.
- Alexander GR, Kotelchuck M. Assessing the role and effectiveness of prenatal care: history, challenges, and directions for future research. *Public Health Rep*. 2001;116(4):306-316.
- Partridge S, Balayla J, Holcroft CA, Abenhaim HA. Inadequate prenatal care utilization and risks of infant mortality and poor birth outcome: a retrospective analysis of 28,729,765 U.S. deliveries over 8 years. *Am J Perinatol*. 2012;29(10):787-793.
- Committee on Obstetric Practice American Academy of Pediatrics Committee on Fetus and Newborn. Committee opinion No. 644: the Apgar score. *Obstet Gynecol*. 2015;126(4):e52-e55.
- Martin JA, Wilson EC, Osterman MJ, Saadi EW, Sutton SR, Hamilton BE. Assessing the quality of medical and health data from the 2003 birth certificate revision: results from two states. *Natl Vital Stat Rep*. 2013;62(2):1-19.
- Armstrong RA. When to use the Bonferroni correction. *Ophthalmic Physiol Opt*. 2014;34(5):502-508.
- Penfold RB, Zhang F. Use of interrupted time series analysis in evaluating health care quality improvements. *Acad Pediatr*. 2013;13(6)(suppl):S38-S44.
- Declercq E, Macdorman MF, Menacker F, Stotland N. Characteristics of planned and unplanned home births in 19 States. *Obstet Gynecol*. 2010;116(1):93-99.
- Silver DW, Sabatino F. Precipitous and difficult deliveries. *Emerg Med Clin North Am*. 2012;30(4):961-975.
- Vedam S, Leeman L, Cheyney M, et al. Transfer from planned home birth to hospital: improving interprofessional collaboration. *J Midwifery Womens Health*. 2014;59(6):624-634.
- Campbell OMR, Graham WJ; Lancet Maternal Survival Series steering group. Strategies for reducing maternal mortality: getting on with what works. *Lancet*. 2006;368(9543):1284-1299.
- Lorch SA, Srinivas SK, Ahlberg C, Small DS. The impact of obstetric unit closures on maternal and infant pregnancy outcomes. *Health Serv Res*. 2013;48(2 pt 1):455-475.
- Office of Disease Prevention and Health Promotion, Department of Health and Human Services. Maternal, infant, and child health. <https://www.healthypeople.gov/2020/topics-objectives/topic/maternal-infant-and-child-health/objectives>. Accessed February 19, 2018.
- Behrman R, Stith Butler A, eds; Institute of Medicine Committee on Understanding Premature Birth and Assuring Healthy Outcomes. *Preterm Birth*. Washington, DC: National Academies Press; 2007.
- Kent ST, McClure LA, Zaitchik BF, Gohlke JM. Area-level risk factors for adverse birth outcomes: trends in urban and rural settings. *BMC Pregnancy Childbirth*. 2013;13(1):129.
- McDonald TP, Coburn AF. Predictors of prenatal care utilization. *Soc Sci Med*. 1988;27(2):167-172.
- World Health Organization. WHO recommendations on antenatal care for a positive pregnancy experience. Geneva, Switzerland: WHO Press. <http://apps.who.int/iris/bitstream/10665/250796/1/9789241549912-eng.pdf>. Published 2016. Accessed February 19, 2018.
- Zhao L. Why are fewer hospitals in the delivery business? Bethesda, MD: NORC at the University of Chicago. <http://www.norc.uchicago.edu/PDFs/Publications/DecliningAccessToHospitalBasedObstetricServicesInRuralCounties.pdf>. Published April 2007. Accessed February 19, 2018.
- Hung P, Kozhimannil KB, Casey MM, Moscovice IS. Why are obstetric units in rural hospitals closing their doors? *Health Serv Res*. 2016;51(4):1546-1560.
- Lasswell SM, Barfield WD, Rochat RW, Blackmon L. Perinatal regionalization for very low-birth-weight and very preterm infants: a meta-analysis. *JAMA*. 2010;304(9):992-1000.
- Mann S, McKay K, Brown H. The maternal health compact. *N Engl J Med*. 2017;376(14):1304-1305.

Original Investigation | Obstetrics and Gynecology

Severe Maternal Morbidity and Mortality After Delivery Hospitalization Among Rural Residents Bypassing Local Care for Urban Hospitals

Peiyin Hung, PhD, MSPH; Haoyuan Gao, MPH; Jihong Liu, ScD; A. Caroline Rudisill, PhD, MSc; Nansi S. Boghossian, PhD; Berry A. Campbell, MD; Lauren Workman, PhD; Yunqing Ma, MS; Jiajia Zhang, PhD

Abstract

IMPORTANCE Rural residents experience higher severe maternal morbidity and mortality (SMMM) and limited local hospital obstetric supply. However, data on postpartum SMMM among these rural residents bypassing local communities for childbirth are limited.

OBJECTIVE To estimate postpartum SMMM among urban, rural nonlocal, and rural local births.

DESIGN, SETTING, AND PARTICIPANTS This retrospective population-based cohort study identified all childbirth deliveries and hospitalization discharges from January 1, 2018, to December 31, 2022, in South Carolina and followed-up to 1-year postpartum using data from all-payer hospital inpatient, outpatient, and emergency department visits linking to vital records for birth and death certificates information. Data were analyzed from March to September 2025.

EXPOSURE Urban residency, rural residency with nonlocal birth (ie, urban hospital deliveries), and rural residency with local birth (deliveries at in-county or adjacent rural hospitals), classified using the 2023 Rural-Urban Continuum Codes definitions (1-3, urban; 4-9, rural).

MAIN OUTCOME AND MEASURES The primary outcomes of postpartum SMMM—severe maternal morbidity (SMM) and/or pregnancy-associated mortality—were identified using *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision* diagnosis and procedure codes and death certificates, respectively. Cox proportional hazards models compared cumulative incidence and timing of postpartum SMMM across exposure groups.

RESULTS Of 235 375 deliveries to 197 216 women (mean [SD] maternal age, 28.3 [5.8] years), 203 325 (86.4%) were to urban residents, 15 053 (6.4%) were to rural residents bypassing local birth sites for urban hospitals, and 16 997 (7.2%) were to rural residents delivering locally, yielding a 47.0% bypassing rate for rural residents. SMMM was highest among rural nonlocal deliveries (180.0 per 10 000 births), followed by similar rates for urban (118.8 per 10 000 births) and rural local deliveries (114.7 per 10 000 births). Adjustment for maternal sociodemographic characteristics, clinical factors, and hospital characteristics still showed higher SMMM risk for rural nonlocal vs urban deliveries (adjusted hazard ratio, 1.18; 95% CI, 1.04-1.33), while the risk associated with rural local vs urban delivery was not significantly different.

CONCLUSIONS AND RELEVANCE In this cohort study of 2018 to 2022 childbirth deliveries in South Carolina, rural local deliveries had SMMM risks comparable to urban births, but rural nonlocal deliveries were associated with increased risk. These findings suggest that targeted interventions (eg, strengthening rural obstetric care supply, childbirth discharge planning, postpartum care coordination, and timely follow-up) may help mitigate these disparities for rural nonlocal births.

Key Points

Question Do rural residents who bypassed local communities for delivery at urban hospitals (nonlocal delivery) have higher postpartum severe maternal morbidity and mortality (SMMM) than rural local and urban births?

Findings In this cohort study of 235 375 births in South Carolina, nearly one-half of rural deliveries occurred at nonlocal hospitals. Rural nonlocal deliveries had the highest 1-year postpartum SMMM risk, even after adjusting for maternal and hospital factors.

Meaning In this cohort study, rural nonlocal births were more likely to experience SMMM than urban and rural local births, underscoring the need for targeted discharge planning and postpartum care coordination for rural deliveries in nonlocal settings.

+ Supplemental content

Author affiliations and article information are listed at the end of this article.

JAMA Network Open. 2025;8(11):e2544522. doi:10.1001/jamanetworkopen.2025.44522

 **Open Access.** This is an open access article distributed under the terms of the CC-BY License.

JAMA Network Open. 2025;8(11):e2544522. doi:10.1001/jamanetworkopen.2025.44522

November 19, 2025 1/12

Introduction

Severe maternal morbidity (SMM)—potentially life-threatening conditions that manifest during pregnancy, at delivery, or postpartum—results in significant short- or long-term consequences for a woman's health.¹ These complications are frequently associated with long hospital stays and high medical costs, and if not properly treated, could result in maternal death.²⁻⁴ Annually, approximately 60 000 individuals nationwide experience SMM, a critical near miss from pregnancy-associated deaths, which claim the lives of 700 individuals every year in the US.⁵ SMM and pregnancy-associated mortality (SMMM) disproportionately affect rural populations,⁶⁻¹⁰ with the maternal mortality ratio for rural residents almost 2-fold that of urban residents.¹¹ In South Carolina—a southern rural state with the eighth highest pregnancy-associated death rate in the nation—maternal mortality in rural counties (55.7 deaths per 100 000 live births) is nearly twice as high as in urban areas (28.9 deaths per 100 000 live births).¹² More than 70% of these deaths occurred during the postpartum period.¹²

Access to quality maternity care and social determinants of health (eg, travel burdens or care access) are key factors underlying rural disparities.¹³⁻¹⁷ However, access to care has been decreasing nationwide. From 2004 to 2018, rural America experienced a 19% reduction in hospital-based obstetric units, much higher than the 5% reduction observed in urban areas.^{16,18,19} In South Carolina alone, 13 hospital obstetric units have closed since 2012, and as of 2022, more than one-half of South Carolina counties were designated as medically underserved areas. These closures have hindered access to timely and adequate perinatal care.^{12,20}

Historically, many rural residents have bypassed local facilities to seek high-acuity obstetric care in urban hospitals due to clinical needs.^{21,22} Recent closures have further exacerbated this trend, increasing travel burdens and widening existing maternal health disparities in these vulnerable populations.^{19,23} However, data on SMMM among these rural residents bypassing local hospitals for childbirth are limited. This study used all-payer data linking to vital records to estimate SMMM among urban, rural nonlocal, and rural local births. This is the first study of which we are aware to use such all-payer outpatient, inpatient, and emergency department data to build an encompassing picture of postdischarge SMMM risk and examine how place of birth relative to home is associated with SMMM risk. We hypothesized SMMM risk to be greatest among rural nonlocal births, moderate among rural local births, and lowest among urban births.

Methods

Study Design and Data

This retrospective population-based cohort study was approved by the University of South Carolina institutional review board and followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline. We extracted data from the South Carolina all-payer hospital inpatient, outpatient, and emergency department utilization database, linking it to vital records birth and death certificate registries from 2018 to 2023. We first extracted childbirth hospitalizations and stillbirths using previously documented *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10)* diagnosis or procedure codes, or diagnostic related group codes. We then linked each hospitalization record to birth certificates records using unique patient identifiers and labor and delivery dates. Death registry records were used to flag pregnancy-associated mortality for a patient from childbirth to 1-year postpartum.

Study Cohort

The study cohort included all 235 375 childbirths from individuals aged 15 to 50 years who gave birth in South Carolina, from January 1, 2018, to December 31, 2022, regardless of payer status (eFigure 1 in Supplement 1). Multiple deliveries from a single patient were included when they were separated by at least 160 days. Of 243 317 deliveries to 203 323 birthing individuals from the linkage of

hospital-based childbirth records and birth certificate data, 7942 births to 6109 birthing individuals were excluded due to missing information on maternal age, race and ethnicity, residential county, education, prenatal care pattern, plurality, and parity. Follow-up data extended through December 31, 2023, allowing up to 1 year of postpartum observation for the entire cohort.

Measures

The primary outcome was days from discharge to the first episode of SMM or pregnancy-associated mortality (postpartum SMMM)²⁴⁻²⁶ or to 365 days postdischarge for censored individuals without an event). We chose the postpartum timing of SMMM because it marks a critical transition time from hospital to residential community settings, and this approach allows everyone to be consistently followed up for 365 days from discharge. SMM was identified from hospital inpatient, outpatient, and emergency department utilization records, using ICD-10 diagnosis and procedure codes for 20 conditions (eg, eclampsia, sepsis, disseminated intravascular coagulation, acute myocardial infarction, or acute respiratory distress) compiled by the Centers for Disease Control and Prevention. Because blood transfusion alone may not represent a truly severe maternal event,²⁷ such cases were not considered as SMM. Mortality was defined using death certificates data with all-cause deaths that occurred during childbirth or within 1 year postdischarge. Rates of SMMM were calculated as the number of deliveries that experienced SMMM per 10 000 births.

Residential and childbirth hospital locations were used to categorize participants into 3 exposure groups: (1) urban residents, (2) rural residents who gave birth in nonlocal hospitals, and (3) rural residents who gave birth in local hospitals. We did not categorize urban residents by their birthing location because only about 5% gave birth in nonlocal settings (ie, rural, nonadjacent counties) (eFigure 2 in Supplement 1). Among rural residents, we distinguished those who bypassed rural hospitals for childbirth in urban facilities (nonlocal births) from those who delivered at in-county or adjacent-county rural hospitals (local births). We defined urban (Rural-Urban Continuum Codes [RUCCs] 1-3) or rural location (RUCCs 4-9), based on residence county, using the 2023 RUCC definitions from the US Department of Agriculture.²⁸

We extracted delivery- and hospital-level covariates that were evidently associated with adverse maternal outcomes and care settings.^{26,29,30} Delivery-level covariates included maternal age at birth, race and ethnicity, education attainment, parity, Kotelchuck Prenatal Care Adequacy Index, gestational age at birth, obstetric comorbidity index, mode of delivery, and birth year. Race and ethnicity were self-reported by parents in their child's or children's birth certificates. Race and ethnicity categories included Hispanic, non-Hispanic Black, non-Hispanic White, and non-Hispanic other race or ethnicity (ie, American Indian and Alaska Native, Asian, multiracial, and Native Hawaiian or Other Pacific Islander); race and ethnicity were included to account for different care experiences across groups. Obstetric Comorbidity Index summary score was calculated using all-payer hospital data from pregnancy conception to childbirth discharge based on a previously published algorithm³¹ (excluding preterm birth indicator to separately adjust for gestational age at birth), ranging from 0 to 118, with higher scores indicating higher risk of SMMM. Birth month was further categorized based on 1-year postpartum exposure to the COVID-19 public health emergency (PHE): those discharged before March 1, 2019 (unexposed), and those discharged on or after March 1, 2020 (exposed).

Hospital-level covariates (hospital obstetric care level [Level I, II, and III-IV]) and hospital obstetric care workforce model (no obstetricians, obstetrician only, and both obstetrician and family physicians) were constructed using all-payer hospital data for the childbirth hospitalization record. A physician who had taxonomy of obstetrics and other specialties (eg, family medicine) was considered as an obstetrician.

Statistical Analysis

The association of delivery with hospital characteristics of childbirths by residence and clinician location were first examined using χ^2 tests. Second, Kaplan-Meier estimates were used to determine cumulative incidence of SMMM at predefined time intervals postpartum. Cumulative incidence of

SMMM during follow-up from childbirth hospital discharge to the first event was compared by residence and childbirth location using log-rank tests. Third, we generated unadjusted rates of SMM per 10 000 births by location. Fourth, we conducted multivariable Cox proportional hazard models, adjusting for aforementioned covariates. Birth year fixed effects were used to control for secular trends. Several sensitivity analyses were conducted: by postpartum exposure to COVID-19 PHE, across prenatal care receipt at the same vs different site as childbirth delivery hospital or no prenatal care, and the differential associations of locations with SMMM by maternal race and ethnicity. Tests of the associations between time and Schoenfeld residuals showed no violations for the proportional hazards assumption across all models. Statistical significance was determined at a 2-sided $P < .05$. Analyses were performed from March to September 2025 using R version 4.3.2 (R Project for Statistical Computing).

Results

Study Sample

Among 235 375 deliveries from 2018 to 2022 to 197 216 individuals (mean [SD] maternal age, 28.3 [5.8] years; 12 813 Hispanic [5.44%], 71 473 non-Hispanic Black [30.4%], and 134 925 non-Hispanic White individuals [52.3%]), 203 325 (86.4%) were to urban residents, 15 053 (6.4%) were to rural residents who bypassed local hospitals for urban childbirth (rural nonlocal deliveries), and 16 997 (7.2%) were to rural residents who delivered locally (rural local deliveries) (Table 1). Of rural deliveries alone, nearly one-half (15 053 [47.0%]) were nonlocal, with substantial variations from 223 of 3538 deliveries (6.3%) in Greenwood County, South Carolina to 2780 of 2782 deliveries (99.9%) in Cherokee County, South Carolina (Figure 1). Compared with urban residents, rural nonlocal deliveries were by mothers who were younger, identified as non-Hispanic Black, had lower educational attainment, and who were more likely to undergo cesarean delivery. Rural nonlocal deliveries were more likely to be preterm and by mothers who had higher rates of obesity, who were more likely to receive inadequate prenatal care, and who had a higher comorbidity score. These rural nonlocal deliveries were more likely to be in hospitals with higher obstetric care level and with both obstetricians and family physicians attending births.

