Received: 26 May 2020 | Revised: 23 October 2020 | Accepted: 9 November 2020

DOI: 10.1111/birt.12516

ORIGINAL ARTICLE

BIRTH ISSUES IN PERINATAL CARE WILEY

Rural resilience: The role of birth centers in the United States

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Abstract

Purpose: To explore the role of the birth center model of care in rural health and maternity care delivery in the United States.

Methods: All childbearing families enrolled in care at an American Association of Birth Centers Perinatal Data Registry™ user sites between 2012 and 2020 are included in this descriptive analysis.

Findings: Between 2012 and 2020, 88 574 childbearing families enrolled in care with 82 American Association of Birth Centers Perinatal Data Registry™ user sites. Quality outcomes exceeded national benchmarks across all geographic regions in both rural and urban settings. A stable and predictable rate of transfer to a higher level of care was demonstrated across geographic regions, with over half of the population remaining appropriate for birth center level of care throughout the perinatal episode of care. Controlling for socio demographic and medical risk factors, outcomes were as favorable for clients in rural areas compared with urban and suburban communities.

Conclusions: Rural populations cared for within the birth center model of care experienced high-quality outcomes.

Health Policy Implications: A major focus of the United States maternity care reform should be the expansion of access to birth center models of care, especially in underserved areas such as rural communities.

KEYWORDS

birth centers, childbirth, rural

1 | INTRODUCTION

An estimated twenty-eight million women of reproductive age live in rural areas of the United States, amidst a crumbling health care infrastructure.[1] More than one in five women over the age of 18 in the United States lives in a rural county making the disparities in rural health outcomes a high priority issue.[2] Challenges facing maternity care in the United States, including overmedicalization, overuse, and unwarranted variations of care, are compounded in rural settings.[3-11] Root causes of poor outcomes in rural communities have been differentially attributed to population-level risk factors, lack of access to appropriate care, or poor-quality care associated with low-volume practice.[5-10] Increased closures of rural hospitals and maternity units have further strained the rural care infrastructure.[11-13] Maintaining high performance systems of care within low-volume practice environments has proven nearly impossible economically despite the fact that the need

for maternity services is universal, obstetric units are often centers for financial loss because of high costs and low reimbursement crossing.[13]

Interest in the birth center model of care in the United States (US) has grown steadily across stakeholder groups over the last decade, with an emphasis on expanded access for rural families.[13-15] In the United States, birth centers are health care facilities where prenatal, labor and birth, and postpartum care are provided using midwifery and wellness models of care. A birth center is freestanding, meaning that it is not within a hospital. Birth centers are integrated into the larger health care system, and midwives who provide services in this birth setting adhere to standards of consultation, collaboration, and transfer to higher levels of care when appropriate. The first rural birth center in the United States was started in 1971 in South Texas as a partnership between Catholic Charities and the Migrant Health Division of the US Department of Health, Education and Welfare.[16] According to data from the American Association of Birth Center member practices, there are 384 birth centers in the United States, a 97% increase in the past 10 years. Approximately 30% of birth centers are in rural areas and small towns.

Over the past 30 years, the safety and efficacy of midwifery-led community birth has been documented in the literature.[17-19] The birth center model has demonstrated appropriate use of evidence-based practices such as continuous labor support, nonintervention in the absence of complications, and support for initiation and maintenance of lactation, while limiting overuse of low-value medical procedures.[17-20] Limitations to effective spread and scale-up of midwifery-led birth center models of care are rooted in a lack of supportive state policies and significant barriers to reimbursement.[6,13,21] Unlike other high-resource nations, United States policies are not aligned with national standards for the support of midwives as autonomous, independent practitioners, nor with birth center facilities as the appropriate level of care for the majority of childbearing families, despite increasing service user demand.[6,13,21]

The current United States maternity care crisis is characterized by poor outcomes, systemic racism, and inequitable access to appropriate care.[6] Between 2012 and 2016, the Center for Medicare and Medicaid Innovation explored birth centers as an innovative solution to improve quality and decrease costs through an initiative called Strong Start for Mothers and Newborns (Strong Start). The final Strong Start evaluation report concluded that the birth center model of care is an appropriate level of care for most Medicaid beneficiaries.[19] Of the 47 birth centers included in this federal initiative, 21% were in rural locations. The purpose of this research was to explore the potential contribution of the birth center model of care in improving access to high-quality maternity care in rural communities.

