

# Obstetric Delivery Services and Workforce in Rural Wisconsin Hospitals

## Key Findings

- 56% of rural Wisconsin hospitals provide obstetric delivery services.
- 99% of women of child-bearing age live within a 30-minute drive of a hospital that provides obstetric delivery services.
- 70% of rural hospitals that deliver babies utilize more than one type of provider to provide obstetric care. The most frequent combinations are obstetricians working with family physicians, obstetricians working with family physicians and general surgeons, and family physicians with general surgeons.
- 11 rural hospitals have closed their obstetric units in the past 10 years.
- When asked about the challenges they face in keeping obstetric units open, rural hospitals most frequently cited challenges with **provider coverage, maintenance of provider skills, and low or reduced volume of deliveries.**

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Appendix: Survey and Birth Data	Available by request

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\*Revisions have been made to page 10 of this report to accurately reflect the time periods in which hospitals discontinued delivery services.

## Purpose

The purpose of this study was to better define the availability of hospital-based obstetric services throughout rural Wisconsin, describe the workforce providing these services, and better understand the factors that may be influencing closure of obstetric units.

## Background

Recent research has called attention to a trend of obstetric unit closure in rural hospitals over the past several decades and raised concerns about access to perinatal and delivery services in rural areas.<sup>1-3</sup> There is evidence that the rate of closures has continued to rise and increasingly, pregnant women in rural areas must travel farther to receive the care they need.<sup>4-6</sup> Lack of local obstetric care has long been shown to worsen perinatal outcomes. Negative outcomes such as neonatal mortality and maternal complications increase together with distance from appropriate care.<sup>7-11</sup>

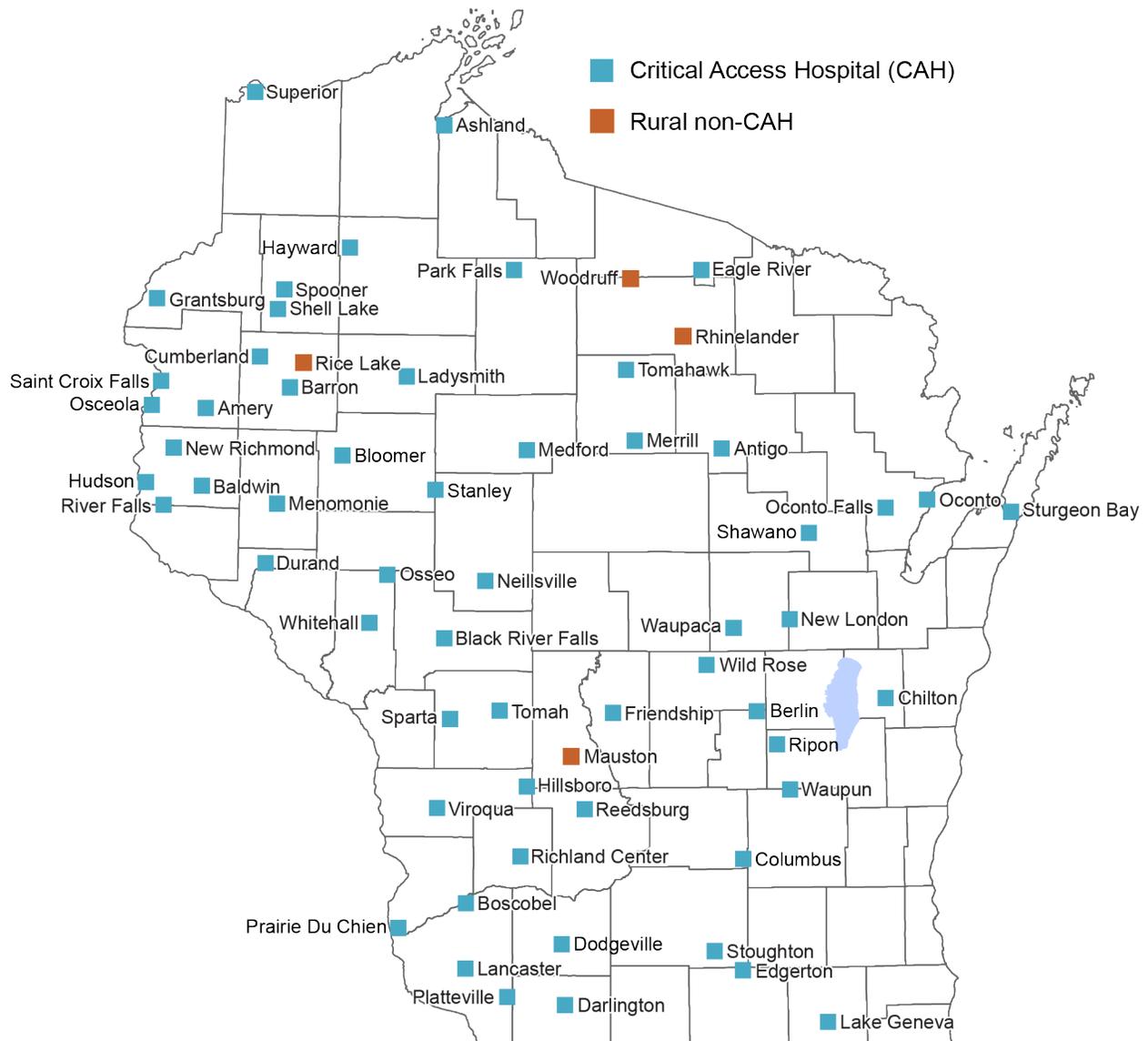
The factors influencing closure of obstetric units in rural hospitals are numerous. Medicaid is the largest insurer of rural births in the United States.<sup>12</sup> Because Medicaid pays less for obstetric services than private insurers, it can be difficult for rural hospitals with low-volume obstetric units to cover expenses.<sup>13,14</sup> Closure of obstetric units is more common in areas with fewer obstetricians and family physicians and these hospitals commonly report staffing difficulties such as retention and recruitment as primary factors of closure.<sup>14</sup> Given projected shortages of both obstetricians and family physicians, low numbers of obstetricians practicing in rural areas, and the declining number of family physicians practicing obstetrics, there are concerns that access to obstetrical care in rural areas will continue to decline.<sup>15-17</sup>