Incidence Rates of SMMM

A total of 2881 deliveries (122.4 per 10 000 births) had SMMM within 365 days postpartum. The median (IQR) time to event was 66 (10-208) days for SMMM-affected deliveries. Rural nonlocal deliveries had the highest rates (180.0 per 10 000 births), followed by urban resident deliveries (118.8 per 10 000 births) and rural local deliveries (114.7 per 10 000 births) ($P < .001$) (Table 2 and eTable 1 in Supplement 1).

Cumulative incidence curves showed the greatest divergence in postpartum SMMM risk among rural nonlocal deliveries, particularly beyond 90 days postpartum (Figure 2). At the 365-day follow-up, compared with urban resident deliveries, rural local deliveries had similar SMMM risk (unadjusted hazard ratio [HR], 0.97; 95% CI, 0.84-1.12), while rural nonlocal births had higher risk (HR, 1.51; 95% CI, 1.33-1.71; $P < .001$) (Figure 2). In the fully adjusted model, rural nonlocal individuals remained at higher risk of SMMM (adjusted hazard ratio [aHR], 1.18; 95% CI, 1.04-1.33; $P = .01$) (Table 2). eTable 2 in Supplement 1 presents the full model results. Results were consistent for SMM alone; for pregnancy-associated mortality, rural nonlocal deliveries had higher, but not statistically significant, risk after adjustment (Table 2).

Before the COVID PHE, rural residents, whether delivering locally or bypassing, had similar SMMM risks compared with urban residents (eTable 3 in Supplement 1). During the COVID PHE, rural individuals with nonlocal births had higher SMMM risk than urban individuals (aHR, 1.22; 95% CI, 1.06-1.41; $P = .005$). In contrast, rural residents who delivered locally did not differ significantly from urban individuals (aHR, 0.83; 95% CI, 0.70-1.06; $P = .06$). Additional analyses suggested that whether one received prenatal care at the childbirth delivery hospital was not significantly associated

Table 1. Maternal and Hospital Characteristics by Residence and Childbirth Hospital Location

Characteristic	All study childbirths, No. (%) (N = 235 375)	Residents by hospital location, No. (%) ^a		
		Urban (n = 203 325)	Rural Nonlocal birth (n = 15 053)	Local birth (n = 16 997)
Maternal age at birth, y				
<20	12 767 (5.4)	10 299 (5.1)	947 (6.3)	1521 (9.0)
20-24	51 278 (21.8)	42 071 (20.7)	4144 (27.5)	5063 (29.8)
25-29	71 593 (30.4)	61 528 (30.3)	4872 (32.4)	5193 (30.6)
30-34	63 516 (27.0)	56 771 (27.9)	3245 (21.6)	3500 (20.6)
≥35	36 221 (15.4)	32 656 (16.1)	1845 (12.3)	1720 (10.1)
Maternal race and ethnicity				
Hispanic	12 813 (5.4)	11 779 (5.8)	177 (1.2)	857 (5.0)
Non-Hispanic Black	71 473 (30.4)	57 682 (28.4)	5929 (39.4)	7862 (46.3)
Non-Hispanic White	134 925 (57.3)	118 980 (58.5)	8320 (55.3)	7625 (44.9)
Non-Hispanic other ^b	16 164 (6.9)	14 884 (7.3)	627 (4.2)	653 (3.8)
Maternal education attainment				
No high school diploma	28 746 (12.2)	23 997 (11.8)	1750 (11.6)	2999 (17.6)
High school diploma	61 292 (26.0)	50 152 (24.7)	4882 (32.4)	6258 (36.8)
Some college	76 654 (32.6)	65 404 (32.2)	5665 (37.6)	5585 (32.9)
Bachelor's degree	43 841 (18.6)	40 513 (19.9)	1845 (12.3)	1483 (8.7)
Graduate school	24 842 (10.6)	23 259 (11.4)	911 (6.1)	672 (4.0)
Parity				
1	87 616 (37.2)	76 334 (37.5)	5491 (36.5)	5791 (34.1)
2	74 685 (31.7)	64 796 (31.9)	4731 (31.3)	5158 (30.4)
3	42 491 (18.1)	36 491 (18.0)	2715 (18.0)	3285 (19.3)
≥4	30 583 (13.0)	25 704 (12.6)	2116 (14.1)	2763 (16.3)
Gestational age at birth, wk				
≤31	3521 (1.5)	2904 (1.4)	473 (3.1)	144 (0.9)
32-33	2825 (1.2)	2413 (1.2)	312 (2.1)	100 (0.6)
34-36	18 447 (7.8)	15 704 (7.7)	1558 (10.4)	1185 (7.0)
37-38	71 412 (30.3)	61 151 (30.1)	4875 (32.4)	5386 (31.7)
39-40	132 972 (56.5)	115 669 (56.9)	7593 (50.44)	9710 (57.13)
≥41	6198 (2.6)	5484 (2.7)	242 (1.6)	472 (2.8)
Kotelchuck Index				
Inadequate	39 435 (16.8)	33 821 (16.6)	2858 (19.0)	2756 (16.2)
Intermediate	12 357 (5.3)	10 727 (5.3)	596 (4.0)	1034 (6.1)
Adequate	67 342 (28.6)	59 351 (29.2)	3565 (23.7)	4426 (26.0)
Adequate plus	116 067 (49.3)	99 285 (48.8)	8017 (53.3)	8765 (51.6)
Obstetric Comorbidity Index				
None	61 879 (26.3)	54 477 (26.8)	2866 (19.0)	4536 (26.7)
1-8	67 132 (28.5)	57 752 (28.4)	4120 (27.4)	5260 (31.0)
9-14	55 825 (23.7)	48 149 (23.7)	3638 (24.2)	4038 (23.8)
≥15	50 539 (21.5)	42 947 (21.1)	4429 (29.4)	3163 (18.6)
Hospital obstetric care level				
I	32 255 (13.7)	25 460 (12.5)	437 (2.9)	6358 (37.4)
II	90 974 (38.7)	79 192 (39.0)	5641 (37.5)	6141 (36.1)
III-IV	90 186 (38.3)	78 393 (38.6)	7476 (49.7)	4317 (25.4)
Missing	21 960 (9.3)	20 280 (10.0)	1499 (10.0)	181 (1.1)
Hospital obstetric care workforce model				
No obstetrician	39 (<0.1)	26 (<0.1)	<10	11 (0.1)
Obstetrician only	82 115 (34.9)	73 237 (36.0)	>3800 (25.8)	4988 (29.4)
Both obstetrician and family physician	153 221 (65.1)	130 062 (64.0)	11 161 (74.1)	11 998 (70.6)

(continued)

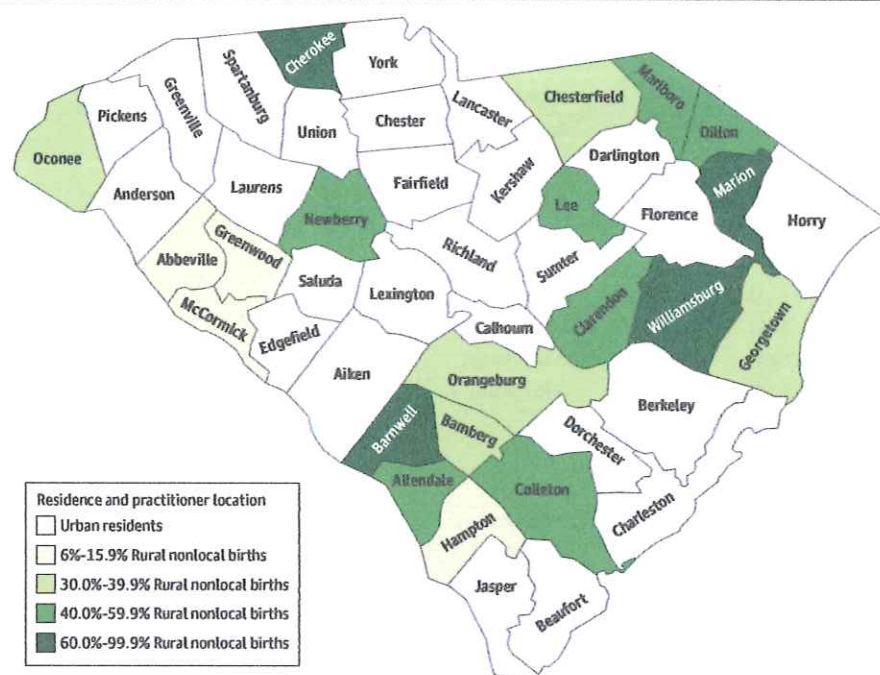
Table 1. Maternal and Hospital Characteristics by Residence and Childbirth Hospital Location (continued)

Characteristic	All study childbirths, No. (%) (N = 235 375)	Residents by hospital location, No. (%) ^a		
		Urban (n = 203 325)	Rural Nonlocal birth (n = 15 053)	Local birth (n = 16 997)
Birth year				
2018	42 928 (18.2)	36 979 (18.2)	2609 (17.3)	3340 (19.7)
2019	44 671 (19.0)	38 526 (19.0)	2738 (18.2)	3407 (20.0)
2020	46 229 (19.6)	39 821 (19.6)	2951 (19.6)	3457 (20.3)
2021	49 043 (20.8)	42 437 (20.9)	3240 (21.5)	3366 (19.8)
2022	52 504 (22.3)	45 562 (22.4)	3515 (23.4)	3427 (20.2)

^a P values for statistical differences in maternal and hospital characteristics across urban, rural nonlocal, and rural local births groups were all less than .001, calculated using Pearson χ^2 tests.

^b Non-Hispanic other includes American Indian and Alaska Native, Asian, multiracial, and Native Hawaiian or Other Pacific Islander.

Figure 1. County Distributions of Urban Births and Proportion of Rural Nonlocal Births Among Rural Counties in 2018-2022



Urban (rural-urban continuum codes [RUCCs] 1-3) or rural location (RUCCs 4-9), based on residence county, was defined using the 2023 RUCCs developed by the US Department of Agriculture.

with postpartum SMMM (eTable 4 in [Supplement 1](#)). Racial and ethnic differences in SMMM were persistent regardless of residence and hospital locations (eTable 5 in [Supplement 1](#)).

Discussion

In this population-based cohort study of South Carolina births, we found rural residents who delivered at urban hospitals—accounting for nearly one-half of rural births—experienced the highest risk of SMMM, significantly exceeding the risk for urban residents and rural residents delivering locally. This finding suggests that not only was rural residence associated with higher SMMM risk, but traveling outside one's local area for childbirth, whether due to clinician referral, patient choice, or other factors, appears to compound that risk.

Our findings of rural-urban disparities in SMMM are consistent with prior literature. A national study from 2007 to 2015 found that rural birthing people, compared with their urban peers,⁹ had elevated risk of SMM and in-hospital mortality by 9% during childbirth hospitalization. This nationwide finding parallels our data of higher SMMM among South Carolina's rural 2018 to 2022

birthing population, reinforcing the rural-urban gap across states and years. According to the South Carolina maternal mortality review committee, in 2018 to 2021, rural births had 62% higher pregnancy-associated mortality rates than urban births with 55.4 vs 34.2 per 100 000 births.¹² Our study adds a new nuance to the existing literature by differentiating rural deliveries into local vs nonlocal and found that hospital location plays a critical role in differentiating SMMM risk. The heightened SMMM risk we identified among rural residents, especially those traveling for urban

Table 2. Rates and Risk of Severe Maternal Morbidity and/or Mortality by Residence and Birthing Hospital Location

Characteristic	Severe maternal morbidity and/or mortality cases, No. (rate/10 000 births) ^c	P value	Severe maternal morbidity and/or mortality, HR (95% CI)		P value
			Unadjusted	Adjusted ^a	
Severe maternal morbidity and mortality, all ^b	2881 (122.4) ^c	NA	NA	NA	NA
Residence and birthing hospital location					
Urban residents	2415 (118.8)	<.001	1 [Reference]	1 [Reference]	NA
Rural residents bypassed for urban hospitals	271 (180.0)		1.51 (1.33-1.71) ^c	1.18 (1.04-1.33) ^c	.01
Rural residents staying at local hospitals	195 (114.7)		0.97 (0.84-1.12)	0.88 (0.76-1.03)	.11
Severe maternal morbidity, all	2866 (121.8) ^c	<.001	1 [Reference]	1 [Reference]	
Urban residents	2401 (118.1)		1 [Reference]	1 [Reference]	
Rural residents bypassed for urban hospitals	269 (178.7)		1.50 (1.32-1.70) ^c	1.17 (1.03-1.33) ^c	.02
Rural residents staying at local hospitals	196 (115.3)		0.98 (0.84-1.13)	0.90 (0.77-1.04)	.16
Pregnancy-associated mortality, all	125 (5.3) ^c	<.001	1 [Reference]	1 [Reference]	NA
Urban residents	96 (4.7)		1 [Reference]	1 [Reference]	NA
Rural residents bypassed for urban hospitals	16 (10.6)		2.28 (1.34-3.86) ^c	1.65 (0.97-2.82)	.07
Rural residents staying at local hospitals	13 (7.7)		1.64 (0.92-2.92)	1.54 (0.84-2.84)	.16

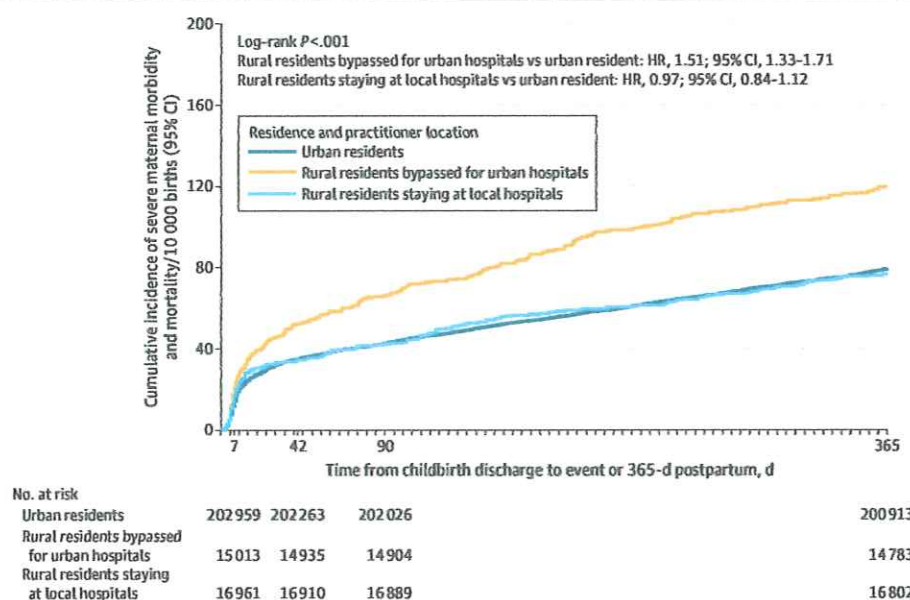
Abbreviations: HR, hazard ratio; NA, not applicable.

^a Adjusted HRs were calculated from a multivariable Cox proportional hazard model, controlling for maternal age at birth, race and ethnicity, education attainment, parity, Kotelchuck Prenatal Care Adequacy Index, gestational age at birth, Obstetric Comorbidity Index, hospital obstetric care level, hospital obstetric care workforce model, and birth year. Full model results can be found in eTable 2 in Supplement 1.

^b Because blood transfusion alone may not represent a truly severe maternal event, we did not consider such cases as severe maternal morbidity or mortality.

^c Significant values.

Figure 2. Cumulative Incidence of Severe Maternal Morbidity and Pregnancy-Associated Mortality From Childbirth Discharge to 365 Days Postpartum



Hazard ratios (HRs) were calculated from a Cox proportional hazard model. Cumulative incidence of severe maternal morbidity and mortality is shown for deliveries to urban residents, rural residents who bypassed for urban hospitals, and rural residents who stayed locally at rural hospitals from January 1, 2018, December 31, 2023.

hospitals to give birth during the COVID-19 PHE, is part of a broader pattern of rural maternal health disadvantage documented across the US.³²⁻³⁴

The fact that rural mothers delivering nonlocally—those likely traveling long distances to give birth—had the greatest SMMM risk suggests that rural risk is not monolithic and where the delivery takes place matters. Travel distance and access to obstetric units have evidently shown to be associated with maternal outcomes. A 2011 to 2015 Pennsylvania study found that patients living 37 to 50 miles away vs 3 or fewer miles away from a birthing hospital had 53% higher SMM risk.³³ While nationwide research on the association of distance to care with SMM or SMMM is lacking, the recent loss of rural obstetric units has exacerbated such accessibility to care, forcing many rural mothers to give birth far from home.^{15,16} Indeed, fewer than 50% of rural US birthing individuals have access to obstetric units within a 30-minute drive, and more than 10% must drive more than 100 miles for maternity care.^{35,36} South Carolina mirrors this challenge as 100% of rural South Carolina residents live more than 30 minutes from a birthing hospital, compared with only 8.5% of urban residents.²⁰ Rural individuals delivering outside their local area did so likely because nearer options were unavailable or lacked appropriate services, contributing to delayed or complicated diagnosis, resulting in higher SMMM.