2 | METHODS

Data were collected using the American Association of Birth Centers (AABC) Perinatal Data Registry™—a prospective clinical data registry that captures over 900 clinical variables throughout the perinatal course of care. The American Association of Birth Centers has served as the nonprofit, membership organization and the nation's leading resource on the birth center model of care for over 30 years. Approximately 30% of the member practices (n = 134) are in rural areas and small towns, and 34% of the sample in this study are rural or small-town birth center sites.

The primary purpose of the AABC PDR™ is to provide data for continuous quality improvement activities for members at the individual practice level and the aggregate level for the birth center industry. The secondary purpose of the registry is to serve as a research database to inform practice and policy development related to communities experiencing midwifery-led birth center, home, and hospital birth care. Eighty-two sites, representing 61% of member practices, participated in the AABC PDR and the 2016 AABC site survey and are included in this study. The clinical data from the registry are merged with the AABC 2016 site survey data, providing details about business model (eg, for-profit or not-for-profit), geographic location, licensure, and accreditation status. Users of the registry undergo formal data training, including use of a data dictionary, which aligns with the ACOG Revitalize Project and the National Quality Forum definitions of endorsed quality measures. In addition, the registry has systems to trigger incomplete and missing data reports, and mechanisms to track attrition. The registry has been demonstrated to be both reliable and valid, and is actively registered with the New England Institutional Review Board.[22]

2.1 | Data sources

All childbearing families enrolled in care at the American Association of Birth Centers Perinatal Data Registry™ user sites between 2012 and May of 2020, who completed the 2016 AABC Site Survey, are included in this analysis. There are 82 sites—28 (34.1%) coded as rural/small town and 54 (65.8%) coded as suburban/urban. A total of 88 574 courses of care are included and tracked from the first prenatal visit, through the antenatal, intrapartum, and postpartum periods. Attrition is tracked, including transfers to higher levels of care (eg, hospitals and practitioners: family practice physicians, obstetricians, and perinatologists). Births in all settings are included within the data set, including home, birth center, elective hospitalization (planned birth in a hospital in the absence of medical risk factors), and medically indicated hospitalization.

2.2 | Covariables

To explore the quality of rural health outcomes within the birth center model of care, the primary outcome measures include core maternal quality indicators: induction of labor, episiotomy, cesarean, and infant feeding. Infant outcome measures include birthweight in pounds, 1-minute and 5-minute Apgar score, low 5-minute Apgar score, and neonatal intensive care unit (NICU) admissions. To estimate the model's capability to serve as the appropriate level of care in rural settings, several variables were included. Antenatal transfer, intrapartum transfer, newborn transfer, and postpartum transfer variables quantify the percent of the population requiring transfer to a higher level of care (eg, level 2, 3, or 4 hospital). Planned birth site, site of labor admission, and actual place of birth are included in the analysis.

When comparing health outcomes between rural and urban birth center samples, we controlled for sociodemographic and clinical factors, including years of education, body mass index, maternal age, gravidity, parity, marital status, public or private payer, and minority status (Black or Hispanic/Latinx). We also controlled for medical risk status, using medical history, pregnancy history, and prenatal complication variables (Table 1).

TABLE 1 Low-risk sample—excluded characteristics

History	Prenatal complications
Medical History	Anemia
<16 y	Abruption/Previa
Cervical Abnormality	GDMA 2
Diabetes	Hypertension
Hypertension	Hyperemesis
HIV+	IUFD
Substance Abuse	IUGR
Seizures	Macrosomia
Smoker	Multiple Gestation
Uterine Abnormality	Malpresentation
Thyroid Disease	Maternal Death
Pregnancy History	Nonreassuring Fetal Status
Cesarean	Preeclampsia
Preeclampsia	Preterm Labor
IUGR/LBW	Preterm ROM
Sensitization	Vaginal Bleeding
Preterm Birth	Sensitization with Antibody

2.3 | Statistical analysis

Frequency means are reported for all variables and compared at the geographic level. For the purposes of this analysis, rural and small town are categorized together and suburban and urban areas are categorized together. Odds ratios are calculated using logistic regression, with controls for risk factors employed. Logistic regression was used to test low-frequency events within the sample (eg, low birthweight, neonatal intensive care admissions, and postpartum and neonatal transfers). Robust standard errors are clustered at the birth center level, using regional fixed effects instead of state fixed effects as certain characteristics do not vary within some states. Finally, a subsample of medically low-risk women is analyzed (excluding medical risk factors) to evaluate for the presence or absence of unwarranted geographic variation by rural or urban location. Missing outcome data occurs in the sample as a result of attrition from the birth center. Women may leave the sample by choice or medical attrition. Both are tracked within the data set. This missing outcome data may raise concern if there is selected attrition based on the geographic location of the birth center and this was not found in this sample (OR 0.85, CI 0.60-1.21). All data analysis is performed in Stata (version 16; StataCorp LP).

