



## Editor's Choice

### Policy Matters

# Rural Focus and Representation in State Maternal Mortality Review Committees: Review of Policy and Legislation



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## A B S T R A C T

**Objectives:** Between 1990 and 2013, maternal mortality nearly doubled in the United States and rural residents experienced decreasing access to obstetric care. To improve maternal health, many states have established maternal mortality and morbidity review committees (MMRCs). We assessed the extent of rural representation in state policy efforts related to MMRCs. **Methods:** We reviewed publicly available information on MMRCs (websites, statutes, bills, media) in all 50 states and the District of Columbia, separately identifying highly rural states (with >30% of the population being rural residents). We assessed whether each state 1) had established an MMRC, 2) had passed legislation requiring an MMRC, 3) had considered, but not passed, legislation requiring an MMRC, 4) mentioned rural populations in MMRC legislation, 5) required representation on the MMRC from any particular groups, and 6) required rural representation on the MMRC. **Results:** As of December 2018, MMRCs were established in 45 states and the District of Columbia, an increase from 23 in 2010. Legislation was in place in 27 states, up from 6 in 2010. Only three states specifically mentioned rurality in legislation (including one highly rural state), and only two states required rural representation among their MMRC members (neither of which were highly rural states).

**Conclusions:** Recent growth in MMRCs has had a limited focus on rural residents, despite their worse health outcomes and more limited access to health care, including obstetric services. Lack of rural representation may hamper geographically tailored efforts to reverse rising rates of maternal morbidity and mortality nationally.

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Maternal mortality is defined as a death attributable to “a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy” occurring during pregnancy and up to one

year postpartum (Centers for Disease Control and Prevention, 2018). Maternal morbidities are “unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman's health” (Centers for Disease Control and Prevention, 2017b). Maternal mortality is a growing challenge in the United States, claiming the lives of 700–900 individuals every year; more than one-half of these deaths are likely preventable (Centers for Disease Control and Prevention, 2017a). Between 1990 and 2013, maternal mortality increased dramatically, nearly doubling in the United States, while declining in all other developed nations (Kassebaum et al., 2016).

### Maternal Morbidity and Mortality Risk

Risk for maternal morbidity and mortality is unevenly distributed, with some populations bearing substantially greater

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risk. Among the groups at highest risk are Black women, low-income individuals, and rural residents (Building U.S. Capacity to Review and Prevent Maternal Deaths, 2018; Centers for Disease Control and Prevention, 2018; Ely, Driscoll, & Mathews, 2017). Those with more than one of these characteristics may be at highest risk (Lu, 2018). Clinical efforts are underway to address the issue of rising maternal morbidity and mortality, but policy efforts to align systems and structures with evidence are also required to ensure improvement in maternal health (Clark & Belfort, 2017; Lu, 2018; Mann, Hollier, McKay, & Brown, 2018).

Geography is an important determinant of access to, and outcomes associated with, care, including maternity care. Rural residents tend to have lower incomes and more health-related complications than people living in urban areas, and their access to care is limited by greater distances to care, clinician workforce shortages, and hospital and unit closures (Health Resources and Services Administration, 2019a, 2019b; Probst, Laditka, Wang, & Johnson, 2006; Rural Health Research Gateway, 2017, 2018). These challenges affect care for rural residents during all stages of life, including pregnancy and childbirth. On average, rural residents have worse health (e.g., self-reported health, injury, smoking, obesity, pregnancy complications, preterm birth, low birth weight) before pregnancy, during pregnancy, and in the year after childbirth, compared with urban residents (American College of Obstetricians and Gynecologists, 2014). Moreover, maternal mortality rates are significantly higher in rural areas than in urban areas; in 2015, the maternal mortality rate in the most rural areas of the United States was 29.4 per 100,000 live births, whereas in large metropolitan areas it was 18.2 (Fine Maron, 2017).