Several studies have included Wisconsin in multi-state surveys of rural obstetric unit closure and workforce trends.<sup>4,14</sup> However, it is unclear what the current state of hospital-based obstetric care is in rural Wisconsin hospitals or how provider demographics, which have implications for access to care, have changed in recent years. Given the national trends in rural obstetric unit closures, up-to-date information is needed to inform policy decisions, plan training opportunities, and develop innovative practice models that maintain and increase access to obstetric services in the communities that need them the most.

## Approach

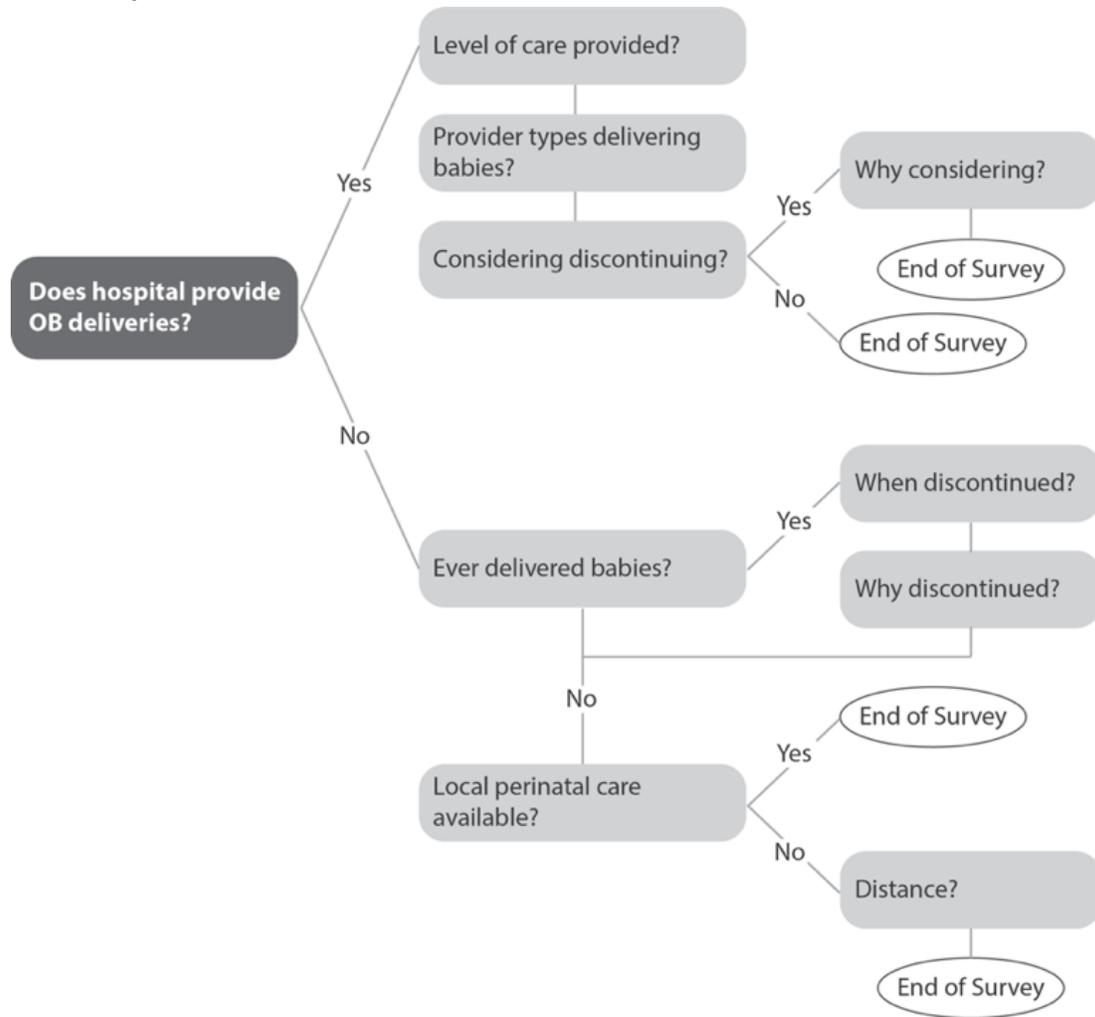
With input from stakeholders, an electronic survey was designed and distributed to contacts at all Critical Access Hospitals\* (CAHs) and rural non-CAHs in Wisconsin in March 2018 (Map 1). The survey was sent out again in November 2018 and non-responding hospitals were contacted by phone and offered the opportunity to complete the survey via telephone interview. The survey was brief; depending on how respondents answered, the maximum number of questions was seven (Figure 1).