Our results showed a shift in postpartum SMMM risk during the COVID-19 PHE. Although rural and urban residents had similar risks before the PHE, rural residents who gave birth at urban hospitals had a higher SMMM risk than urban residents. In contrast, rural residents who delivered locally had a modestly lower SMMM risk, findings that carry several key implications. These shifts likely reflect structural changes during COVID-19 PHE, including recent increases in rural obstetric unit closures¹⁹ and the emergence of maternity care deserts.³⁷ Meanwhile, the rapid expansion of telemedicine might have helped individuals delivering locally maintain access to prenatal and postpartum support, buffering risk.³⁸ Persistent structural barriers, such as broadband gaps, limited telecommunication resources, and heightened stress and anxiety during the PHE, likely compounded risks for rural residents traveling to urban hospitals for obstetric care.^{17,39,40} Future studies should disentangle the roles of structural factors and psychosocial stressors to inform policies aimed at reducing maternal health disparities in rural communities.

The increased risk of postpartum SMMM among rural nonlocal births highlights the need for targeted interventions, such as expanding rural obstetric care supply in high-risk communities, and/or facilitating care coordination during childbirth hospitalization, comprehensive discharge planning, and robust postpartum follow-up in urban obstetric care settings delivering rural births. Given that more than 70% of pregnancy-associated mortality occurred after hospital discharge,¹² and that rural hospital closures and workforce shortages have increased rural non-local births,^{15,16,18,21} our findings highlight the need to address the potential consequences of rural obstetric bypassing. First, urban clinicians should recognize rural patients who travel for childbirth to their settings as high risk and treat proactively to mitigate SMMM risk during the immediate and extended postpartum periods. The Hear Her Campaign has recognized the urgent maternal warning signs of pregnancy complications, providing an opportunity to leverage this by developing standardized protocols for inpatient education on warning signs of common postpartum complications⁴¹⁻⁴³; this is particularly important for rural patients delivering nonlocally because our data indicate that their educational attainment is relatively low. Second, similar to psychiatric hospital discharge planning,^{44,45} interhospital coordination and care transition might help ensure rural birthing individuals have prearranged appointments with a local perinatal practitioner as part of discharge plan. Third, leveraging current community-based home visiting programs to provide informational, instrumental, and social support might help address barriers to care continuity between hospital childbirth care and community postpartum care postdischarge.^{46,47}

Limitations

There are limitations to consider. First, the retrospective design and administrative data hinder our abilities to conclude causality. Second, we defined bypass and nonlocal based on a patient's county

relative to the hospital county, which may not fully capture actual proximity to childbirth due to data limitations. Therefore, some high-acuity rural births that require travel to adjacent counties may be classified as local, potentially underestimating the bypassing association with SMMM; this is especially true if travel distance and adverse maternal outcomes are positively associated.³³ Also, the higher risks observed among rural residents who received care at urban centers may reflect unobservable factors such as other underlying medical risk factors such as fetal conditions, health literacy, quality of care, or proximity to the nearest obstetric care and postpartum providers. However, efforts were made to control for clinical reasons that could explain bypassing for urban hospitals, such as gestational age at birth, plurality, and obstetric comorbidity index which incorporates 26 comorbidities in relation to SMM.³¹ Third, while our findings align with national rural-urban SMMM gaps, our results may not apply to other states, depending on health care infrastructure, Medicaid expansion, patient mix, and rural hospital obstetric capacity. Fourth, our SMM identification relied on hospital-based records, which might be underestimated by missing complications treated in nonhospital settings. Also, our focus on postpartum SMM ensured consistent 1-year follow-up across all deliveries but did not capture intrapartum SMM that might have been present before the delivery and/or a result of antepartum complications rather than outcomes following delivery, which warrant future investigations. Moreover, while we examined postpartum SMMM up to 1-year postdischarge, we could not fully distinguish between preventable vs unavoidable complications leading to readmission. More detailed cause-specific analyses (eg, postpartum hemorrhage vs cardiomyopathy-related admissions) could provide further evidence into targetable risk factors. Despite these limitations, to our knowledge, this is the first study measuring postpartum SMMM from all-payer outpatient, inpatient, and emergency department records, linking to death certificates records. The results provide compelling evidence on persistent SMMM disparities facing rural populations and highlight critical areas for intervention.

Conclusions

In this cohort study of 2018 to 2022 childbirth deliveries in South Carolina, rural local births had SMMM risks comparable to urban births, but bypassing local hospitals was associated with increased SMMM risk. Targeted interventions that facilitate childbirth discharge planning, postpartum care coordination, and timely follow-up may help mitigate these disparities for rural nonlocal births. Ongoing efforts should focus on keeping rural birthing individuals engaged in care after hospital discharge and ensuring that postpartum complications are identified and managed before they escalate.

ARTICLE INFORMATION

Accepted for Publication: September 29, 2025.

Published: November 19, 2025. doi:10.1001/jamanetworkopen.2025.44522

Open Access: This is an open access article distributed under the terms of the [CC-BY License](#). © 2025 Hung P et al. *JAMA Network Open*.

Corresponding Author: Peiyin Hung, PhD, MSPH, Department of Health Services Policy & Management, Arnold School of Public Health, University of South Carolina, 915 Greene St, Ste 348, Columbia, SC 29208 (hungp@mailbox.sc.edu).

Author Affiliations: University of South Carolina Rural Health Research Center, Columbia (Hung, Liu); Department of Health Services Policy & Management, Arnold School of Public Health, University of South Carolina, Columbia (Hung, Workman); South Carolina SmartState Center for Healthcare Quality, University of South Carolina, Columbia (Hung); Department of Epidemiology and Biostatistics, Arnold School of Public Health, University of South Carolina, Columbia (Gao, Liu, Boghossian, Ma, Zhang); Department of Health Promotion, Education, and Behavior, Arnold School of Public Health, University of South Carolina, Columbia (Rudisill); Division of Maternal-Fetal Medicine, University of South Carolina School of Medicine, Columbia (Campbell); Center for Applied Research and Evaluation, University of South Carolina, Columbia (Workman).

Author Contributions: Dr Hung and Ms Gao had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: Hung, Gao, Rudisill, Boghossian, Workman, Zhang.

Acquisition, analysis, or interpretation of data: Hung, Gao, Liu, Rudisill, Campbell, Ma, Zhang.

Drafting of the manuscript: Hung.

Critical review of the manuscript for important intellectual content: All authors.

Statistical analysis: Hung, Gao, Liu, Ma, Zhang.

Obtained funding: Hung, Liu.

Administrative, technical, or material support: Hung, Liu, Campbell, Workman.

Supervision: Hung, Boghossian, Zhang.

Conflict of Interest Disclosures: Dr Hung reported receiving grants from the Health Resources and Services Administration Federal Office of Rural Health Policy outside the submitted work. Dr Rudisill reported receiving grants from the Centers for Disease Control and Prevention, the National Institutes of Health, and Prisma Health and book royalties from Cambridge University Press outside the submitted work. No other disclosures were reported.

Funding/Support: Research reported in this publication was supported by the Eunice Kennedy Shriver National Institute of Child Health & Human Development of the National Institutes of Health (award No. 5U01HD110062-03S1).

Role of the Funder/Sponsor: The sponsor had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

Disclaimer: The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Data Sharing Statement: See [Supplement 2](#).

REFERENCES

- Centers for Disease Control and Prevention. Severe maternal morbidity in the United States. Updated May 15, 2024. Accessed August 22, 2025. <https://www.cdc.gov/maternal-infant-health/php/severe-maternal-morbidity/index.html>
- Admon LK, Winkelman TNA, Zivin K, Terplan M, Mhyre JM, Dalton VK. Racial and ethnic disparities in the incidence of severe maternal morbidity in the United States, 2012-2015. *Obstet Gynecol*. 2018;132(5):1158-1166. doi:10.1097/AOG.0000000000002937
- Callaghan WM, Creanga AA, Kuklina EV. Severe maternal morbidity among delivery and postpartum hospitalizations in the United States. *Obstet Gynecol*. 2012;120(5):1029-1036. doi:10.1097/AOG.0b013e31826d60c5
- Gibson C, Rohan AM, Gillespie KH. Severe maternal morbidity during delivery hospitalizations. *WMJ*. 2017;116(5):215-220.
- Martin JA, Hamilton BE, Osterman MJK. Births in the United States, 2022. *NCHS Data Brief*. Published online August 20, 2023. doi:10.15620/cdc.131354
- Centers for Disease Control and Prevention. Pregnancy-related deaths: data from maternal mortality review committees in 38 U.S. states, 2020. Published May 28, 2024. Accessed August 23, 2025. <https://archive.cdc.gov/#/details?url=https://www.cdc.gov/maternal-mortality/php/data-research/index.html>
- Hoyert DL. Maternal mortality rates in the United States, 2021. National Center for Health Statistics. Published March 16, 2023. Accessed October 16, 2025. https://stacks.cdc.gov/view/cdc/124678/cdc_124678_DS1.pdf
- Dol J, Hughes B, Bonet M, et al. Timing of maternal mortality and severe morbidity during the postpartum period: a systematic review. *JBI Evid Synth*. 2022;20(9):2119-2194. doi:10.1111/JBIES-20-00578
- Kozhimannil KB, Interrante JD, Henning-Smith C, Admon LK. Rural-urban differences in severe maternal morbidity and mortality in the US, 2007-15. *Health Aff (Millwood)*. 2019;38(12):2077-2085. doi:10.1377/hlthaff.2019.00805
- Interrante JD, Tuttle MS, Admon LK, Kozhimannil KB. Severe maternal morbidity and mortality risk at the intersection of rurality, race and ethnicity, and Medicaid. *Womens Health Issues*. 2022;32(6):540-549. doi:10.1016/j.whi.2022.05.003
- Harrington KA, Cameron NA, Culler K, Grobman WA, Khan SS. Rural-urban disparities in adverse maternal outcomes in the United States, 2016-2019. *Am J Public Health*. 2023;113(2):224-227. doi:10.2105/AJPH.2022.307134

12. South Carolina Department of Public Health; South Carolina Maternal Morbidity and Mortality Review Committee. 2025 legislative brief. 2025. Accessed January 20, 2025. <https://dph.sc.gov/sites/scdph/files/Library/00229-ENG-CR.pdf>
13. Kozhimannil KB, Henning-Smith C, Hung P, Casey MM, Prasad S. Ensuring access to high-quality maternity care in rural America. *Womens Health Issues*. 2016;26(3):247-250. doi:10.1016/j.whi.2016.02.001
14. National Advisory Committee on Rural Health and Human Services. Maternal and obstetric care challenges in rural America. Published May 2020. Accessed August 23, 2025. <https://www.hrsa.gov/sites/default/files/hrsa/advisory-committees/rural/2020-maternal-obstetric-care-challenges.pdf>
15. Kozhimannil KB, Interrante JD, Tuttle MKS, Henning-Smith C. Changes in hospital-based obstetric services in rural US counties, 2014–2018. *JAMA*. 2020;324(2):197-199. doi:10.1001/jama.2020.5662
16. Hung P, Henning-Smith CE, Casey MM, Kozhimannil KB. Access to obstetric services in rural counties still declining, with 9 percent losing services, 2004–14. *Health Aff (Millwood)*. 2017;36(9):1663-1671. doi:10.1377/hlthaff.2017.0338
17. Hung P, Zhang J, Chen S, Harrison SE, Boghossian NS, Li X. A hidden crisis: postpartum readmissions for mental health and substance use disorders in rural and racial minority communities. *Am J Obstet Gynecol*. 2024;231(4):e117-e129. doi:10.1016/j.ajog.2024.05.047
18. Kozhimannil KB, Hung P, Henning-Smith C, Casey MM, Prasad S. Association between loss of hospital-based obstetric services and birth outcomes in rural counties in the United States. *JAMA*. 2018;319(12):1239-1247. doi:10.1001/jama.2018.1830
19. Kozhimannil KB, Interrante JD, Carroll C, et al. Obstetric care access at rural and urban hospitals in the United States. *JAMA*. 2025;333(2):166-169. doi:10.1001/jama.2024.23010
20. March of Dimes. Where You Live Matters: Maternity Care in South Carolina. Published 2023. Accessed August 22, 2025. <https://www.marchofdimes.org/peristats/assets/s3/reports/mcd/Maternity-Care-Report-SouthCarolina.pdf>
21. Kozhimannil KB, Casey MM, Hung P, Prasad S, Moscovice IS. Location of childbirth for rural women: implications for maternal levels of care. *Am J Obstet Gynecol*. 2016;214(5):661.e1-661.e10. doi:10.1016/j.ajog.2015.11.030
22. Saunders C, Bellamy GR, Menachemi N, Chukmaitov AS, Brooks RG. Bypassing the local rural hospital for outpatient procedures. *J Rural Health*. 2009;25(2):174-181. doi:10.1111/j.1748-0361.2009.00214.x
23. Planey AM, Planey DA, Wong S, McLafferty SL, Ko MJ. Structural factors and racial/ethnic inequities in travel times to acute care hospitals in the rural US South, 2007–2018. *Milbank Q*. 2023;101(3):922-974. doi:10.1111/1468-0009.12655
24. Jairam JA, Vigod SN, Siddiqi A, et al. Severe maternal morbidity and mortality among immigrant and Canadian-born women residing within low-income neighborhoods in Ontario, Canada. *JAMA Netw Open*. 2023;6(2):e2256203. doi:10.1001/jamanetworkopen.2022.56203
25. Metz TD, Clifton RG, Hughes BL, et al; National Institute of Child Health and Human Development Maternal-Fetal Medicine Units (MFMU) Network. Association of SARS-CoV-2 infection with serious maternal morbidity and mortality from obstetric complications. *JAMA*. 2022;327(8):748-759. doi:10.1001/jama.2022.1190
26. Frey HA, Ashmead R, Farmer A, et al. Association of Prepregnancy Body Mass Index With Risk of Severe Maternal Morbidity and Mortality Among Medicaid Beneficiaries. *JAMA Netw Open*. 2022;5(6):e2218986. doi:10.1001/jamanetworkopen.2022.18986
27. Agency for Healthcare Research and Quality. Maternal Health Indicators (MHI) Beta Software V2024 Product Information. 2024. Accessed March 23, 2025. https://qualityindicators.ahrq.gov/News/ICD10_v2024_FAQ_MHI.pdf
28. United States Department of Agriculture. Rural-urban commuting area codes. Updated September 26, 2025. Accessed October 16, 2025. <https://www.ers.usda.gov/data-products/rural-urban-commuting-area-codes.aspx>
29. Chen J, Cox S, Kuklina EV, Ferre C, Barfield W, Li R. Assessment of incidence and factors associated with severe maternal morbidity after delivery discharge among women in the US. *JAMA Netw Open*. 2021;4(2):e2036148. doi:10.1001/jamanetworkopen.2020.36148
30. Srinivas SK, Kozhimannil K, Hung P, Attanasio L, Jou J, Grobman WA. Do hospitals with a higher level of maternal care designation have better maternal outcomes? *Am J Perinatol*. 2019;36(6):653-658. doi:10.1055/s-0038-1672140
31. Leonard SA, Kennedy CJ, Carmichael SL, Lyell DJ, Main EK. An expanded obstetric comorbidity scoring system for predicting severe maternal morbidity. *Obstet Gynecol*. 2020;136(3):440-449. doi:10.1097/AOG.0000000000004022
32. Centers for Medicare & Medicaid Services. Improving access to maternal health care in rural communities: an issue brief. Published 2019. Accessed February 26, 2025. <https://www.cms.gov/About-CMS/Agency-Information/OMH/equity-initiatives/rural-health/09032019-Maternal-Health-Care-in-Rural-Communities.pdf>