3 | RESULTS

Between 2012 and 2020, 88 574 pregnant clients enrolled in care within 82 American Association of Birth Center's Perinatal Data Registry™ user sites. Twenty-three percent of the episodes of care, or 20 371 pregnancies, were cared for within 28 sites coded as rural/small town. Rural sites accounted for 34.2% of the sites in the sample, whereas 54 (65.8%) sites were coded as suburban/urban. The average educational attainment of the clients served by the birth center model was 14.9 years with higher educational averages in urban birth centers (15.1 years) and lower in rural settings (13.9 years) (Table 2). The average maternal age was 25.1 years, similar for both urban and rural settings. Most childbearing people were married (78.0%), similar across urban and rural settings. Families in rural sites were more likely to be publicly insured (32.6%), compared with urban settings (28.4%). The majority of the clients receiving birth center model care in this sample are White-non-Hispanic (76.4%), with a higher portion of Black (10.0%) and Hispanic (8.5%) clients in urban birth centers.

Childbearing families cared for within this model of care achieved high-quality outcomes across all geographic settings (both rural and urban), meeting or exceeding national benchmarks (Table 2). For the entire sample, across all geographic locations, performance was notable with low rates of episiotomy (1.7%), cesarean (9.2%), induction of labor (11.0%), and

high rates of exclusive breastfeeding at discharge (94.6%). The birth center model of care demonstrated an average infant birthweight of 7.7 pounds, and 1-minute and 5-minute Apgar scores above 8.0 and 8.9, respectively. The incidence of low 5-minute Apgar scores across all geographic settings was less than 1.2%. Neonatal admission rates across all geographic locations were 1.1%. Of all clients who enrolled in pregnancy care within the birth center practices, 20.3% required transfer to a higher level of care during the prenatal period, and 10.6% during the intrapartum period. After birth, 1.2% of newborns required transfer to a higher level of care, and 1.1% of mothers required transfer to a higher level of care.

To explore variation by geographic location, cases were coded as rural (n = 20 371) or urban (n = 68 203) and frequencies of key maternal and neonatal outcomes compared (Table 2). For rural mothers receiving care within the birth center model, including those who transferred to a higher level of care, there are lower incidences of episiotomy (1.1%), cesarean birth (8.1%), and induction (10.6%), with higher incidences of exclusive breastfeeding (95.6%). Infants born within rural birth center systems, including those transferred to higher levels of care, had higher average birthweight in pounds (7.74), higher Apgar scores at five minutes (8.96), and similar rates of neonatal intensive care unit admissions (1.1%).

None of the above-mentioned performance advantages in rural settings achieved statistical significance, once controlling for geographic, sociodemographic, and medical risk factors (Table 3). Table 3 shows the results from the logistic regression comparing rural and urban settings and core quality indicators, while controlling for region of birth and sociodemographic and medical risk factors. Rural areas demonstrate similar performance in maternal and newborn birth outcomes to urban areas within this sample. Within the subsample of 44 379 clients coded as low medical risk at the time of admission in labor (Table 4), there are no statistically significant variations in perinatal quality outcomes by location of birth (rural or urban), with the exception of statistically significant performance advantage within rural sites demonstrating lower episiotomy among multiparas (OR 0.34, CI 0.12-1.00). There are no statistically significant variations in quality indicators between rural and urban births among low-risk nulliparas in this sample (Table 4).

Most birth centers (72.9%) were located less than 4 miles from the transfer hospital; 64.9% of rural birth centers and 78.9% of urban hospitals were within 4 miles of the closest transfer hospital. Similarly, 35% of birth centers in rural settings and 43% of birth centers in urban settings required more than 15 minutes of travel time to arrive to the nearest hospital of transfer. There are no performance advantages demonstrated within sites that are less than 15 minutes from the hospital of transfer within this sample. Cesarean rates (OR 0.96, CI 0.70-1.31), transfer rate (OR 0.79, CI 0.51-1.22), and Apgar score less than 7 at 5 minutes (OR 1.39, CI 0.92-2.09) were not statistically different based on proximity to a higher level of care. Similarly, being less than 5 miles from the nearest transfer facility did not demonstrate a performance advantage in this sample: cesarean rate (OR 0.85, CI 0.48-1.50), transfer rate (OR 1.34, CI 0.92-1.94), and Apgar score less than 7 at 5 minutes (OR 0.93, CI 0.55-1.57).

