County-Level Availability of Obstetric Care and Economic Implications of Hospital Closures on Obstetric Care

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KEY FINDINGS

- The majority of rural counties in the United States do not have an obstetric care provider within their borders (micropolitan and non-core as defined by the NCHS urban-rural definitions).
- Counties without obstetric care facilities have higher rates of poverty and lower rates of health insurance coverage across all ages.
- For the years studied, data illustrate a decline in economic activity after the counties experienced a loss in obstetric facilities, either through facility conversion or through hospital closure.
- Counties which lost obstetric care access also had decreases in their labor forces and population of reproductive age.

BACKGROUND

Rural U.S. populations face particular challenges in terms of maternal and obstetric care. Women living in rural areas have more children than metropolitan women per capita, and report an earlier age at first birth – even net of respondent characteristics such as race and income (Daniels, Martinez, and Nugent 2018; Ely and Hamilton 2018; Janis, Ahrens, and Ziller 2019). Unfortunately, rural populations also suffer from elevated infant mortality, maternal mortality, and serious complications (Ely, Driscoll, and Matthews 2017; Kozhimannil et al. 2019).

Given this context, policymakers need to understand the demographic, economic, and geographic differences in access to obstetric care. Furthermore, existing literature points to negative outcomes in both health and economic development in areas losing health care facilities (Holmes et al. 2006; Katy B. Kozhimannil et al. 2018).

This policy brief draws out the demographic and economic differences between counties with obstetric care facilities and those without. Populations without obstetric care access in-county tend to have higher rates of poverty and lower rates of health insurance coverage. This policy brief provides descriptive data on the economic changes underway in counties that lost obstetric care facilities between 2012 and 2019.

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DATA AND METHODS

To analyze county-level access to obstetric care, we used the American Hospital Association's (AHA) Annual Survey of Hospitals for the years 2012-2019. The AHA surveys all active hospitals in the United States, achieving a response rate of over 75% for most years. This survey contains questions on whether the hospital provides obstetric care, the level of obstetric care provided, the number of deliveries performed at the hospital, and the number of obstetric care beds available.

We define obstetric care facilities conservatively, following similar recent policy research (Interrante et al. 2021). We identify an obstetric facility as any hospital that (1) reports itself as such; and (2) reports its level of obstetric care; and (3) reports having obstetric care beds; and (4) reports more than 10 deliveries in a given year. From the AHA data alone, this results in 2,167 facilities that provide obstetric care service in 2019. To address discrepancies in the AHA data, we cross-referenced facilities with the Center for Medicare & Medicaid Services' Provider of Services (POS) files from 2012-2019. We additionally define a hospital as providing obstetric services if the Provider of Services file identifies the hospital as providing obstetric services and the hospital reports greater than 10 deliveries in that year. This increases the number of obstetric care providers nationwide to 2,751 in 2019. We exclude from our sample any hospital which reports itself as restricting admissions primarily to children.

We connect hospital data with federal demographic and economic data from the American Community Survey (ACS), the Quarterly Census of Employment and Wages (QCEW), and the National Center for Health Statistics (NCHS) as well as with data on hospital closures from the Sheps Center for Health Services Research at the University of North Carolina.[1] The resulting dataset covers 3,141 counties and county equivalents in the United States. We break down demographic and economic indicators by obstetric services availability and county-level loss of obstetric services. To measure economic impact of obstetric closures we use the number of total business establishments, the number of private health establishments, the size of the labor force, and the size of the employed population.

FINDINGS

For 2019, the most recent year of complete data, we find 972 rural hospitals providing obstetric services covering 43.8% of rural counties. We find 1,809 urban hospitals providing obstetric services, which covers the majority (64.3%) of urban counties. Demographic and economic indicators across this divide demonstrate that populations living in counties without obstetric services are on average older,

[1] https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/

poorer, and have lower rates of health insurance coverage. Table 1 below provides weighted means and medians for various indicators.

Table 1. County Averages of **Socio-Economic Indicators** by Obstetric Facility Availability, All Counties

	With OB (n=1,615)		Without OB (n=1,526)		Lost OB Service (n=148)	
	URBAN	RURAL	URBAN	RURAL	URBAN	RURAL
	Population Weighted Mean					
Population	1,420,259	53,874	66,921	24,019	85,285	33,529
Female Population	722,509	27,048	33,827	11,954	43,194	16,885
Female Population Aged 15-49	343,675	11,202	14,759	4,697	18,946	6,655
Poverty Rate	13%	16%	12.5%	17.1%	4.3%	16.0%
Uninsured Rate	8.7%	9.5%	8.6%	10.2%	4.4%	10.2%
	Population Weighted Median					
Median Age	37.8	40.6	40.8	43.0	40.2	42.4
Median Age for Women	39.0	42.0	42.0	44.6	41.4	43.9
Median Household Income	$68,839	$50,996	$61,091	$46,822	$60,771	$47,098

Sources: NCHS Bridged-Race Population Estimates 2019, ACS 5-Year Estimates 2019, Chmura/JobsEQ 2020

As suggested by the population figures provided above, counties without obstetric services tend to be much more sparsely populated with lower populations of women of childbearing age.

Table 2 below provides a breakdown of obstetric facility availability by county rural status. We define rural and metropolitan counties following the Urban-Rural Classification Scheme provided by the National Center for Health Statistics.[2] Rural counties include micropolitan and non-core counties. The results in Table 2 below illustrate that nearly 2 out of 3 counties in a metropolitan area have obstetric care services within their borders whereas the majority of rural counties do not have a hospital providing obstetric care services.