Although a variety of clinicians provide maternity care for rural residents, including family physicians, obstetricians, and midwives (Kozhimannil et al., 2015), shortages in the availability of clinicians in each of these specialties affect access to care in rural communities (Ollive, 2016). For example, fewer than 10% of obstetricians are located in rural areas. This translates to nearly one-half of U.S. counties—most of them rural—not having an obstetrician (Rayburn, 2017). Workforce issues are closely related to the supply of hospital-based obstetric services.

Fewer than one-half of rural residents live within a 30-minute drive of the nearest hospital offering obstetric services (Rayburn, 2017). Approximately 12% of those residing in rural towns (2,500–9,999 people) live more than an hour from a hospital with obstetric services, and 21% of residents of the most sparsely populated rural areas (<2,500 people) live more than 1 hour from a hospital with obstetric services (American College of Obstetricians and Gynecologists, 2014; Rayburn, 2017). From 2004 to 2014, 9% of rural counties lost hospital-based obstetric services (Hung, Henning-Smith, Casey, & Kozhimannil, 2017), and these rural communities saw an increase in out-of-hospital births, births in hospitals without obstetric units, and—in rural counties not adjacent to urban areas—an increase in preterm birth rates (Kozhimannil, Hung, Henning-Smith, Casey, & Prasad, 2018). From 2011 to 2018, hospital obstetric unit closures in 152 rural communities resulted in an increased travel distance of at least 30 minutes for pregnant residents in more than one-half of these communities (Chartis Center for Rural Health, 2019).

### Maternal Morbidity and Mortality Response

Although national estimates for maternal morbidity and mortality can be tabulated through the use of vital statistics and national surveillance systems, simply identifying the occurrence of

maternal death does not elucidate contributing factors or clarify strategies for prevention. Both state and federal policies have focused on the establishment of committees to review cases of maternal mortality (and sometimes also morbidity), called maternal mortality review committees (MMRCs). MMRCs collect data on risk markers, including health care and clinical factors, as well as social determinants of health. As such, MMRCs are uniquely positioned to review and document individual causes of death, make recommendations for the prevention of future deaths, and promote and implement prevention activities (Centers for Disease Control and Prevention, 2017a; Review to Action, 2019c).

MMRCs have traditionally been primarily comprised of medical professionals, but many have expanded to include public health professionals, social workers, community members, and other stakeholders (Centers for Disease Control and Prevention, 2017a). Some form of maternal mortality review process or MMRC has intermittently existed in most states for over a century (Review to Action, 2019c). Yet legislative protections for MMRCs and regulation requiring reviews and reporting of maternal deaths by MMRCs have only been instituted recently, primarily over the last two decades (Martin & Fields, 2018; Review to Action, 2019a). The federal Preventing Maternal Deaths Act was signed into law on December 21, 2018 (Preventing Maternal Deaths Act of 2018, 2018), encouraging all states to form MMRCs to investigate maternal deaths and to make recommendations for prevention. This national legislation builds upon efforts by states, which have increasingly—but not universally—established MMRCs in the wake of rising rates of maternal morbidity and mortality (Barfield, 2017).

As the number of MMRCs has increased over time, it is not clear to what extent rural populations—and their unique needs—are being recognized and explicitly included in policies designed to address the growing crisis of maternal mortality. Ensuring that there is adequate and appropriate rural representation in policy efforts is necessary to inform geographically tailored interventions to reverse the increasing rates of maternal morbidity and mortality nationally, particularly in rural areas. The goal of this analysis was to assess the extent of rural focus and representation in current state policy efforts to develop committees to review maternal morbidity and mortality.

### Methods

We assessed the existence of state-specific MMRCs in all 50 states and the District of Columbia (51 “states”), including those housed within a state department of health or related agency. In states with currently existing MMRCs, we identified the text of laws using official state legislative documentation. For existing MMRCs and existing and proposed legislation, we extracted information pertaining to MMRC goals and scope, year of MMRC establishment or year first convened, and if legislation was proposed or existing, along with the associated year. If legislation was proposed, but not signed into law, we looked at whether the bill was re-introduced in a later legislative session. Finally, we analyzed the language of the legislation pertaining to each MMRC to assess whether it required representation from any particular group. We designated states as requiring representation if the text of their legislation stated that committee members “must” or “shall” include any particular groups or perspectives (such as specific medical professionals, state departments, academic institutions, community members, etc.). In addition to identifying whether any type of representation was required, we identified whether rural populations were mentioned and whether rural

representation was specifically mandated. To ensure consistency, two of the authors individually extracted data, then cross-checked their results and related designations to ensure systematic classification. Few (three) inconsistencies were found between the two researchers, and all coauthors were consulted and final designations were agreed upon.