**Map 1. CAHs and Rural Non-CAHs in Wisconsin**



\*“Critical Access Hospital” is a designation given to eligible rural hospitals by the Centers for Medicare and Medicaid Services and is designed to reduce the financial vulnerability of these hospitals by providing certain benefits such as cost-based reimbursement for Medicare services.<sup>18</sup>

Figure 1. Survey Structure



Complete responses were received from 55 of 58 (95%) CAHs and 3 of 4 (75%) rural non-CAHs for a total response rate of 94% of Wisconsin’s rural hospitals (CAH and non-CAH combined). Incomplete responses were received from two additional CAHs and the remaining rural non-CAH but were not included in the analysis. Only one CAH did not participate in any way. Responses came from a variety of personnel, including Chief Nursing Officers, Chief Medical Officers, Chiefs of Staff, Nurse Managers, and other staff members.

In addition to survey responses, birth data from the Wisconsin Department of Health Services (DHS) was used to verify responses and supplement the information collected. Census Bureau population data and Esri street network data were used to help assess distance to obstetric care.

Hospital rurality was determined using the [Municipal-level Urban-Rural Classification](#) system<sup>19</sup> developed by the Office of Rural Health. Hospitals located in municipalities that have fewer than 10,000 residents and are 25 miles or more from a population center (defined as a municipality with 50,000+ residents) were designated as rural.