4 | DISCUSSION

This research supports the expansion of birth centers into rural communities in the United States. Midwifery care delivered in rural and small-town birth centers is associated with excellent outcomes across geographic locations, including within rural communities. As the infrastructures of standard, hospital-based maternity care in rural communities deteriorate, the birth center model of care has demonstrated its role as a durable model capable of stable and predictable capability to provide high-quality health care.[19] Exploration of the expanded role of the birth center model of care in rural settings is warranted.

Both populations of childbearing families in this study, rural/small town and urban/suburban, surpassed national benchmarks for selected quality measures. Although maternal and neonatal health inequities are well documented in rural America,[5-13] findings from this project tell a different story—one of population health, strength, and resilience associated with community midwifery care. Controlling for medical risk factors and when matched with the appropriate level of care, rural childbearing families have equal and in some cases better outcomes than those living in urban settings. Variations in quality by rural/urban location previously published within the literature are not demonstrated within this sample of birth center consumers.[5-13] The harmful variations that have been demonstrated to be amplified in populations of low-risk women, including overuse of cesarean birth and neonatal intensive care units, were not demonstrated in this sample.[3,20,23-25] More research exploring the variation in episiotomy rates within this sample of childbearing multiparous people of low medical risk is warranted. This variation is suggestive of unwarranted variation in care, hypothesized to be related to elective hospitalization within the sample.[20]

This research provides public health scientists and policymakers with estimates of the models' capacity to serve rural communities. Transfer rates during the antenatal, intrapartum, and postpartum period were stable, regardless of geographic location. This work provides population health estimates for anticipated referrals from rural sites to higher levels of care during the antenatal (19.9%), intrapartum (10.3%), postpartum (1.1%), and neonatal (1.3%) time periods. This supports previous research that demonstrates

TABLE 2 Average individual outcomes for means by urban and rural status

Core variables	Urban mean	Rural mean	Average mean for total
Sociodemographic variables			
Education	15.1	13.8	14.8
BMI	25.1	25.12	25.1
Maternal Age	29.7	29.0	29.5
Gravidity	2.5	2.8	2.6
Parity	1.0	1.3	1.1
Married	77.7	78.9	78.0
Public Insurance	28.4	3.26	29.4
Private Insurance	61.5	45.8	57.9
Race—White-Non-Hispanic	74.1	84.0	76.4
Black	10.0	4.5	8.8
Hispanic	8.5	6.4	8.0
Quality indicators			
Maternal outcomes			
Episiotomy	1.9	1.1	1.7
Cesarean	9.6	8.1	9.2
Induction	11.1	10.6	11.0
Exclusive Breast	94.3	95.6	94.6
Exclusive Formula	1.3	1.5	1.4
Infant Outcome			
Birthweight Pounds	7.71	7.74	7.72
One-Minute Apgar	8.0	7.9	8.0
Five-Minute Apgar	8.9	8.9	8.9
Low Five-Minute Apgar	1.2	1.3	1.2
NICU Admission	1.0	1.1	1.1
Transfers			
Transfer—Antepartum	20.4	19.9	20.3
Transfer—Intrapartum	10.8	10.3	10.6
Transfer—Neonatal	1.2	1.3	1.2
Transfer—Postpartum	1.1	1.1	1.1
Place			
Birth Place—Birth Center	60.3	60.9	60.4
Birth Place—Hospital	36.3	32.8	35.4
Birth Place—Home	2.2	4.9	2.8
Intended—Birth Center	83.2	82.1	82.9
Intended—Hospital	11.3	8.4	10.7
Intended—Home	2.2	4.7	2.8

Note: Urban mean, N = 68 203; rural mean, N = 20 371; mean for total, N = 88 574.

that most childbearing people in a population can be cared for using a midwifery-led, birth center model of care.[19] One of the most important initiatives for strengthening the maternal health infrastructure in the United States is the Obstetric Care Consensus: Levels of Maternal Care, led by the American College of Obstetricians and Gynecologists and the Society for Maternal Fetal Medicine.[26] This movement, partnered with an amplified understanding that the appropriate level of care for the majority of childbearing families is "basic," should lead to a systems approach, which matches the population health needs with the appropriate level of care.[27,28] The results of this analysis build on the growing body of literature, which supports the role of enhanced birth models and their ability to provide risk-appropriate care while protecting and promote resilience within populations, preventing the harmful effects of overmedicalization of pregnancy and birth and lack of access to wellness-based care.[5,6,14,17-21]