We conducted reviews of the following in our assessment process: 1) information available through the Review to Action website, developed by the Association of Maternal and Child Health Programs in partnership with the CDC Foundation and the CDC Division of Reproductive Health ([Review to Action, 2019b](#)), 2) online state legislative records, 3) media coverage and journal articles for references to recent or current legislative proposals related to maternal morbidity and mortality, 4) state departments of health and other state-specific health related organization websites, and 5) national bill tracker websites. We used search terms including “maternal mortality,” “maternal morbidity,” and “maternal death” to identify records.

In addition to assessing whether rural representation was required in states across the nation, we also assessed rural representation among highly rural states, which we defined as those states with 30% or more of the state's population residing in nonmetropolitan communities, based on definitions of rurality from the U.S. Census Bureau ([U.S. Census Bureau, 2018](#)). We identified 18 states as highly rural: Alabama, Alaska, Arkansas, Iowa, Kentucky, Maine, Mississippi, Montana, New Hampshire, North Carolina, North Dakota, Oklahoma, South Carolina, South Dakota, Tennessee, Vermont, West Virginia, and Wyoming.

This study was determined exempt from review by the University of Minnesota Institutional Review Board.

## Results

As of December 2018, 45 states and the District of Columbia (46 states) had MMRCs; 27 of these were protected by legislation, and 9 of those laws passed in 2018 ([Table 1](#)). That is, 59% of all states with MMRCs (27 of 46) had statutory protection for maternal mortality review by the end of 2018. Of the 27 states that had MMRC legislation in 2018, 14 states (52%) required representation from any specific group or population. Only two states (Pennsylvania and Texas) explicitly required representation from rural communities in their legislative language. [Figure 1](#) shows the increase over time in established and legislated MMRCs, as well as any required representation and rural representation specifically. In 2010, 23 states had MMRCs, but only 6 (26% of those with MMRCs) were protected by legislation. By 2018, 27 states (59% of those with MMRCs) had statutory protection for their MMRCs. Requirements for representation from any particular group were present in some states' MMRC legislation throughout the study period, and increased over time (in 3 states by 2010 and in 14 states by 2018). The first requirement for rural representation on an MMRC occurred in 2013 (Texas).

All 46 MMRCs review cases of maternal death with the goal of reducing rates of maternal mortality. Seventeen of the 46 states also specify reducing maternal morbidity as a goal. Five of those state MMRCs (Illinois, Indiana, Oregon, South Carolina, and Texas) take their analysis further and review cases of maternal morbidity, as well as cases of maternal mortality.

[Figure 2](#) shows an overview of the status of MMRCs across states, as of December 2018. It includes data on the establishment and legislation of committees, the prevalence of failed legislation (e.g., legislation that was proposed to either establish an MMRC or provide statutory protection and requirements of an

existing MMRC but did not pass as of December 2018), as well as whether any representation was required, if rural populations were mentioned, and whether rural representation was specifically required in statute. As of December 2018, 7 states had introduced legislation that failed, 14 states required representation from a particular group, 3 states mentioned rural populations, and 2 states required rural representation.