# Results

## Obstetric Services

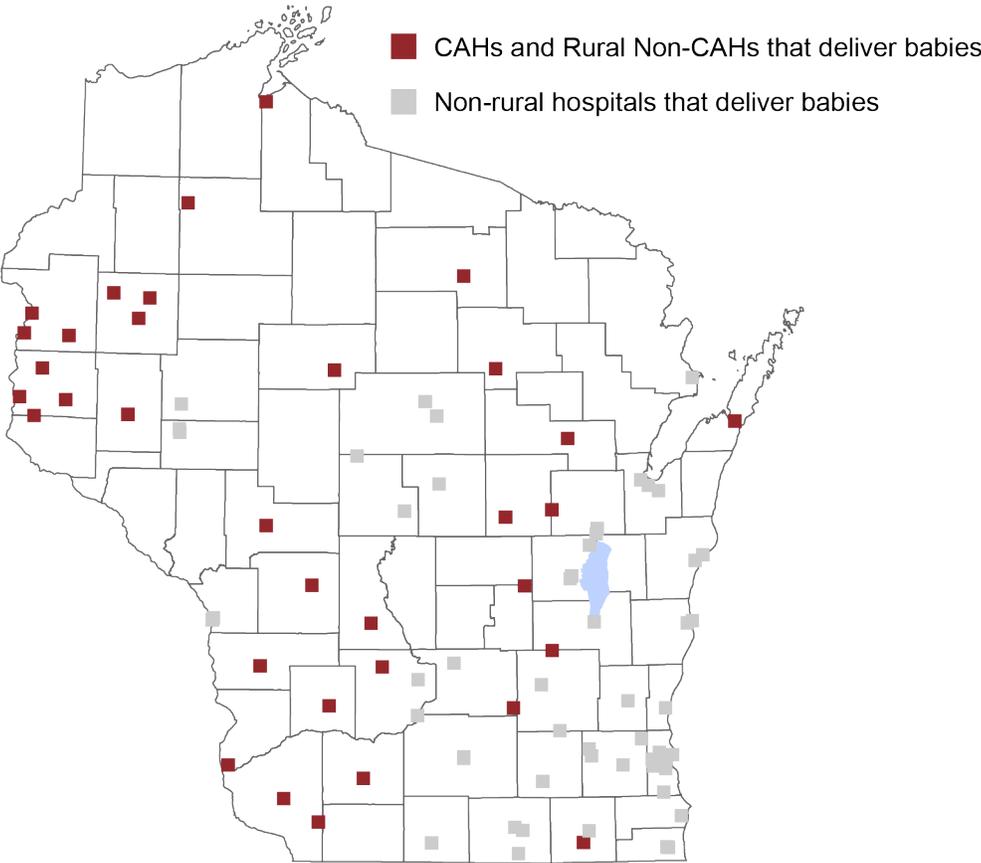
### Availability of Care

Fifty-six percent of Wisconsin's rural hospitals provide obstetric services (defined as having a relatively stable number of births for the past five years) (Table 1, Map 2).<sup>20</sup> Fifty-three percent of CAHs provide obstetric services, which is higher than the national average of 40%.<sup>2,22</sup> Of the rural hospitals performing deliveries, the majority (63%) average fewer than 200 births per year and 11% average fewer than 100 births per year (Table 2).

**Table 1. Rural Hospitals that Deliver Babies**

Deliver babies?	CAHs (n=58)	Rural non-CAHs (n=4)	Total (n=62)
Yes	31 (53%)	4 (100%)	35 (56%)
No	27 (47%)	0	27 (44%)

**Map 2. Hospitals that Deliver Babies**

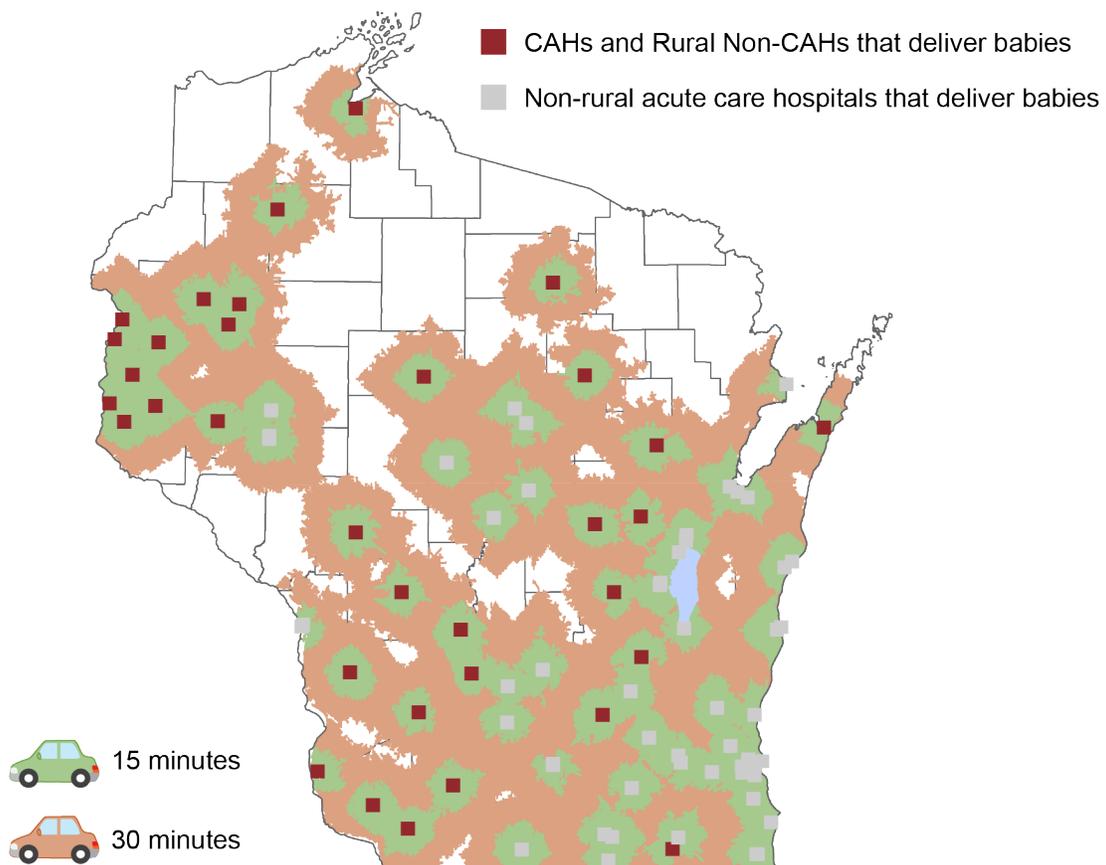


**Table 2. Number of Births in Rural Wisconsin Hospitals (five-year average, 2014-2018)<sup>20</sup>**

Number of births	CAHs (n=31)	Rural non-CAHs (n=4)	Total (n=35)
1-100	4 (13%)	0	4 (11%)
101-150	11 (35%)	0	11 (31%)
151-200	6 (19%)	1 (25%)	7 (20%)
201-300	7 (22%)	1 (25%)	8 (23%)
301+	3 (10%)	2 (50%)	5 (14%)