33. Minion SC, Krans EE, Brooks MM, Mendez DD, Haggerty CL. Association of driving distance to maternity hospitals and maternal and perinatal outcomes. *Obstet Gynecol*. 2022;140(5):812-819. doi:10.1097/AOG.0000000000004960
34. Thorsen ML, Harris S, Palacios JF, McGarvey RG, Thorsen A. American Indians travel great distances for obstetrical care: examining rural and racial disparities. *Soc Sci Med*. 2023;325:115897. doi:10.1016/j.socscimed.2023.115897
35. Eberth JM, Hung P, Benavidez GA, et al. The problem of the color line: spatial access to hospital services for minoritized racial and ethnic groups. *Health Aff (Millwood)*. 2022;41(2):237-246. doi:10.1377/hlthaff.2021.01409
36. Hung P, Benavidez GA, Probst JC, et al. Spatial access to hospital-based obstetric units among racial/ethnic minoritized communities in rural and urban America. Published August 2022. Accessed January 5, 2025. https://www.sc.edu/study/colleges_schools/public_health/research/research_centers/sc_rural_health_research_center/archive/documents/mrg_obstetrics_hung_forhp_8.8.22.pdf
37. Sonenberg A, Mason DJ. Maternity care deserts in the US. *JAMA Health Forum*. 2023;4(1):e225541. doi:10.1001/jamahealthforum.2022.5541
38. Hung P, Yu J, Harrison SE, et al; National COVID Cohort Collaborative Consortium. Racial and ethnic and rural variations in the use of hybrid prenatal care in the US. *JAMA Netw Open*. 2024;7(12):e2449243. doi:10.1001/jamanetworkopen.2024.49243
39. Hung P, Granger M, Boghossian N, et al. Dual barriers: examining digital access and travel burdens to hospital maternity care access in the United States, 2020. *Milbank Q*. 2023;101(4):1327-1347. doi:10.1111/1468-0009.12668
40. Li Z, Tucker CM, Odahowski CL, Eichelberger KY, Zhang J, Hung P. Co-occurrence of mental illness and substance use among US pregnant individuals, 2012-2021. *Psychiatry Res*. 2024;334:115820. doi:10.1016/j.psychres.2024.115820
41. Okechukwu A, Magrath P, Alaofe H, et al. Optimizing postpartum care in rural communities: insights from women in Arizona and implications for policy. *Matern Child Health J*. 2024;28(7):1148-1159. doi:10.1007/s10995-023-03889-w
42. McKinney J, Keyser L, Clinton S, Pagliano C. ACOG Committee opinion No. 736: optimizing postpartum care. *Obstet Gynecol*. 2018;132(3):784-785. doi:10.1097/AOG.0000000000002849
43. Alliance for Innovation on Maternal Health. Urgent maternal warning signs. American College of Obstetricians and Gynecologists. Updated June 2025. Accessed August 23, 2025. <https://rhntc.org/resources/recognizing-urgent-maternal-warning-signs-postpartum-period-webinar>
44. Smith TE, Haselden M, Corbeil T, et al. Relationship between continuity of care and discharge planning after hospital psychiatric admission. *Psychiatr Serv*. 2020;71(1):75-78. doi:10.1176/appi.ps.201900233
45. Avey JP. Discharge planning from urban psychiatric facilities to rural communities using telehealth Dissertation. University of Alaska Anchorage; 2014. Accessed October 16, 2025. <https://www.proquest.com/docview/1536437152>
46. Federal Office of Rural Health Policy. Maternal, infant, and early childhood home visiting (MIECHV) program. Health Resources and Services Administration Maternal and Child Health Bureau. Updated September 2025. Accessed October 16, 2025. <https://mchb.hrsa.gov/programs-impact/maternal-infant-early-childhood-home-visiting-miechv-program>
47. Lewy D. Addressing racial and ethnic disparities in maternal and child health through home visiting programs. Center for Health Care Strategies. Published October 2021. Accessed February 19, 2025. <https://www.chcs.org/media/Addressing-Racial-Ethnic-Disparities-Maternal-Child-Health-Home-Visiting-Programs.pdf>

SUPPLEMENT 1.

eFigure 1. Sample Selection Diagram

eFigure 2. Childbirth Care Locations and Severe Maternal Morbidity and Mortality by Residence Location

eTable 1. Rates and Timing of Severe Maternal Morbidity and Mortality Among Study Sample in South Carolina

eTable 2. Full Model Results of Hazard Ratios of Severe Maternal Morbidity and Mortality

eTable 3. Rates and Hazard Ratios of Severe Maternal Morbidity and Mortality in Relation to Residence and Birthing Hospital Location by Postpartum COVID-19 Exposure

eTable 4. Sensitivity Analysis: Associations of Prenatal Care Continuity and Other Maternal and Hospital Characteristics With Severe Maternal Morbidity and Mortality

eTable 5. Sensitivity Analysis: Full Model With Racial and Ethnic Differences in the Association Between Residence and Birthing Hospital Location and Severe Maternal Morbidity and/or Mortality

SUPPLEMENT 2.

Data Sharing Statement



Maine State Legislature
OFFICE OF POLICY AND LEGAL ANALYSIS
www.mainelegislature.gov/opla
13 State House Station, Augusta, Maine 04333-0013
(207) 287-1670

MEMORANDUM

TO: Members, Joint Standing Committee on Health Coverage, Insurance and Financial Services

FROM: Colleen McCarthy Reid, Principal Analyst *CMR*

DATE: September 29, 2026

RE: Response to Committee Letter and Reports Submitted Since August 27th Meeting

For your review and information, I've attached the following documents previously shared with you by email:

1. Response to the Committee's Letter regarding financial assistance for PCHC from the DHHS Commissioner;
2. Bureau of Insurance Annual Report on Report on Independent Dispute Resolution, In-Network Providers, and Denied Claims for Calendar Year 2024;
3. Bureau of Insurance Annual Report on Insurance Fraud and Abuse (CY 2025); and
4. Bureau of Consumer Credit Protection Quarterly Reports on Foreclosure for Q2 2025 through Q2 2026 (April 1, 2025 through June 30, 2026).

Janet T. Mills
Governor

Sara Gagné-Holmes
Commissioner



Maine Department of Health and Human Services
Commissioner's Office
11 State House Station
109 Capitol Street
Augusta, Maine 04333-0011
Tel: (207) 287-3707; Fax: (207) 287-3005
TTY: Dial 711 (Maine Relay)

September 1, 2026

Members of the Maine State Legislature
2 and 3 State House Station
Augusta, ME 04333

Dear Maine State Senators and Representatives,

I write in response to outreach from the Senate Republican Caucus related to Penobscot Community Health Care (PCHC) and a request that the Department, alongside the Governor and Attorney General, anticipates receiving from the Health Coverage, Insurance, and Financial Services Committee for "up to \$5 million in emergency funding to support" to PCHC¹. Given the overlap in these inquiries, we are providing a coordinated response to address the concerns you have raised related to actions the Department of Health and Human Services has taken, or not taken, in support of Federally Qualified Health Centers (FQHCs) and PCHC specifically.

Rural Health Transformation Program Development

According to the Centers for Medicare & Medicaid Services (CMS), the Rural Health Transformation Program (RHTP) "is designed to empower states to transform the existing rural health care infrastructure and build sustainable health care systems that expand access, enhance quality of care, and improve outcomes for patients."² Maine's Year One budget and plan for the Rural Health Transformation Program was developed through transparent stakeholder engagement, public forums, and in consultation with providers across the State. The budget has been thoroughly reviewed by the CMS, refined based on feedback, finalized and approved as well as publicly available on the RHTP website for partners to review and understand Maine's approach. The lens with which the RHTP was developed was a statewide, data-driven, and holistic approach to improving the access to and delivery of health care in Maine in line with federal requirements. Providers across the spectrum of care in Maine are relying on this funding to support this goal.

CMS has indicated that states are not allowed to use RHTP funds to backfill operating budgets. On page 19 of the Notice of Funding Opportunity (NOFO), CMS explicitly states, "[we] will not accept payments to clinical services if they duplicate billable services and/or attempt to change payment amounts of existing fee schedules. If you plan to fund direct health care services, you must justify why they are not already reimbursable, how the payment will fill a gap in care

¹ <https://www.mainesenate.org/sen-bailey-and-legislative-committee-vote-to-take-action-to-protect-maternal-health-care-in-rural-areas/>

² <https://www.cms.gov/newsroom/press-releases/cms-launches-landmark-50-billion-rural-health-transformation-program>

coverage (such as uncompensated care or services not covered by insurance), and/or how they transform the current care delivery model.”³

As States developed proposals last fall and began implementation early in 2026, they pulled from guidance provided by CMS as part of the NOFO as well as supportive documents, such as published questions and answers subsequent to the Notice of Award. Notably, CMS has stated that they expect the following:

- Funding **may not be used** to supplant existing local or State funding, replace or duplicate payments for clinical services that are already reimbursable by insurance, **or fund ongoing costs with no path to sustainability.**
- States must design initiatives that **invest in long-term, sustainable improvements rather than temporary fixes or funding perpetual operating expenses.**
- CMS will recover funding that is used in a manner inconsistent with the activities described in the approved plan.
- Awardees may not unilaterally modify, suspend or cancel an initiative, or redirect funding approved for another initiative, without prior CMS approval.

Rural Health Transformation Program Opportunities Specific to PCHC

Throughout the summer of 2026, the State developed criteria that identified which providers would be eligible to receive funding as part of the activities outlined and budgeted for Year 1 approved funding. In Maine’s approved RHTP plan, FQHCs are eligible to receive funding in Year 1 for two of the three provider funding opportunities: Electronic Medical Record (EMR) Enhancements and Alternative Payment Model (APM) Transitions.

The first opportunity is within the \$30 million investment to support health care providers to modernize EMR systems⁴. Of the \$30 million, FQHCs were eligible to receive nearly \$6 million. When the Department met with PCHC in August, they expressed their concern that their proposed allocation fell short of their full spending on their EMR. We understand this concern but would note that they have been treated the same as all other providers, including other FQHCs. Throughout spring and early summer as the State developed guidance regarding provider eligibility, at no point did it indicate that it would cover certain expenses, or generally that providers should anticipate a certain, pre-fixed amount. PCHC was notified it would be eligible for just under \$500,000 on July 21, 2026. Any expenses associated with PCHC’s \$3 million upgrade were made at the discretion of PCHC alone.

In the State’s efforts to balance the needs of communities across the state while following the directive from CMS that RHTP funds should be used to support rural communities, DHHS developed its EMR funding allocation formula to provide funds equitably to all FQHCs across the state; provider sites in rural areas were weighted at a 1.5 ratio of potential funding compared to provider sites in non-rural areas. We understand that PCHC is frustrated by their allocation, but we are adhering to guidance from CMS to prioritize rural provider locations. Without the

³ <https://grants.gov/search-results-detail/360442>

⁴ <https://www.maine.gov/dhhs/news/maine-dhhs-announces-30-million-investment-help-health-care-providers-modernize-electronic-medical-2026-07-10>

resources to fully cover all projects, the allocation formula was developed to allocate available funds in as equitable a way as possible in alignment with identified need and CMS criteria.

There is no way to increase EMR funding for PCHC without negatively impacting allocations to other providers, but as we have shared with PCHC and other providers who have made similar requests, we are committed to assessing fund usage to identify opportunities to more robustly support PCHC and other providers' work should there be unspent or otherwise available funds through this initiative.

PCHC was made aware at the end of July that they would also be eligible under the Alternative Payment Model (APM) Transition funding, for which a public announcement will be coming shortly. The funding formula is nearly finalized, and the specific amount awarded to each provider will be available subsequently. Again, any dollars in this initiative redirected to provide additional support to PCHC would be to the detriment of other eligible providers who also need support and would compromise the current funding methodology.

PCHC has also requested that the Department expedite their funds in these two initiatives to provide relief for their capital needs. While this may sound reasonable, based on the process through which funds will be available it will be difficult to move funding for one provider faster than others. The EMR funding is provided through a "willing and qualified" process with consistent template agreements that outline the recipient's responsibilities to ensure adherence to federal grant requirements and accounting principles. Although the APM funding opportunity is through direct payments, these will also follow a consistent, template process. Once agreement templates are ready, all providers will have access at roughly the same time. In both the EMR and APM opportunities, budgets will need to be vetted to ensure expenses are allowable under the grant and are in support of the initiative, and the Department will need to ensure requirements of the contract or direct payment have been met prior to payments being made.

Recognizing the urgency for PCHC and the use of the whole RHTP allocation, the Department will work to move these processes forward as efficiently as possible within our control, while also ensuring that funds are made available to all eligible providers in a consistent and approved manner.

Throughout the fall and winter, there will be additional opportunities for which PCHC may be eligible to submit bids, including projects for new or expanded School Based Health Centers and Community Health Workers. Like EMR and APM funding, these are opportunities named within Maine's RHTP Year 1 plan as approved by CMS and intended to expand or enhance services.

At this point, the recommendation to create a fund to support FQHCs in a similar manner as hospitals in the Rural Hospital Efficiency Fund is not feasible because it is not part of Maine's CMS-approved plan, is not aligned with feedback received during the application development and would take away resources already planned and announced for investment in other areas.

MaineCare Investment in FQHCs, Including Cost of Living Adjustments (COLAs)

As the Department has repeatedly expressed to the Legislature in recent years, DHHS cannot implement COLAs for which there is no funding. Unlike in 2025 when the Legislature made appropriations through the biennial budget for a one percent COLA increase to rates across all relevant MaineCare services, the 2026 supplemental budget, Public Law 2025 Ch. 650, part FF-4⁵ included funding and directives for COLAs for services under specifically listed sections of policy (Chapter 101: MaineCare Benefits Manual, Chapter II, Sections 13, 65 and 92 and rule Chapter 101: MaineCare Benefits Manual, Chapter III, Sections 2, 12, 17, 18, 19, 20, 21, 26, 29, 40, 67, 96 and 97 Appendix C), which did not include Section 31, Federally Qualified Health Center rates.

While there was not a COLA implemented in July 2026, over the last several years there has been significant investment in FQHC rates, including PCHC:

- Effective March 1, 2023, MaineCare rebased FQHC rates. Each provider saw a different, provider-specific rate increase identified during the analysis process. For PCHC specifically, that rebasing resulted in a 34% increase, going from \$196.34 per encounter up to \$263.22 per encounter.
- Effective July 1, 2024, MaineCare implemented a 4.7% increase to FQHC rates in alignment with the CMS FQHC market basket index.
- Effective July 1, 2025, as directed and funded by the Legislature, MaineCare implemented a 1% increase to FQHC rates.
- Following a request from PCHC to increase their rate to account for additional services, MaineCare reviewed the data and increased the rate by \$5.54 per encounter rate, reflecting roughly \$1.4 million in costs reimbursed by MaineCare. This new rate will be effective September 1, 2026.

All combined, PCHC's encounter rate as of September 1, 2026, will be \$283.89, which is 45 percent higher than it was just three years ago, before rebasing.

Broadly, MaineCare's total spending on Section 31, FQHC services has increased by nearly 50 percent since 2023, increasing to over \$100 million in calendar year 2025. While there is no debate about whether providing health care is financially challenging, there should be no misunderstanding that the State has made significant investment in these services and that additional investment is outside of the Department's unilateral control.

It should also be noted that due to the budget process in the last two years, MaineCare has been forced to cap certain payments to providers in the months leading up to the turn of the fiscal year and the availability of necessary funds. Were the Department to implement COLAs for FQHCs or any providers above what is appropriated or without an appropriation, that capping would have been deeper and broader in its impact. The Department has worked hard to protect more vulnerable providers like FQHCs from MaineCare payment disruption due to the Legislature's inability to timely appropriate needed funds and has thus far been successful due to its diligent cost management.

⁵ <https://legislature.maine.gov/backend/App/services/getDocument.aspx?documentId=123960>

Department Responsiveness to CMS

The letter from the Senate Republican Caucus alleged that “the administration’s inability to meet federal deadlines nearly put the entire \$190 million in first-year RHTP funding U.S. Sen. Susan Collins secured for Maine at risk.” To be clear, the State has not missed any deadlines related to its RHTP application or for providing supplemental information requested by the Federal government following its approval of Maine’s award. Throughout the RHTP process, the State has worked diligently under tight timeframes to provide thorough information to CMS, and at no point did CMS indicate - in writing, verbally or otherwise - that Maine’s responses were untimely or inadequate, or that our funds were potentially at risk.

We acknowledge the important services that PCHC provides the community and stand as a partner with the Legislature and providers in working toward a robust health care system that Maine people can rely on. In that work, it is important to acknowledge the roles and limitations each of us must navigate.

Sincerely,

A handwritten signature in cursive script, reading "Sara Gagné-Holmes".

Sara Gagné-Holmes, Commissioner
Department of Health and Human Services

cc: Senate Republican Caucus
Members of the Health Coverage, Insurance, and Financial Services Committee
Office of Governor Janet T. Mills
Attorney General Aaron Frey

SENATE

DONNA BAILEY, DISTRICT 31, CHAIR
JOSEPH M. BALDACCI, DISTRICT 9
DAVID G. HAGGAN, DISTRICT 10

COLLEEN MCCARTHY REID, PRINCIPAL LEGISLATIVE ANALYST
EDNA CAYFORD, COMMITTEE CLERK



HOUSE

KRISTI MICHELE MATHIESON, KITTERY, CHAIR
POPPY ARFORD, BRUNSWICK
ANNE-MARIE MASTRACCIO, SANFORD
MICHELLE NICOLE BOYER, CAPE ELIZABETH
SALLY JEANE CLUCHEY, BOWDOINHAM
ROBERT A. FOLEY, WELLS *
JOSHUA MORRIS, TURNER
ROLF A. OLSEN, JR., RAYMOND
PAUL R. FLYNN, ALBION
MARYGRACE CAROLINE CIMINO, BRIDGTON

STATE OF MAINE ONE HUNDRED AND THIRTY SECOND LEGISLATURE COMMITTEE ON HEALTH COVERAGE, INSURANCE AND FINANCIAL SERVICES

September 1, 2026

Governor Janet T. Mills
1 State House Station
Augusta, Maine 04333

Sara Gagné-Holmes
Commissioner of the Department of Health and Human Services
11 State House Station
Augusta, Maine 04333

Aaron Frey
Attorney General
6 State House Station
Augusta, Maine 04333

VIA EMAIL

Dear Governor Mills, Commissioner Gagné-Holmes and Attorney General Frey:

As members of the Joint Standing Committee on Health Coverage, Insurance and Financial Services, we are writing to urge your collective action to provide emergency funding of up to \$5 million dollars to support Penobscot Community Health Care (PCHC). Recently, PCHC shared that it needs immediate capital investment to stabilize its ability to provide health care to approximately 50,000 Maine people without curtailing services or closing locations. PCHC is the State's largest federally qualified health care and serves everyone who needs health care, regardless of their ability to pay. The committee believes it is critically important that the State do everything possible to maintain the services PCHC provides. We ask that you collectively review potential sources of funding available, including Rural Health Transformation Program grant funds, Opioid Settlement funds or loans from State agencies or quasi-independent agencies, and determine whether the State can provide the needed funds to PCHC to address the immediate financial crisis PCHC is experiencing.