The circumstances of failed attempts to pass MMRC legislation vary by state. Seven states (Arkansas, California, Colorado, Missouri, New Jersey, New Mexico, and New York) had proposed legislation between 2015 and 2018 that did not pass by December 2018. All of these states, except for Arkansas, have existing nonlegislated MMRCs. For example, Missouri, New Jersey, and New York all had proposed or pending legislation at the time of this analysis. Missouri legislators introduced legislative protections and changes to their existing MMRC in 2018 that would have required reviews of maternal deaths as well as cases of severe maternal morbidity. The legislation would have also required representation for certain groups, including patient and community health advocates (rural representatives were not specifically mentioned), but the bill did not make it out of committee. New Jersey's legislature has proposed an MMRC bill that is currently pending; this legislation would provide legal protection, require reporting, require representation of certain groups (although rural representation would not be required), and include the explicit goal of reducing or eliminating racial and other disparities. New York has pending legislation stating their MMRC members should include individuals “who serve and are representative of the diversity of the women and mothers in medically underserved areas of the state or areas...with disproportionately high occurrences of maternal mortality or morbidity,” implying, but not explicitly stating, a requirement that rural communities be represented. Many states continue to engage in legislative action regarding MMRCs.

We also looked specifically at MMRCs in highly rural states, defined as those with 30% or more of the state's population living in non-metropolitan areas ([Figure 3](#)). Of these 18 highly rural states, 6 states had MMRCs in 2010 with 3 legislated, and in 2018, 14 had MMRCs with 11 of these being legislated. Only 5 of the 11 highly rural states with legislated MMRCs required any type of representation, and none of them required rural representation. Four highly rural states did not have MMRCs in place (Arkansas, North Dakota, South Dakota, and Wyoming). In 2017, Arkansas announced the formation of an interim team to review maternal mortality, with the potential to develop an MMRC. As of December 2018, the Arkansas Department of Health was still in the planning stages for this task. Two highly rural states (North Dakota and Wyoming) had no legislative history regarding maternal morbidity and mortality. The fourth highly rural state (South Dakota) had legislation supporting the analysis of maternal mortality, but only as it related to abortion.

## Discussion

This analysis of state maternal morbidity and mortality review efforts and policies revealed increasing attention to, and statutory support for, MMRCs, which together constitute the primary infrastructure for understanding patterns of maternal deaths in communities across the country ([Building U.S. Capacity to Review and Prevent Maternal Deaths, 2018](#); [Lu, 2018](#); [Zaharatos, St. Pierre, Cornell, Pasalic, & Goodman, 2017](#)). In 2010, 23 states had established MMRCs; this number doubled by 2018. However, to date, MMRCs have had a limited focus on rural residents and

their unique health care needs and challenges during pregnancy through 1 year postpartum. In 2018, maternal mortality review was near universal across the United States, with MMRCs established in 45 states and the District of Columbia, yet four of the five

states without MMRCs are highly rural. Only three state MMRCs (Iowa, Pennsylvania, and Texas) explicitly mention rural residents, with only two of those (Pennsylvania and Texas) requiring rural representation on the states' MMRCs.

**Table 1**  
Maternal Mortality Review Committees by State, Percentage of State That Is Rural, Year Established, Year Legislated, Representation Requirements, and Rural Representation Requirement as of December, 2018