To determine potential coverage gaps, a drive-time analysis was conducted (Map 3). Using Census Bureau population data and Esri network data, we discovered that 86.8% of women aged 15 to 44 live within a 15-minute drive of a hospital that provides obstetric deliveries and 98.9% live within 30-minute drives. We also conducted the analysis for 60-minute drives and found that, although 60-minute drives dramatically expanded the geographic area, they did not greatly affect the proportion of women in the study area (99.3%).

**Map 3. Drive Times to Obstetric Delivery Services**



### Level of Care

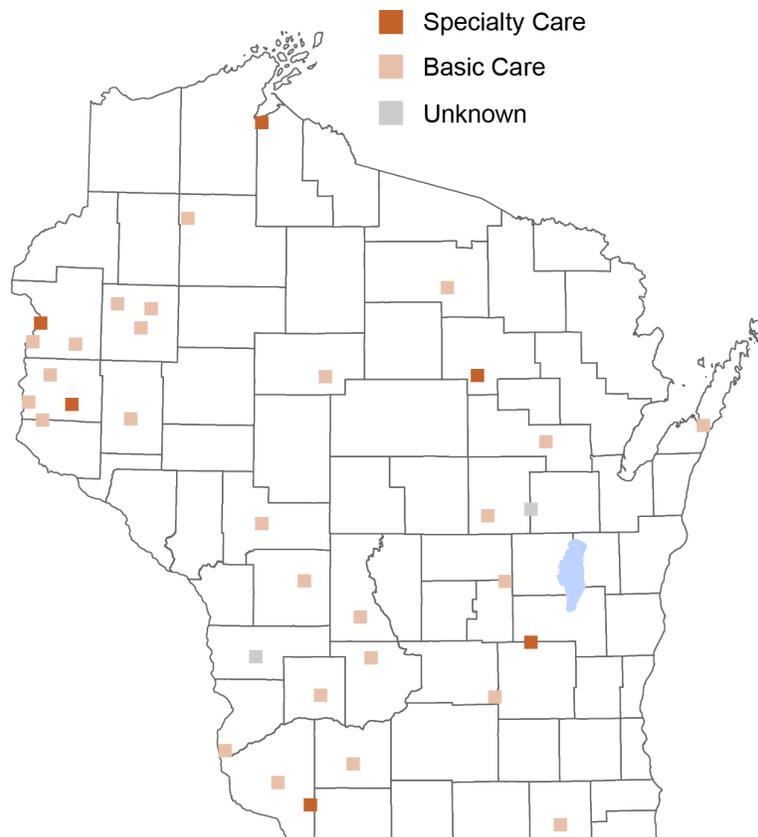
Surveyed hospitals were asked about the level of obstetric care they provide. More than three-quarters of the rural hospitals surveyed that perform deliveries provide basic care – uncomplicated obstetric and neonatal care (this includes Cesarean deliveries), as defined by the American Council of Obstetricians and Gynecologists.<sup>23</sup> The remainder of responding hospitals that perform deliveries provide specialty care – limited complicated obstetric and neonatal care (19%). No rural hospitals reported providing subspecialty care – full complicated obstetric and neonatal care (Table 3, Map 4).

**Table 3. Level of Obstetric Care in Rural Hospitals**

	CAHs (n=29)	Rural non-CAHs (n=3)	Total (n=32)
Basic care	23 (79%)	3 (100%)	26 (81%)
Specialty care	6 (21%)	0	6 (19%)
Subspecialty care	0	0	0
Information not provided*	2	1	3

\*The numbers in this row are not included in the table calculations.