While PCHC is only one of the State's federally qualified health centers, this situation highlights the need for us to work together to preserve and strengthen access to health care services; to make health insurance coverage more affordable; and to reduce overall health care costs. In the 133rd Legislature, the committee will be focused on developing long-term policy solutions to achieve these goals. In the short term until the Legislature can act, we ask that you provide the necessary financial assistance to PCHC so that it can

continue to maintain operations without a detrimental impact on many, many people it delivers health care to in our communities

Thank you for your consideration of the committee's request.

Sincerely,

Donna Bailey
Sen. Donna Bailey
Senate Chair

Kristi M. Mathieson
Rep. Kristi Michele Mathieson
House Chair

cc: Members, Joint Standing Committee on Health Coverage, Insurance and Financial
Services
Lori Dwyer, President and CEO, Penobscot Community Health Care

Maine Bureau of Insurance

Consumer Health Care Division

***Report on Independent Dispute Resolution,
In-Network Providers, and Denied Claims
for Calendar Year 2024***

September 2026

Janet T. Mills
Governor

Joan F. Cohen
Commissioner

Sandra C. Darby
Acting Superintendent

Table of Contents

Executive Summary	1
Introduction	1
Independent Dispute Resolution	2
Claims Data	2
Medical Loss Ratio	11
Conclusion	13
Appendix A.....	14

Executive Summary

This report covers data from calendar year 2024 with comparisons to calendar year 2023.

There were only two IDR requests in 2024: one was settled in favor of the provider/applicant for \$8,393.48, while the other was settled privately by the parties involved. From 2023 to 2024, the Total Annual Amount of Spending on Out-of-Network Emergency Costs across all carriers increased from \$6,619,625 to \$8,954,375 (35%). The Total Number of Provider-submitted Claims increased from 4,213,508 to 6,800,211 (61%), while the Total Number of Denied Provider Claims increased from 256,928 to 428,901 (67%). The Total Percentage of Denials remained mostly stable, only increasing from 6.1% to 6.3%.

Introduction

The Superintendent of Insurance is required to produce this annual report to the Legislature regarding the IDR process and other statistics (see the full text of the statute in Appendix A). Under 24-A M.R.S. § 4303-E, out-of-network emergency healthcare providers can request IDR for bills for covered emergency services rendered by out-of-network providers. Uninsured patients with an emergency services bill of \$750 or more can also request IDR under 22 M.R.S. § 1718-D(3). All health carriers with more than one thousand covered lives—as reported to the Bureau in Rule 940 and 945 reports—must file IDR information with the Bureau. All records relating to an IDR request or proceeding are confidential,¹ therefore the presentation of IDR information in this report does not reveal identifying information about individuals involved in IDR cases.

The following information is reported by carriers who meet the one thousand covered lives threshold:

- Total Annual Amount Spent on Emergency Out-of-Network Claims;
- Number of Claims Submitted; and
- Number of Claims Denied.

Responses were received from seven carriers:

- Cigna Life and Health Insurance Company;
- Aetna Life Insurance Company;
- Anthem Health Plans of Maine;
- Community Health Options;
- Harvard Pilgrim Health Care (HPHC);
- HPHC Insurance Company; and
- UnitedHealth Care Insurance Company.

Carriers were required to provide responses in the aggregate for their Maine business, not at the plan-level.

¹ 24-A 4303-E(5)

Independent Dispute Resolution

The Bureau contracts with an IDR entity to preside over emergency services billing disputes between insurance carriers, out-of-network providers, and certain uninsured persons. Since October 1, 2023, the Bureau's IDR administrative vendor is Improve Health.

As seen in Exhibit 1, in 2024, two requests were made for IDR. One case involved neonatology (care of newborn infants), and the other case involved emergency heart surgery. One decision was made in favor of the provider/applicant. The other matter was privately settled by the parties and its case was dismissed.

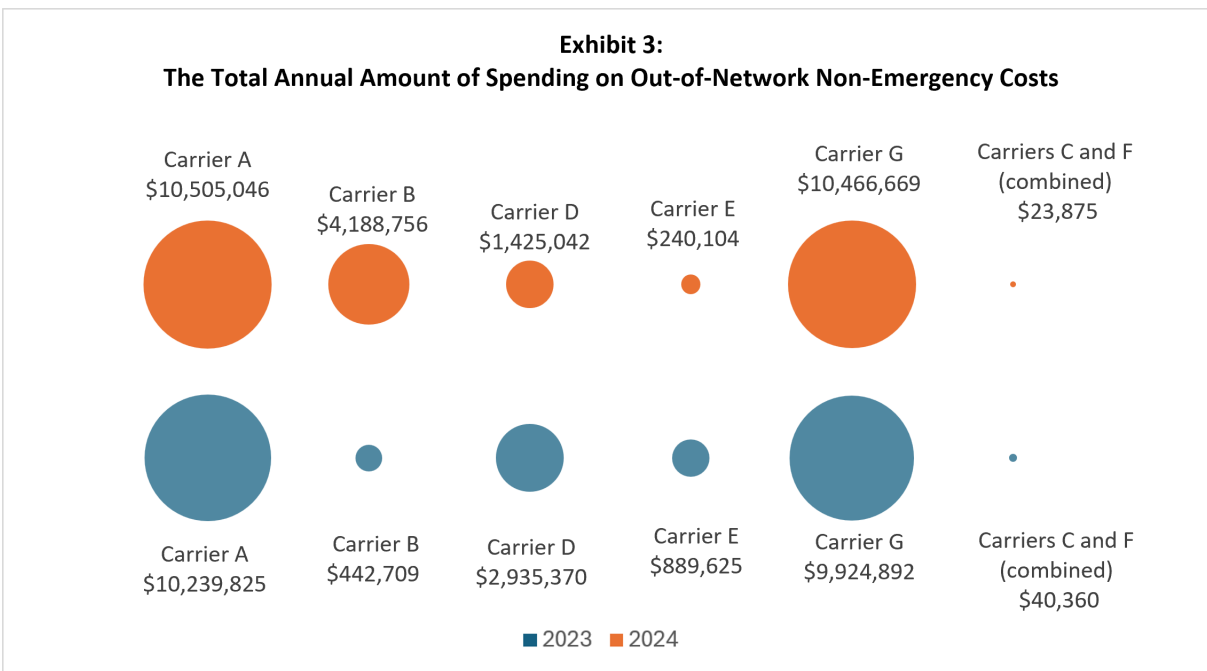
Exhibit 1: 2024 IDR Decisions		
Provider Fee	Carrier Offer	Case Decision Amount
\$8,393.48	\$1,242.72	\$8,393.48
N/A	N/A	N/A

Claims Data

As indicated by Exhibit 2, from 2023 to 2024, the Total Annual Amount of Spending on Out-of-Network Non-Emergency Costs across all carriers increased by 10%.

Exhibit 2: The Total Annual Amount of Spending on Out-of-Network Non-Emergency Costs, 2023-2024		
	2023	2024
Carrier A	\$10,239,825	\$10,505,046
Carrier B	\$442,709	\$4,188,756
Carrier C	\$19,110	\$9,136
Carrier D	\$2,935,370	\$1,425,042
Carrier E	\$889,625	\$240,104
Carrier F	\$21,250	\$14,739
Carrier G	\$ 9,924,892	\$10,466,669
Total	\$24,472,781	\$26,849,492

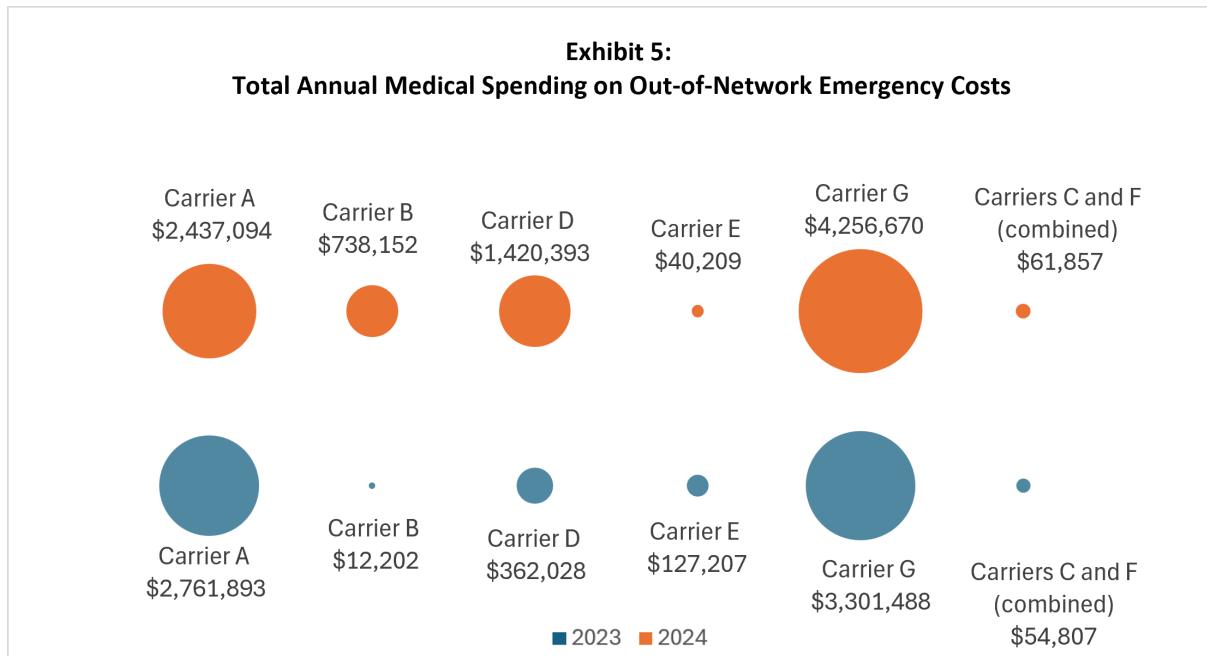
Exhibit 3 provides a visual representation of out-of-network non-emergency spending totals by year using data from Exhibit 2.



As indicated in Exhibit 4, from 2023 to 2024, the Total Annual Amount of Spending on Out-of-Network Emergency Costs across all carriers increased by 35%.

Exhibit 4: The Total Annual Amount of Spending on Out-of-Network Emergency Costs, 2023-2024		
	2023	2024
Carrier A	\$2,761,893	\$2,437,094
Carrier B	\$12,202	\$738,152
Carrier C	\$27,392	\$35,917
Carrier D	\$362,028	\$1,420,393
Carrier E	\$127,207	\$40,209
Carrier F	\$27,415	\$25,940
Carrier G	\$3,301,488	\$4,256,670
Total	\$6,619,625	\$8,954,375

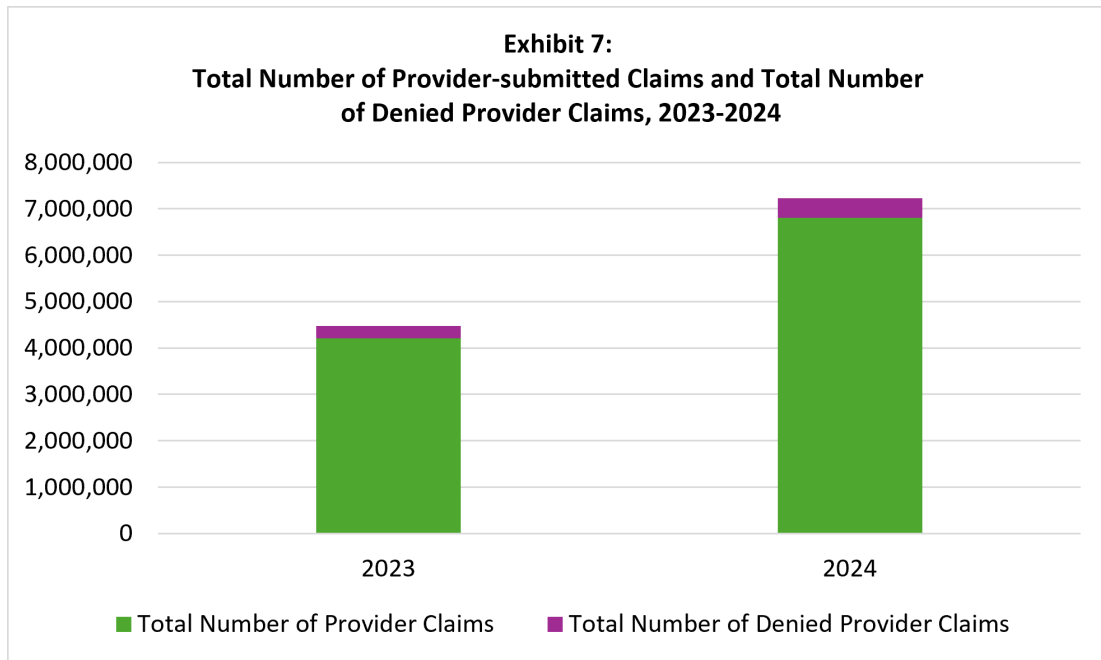
Exhibit 5 provides a visual representation of out-of-network emergency spending totals by year using data from Exhibit 4.



As indicated by Exhibit 6, the Total Number of Provider-submitted Claims increased by 61% between 2023 and 2024 while the Total Number of Denied Provider Claims increased by 67%. The Total Percentage of Denials remained mostly stable, only increasing from 6.1% to 6.3%. Two carriers, Carrier A and Carrier F, reduced their Percentage of Denials slightly by 0.5%. Carrier B had the largest increase of 6.8% to 17.5%. Percentages of Denials greater than 25% are highlighted in red in Exhibit 6.

Exhibit 6: Total Number of Provider-submitted Claims and Total Number of Denied Provider Claims, 2023-2024				
Carrier	Year	Total Submitted Claims	Total Denied Claims	Percentage of Denials
Carrier A	2024	1,745,505	152,869	8.8%
	2023	1,587,968	148,286	9.3%
Carrier B	2024	965,857	169,378	17.5%
	2023	413,123	28,231	6.8%
Carrier C	2024	568	69	12.1%
	2023	668	75	11.2%
Carrier D	2024	34,402	10,478	30.5%
	2023	36,907	9,533	25.8%
Carrier E	2024	8,842	2,739	31.0%
	2023	10,252	2,715	26.5%
Carrier F	2024	309,532	60,206	19.5%
	2023	302,795	60,461	20.0%
Carrier G	2024	3,735,505	33,162	0.9%
	2023	1,861,795	7,627	0.4%
Total	2024	6,800,211	428,901	6.3%
	2023	4,213,508	256,928	6.1%

Exhibit 7 provides a visual representation of the total numbers of Provider Claims and Denied Provider Claims from 2023 and 2024 using data from Exhibit 6.



Exhibits 8A and 8B provide additional context for the claim denials from 2024 and 2023 in Exhibit 6. The total number of denials is separated by carrier and by category of applicable reasons for denial.

In 2024 and 2023, claims in the Other category were denied primarily for the following reasons: the enrollee was not covered by the plan; the plan had no out-of-network benefits; the provider was not found under the National Provider Identifier (NPI)/ Taxpayer Identification Number (TIN); benefits exceeded plan limits; the claim was replaced; and an adjustment needed to be made to the original submission.