State	Percentage of Population That Is Rural*	Year Established	Year Legislated	Required Representation of Any Specific Group or Population	Required Rural Representation
Alabama*	41.0	2018	2018	No	No
Alaska*	34.0	1989	n/a	No	No
Arizona	10.2	2011	2011	Yes	No
Arkansas*	43.8	n/a	n/a	No	No
California	5.0	2006	n/a	No	No
Colorado	13.8	1993	n/a	No	No
Connecticut	12.0	2015	2018	No	No
Delaware	16.7	2011	2008	No	No
District of Columbia	0.0	2018	2018	Yes	No
Florida	8.8	1996	n/a	No	No
Georgia	24.9	2012	2014	No	No
Hawaii	8.1	2016	2016	No	No
Idaho	29.4	2007	2007	Yes	No
Illinois	11.5	2000/2016†	n/a	No	No
Indiana	27.6	2018	2018	Yes	No
Iowa*	36.0	1952	n/a‡	No	No‡
Kansas	25.8	2018	2018	Yes	No
Kentucky*	41.6	1995§	2018	No	No
Louisiana	26.8	1992	2018	Yes	No
Maine*	61.3	2005	2005	No	No
Maryland	12.8	2000	2000	No	No
Massachusetts	8.0	1997	n/a	No	No
Michigan	25.4	1950	n/a	No	No
Minnesota	26.7	2012	n/a	No	No
Mississippi*	50.6	2017	2017	No	No
Missouri	29.6	2011	n/a	No	No
Montana*	44.1	2013	2013	Yes	No
Nebraska	26.9	2013	2013	Yes	No
Nevada	5.8	n/a	n/a	No	No
New Hampshire*	39.7	2013	2010	Yes	No
New Jersey	5.3	1932	n/a	No	No
New Mexico	22.6	1993	n/a	No	No
New York	12.1	2010	n/a	No	No
North Carolina*	33.9	2015	2015	No	No
North Dakota*	40.1	n/a	n/a	No	No
Ohio	22.1	2010	n/a	No	No
Oklahoma*	33.8	2009	n/a	No	No
Oregon	19.0	2018	2018	No	No
Pennsylvania	21.3	2018	2018	Yes	Yes
Rhode Island	9.3	1931	n/a	No	No
South Carolina*	33.7	2016	2016	No	No
South Dakota*	43.3	n/a	n/a	No	No
Tennessee*	33.6	2017	2016	Yes	No
Texas	15.3	2014	2013	Yes	Yes
Utah	9.4	1995	n/a	No	No
Vermont*	61.1	2011	2011	Yes	No
Virginia	24.5	2002	n/a	No	No
Washington	15.9	2016	2016	No	No
West Virginia*	51.3	2008	2008	Yes	No
Wisconsin	29.8	1997	n/a	No	No
Wyoming*	35.2	n/a	n/a	No	No

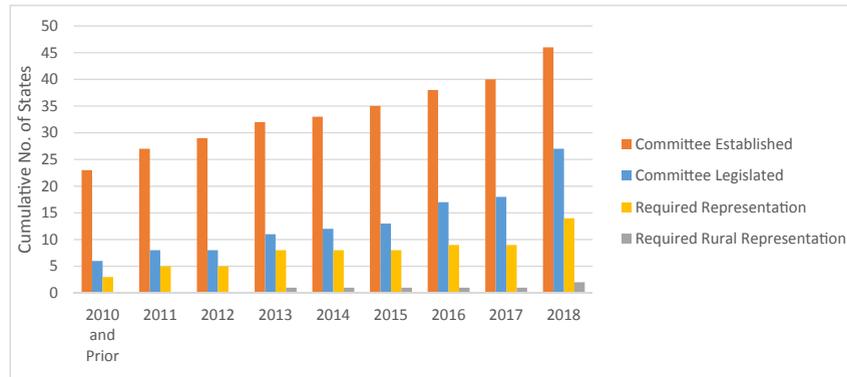
Abbreviation: n/a, not applicable.

\* Highly rural states defined as those with 30% or more of the population residing in rural communities, as of 2010 Decennial Census, U.S. Census Bureau (U.S. Census Bureau, 2018).

† The Illinois Maternal Mortality Review Committee was convened in 2000 and reviews all pregnancy-associated deaths that were potentially related to pregnancy, excluding injury-related deaths. The Illinois Severe Maternal Morbidity committee convened in 2016. This review is done at the hospital level and is an effort to reduce maternal morbidity. Neither are protected with legislation.

‡ Although legislation was passed in 2008 requiring reporting of maternal deaths in Iowa, it does not specify that a maternal mortality review committee must exist, simply that an annual review must occur. As of February 2019, the Iowa Medical Society was tasked with the review. A second piece of legislation was passed in 2018 that is designed to ensure Iowa perinatal patients receive appropriate maternal and neonatal care as close to their homes as possible. This legislation mentions rural multiple times in the legislative language, but does not require representation, because it does not involve a maternal mortality review committee.

§ In 2018, Kentucky passed legislation that added maternal mortality review to their existing Child Fatality Review Team. Before 2018, a private medical society in Kentucky reviewed maternal deaths and did not issue public reports. However, the medical society did publish some analyses of Kentucky's maternal mortality in their own journal.