**Map 4. Level of Obstetric Care in Rural Hospitals**



## Obstetric Workforce

### Provider Types Attending Deliveries

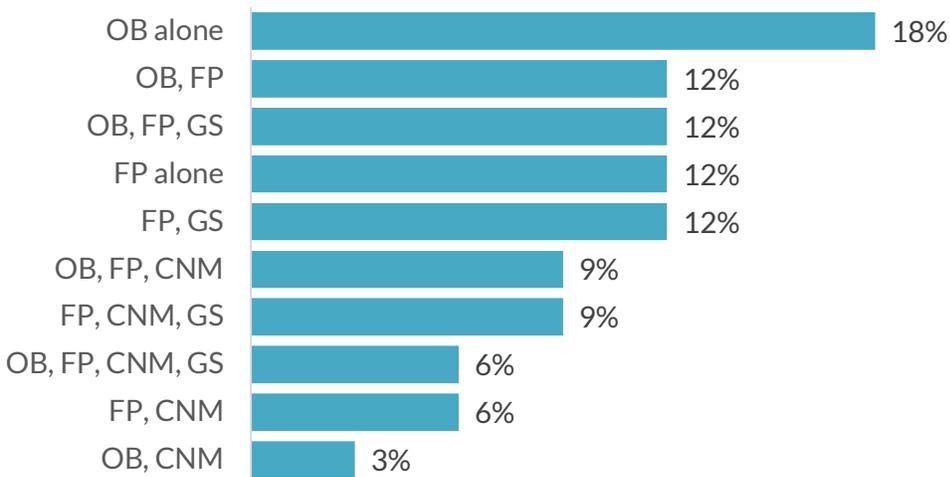
Of the responding hospitals that deliver babies, more than two-thirds (70%) utilize more than one type of provider to perform deliveries (Figure 2, Map 5, Table 4). The three most common multi-provider combinations involve obstetricians/gynecologists, family physicians, and general surgeons. About one-third (30%) of these hospitals utilize a single type of provider to perform deliveries. The most commonly reported single-provider types were obstetricians/ gynecologists (18%) and family physicians (12%).

Of the hospitals that responded to the survey and perform deliveries:

- Family physicians attend deliveries in 79% of hospitals (12% alone and 67% in combination with other providers),
- Obstetricians/gynecologists attend deliveries in 60% of hospitals (18% alone and 42% in combination with other providers),
- General surgeons attend deliveries in 39% of hospitals, and
- Certified Nurse Midwives attend deliveries in 33% of hospitals.

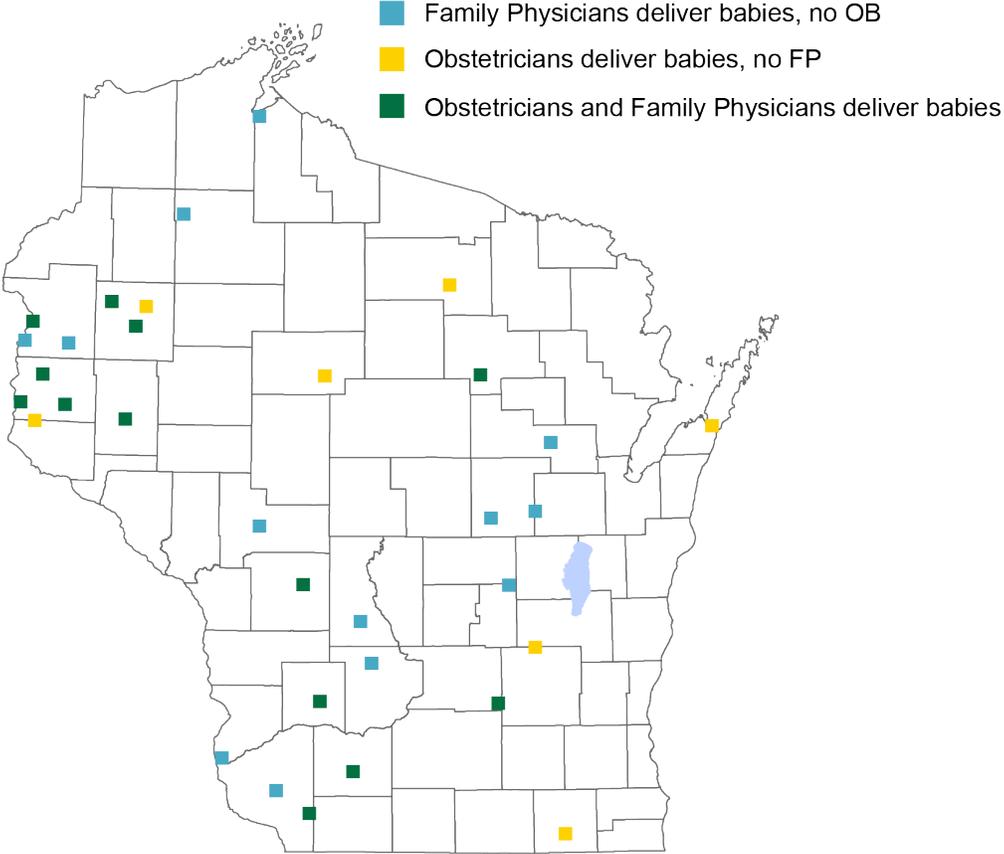
These findings suggest that family physicians and obstetrician/gynecologists continue to be the most common types of practitioners providing delivery services in rural Wisconsin hospitals. However, general surgeons and Certified Nurse Midwives are also involved in care at a substantial portion of rural hospitals.