Exhibit 8A: The Number of Provider-submitted Claims That Were Denied and the Applicable Reason, 2024												
Carrier Code	Coding Error	Duplicate Claim	Medical Necessity /Experimental	More Info. Needed	No Prior Authorization	Out-of-Network Provider	Covered by Medicare/Other Plan	Before/After Effective Date	Services Not Covered	Claim Time Expired	Other	Total by Carrier
A	7,501	24,378	1,050	10,768	15,179	1,627	1,298	18,581	6,144	10,091	56,252	152,869
B	28,030	7,431	215	407	11,804	0	3,978	23,883	66,381	10,529	16,720	169,378
C	0	7	3	3	0	11	0	11	5	0	29	69
D	1,220	1,871	6	527	196	36	694	14	95	406	5,413	10,478
E	308	581	0	136	20	13	170	1	36	146	1,328	2,739
F	8,951	12,534	699	19,623	3,484	1,240	1,974	3,856	3,353	1,289	3,203	60,206
G	878	3,441	1,126	3,389	451	1,714	1,063	1,553	4,308	13,892	1,347	33,162
Total	46,888	50,243	3,099	34,853	31,134	4,641	9,177	47,899	80,322	36,353	84,292	

Exhibit 8B: The Number of Provider-submitted Claims That Were Denied and the Applicable Reason, 2023												
Carrier Code	Coding Error	Duplicate Claim	Medical Necessity/ Experimental	More Info. Needed	No Prior Authorization	Out-of-Network Provider	Covered by Medicare/Other Plan	Before/After Effective Date	Services not covered	Claim Time Expired	Other	Total by Carrier
A	5,404	26,292	672	10,286	10,280	1,343	1,969	18,056	7,202	11,161	55,621	148,286
B	328	2,523	1	1,265	4,238	170	1,119	6,357	1,179	5,369	5,682	28,231
C	0	19	3	11	0	4	0	13	1	1	23	75
D	537	2,459	44	5,519	168	85	0	18	257	0	446	9,553
E	154	747	14	1,504	20	11	0	13	61	0	191	2,715
F	7,736	11,649	1,016	19,485	3,252	1,946	2,183	4,459	4,229	359	4,147	60,461
G	51	710	454	961	67	315	610	900	731	1,788	1,040	7,627
Total	14,210	44,399	2,204	39,031	18,025	3,874	5,881	29,816	13,660	18,670	67,150	

Exhibit 9 provides a visual representation of Provider-submitted Claims That Were Denied in 2023 and 2024, separated by Applicable Reason, using data from Exhibits 8A and 8B.

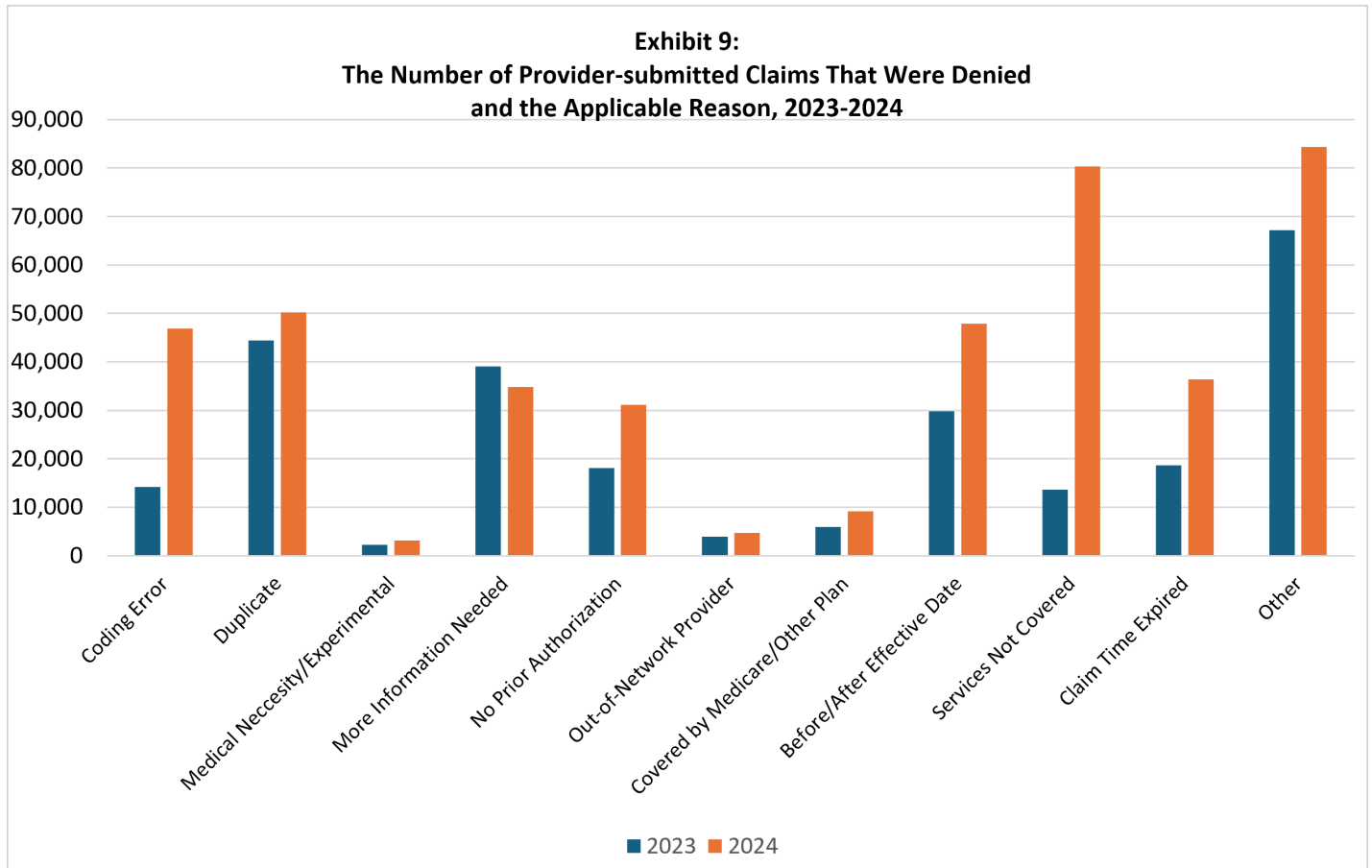


Exhibit 10 details the Number of Provider-submitted Claims That Were Downcoded² between 2023 and 2024. Notably, Carrier F's downcoded claims in the Other category increased substantially from 227 in 2023 to 3,239 in 2024 due to an increase in contract errors, duplicate claims, eligibility issues, claims processing errors, and provider billing errors.

In 2023 and 2024, common reasons for downcoded claims in the Other category for Carriers F and G were contract errors, duplicate claims, eligibility issues, hospital billing errors, and hospital bill audits.

Exhibit 10: The Number of Provider-submitted Claims That Were Downcoded and the Applicable Reason, 2023-2024							
Carrier Code	Year	Diagnostic Information Does Not Meet Claim Billed	Inadequate Documentation	Incorrect Codes Used	Services Bundled	Other	Total
A	2024	0	0	0	0	0	0
	2023	78	0	0	0	0	78
B	2024	0	215	0	0	0	215
	2023	0	162	592	3,265	0	4,019
C	2024	0	1	0	0	0	1
	2023	0	0	0	0	0	0
D	2024	0	0	0	0	0	0
	2023	0	0	0	0	0	0
E	2024	0	0	0	0	0	0
	2023	0	0	0	0	0	0
F	2024	0	264	28	103	3,239	3,634
	2023	6	481	9	13	227	736
G	2024	0	0	231	94	122	447
	2023	0	0	164	127	429	720
Total	2024	0	480	259	197	3,361	4,297
	2023	84	643	765	3,405	656	5,553

² In instructions to carriers, the Bureau defined "downcoding" as "the alteration by plan or issuer of a service code to another service code, or the alteration, addition, or removal by a plan or issuer of a modifier, if the changed code or modifier is associated with a lower Qualifying Payment Amount (QPA) than the service code or modifier billed by the provider or facility."

Exhibit 11 shows each carrier's reported Aggregate Number of In-Network High-Volume Specialists Practicing in Maine in 2023 and 2024. In both years, the most common specialists in the Other category were anesthesiologists, emergency medicine, internal medicine, pathologists, and radiologists.

Exhibit 11: The Aggregate Number of In-Network High-Volume Specialists Practicing in Maine, Per Carrier, 2023-2024										
Carrier Code	Year	Number of In-Network Facilities ³	Behavioral Health	Cardiology	Dermatology	Gastroenterology	Gynecology/Obstetrics	Ophthalmology	Orthopedic Surgery	Other
A	2024	4,505	3,682	175	99	99	223	108	193	1,896
	2023	4,255	3,417	177	75	91	203	99	178	743
B	2024	7,684	2,575	160	57	77	182	85	166	4,656
	2023	7,157	2,458	159	52	73	168	88	161	4,286
C	2024	4,277	4,955	72	69	90	201	91	190	1,540
	2023	3,992	4,261	61	67	83	185	93	156	1,516
D	2024	322	4,630	204	60	100	201	93	174	2,124
	2023	310	3,569	201	57	98	190	89	155	1,944
E	2024	322	4,630	204	60	100	201	93	174	2,124
	2023	310	3,569	201	57	98	190	89	155	1,944
F	2024	931	2,719	155	64	86	165	80	189	1,109
	2023	932	2,293	150	58	80	174	89	169	1,136
G	2024	2,073	3,114	244	95	114	327	80	241	9,146
	2023	2,008	2,893	210	58	98	303	98	214	8,464

³ In instructions to carriers, the Bureau defined "facility" as any public or private hospital, clinic, center, medical school, medical training institution, health care facility, physician's office, infirmary, dispensary, ambulatory surgical center, or other institution or location where medical or mental health care is provided to any person.

Medical Loss Ratio

Carriers must provide rebates in the large group, small group, and individual markets if they do not meet the minimum medical loss ratio⁴ in one of these markets. Exhibit 12, Exhibit 13, and Exhibit 14 show the degree to which carriers in the individual and small group markets met a statutory requirement of a medical loss ratio of 80% and the extent to which the large group market met a higher standard of 85%. Federal law requires that these ratios represent a rolling three-year average.

Carriers reported a total of \$2,129,594,783 in medical claims for 2024 in their Rule 945 reports⁵. The \$23,398,888 in out-of-network non-emergency claims reported by carriers represent 1% of that claim total.

Two additional carriers (Carrier H and Carrier I) are included in this section because though they have fewer than one thousand insureds, they are still required to meet MLR minimums.

For 2024, Carrier H was required to pay rebates of \$174,838 to large group policyholders in Maine. No other rebates were required to be paid in 2023 as a result of all the carriers meeting the minimum MLR.

For more information regarding carriers' premiums collected and expenses paid across individual, small group, and large group markets in 2024, please visit

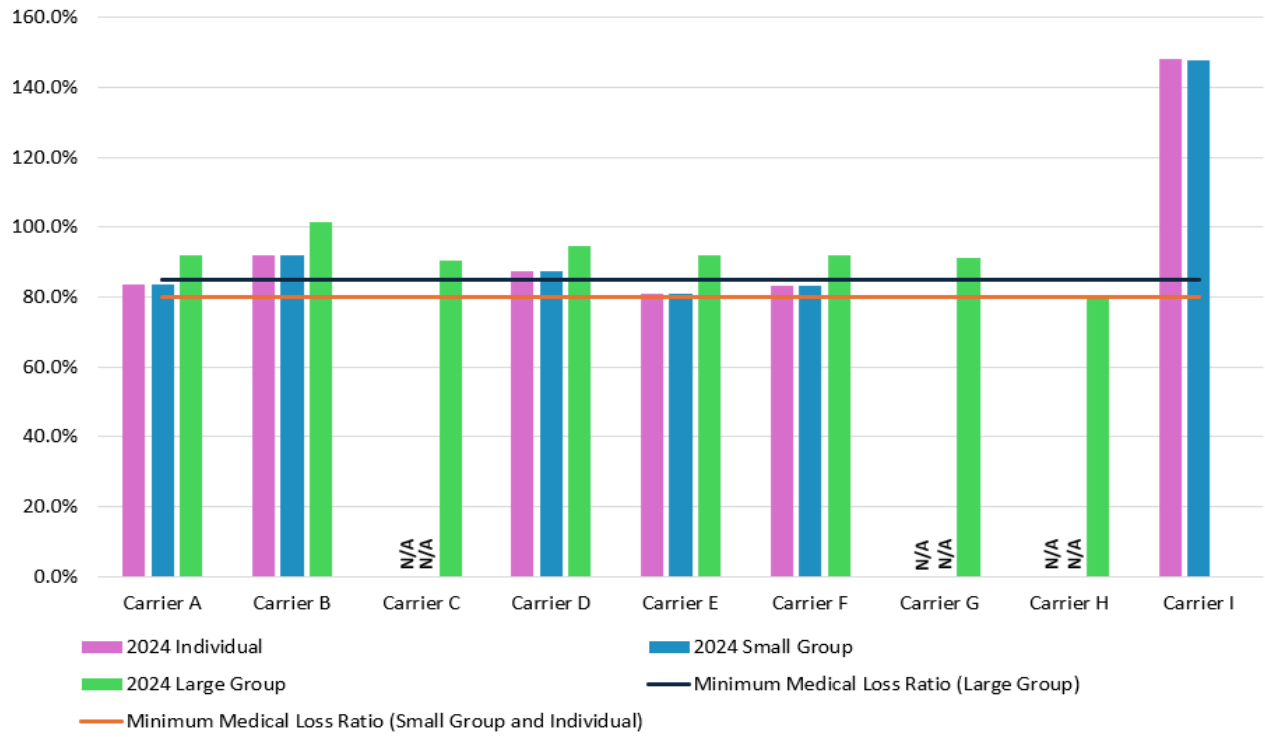
<https://www.maine.gov/pfr/insurance/sites/maine.gov.pfr.insurance/files/inline-files/2024-945-Charts-Graphs.pdf>.

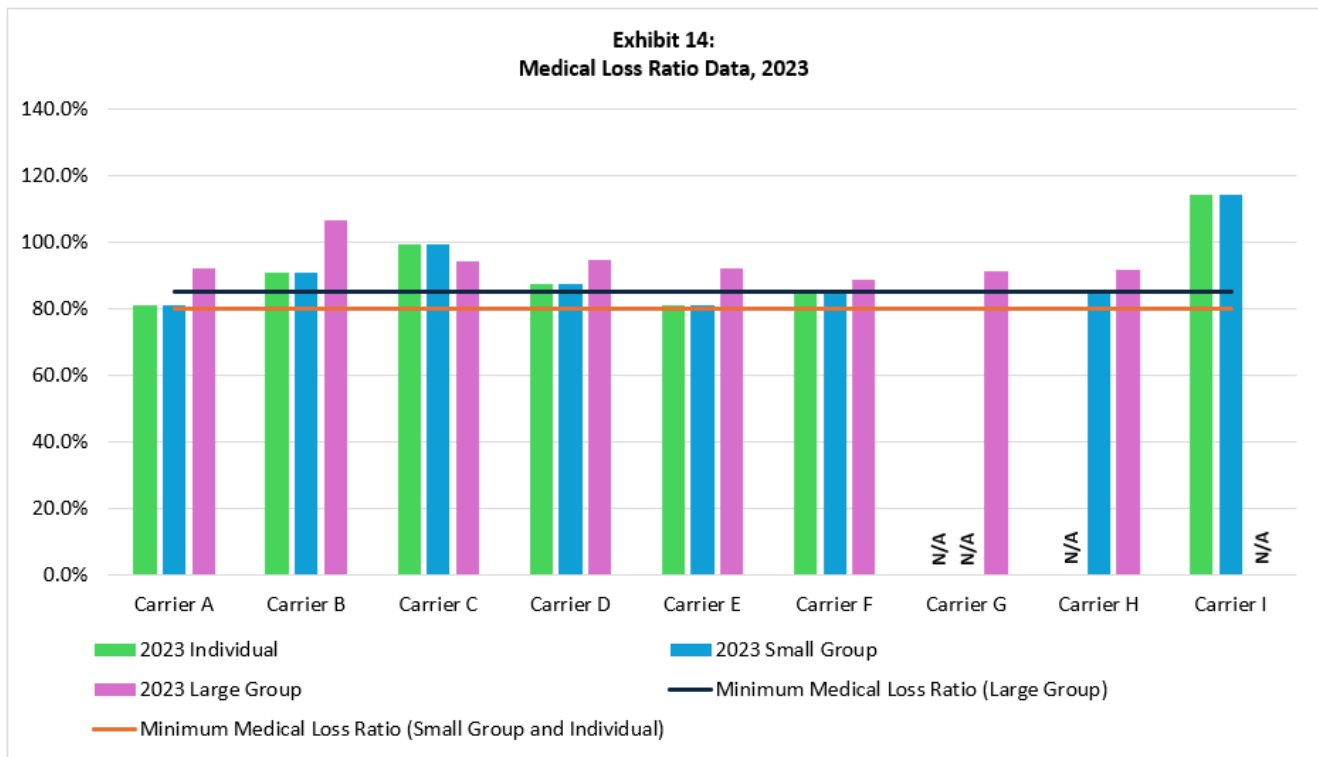
Exhibit 12: Medical Loss Ratio Data, 2023-2024						
Carrier	2023			2024		
	Individual	Small Group	Large Group	Individual	Small Group	Large Group
Carrier A	81.0%	81.0%	92.0%	83.6%	83.6%	91.8%
Carrier B	91.0%	91.0%	106.7%	91.9%	91.9%	101.4%
Carrier C	99.4%	99.4%	94.1%	N/A	N/A	90.3%
Carrier D	87.5%	87.5%	94.8%	87.5%	87.5%	94.8%
Carrier E	80.9%	80.9%	92.0%	80.9%	80.9%	92.0%
Carrier F	84.4%	84.4%	88.6%	83.2%	83.2%	91.8%
Carrier G	N/A	N/A	91.4%	N/A	N/A	91.2%
Carrier H	N/A	84.5%	91.5%	N/A	N/A	79.8%
Carrier I	114.3%	114.3%	N/A	148.2%	147.8%	N/A

⁴ "Medical loss ratio" is defined in 24-A M.R.S. §4319 (2) as the ratio of the amount expended on reimbursement for clinical services provided to enrollees and activities that improve health care quality (the numerator), and the total amount of premium revenue excluding federal and state taxes and licensing and regulatory fees paid and after accounting for payments or receipts for risk adjustment, risk corridors and reinsurance pursuant to federal law (the denominator). These amounts are subject to any credibility adjustment.