The distribution of births across the United States is disproportionately concentrated in regions with high population density.[9,10] As the maternity care system is redesigned to provide the appropriate level of care to the population, regardless of geography, it is unrealistic to expect there to be shifts in distribution of birth volume equally across settings. Research has shown that the majority of rural families will continue to give birth in rural areas, regardless of access to appropriate levels of care.[4] The system needs to be designed as an integrated, fluid system wherein communities have access to basic care, including the birth center model of care as a normative entry point. In this sample, the

TABLE 3 Birth outcomes by rural vs. urban settings

Core Variables	Cesarean Odds Ratio [Confidence Interval]	Episiotomy Odds Ratio [Confidence Interval]	Induction Odds Ratio [Confidence Interval]	Transfer Odds Ratio [Confidence Interval]	Breastfeeding Odds Ratio [Confidence Interval]	Apgar < 7 Odds Ratio [Confidence Interval]	Weight < 5.5lbs Odds Ratio [Confidence Interval]
Sociodemographic Variables							
Rural	0.93 [0.77,1.12]	0.58 [0.29,1.16]	1.04 [0.76,1.43]	1.02 [0.79,1.31]	1.37 [0.78,2.39]	1.05 [0.85,1.31]	0.85 [0.66,1.11]
Married	0.75 [0.68,0.82][a]	1.13 [0.87,1.46]	0.92 [0.85,1.00][b]	0.85 [0.77,0.95][a]	1.74 [1.47,2.08][a]	1.01 [0.80,1.28]	0.88 [0.72,1.08]
Education	0.95 [0.93,0.98][a]	0.98 [0.92,1.05]	0.99 [0.97,1.01]	1.01 [0.99,1.03]	1.11 [1.06,1.16][a]	1.02 [0.98,1.05]	0.92[0.89,0.96] [a]
Maternal Age	1.11 [1.05,1.17][a]	0.88 [0.77,0.99][b]	0.95 [0.90,1.00][b]	0.99 [0.94,1.04]	1.18 [1.09,1.27][a]	1.00 [0.88,1.14]	0.87 [0.81,0.95][a]
Age-Sq.	1.00 [1.00,1.00]	1.00 [1.00,1.00][b]	1.00 [1.00,1.00][b]	1.00 [1.00,1.00]	1.00 [1.00,1.00][a]	1.00 [1.00,1.00]	1.00 [1.00,1.00][a]
Underweight	0.69 [0.57,0.85][a]	1.11 [0.83,1.47]	0.84 [0.76,0.92][a]	0.96 [0.89,1.05]	1.04 [0.83,1.31]	1.07 [0.62,1.85]	1.94 [1.51,2.49][a]
Obese	1.94 [1.74,2.17][a]	1.12 [0.84,1.50]	1.45 [1.34,1.58][a]	1.36 [1.21,1.52][a]	0.59 [0.50,0.69][a]	1.49 [1.16,1.91][a]	1.06 [0.86,1.30]
Overweight	1.35 [1.22,1.50][a]	1.12 [0.93,1.34]	1.23 [1.09,1.39][a]	1.24 [1.14,1.34][a]	0.82 [0.70,0.97][b]	1.58 [1.23,2.03][a]	0.90 [0.71,1.14]
Black	1.29 [1.07,1.56][a]	0.76 [0.49,1.18]	0.79 [0.67,0.93][a]	1.17 [1.02,1.33][b]	0.63 [0.38,1.05][c]	1.21 [0.92,1.59]	2.15 [1.69,2.72][a]
Hispanic	1.45 [1.23,1.71][a]	1.09 [0.70,1.69]	0.96 [0.79,1.16]	1.00 [0.83,1.20]	0.63 [0.46,0.85][a]	1.09 [0.85,1.40]	1.39 [1.11,1.73][a]
Public Insurance	1.11 [0.97,1.27]	1.19 [0.80,1.75]	1.04 [0.93,1.17]	1.11 [1.02,1.22][b]	0.73 [0.58,0.92][a]	1.17 [0.94,1.45]	1.26 [1.04,1.54][b]
Self	0.82 [0.71,0.96][b]	0.83 [0.61,1.11]	0.79 [0.68,0.91][a]	0.86 [0.75,1.00][c]	1.34 [0.93,1.93]	1.29 [0.99,1.69][c]	1.01 [0.81,1.27]
Total (N) Births	64,102	58,196	87,205	87,588	47,374	47,648	53,911
Total (N) Sites	78	78	78	78	78	78	78
Pseudo–R-squared	0.08	0.07	0.05	0.05	0.09	0.03	0.05
Mean-Dependent	0.09	0.02	0.11	0.33	0.95	0.01	0.02
Controls for Risk	X	X	X	X	X	X	X