**Figure 2. Percentage of Rural Hospitals by Type(s) of Providers Attending Deliveries**



OB: Obstetrician/Gynecologist    FP: Family Physician    GS: General Surgeon    CNM: Certified Nurse Midwife

**Map 5. Types of Providers Delivering Babies in Rural Hospitals**



**Table 4. Types of Providers Delivering Babies in Rural Hospitals**

Hospitals with any:	CAHs (n=29)	Rural non-CAHs (n=3)	Total (n=32)
<b>Obstetricians/Gynecologists</b>			
Number (Percent) of hospitals	18 (62%)	2 (67%)	20 (63%)
Average number of providers/hospital**	2.1	4.0	2.3
<b>Family Physicians</b>			
Number (Percent) of hospitals	25 (86%)	1 (33%)	26 (81%)
Average number of providers/hospital**	5.8	7.0	5.8
<b>Certified Nurse Midwives</b>			
Number (Percent) of hospitals	11 (34%)	0	11 (34%)
Average number of providers/hospital**	1.8	0	1.8
<b>General Surgeons</b>			
Number (Percent) of hospitals	13 (45%)	0	13 (41%)
Average number of providers/hospital**	1.5	0	1.5
Information not provided*	2	1	3

\*The numbers in this row are not included in the table calculations.

\*\*This is the average number of providers in each hospital that utilizes this provider type.

### Provider Types Performing C-Sections

Ninety-seven percent of the rural hospitals that responded to the survey and deliver babies perform Cesarean deliveries (C-sections). These data are reassuring from the perspective of care quality and access because lack of C-section services can result in lethal consequences in emergency situations.<sup>14,24</sup> There is agreement that in order to provide effective perinatal care, rural hospitals must be equipped to perform C-sections.<sup>24,25</sup> Research has shown that availability of C-section services is associated with more local deliveries and a lower rate of preterm deliveries.<sup>26</sup>

Obstetricians are the most common provider type involved in C-sections in rural hospitals (Table 5). They are involved with C-sections at 62% of surveyed hospitals and are the sole providers of C-section services in 34% of hospitals. Family physicians provide C-sections in combination with other provider types at 34% of hospitals and as the sole providers in 16% of hospitals. General surgeons provide C-sections in combination with other providers in 34% of hospitals and as the sole providers in 9% of hospitals.

**Table 5. Types of Providers Performing C-Sections in Rural Hospitals**

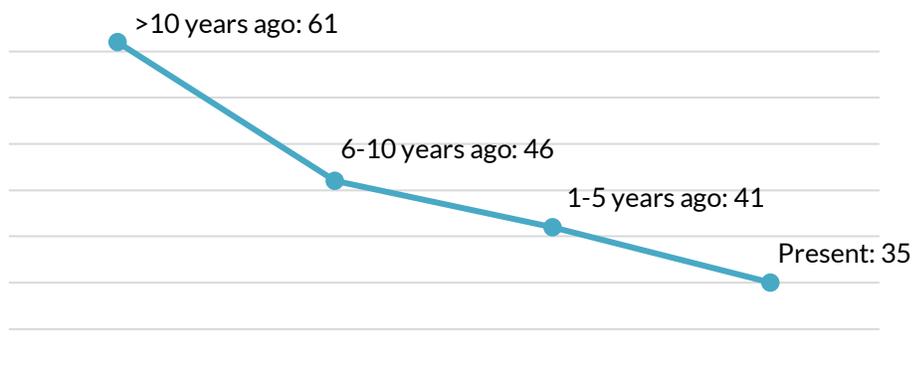
	CAHs (n=29)	Rural non-CAHs (n=3)	Total (n=32)
OB alone	9 (31%)	2 (67%)	11 (34%)
FP alone	4 (14%)	1 (33%)	5 (16%)
OB+FP+GS	5 (17%)		5 (16%)
FP+GS	4 (14%)		4 (13%)
GS alone	3 (10%)		3 (9%)
OB+GS	2 (7%)		2 (6%)
OB+FP	2 (7%)		2 (6%)
Information not provided*	2	1	3

\*The numbers in this row are not included in the table calculations.

### Risks for Service Discontinuation

An important part of this study was identifying risk factors for obstetric service discontinuation. Using birth data from DHS<sup>20</sup> and survey responses, we determined that 14 rural Wisconsin hospitals discontinued delivery services more than 10 years ago (12 hospitals explicitly stated closing more than 10 years ago, 2 hospitals reported not knowing and were included in this category). In the past 10 years, 11 additional rural hospitals stopped offering delivery services, the most recent being 2017, representing a 24% decline in the past 10 years. One recent study found that nationally, the number of counties with hospital-based delivery services declined by 9% from 2004-2014.<sup>4</sup> While the parameters of these measurements are different, both suggest that Wisconsin has had significant decreases in access to hospital-based obstetric delivery services.