⁵ Rule 945, Annual Report Supplement for Health Insurers, was promulgated pursuant to 24-A M.R.S. §423-D

Exhibit 13:
Medical Loss Ratio Data, 2024





Conclusion

Few providers are using the IDR process to resolve out-of-network emergency bills. During 2024, two IDR decisions were issued. It is not clear whether the low number of IDR requests indicates that providers are satisfied with the amount carriers are paying for out-of-network emergency services or whether they are instead choosing to resolve disputes on their own; additionally, it is unclear if uninsured persons are choosing to resolve disputes on their own.

Appendix A

24-A M.R.S. § 4303-E. Dispute resolution process for surprise bills and bills for out-of-network emergency services

1. Independent dispute resolution process. The superintendent shall establish an independent dispute resolution process by which a dispute for a surprise bill for emergency services or a bill for covered emergency services rendered by an out-of-network provider in accordance with section 4303-C, subsection 2 may be resolved as provided in this subsection beginning no later than October 1, 2020.

A. The superintendent may select an independent dispute resolution entity to conduct the dispute resolution process. The superintendent shall adopt rules to implement a dispute resolution process that uses a standard arbitration form and includes the selection of an arbitrator from a list of qualified arbitrators developed pursuant to the rules. A qualified arbitrator must be independent; may not be affiliated with a carrier, health care facility or provider or any professional association of carriers, health care facilities or providers; may not have a personal, professional or financial conflict with any parties to the arbitration; and must have experience in health care billing and reimbursement rates. Rules adopted pursuant to this paragraph are routine technical rules as defined in Title 5, chapter 375, subchapter 2-A.

B. An independent dispute resolution entity shall make a decision within 30 days of receipt of the dispute for review.

C. In determining a reasonable fee for the health care services rendered, an independent dispute resolution entity shall select either the carrier's payment or the out-of-network provider's fee. The independent dispute resolution entity shall determine which amount to select based upon the conditions and factors set forth in this paragraph. In determining the reasonable fee for a health care service, an independent dispute resolution entity shall consider all relevant factors, including:

- (1) The out-of-network provider's level of training, education, specialization, quality and experience and, in the case of a hospital, the teaching staff, scope of services and case mix;
- (2) The out-of-network provider's previously contracted rate with the carrier, if the provider had a contract with the carrier that was terminated or expired within one year prior to the dispute; and
- (3) The median network rate for the particular health care service performed by a provider in the same or similar specialty, as determined by the all-payer claims database maintained by the Maine Health Data Organization or, if Maine Health Data Organization claims data is insufficient or otherwise inapplicable, another independent medical claims database. If authorized by rule, the superintendent may enter into an agreement to obtain data from an independent medical claims database to carry out the functions of this subparagraph.

D. If an independent dispute resolution entity determines, based on the carrier's payment and the out-of-network provider's fee, that a settlement between the carrier and out-of-network provider is reasonably likely, or that both the carrier's payment and the out-of-network provider's fee represent unreasonable extremes, the independent dispute resolution entity may direct both parties to attempt a good faith negotiation for settlement. The carrier and out-of-network provider may be granted up to 10 business days for this negotiation, which runs concurrently with the 30-day period for dispute resolution.

E. The determination of an independent dispute resolution entity is binding on the carrier, out-of-network provider and enrollee and is admissible in any court proceeding between the carrier, out-of-network provider and enrollee or in any administrative proceeding between this State and the provider.

F. When an independent dispute resolution entity determines the carrier's payment is reasonable, payment for the dispute resolution process is the responsibility of the out-of-network provider. When the independent dispute resolution entity determines the out-of-network provider's fee is reasonable, payment for the dispute resolution process is the responsibility of the carrier. When a good faith negotiation directed by the independent dispute resolution entity results in a settlement between the carrier and the out-of-network provider, the carrier and the out-of-network provider shall evenly divide and share the prorated cost for dispute resolution.

G. The superintendent shall enforce the determination of an independent dispute resolution entity pursuant to this subsection or any agreement made by a carrier and an out-of-network provider after the conclusion of the independent dispute resolution process pursuant to this subsection. The superintendent may use any powers provided to the superintendent under this Title.

H. Following a determination by an independent dispute resolution entity of a reasonable fee for a particular health care service, an out-of-network provider may not initiate the dispute resolution process under this subsection for that same health care service for a period of 90 days.

2. Self-insured health benefit plans. An entity providing or administering a self-insured health benefit plan exempted from the applicability of this section under the federal Employee Retirement Income Security Act of 1974, 29 United States Code, Sections 1001 to 1461 (1988) may elect to be subject to the provisions of this section to resolve disputes with respect to a surprise bill for emergency services or a bill for covered emergency services from an out-of-network provider. In the event an entity providing or administering a self-insured health benefit plan elects to be subject to the provisions of this section, the provisions of this section apply to a self-insured health benefit plan and its members in the same manner as the provisions of this section apply to a carrier and its enrollees. To elect to be subject to the provisions of this section, the entity shall provide notice, on an annual basis, to the superintendent, on a form and in a manner prescribed by the superintendent, attesting to the entity's participation and agreeing to be bound by the provisions of this section. The entity shall amend the health benefit plan, coverage policies, contracts and any other plan documents to reflect that the provisions of this section apply to the plan's members.

3. Information required from carriers. As part of the carrier's annual public regulatory filings made to the superintendent, a carrier shall submit in a form and manner determined by the superintendent information related to:

A. The use of out-of-network providers by enrollees and the impact on premium affordability and benefit design; and

B. The number of claims submitted by a provider to the carrier that are denied or down coded by the carrier and the reason for the denial or down coding determination.

4. Report from superintendent. On or before January 31st annually, beginning January 1, 2022, the superintendent shall report the following information received from all carriers in the aggregate:

A. The number of requests for independent dispute resolution filed pursuant to this section between January 1st and December 31st of the previous calendar year, including the percentage of all claims that

were subject to dispute. For each independent dispute resolution determination, the carrier shall provide aggregate information that does not identify any provider, carrier, enrollee or uninsured patient involved in each determination about:

- (1) Whether the determination was in favor of the carrier, out-of-network provider or uninsured patient;
- (2) The payment amount offered by each side of the independent dispute resolution process and the award amount from the independent dispute resolution determination;
- (3) The category and practice specialty of each out-of-network provider involved, as applicable; and
- (4) A description of the health care service that was subject to dispute;

B. The percentage of facilities and hospital-based professionals, by specialty, that are in network for each carrier in this State as reported in access plans submitted to the superintendent;

C. The number of complaints the superintendent receives relating to out-of-network health care charges;

D. Annual trends on health benefit plan premium rates, the total annual amount of spending on inadvertent and emergency out-of-network costs by carriers and medical loss ratios in the State to the extent that the information is available;

E. The number of physician specialists practicing in the State in a particular specialty and whether they are in network or out of network with respect to the carriers that administer the state employee group health plan under Title 5, section 285, the Maine Education Association benefits trust health plan, the qualified health plans offered pursuant to the federal Affordable Care Act and other health benefit plans offered in the State;

F. A summary of the information submitted to the superintendent pursuant to subsection 3 concerning the number of claims submitted by health care providers to carriers that are denied or down coded by the carrier and the reasons for the denials or down coding determinations;

G. An analysis of the impact of this section, with respect to both emergency services and other health care services, on premium affordability and the breadth of provider networks; and

H. Any other benchmarks or information that the superintendent considers appropriate to make publicly available to further the goals of this section.

The superintendent shall submit the report to the joint standing committee of the Legislature having jurisdiction over health insurance matters and shall post the report on the bureau's publicly accessible website.

5. Confidentiality. Except as provided in this subsection, all records of the bureau or an independent dispute resolution entity relating to an independent dispute resolution request or proceeding are confidential and not a public record under Title 1, chapter 13.



Janet T. Mills
Governor

STATE OF MAINE
DEPARTMENT OF
PROFESSIONAL & FINANCIAL REGULATION



Joan F. Cohen
Commissioner

2025 Report on Insurance Fraud and Abuse

Prepared by the Maine Bureau of Insurance

September 2026

Janet T. Mills
Governor

Joan F. Cohen
Commissioner

Sandra C. Darby
Acting Superintendent

Table of Contents

Introduction 1

Number of Suspected Fraudulent Cases and Claims Reported by Line of Business 1

Number of Suspected Fraudulent Insurance Acts Referred to Law Enforcement and Other Agencies 4

Introduction

This annual report provides aggregate information on suspected fraudulent insurance activity¹ as reported by insurers in Maine for calendar years 2024 and 2025. The data contained in this report is based on responses to the Bureau of Insurance’s annual survey of insurers, as required pursuant to 24-A M.R.S. § 2186(4)(A)(B) and Maine Insurance Rule Chapter 920. The report contains information on:

- the number of suspected fraudulent cases and claims, by line of insurance;
- the amounts paid and the amounts denied for those cases and claims; and
- the number of suspected fraudulent acts reported or referred to law enforcement and other agencies.

Number of Suspected Fraudulent Cases and Claims Reported by Line of Business

Table 1 shows the number of suspected fraudulent cases and claims for 2025,² reported by line of business, along with the amounts paid and denied for those cases and claims.³ Table 2 shows the same data for 2024.

In 2025, a total of 2,145 suspected fraudulent cases were reported by insurers, a decrease of 12% compared to the 2,431 reported in 2024. Life insurance saw the highest increase of suspected fraudulent cases, rising 160% between 2024 and 2025; health insurance saw the second largest increase at 30%; and homeowners insurance saw the third largest increase at 6%. All remaining lines of business saw decreases.

The highest number of suspected fraudulent cases in 2025 was reported for Auto, followed by Health and Workers’ Compensation. Four categories had more than 25% of suspected fraudulent claim amounts denied in 2025: Health (70%), All Other Lines (60%), General Liability (30%), and Auto (27%).

In addition to the decrease in the number of fraudulent cases reported by insurers, the total number of suspected fraudulent claims decreased by 46% (from 19,617 to 10,628) between 2024 and 2025. Because a case involving a suspected fraudulent act does not always result in a claim or can involve multiple claims, the number of cases will often be different than the number of claims.

¹ Under 24-A M.R.S. § 2186(1)(A) a “fraudulent insurance act” can include a variety of actions, including providing materially false information in an application for insurance or in a claim for benefits under an insurance policy, providing false proof of insurance, providing false information regarding the financial condition of an insurer, and transacting insurance business without proper licensure. 24-A M.R.S. §2186(4) requires insurers to report the number of fraudulent insurance acts which they “knew or reasonably believed” had occurred during the previous calendar year. This report refers to the numbers reported as “suspected fraudulent cases and claims” because the reporting includes suspected actions which might not ultimately be proven to be fraudulent.

² Some companies reported cases but did not report claims, and some reported claims but did not report cases.

³ The paid and denied amounts displayed for each line of business may include payments and denials beyond those associated with the cases and claims listed for the line of business; this occurs when cases and claims that were reported in prior years were not paid or denied until this reporting period.

Table 1: Number of Suspected Fraudulent Cases and Claims Reported by Line of Business, 2025						
Line of Business	Number of Cases	Number of Claims	Amounts Paid	Amounts Denied	Total Amounts Paid and Denied	Percentage of Amount of Claims Denied
Automobile (total)	766	1,510	\$5,411,518	\$1,993,780	\$7,405,298	27%
Personal	731	1,307	\$3,725,582	\$1,927,931	\$5,653,513	34%
Commercial	35	203	\$1,685,936	\$65,849	\$1,751,785	4%
General Liability	5	102	\$434,053	\$190,270	\$624,323	30%
Health	655	5,724	\$3,644,373	\$8,686,840	\$12,331,213	70%
Homeowners	86	152	\$3,077,321	\$856,320	\$3,933,641	22%
Life	169	72	\$2,781,105	\$627,824	\$3,408,929	18%
Other Property Lines ⁴ (total)	84	236	\$21,517,072	\$864,118	\$22,381,190	4%
Personal	78	186	\$18,083,268	\$625,897	\$18,709,165	3%
Commercial	6	50	\$3,433,804	\$238,221	\$3,672,025	6%
Wet Marine	12	12	\$104,853	\$14,787	\$119,640	12%
Workers' Comp	313	2500	\$16,412,362	\$222,543	\$16,634,905	1%
All Other Lines ⁵ (total)	55	320	\$204,158	\$307,057	\$511,215	60%
Personal	31	22	\$193,966	\$60,509	\$254,475	24%
Commercial	24	298	\$10,192	\$246,548	\$256,740	96%
Totals	2,145	10,628	\$53,586,815	\$13,763,539	\$67,350,354	N/A

Table 2: Number of Suspected Fraudulent Cases and Claims Reported by Line of Business, 2024						
Line of Business	Number of Cases	Number of Claims	Amounts Paid	Amounts Denied	Total Amounts Paid and Denied	Percentage of Amount of Claims Denied
Automobile (total)	797	1,097	\$7,144,097	\$3,772,675	\$10,916,772	35%
Personal	697	992	\$5,242,712	\$2,231,646	\$7,474,358	30%
Commercial	100	105	\$1,901,385	\$1,541,029	\$3,442,414	45%
General Liability	44	57	\$191,558	\$633,594	\$825,152	77%
Health	503	13,157	\$2,094,489	\$2,308,621	\$4,403,110	52%
Homeowners	81	150	\$5,108,067	\$553,364	\$5,661,431	10%
Life	65	115	\$10,001,815	\$72,214	\$10,074,029	1%
Other Property Lines (total)	130	394	\$4,016,414	\$1,611,791	\$5,628,205	29%
Personal	39	121	\$1,542,734	\$991,597	\$2,534,331	39%
Commercial	91	273	\$2,473,680	\$620,194	\$3,093,874	20%
Wet Marine	17	16	\$141,129	\$10,602	\$151,731	7%
Workers' Comp	575	532	\$28,322,205	\$721,711	\$29,043,916	2%
All Other Lines (total)	219	4,099	\$2,154,952	\$913,146	\$3,068,098	30%
Personal	47	3,919	\$1,543,222	\$866,146	\$2,409,368	36%
Commercial	172	180	\$611,730	\$47,000	\$658,730	7%
Totals	2,431	19,617	\$59,174,726	\$10,597,718	\$69,772,444	N/A

Number of Suspected Fraudulent Insurance Acts Referred to Law Enforcement and Other Agencies

Table 3 shows that in 2025, 595 of the total 2,145 suspected fraudulent acts were referred to law enforcement and other agencies, a 58% increase from 376 of the total 2,431 reported in 2024.

In 2025, 353 referrals were made to the National Insurance Crime Bureau (NICB), a non-profit organization that investigates insurance fraud and assists with fraud investigations by providing information to state and federal regulators and insurance companies.

There were 240 referrals made to the Other Agencies category; of these referrals, 153 were made to the Maine Bureau of Insurance, and 87 were made to other state and federal agencies.

Table 3: Number of Suspected Fraudulent Insurance Acts Reported/Referred to Law Enforcement and Other Agencies		
Agency	Number of Referrals, 2025	Number of Referrals, 2024
County/District Attorney's Office	0	1
Local Law Enforcement	0	1
National Insurance Crime Bureau	353	216
State Fire Marshal's Office	1	1
U.S. Attorney's Office	1	0
U.S. Postal Authorities	0	1
Workers' Compensation Board Fraud & Abuse	0	0
Other Agencies	240	156
Total	595	376



Janet T. Mills
Governor

STATE OF MAINE
DEPARTMENT OF PROFESSIONAL & FINANCIAL REGULATION
BUREAU OF CONSUMER CREDIT PROTECTION



Joan F. Cohen
Commissioner

Linda Conti
Superintendent

TO: Joint Standing Committee on Health Coverage, Insurance and Financial Services

FROM: Linda Conti, Superintendent, Bureau of Consumer Credit Protection

RE: Foreclosure Report

DATE: September 28, 2026

Background

Title 14 M.R.S. § 6111 requires mortgage lenders and servicers to provide a “notice of right to cure” (also referred to as a “default notice”) to any homeowner in default, prior to commencing a foreclosure action in court. This default notice must be provided to a borrower before a foreclosure proceeding can be brought against the borrower in court. This report reflects the number of default notices sent to consumers and compares that number to the number of actual foreclosures that are filed. While the sending of the default notice is a prerequisite to the filing of a foreclosure action, it does not always result in a foreclosure filing.

The law further requires the lender or servicer to notify the Bureau of Consumer Credit Protection of each defaulting homeowner’s name and address, so the Bureau can mail an informational letter to the homeowner, advising the homeowner of the availability of state resources to assist the homeowner with the pre-foreclosure and foreclosure process.