Note: [a] < 0.01; [b] < 0.05; [c] < 0.1; reported odds ratios from a logistic regression. Controls for risk factors include region of birth, parity, any diabetes history, hypertension history, preeclampsia, substance abuse, and smoking. Robust standard errors are clustered at the birth center level representing statistical levels at 1, 5, and 10 percent. Rural includes small towns. Urban includes suburban areas.

TABLE 4 Nulliparous Birth Outcomes by Rural v. Urban, Low-Risk Sample

Core Variables	Cesarean	Episiotomy	Induction	Transfer	Breastfeeding	Apgar < 7	Weight < 5.5lbs
Independent Variable							
Rural	1.04 [0.86,1.25]	0.62 [0.34,1.12]	0.93 [0.72,1.21]	1.14 [0.86,1.52]	1.41 [0.89,2.23]	0.82 [0.60,1.11]	0.87 [0.61,1.25]
N Births	18,773	16,712	18,776	18,776	14,025	13,859	15,667
N Sites	78	78	78	78	78	78	78
Pseudo–R-squared	0.03	0.02	0.02	0.02	0.04	0.01	0.04
Mean-Dependent	0.11	0.03	0.11	0.31	0.95	0.02	0.01
Parity	Nullipara	Nullipara	Nullipara	Nullipara	Nullipara	Nullipara	Nullipara

Note: Reported odds ratios from a logistic regression and confidence interval. Demographic controls include the controls reported in the full sample results in Table 1. Robust standard errors are clustered at the birth center level. Rural includes small towns. Urban includes suburban areas.

birth center sites were low-volume sites, capable of providing safe, high-quality care associated with improved outcomes. Increasing access to midwifery-led, birth center care will require improved regulatory infrastructure for licensure, accreditation, and regulation, and enhanced reimbursement frameworks.[6,13,21]

4.1 | Limitations

The prevalence of rural and small-town sites in this sample mirrors the national membership report of rural/small-town birth center locations, suggesting that the study is representative. Nonetheless, limitations to generalizability exist and include unquantifiable selection bias in two areas. First, users of the American Association of Birth Centers Perinatal Data Registry™ are members of the professional organization, implying that there is a level of adherence to the organization's standards. Participation in the registry requires commitment from member sites. Thus, these results may not be generalizable to nonmember sites. The second limitation to generalizability involves the unquantifiable level of selection bias introduced by clients who choose birth center care to begin with. As a prospective data registry, the data presented in these research findings have captured and tracked attrition throughout perinatal episodes of care for all clients who enrolled in care at participating birth centers. More research is needed on the differences between women who self-select birth centers versus a different care model because of existent medical risk factors. As more women choose birth centers, population estimates for antenatal transfer of care may rise.

4.2 | Conclusions

Between 2012 and 2020, 88 574 childbearing families enrolled in care with 82 American Association of Birth Centers Perinatal Data Registry™ user sites. Quality outcomes exceeded national benchmarks across all geographic regions with high performance on maternal and neonatal measures. When controlling for regional, sociodemographic, and medical risk factors, childbirth outcomes were the same across rural and urban settings, except for a performance advantage of lower episiotomies in rural settings among low-risk childbearing people. A stable and predictable rate of transfer to a higher level of care was demonstrated across geographic regions, with over half of the population remaining appropriate for birth center care. More research is needed to explore preconception risk, sampling bias, and the effect of elective hospitalization at the client and site level as birth center models are taken to scale across the United States. A major focus of United States maternity care reform should be the expansion of access to birth center models of care, especially in underserved areas such as rural communities.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the 82 birth centers who participated in this study and the 88 574 families who made this research possible.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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How to cite this article: Jolles D, Stapleton S, Wright J, et al. Rural resilience: The role of birth centers in the United States. *Birth*. 2020;47:430–437. https://doi.org/10.1111/birt.12516