**Figure 3. Number of Rural Hospitals Providing Obstetric Deliveries**



Hospitals that have discontinued obstetric services were asked about reasons for the discontinuation. The most frequently cited reasons for cessation of delivery services were issues with provider coverage, including challenges maintaining adequate numbers of on-call providers,

coverage of Cesarean deliveries, and concerns with staff skill maintenance (n = 10). The second most frequent reason (n=7) was low or reduced volume of deliveries. These findings align with other recent studies investigating the reasons for cessation of obstetric services.<sup>11,14</sup> Of note, 12 of the 25 CAHs that do not currently provide delivery services did not answer this question. A deeper dive into reasons for discontinuation, as well as exploration of what high-risk rural hospitals have done to successfully keep their obstetric units open, could be an area for future research.

Of the 27 hospitals that do not perform deliveries, 22 (81%) report that perinatal care is available locally. Only 2 hospitals reported there is no local perinatal care and both specified that patients need to travel farther than 20 miles to access services. Three hospitals did not provide this information. While it is reassuring that women in the majority of these areas still have access to local perinatal care, further defining this care could be another topic of future research.

## Discussion and Conclusions

### Obstetric Services

Hospital-based obstetric services in rural Wisconsin are more prevalent than the national average: More than half of Wisconsin's rural hospitals provide obstetric services, which is higher than the national average of 40%<sup>2,22</sup> and 99% of women of childbearing age live within a 30-minute drive of a hospital that provides obstetric deliveries, which is higher than the national proportion of 88%.<sup>21</sup> It is important to remember however, that rural Wisconsin has seen a 26% decline in the number of hospitals providing obstetric deliveries in the past 10 years and that decline is likely to continue.

### Obstetric Workforce

The current findings suggest that family physicians and obstetrician/gynecologists continue to be the most common provider types performing delivery services in rural Wisconsin hospitals (Figure 2, Table 5). However, general surgeons and Certified Nurse Midwives are also involved with care at a substantial proportion of rural hospitals. Given the multidisciplinary nature of these care teams, obstetric training opportunities should target the entire range of provider types involved. Programs such as ALSO<sup>28</sup> and the Rural Wisconsin Health Cooperative's clinical competency program for nursing staff<sup>29</sup> may serve as effective models for expanding training opportunities.

There is agreement that in order to provide effective perinatal care, rural hospitals must be equipped to perform C-sections.<sup>24,25</sup> Research has shown that availability of C-section services is associated with more local deliveries and lower rates of preterm delivery<sup>26</sup> and a lack of C-section services can result in lethal consequences in emergency situations.<sup>24</sup> It is reassuring that almost all of Wisconsin's rural hospitals providing obstetric care also perform C-sections. While obstetrician/gynecologists are the most common providers of C-sections in Wisconsin's rural hospitals (Table 5), family physicians and general surgeons still play an important role in providing this essential service. Given that 38% of rural Wisconsin hospitals provide C-sections without

OB/GYNs and the challenges that many rural hospitals face in ensuring C-section coverage, there is a need for C-section training opportunities for family physicians and general surgeons.

### **Risks for Discontinuation**

The findings described in this report align with other recent studies investigating the reasons for loss of hospital-based obstetric services,<sup>11,14</sup> namely challenges in recruiting and retaining staff and maintaining adequate skills in low-birth volume settings. Provider coverage issues present a great risk to rural Wisconsin hospital obstetric delivery services. According to experts, hospital OB units with fewer than four providers covering surgical obstetric services (Cesarean deliveries) can be considered “at risk” of closure due to the non-sustainable nature of coverage.<sup>30</sup> In this setting, the burden of responding to all of a hospital’s C-section needs falls on one to three providers, a responsibility that is challenging, if not impossible, to recruit for and retain. Our survey data indicates five rural Wisconsin hospitals are in this “at risk” category. All of these hospitals depend solely on obstetrician/gynecologists for C-sections and average between 100 and 300 births per year. It is critical that these hospitals explore ways to assure sustainable coverage to avoid obstetric unit closure.

Several studies have identified birth-volume thresholds that correlate with increased risk of losing obstetric services and challenges in maintaining obstetric skills. In one study, hospitals with greater than 100 births per year were 90% less likely to close than those with fewer than 100 births per year.<sup>31</sup> Of the 35 rural hospitals that deliver babies, only four (11%) have fewer than 100 births/year (Table 2). Regarding skill maintenance, consideration should be given to increasing access to advanced training and skill maintenance opportunities for clinicians, such as Advanced Life Support in Obstetrics (ALSO), simulation training, and telemedicine consults.<sup>1,24,27</sup>

While it is encouraging that no rural hospitals reported intentions of discontinuing obstetric services, it is questionable whether this event is frequently foreseen. Given current trends in obstetric unit closure and provider coverage and skill maintenance issues, optimism surrounding these data should be cautious and every effort made to support continued provision of these services.

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