Title 14 M.R.S. § 6111(3-B) requires the Bureau to draft a quarterly report to the Joint Standing Committee on Health Coverage, Insurance and Financial Services listing the number of default notices sent to Maine residents by their lenders. BCCP is required to include information on foreclosures filed by several entities, including state-chartered banks, the information for which is provided by the Bureau of Financial Institutions.

Office Location: 76 Northern Avenue, Gardiner, Maine 04345
Mailing Address: 35 State House Station, Augusta, Maine 04333
www.Credit.Maine.gov

This report covers the period April 1, 2025, through June 30, 2026.

Default Notices Mailed to Homeowners

From April 1, 2025 to June 30, 2026, the Bureau mailed 21,698 informational letters to homeowners who received notices of default and right to cure from their lenders. Tables 1 through 5 (below) show the breakdown of mailings by quarter (Q) and lender type. Tables 6 through 10 show the breakdown of mailings by quarter and county. Figure 1 shows notices filed by company type for the period of this report (Q2 2025 through Q2 2026).

Table 1. Default Notices by Company Type: Q2 2025

Type	25-Apr	25-May	25-Jun	Total
Non-bank Mortgage Company	648	500	717	1865
Securitized Pool	364	285	379	1028
Federally Chartered Banks	301	258	348	907
Private Mortgage Lender	122	111	132	365
State Chartered Banks	122	64	68	254
Federally Chartered Credit Unions	63	80	84	227
State Chartered Credit Unions	17	41	50	108
TOTAL	1637	1339	1778	4754

Table 2. Default Notices by Company Type: Q3 2025

Type	25-Jul	25-Aug	25-Sep	Total
Non-bank Mortgage Company	617	562	636	1815
Securitized Pool	336	319	346	1001
Federally Chartered Banks	321	237	285	843
Private Mortgage Lender	106	148	155	409
State Chartered Banks	82	69	70	221
Federally Chartered Credit Unions	27	69	81	177
State Chartered Credit Unions	57	8	38	103
TOTAL	1546	1412	1611	4569

Table 3. Default Notices by Company Type: Q4 2025

Type	25-Oct	25-Nov	25-Dec	Total
-------------	---------------	---------------	---------------	--------------

Non-bank Mortgage Company	593	555	610	1758
Securitized Pool	364	338	278	980
Federally Chartered Banks	349	252	377	978
Private Mortgage Lender	179	141	69	389
State Chartered Banks	96	39	71	206
Federally Chartered Credit Unions	50	32	52	134
State Chartered Credit Unions	24	9	36	69
TOTAL	1655	1366	1493	4514

Table 4. Default Notices by Company Type: Q1 2026

Type	26-Jan	26-Feb	26-Mar	Total
Non-bank Mortgage Company	328	587	599	1514
Securitized Pool	285	380	247	912
Federally Chartered Banks	308	281	201	790
Private Mortgage Lender	41	164	144	349
State Chartered Banks	62	46	95	203
Federally Chartered Credit Unions	31	85	87	203
State Chartered Credit Unions	20	24	19	63
TOTAL	1075	1567	1392	4034

Table 5. Default Notices by Company Type: Q2 2026

Type	26-Apr	26-May	26-Jun	Total
Non-bank Mortgage Company	252	614	668	1534
Securitized Pool	271	310	294	875
Federally Chartered Banks	194	170	252	616
Private Mortgage Lender	108	142	158	408
State Chartered Banks	43	73	83	199
Federally Chartered Credit Unions	37	52	53	142
State Chartered Credit Unions	12	22	19	53
TOTAL	917	1383	1527	3827

Table 6. Default Notices by Maine County: Q2 2025

County	Apr-25	May-25	Jun-25	Total
Androscoggin	153	140	170	463
Aroostook	72	52	74	198
Cumberland	276	176	258	710
Franklin	46	29	43	118
Hancock	53	41	61	155
Kennebec	149	117	188	454
Knox	39	44	49	132
Lincoln	49	50	37	136
Oxford	90	68	113	271
Penobscot	168	149	193	510
Piscataquis	21	20	33	74
Sagadahoc	38	31	46	115
Somerset	77	54	82	213
Waldo	77	42	76	195
Washington	44	27	41	112
York	285	299	314	898
TOTAL	1637	1339	1778	4754

Table 7. Default Notices by Maine County: Q3 2025

County	Jul-25	Aug-25	Sep-25	Total
Androscoggin	156	122	150	428
Aroostook	73	55	88	216
Cumberland	221	236	254	711
Franklin	49	29	31	109
Hancock	46	44	66	156
Kennebec	140	135	154	429
Knox	29	42	48	119
Lincoln	39	37	58	134
Oxford	75	82	87	244
Penobscot	175	143	181	499
Piscataquis	28	29	24	81
Sagadahoc	41	32	40	113
Somerset	80	80	82	242
Waldo	57	45	53	155
Washington	38	27	34	99

York	299	274	261	834
TOTAL	1546	1412	1611	4569

Table 8. Default Notices by Maine County: Q4 2025

County	Oct-25	Nov-25	Dec-25	Total
Androscoggin	186	130	125	441
Aroostook	68	81	74	223
Cumberland	224	189	244	657
Franklin	51	36	30	117
Hancock	70	44	54	168
Kennebec	167	140	129	436
Knox	37	45	38	120
Lincoln	43	21	54	118
Oxford	102	74	92	268
Penobscot	163	148	142	453
Piscataquis	32	16	34	82
Sagadahoc	28	30	49	107
Somerset	92	51	67	210
Waldo	53	42	44	139
Washington	32	32	34	98
York	307	287	283	877
TOTAL	1655	1366	1493	4514

Table 9. Default Notices by Maine County: Q1 2026

County	Jan-26	Feb-26	Mar-26	Total
Androscoggin	112	154	131	397
Aroostook	76	61	47	184
Cumberland	166	265	195	626
Franklin	26	28	44	98
Hancock	39	57	63	159
Kennebec	92	144	128	364
Knox	35	41	53	129
Lincoln	43	52	27	122
Oxford	54	99	87	240
Penobscot	98	171	166	435
Piscataquis	13	19	15	47
Sagadahoc	6	41	36	83

Somerset	46	50	83	179
Waldo	45	53	58	156
Washington	43	28	41	112
York	181	304	218	703
TOTAL	1075	1567	1392	4034

Table 10. Default Notices by Maine County: Q2 2026

County	Apr-26	May-26	Jun-26	Total
Androscoggin	90	132	147	369
Aroostook	38	70	58	166
Cumberland	131	181	221	533
Franklin	24	41	40	105
Hancock	45	50	44	139
Kennebec	80	102	155	337
Knox	30	50	47	127
Lincoln	31	47	53	131
Oxford	61	85	94	240
Penobscot	105	160	173	438
Piscataquis	18	24	17	59
Sagadahoc	29	19	32	80
Somerset	40	81	85	206
Waldo	35	36	49	120
Washington	13	32	44	89
York	147	273	268	688
TOTAL	917	1383	1527	3827

Figure 1 (below) shows total default notices filed by each type of lender.

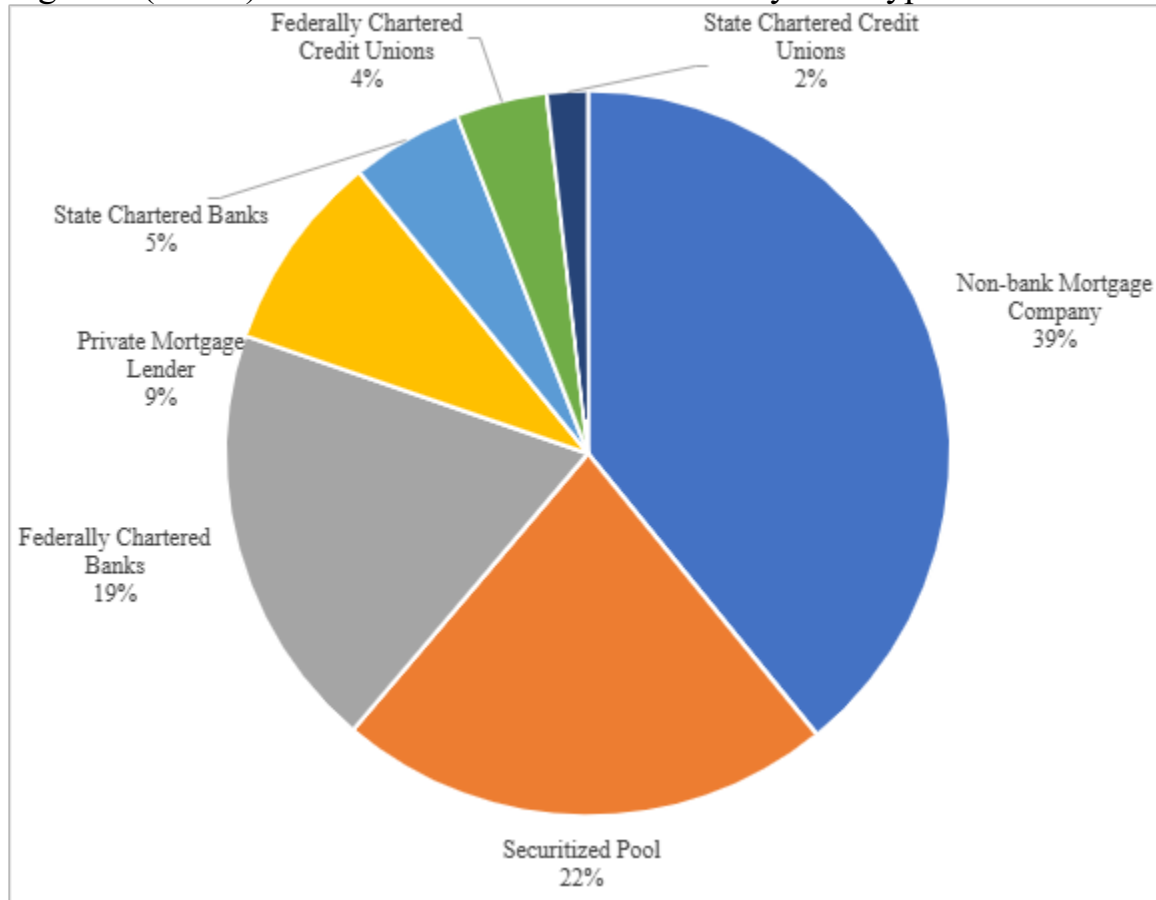


Figure 1. Notices Filed by Company Type: Q2 2025 through Q2 2026.

Foreclosure Filings in Court

Table 11 (below) shows the number of foreclosure actions filed in each court in the State of Maine from April 1, 2025 through June 30, 2026.

Table 11. Foreclosure Actions Filed by Region and Court: Q2 2025 through Q2 2026

Region/Court	Apr - Jun 2025	Jul - Sep 2025	Oct - Dec 2025	Jan - Mar 2026	Apr - Jun 2026	TOTAL
STATEWIDE TOTAL	274	268	264	261	307	1374
Alfred Superior Court	15	7	9	9	7	47
Biddeford Superior Court	28	31	21	27	33	140
Springvale Superior Court	0	0	0	0	0	0

Region/Court	Apr - Jun 2025	Jul - Sep 2025	Oct - Dec 2025	Jan - Mar 2026	Apr - Jun 2026	TOTAL
York District Court	0	0	0	0	0	0
Region 1 Subtotal	43	38	30	36	40	187
Portland Superior Court	36	34	26	31	29	156
Bridgton Superior Court	9	6	7	10	10	42
Portland District Court	0	0	0	0	0	0
Region 2 Subtotal	45	40	33	41	39	198
Auburn Superior Court	6	3	2	8	8	27
Farmington Superior Court	0	2	3	3	7	15
South Paris Superior Court	6	3	8	3	5	25
Farmington District Court	8	3	4	3	1	19
Lewiston District Court	20	20	26	12	25	103
Rumford District Court	3	3	5	8	3	22
South Paris District Court	6	11	8	2	10	37
Region 3 Subtotal	49	45	56	39	59	248
Augusta Superior Court	6	5	9	6	8	34
Skowhegan Superior Court	3	4	5	3	2	17
Augusta District Court	18	11	11	7	9	56
Skowhegan District Court	12	10	16	6	10	54
Waterville District Court	5	6	4	10	10	35
Region 4 Subtotal	44	36	45	32	39	196
Bangor Superior Court	11	10	12	19	10	62
Dover Foxcroft Superior Court	2	4	0	6	2	14
Bangor District Court	10	16	16	8	13	63
Dover Foxcroft District Court	1	2	2	3	4	12
Lincoln/Millinocket District Court	1	4	3	4	5	17
Newport District Court	0	4	3	7	1	15
Region 5 Subtotal	25	40	36	47	35	183
Bath Superior Court	0	2	2	1	2	7
Belfast Superior Court	1	2	4	3	6	16
Rockland Superior Court	4	5	3	2	6	20
Wiscasset Superior Court	0	4	1	0	5	10
Belfast District Court	10	13	5	9	10	47
Rockland District Court	4	4	4	6	5	23
West Bath District Court	5	5	4	3	5	22
Wiscasset District Court	3	4	8	2	2	19
Region 6 Subtotal	27	39	31	26	41	164
Ellsworth Superior Court	0	4	5	5	2	16

Region/Court	Apr - Jun 2025	Jul - Sep 2025	Oct - Dec 2025	Jan - Mar 2026	Apr - Jun 2026	TOTAL
Machias Superior Court	3	5	3	2	3	16
Calais District Court	3	2	4	0	2	11
Ellsworth District Court	3	6	5	4	9	27
Machias District Court	3	1	3	5	2	14
Region 7 Subtotal	12	18	20	16	18	84
Caribou Superior Court	17	7	10	11	15	60
Houlton Superior Court	10	3	0	7	3	23
Caribou District Court	1	2	1	4	8	16
Fort Kent District Court	0	0	1	1	4	6
Houlton District Court	1	0	0	0	3	4
Presque Isle District Court	0	0	1	1	3	5
Region 8 Subtotal	29	12	13	24	36	114

Statewide Trends

Statewide notices peaked at approximately 43,000 in 2013, declined through the late 2010s, and reached a historic low in 2020 during the federal foreclosure moratorium due to COVID 19. Notices have risen from approximately 5,000 in 2020 to 19,000 in 2025. The share escalating to court filings increased from 5.5% in Q2 2025 to 7.5% in Q2 2026, with the sharpest acceleration occurring between Q4 2025 and Q2 2026.

Geographic Concentration

When adjusted for population, Oxford, Somerset, and Piscataquis each exceed the statewide average of 11.2 notices per 10,000 residents. Cumberland County, despite having the highest raw notice count, records the lowest conversion rate (the rate of default notices that result in a foreclosure court filing (“foreclosure action”). Approximately 5.5% of those Cumberland County residents who received a default notice had a foreclosure action filed against them in court. Region 8 (Aroostook County) converts default notices to court filings at 11.6%, roughly one and a half times the statewide average, compared to 4.6% in Region 3 (Androscoggin, Franklin, and Oxford counties) and 4.7% in Region 1 (York County).

Lender Type Composition

Non-bank mortgage companies and securitized pools¹ account for the majority of notices across all five quarters of the study period. The lender composition has remained largely stable, indicating no significant structural shift in who is initiating foreclosure proceedings.

Data Limitations

Default notices are an incomplete measure of actual foreclosure activity. A notice represents the initiation of a potential foreclosure process, not a completed foreclosure. Many homeowners who receive notices resolve their default without proceeding to court. The Bureau tracks default notices because it is statutorily required to, not because notices provide a complete picture of foreclosure outcomes.

Lender reporting is voluntary with no verification mechanism. The Bureau cannot confirm that all notices issued in Maine are captured in its records, and systematic underreporting cannot be ruled out.

Notices are logged manually by a BCCP staff member without an automated data management system, introducing meaningful risk of data entry error and inconsistency. The Bureau does not have the human capital or technical infrastructure to ensure comprehensive and accurate accounting of foreclosure activity statewide.

Methodology

Default notice data was obtained from Bureau internal records covering July 2009 through June 2026. Court filing data was provided by the Maine Judicial Branch covering Q2 2025 through Q2 2026. County unemployment data was obtained from the Maine Department of Labor Center for Workforce Research and Information. Notice rates were calculated per 10,000 residents using 2024 American Community Survey population estimates. Court filing conversion rates were calculated by dividing quarterly filings by quarterly notices within each judicial region.

Information From Other Sources

As of Q 4, 2024, the Federal Housing Finance Agency's (FHFA's) Residential

¹ A securitized mortgage pool is a collection of individual home loans bundled together to back tradeable financial investments.

Mortgage Performance Statistics showed 1.7% of mortgages nationwide were 30 or 60 days past due, with 0.7% nationwide 90 or more days past due. For the same period, the FHFA's statistics showed Maine's delinquencies at around the national average, with 1.7% of residential mortgages 30 or 60 days past due and 0.8% 90 or more days past due. These figures are derived from the FHA's National Mortgage Database, which uses a nationally representative sample of residential mortgages.