**Figure 1.** Number of states and the District of Columbia with existing and/or legislated Maternal Mortality Review Committees, representation requirements, and rural representation requirement, by year.

In other nations, having a robust data collection and analysis infrastructure for maternal morbidity and mortality has supported improvements in health. For example, in the U.K., there has been a maternal death review process since 1954 (the longest running such process anywhere in the world), and it has supported recent efforts to address maternal health, resulting in a decline from 11 maternal deaths per 100,000 live births in 2008 to 9 in 2015 (“Maternal, newborn, child and adolescent health,” 2019; “The World Factbook,” 2019). This population-level strategy was supported by data from the careful and systematic review of each mortality and near-mortality case and efforts to improve processes in response.

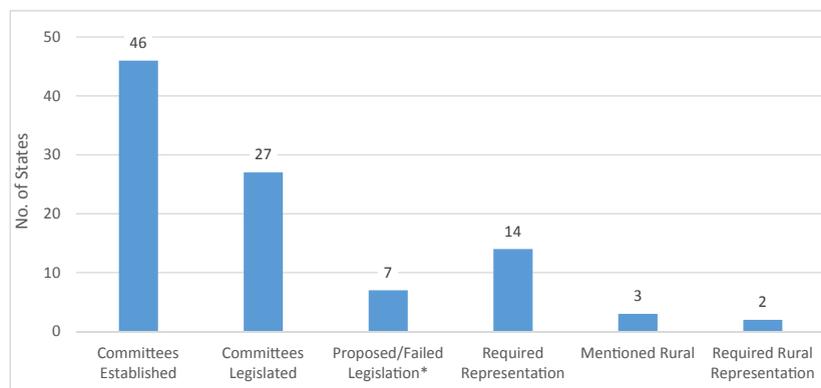
In total, 90% of all states have MMRCs, but only 78% of highly rural states do so. This may be due, in part, to resource constraints within more rural states. On average, these states have smaller populations, meaning fewer births and incidences of maternal morbidity and mortality to review, as well as more limited resources to support maternal mortality review efforts. Additionally, not all state legislatures operate in the same way, because more rural states generally have part-time, rather than full-time, legislators and may be less likely to have substantial legislative staff support (National Conference of State Legislatures, 2017). This factor may constrain these states’ ability to quickly respond to emerging issues and needs.

The lack of attention to rural residents in state MMRCs is troubling, given higher rates of infant mortality in rural areas (Ely et al., 2017) and more limited access to maternity-related health

care services, including recent closures of rural hospitals and rural obstetric units (Hung et al., 2017; The Cecil G. Sheps Center for Health Services Research, 2018). Rural residents, on the whole, are less likely to obtain recommended preventive care than urban residents (Casey, Thiede Call, & Klingner, 2001; Loftus, Allen, Call, & Everson-Rose, 2018), largely owing to the higher rates of people being uninsured and greater constraints on access to care. These factors may have a significant impact on outcomes for maternal and infant health, and more research and policy attention is urgently needed to reverse the trend of rising maternal morbidity and mortality in communities across the United States (Centers for Disease Control and Prevention, 2017b, 2018). Maternal and infant health risks are higher among rural residents, including for hospitalization with complications during pregnancy, preterm birth, low birth weight, and infant mortality (American College of Obstetricians and Gynecologists, 2014). Where populations are sparse, it is difficult to detect patterns unless data are routinely collected and analyzed. It is particularly important that data are analyzed separately for rural populations, to identify unique risk factors and opportunities for intervention, especially in states with large urban populations, where risks to rural residents might not be apparent in average statistics.

#### Limitations

In this study, we identified important state-level differences in the prevalence and scope of MMRCs, as it relates to their rural



**Figure 2.** Status of state and the District of Columbia Maternal Mortality Review Committees (MMRCs) in the United States, as of December 2018. \*Legislation that was proposed to either establish an MMRC or provide statutory protection and requirements of an existing MMRC but did not pass as of December 2018.



Greater focus on the inclusion and integration of rural voices and experiences in current and future policy efforts to improve maternal health outcomes is needed.

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