Table 2. Share of Counties **by Rural Status** with Obstetric Facilities

	Urban Counties		Rural Counties	
	Number	Percent	Number	Percent
No Obstetric Services	415	35.6%	1,111	56.2%
Obstetric Services	750	64.4%	865	43.8%
Total	1,165	100%	1,976	100%

Sources: AHA 2019; POS 2019: NCHS Rural-Urban Definitions

[2] https://www.cdc.gov/nchs/data_access/urban_rural.htm

County-level access to obstetric service varies by county demographic make-up. Relatively few U.S. counties have a racial minority that outnumbers the white population, but those that do have lower rates of county-level obstetric care access. Most majority white counties have in-county obstetric care, while most majority-minority counties do not have an obstetric care facility. These differences are especially noteworthy in the context of persistent disparities in maternal and infant health outcomes by racial, geographic, and socioeconomic lines (Lorenz et al. 2016; Singh 2021). Most counties with majority or a plurality minority population are concentrated in the rural southern Black Belt and on indigenous American lands. Most counties with a majority, or plurality, minority population are also rural (70%). We find that 11 majority or plurality minority counties lost obstetric care services in the period 2012-2019.

Table 3. Obstetric Services by County **Racial Composition**, All Counties

	No Obstetric Services		Obstetric Services	
	Number	Percent	Number	Percent
Majority or Plurality Minority	86	53%	76	47%
Majority or Plurality Black	69	59%	48	41%
Majority or Plurality Native American	16	52%	15	48%
Majority White	1,425	48.3%	1,524	51.7%
All Counties	1,526	48.6%	1,615	51.4%

Source: NCHS Bridged-Race Population Estimates 2012-2019

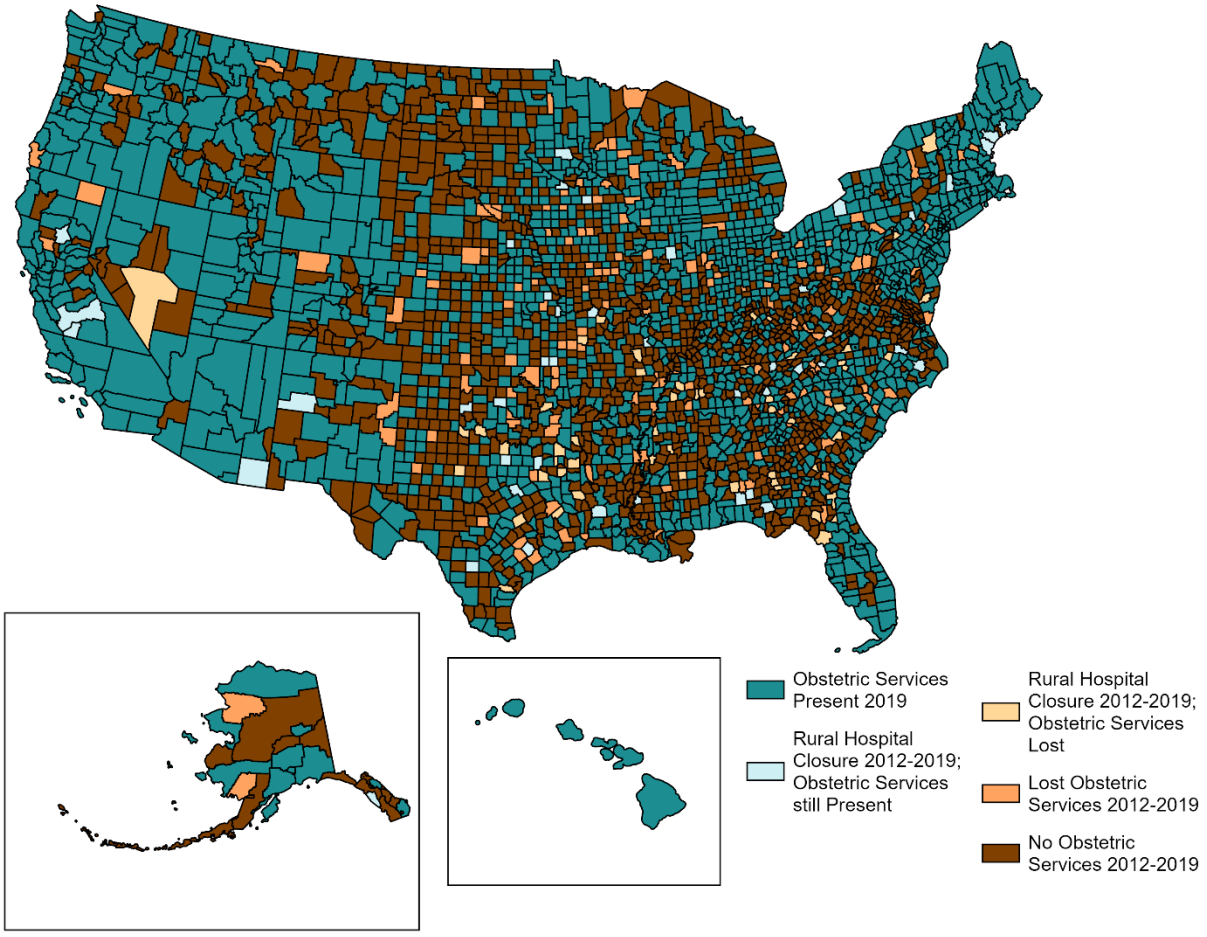
ECONOMIC IMPLICATIONS OF HOSPITAL CLOSURES ON OBSTETRIC CARE

Hospital closures are an important factor driving difficulties in access to obstetric care services. Empirical research has demonstrated the sizable influence that health care facilities have on surrounding economies (Holmes et al. 2006; Edmiston 2019; Alexander and Richards 2021).

Furthermore, empirical research has demonstrated the sizable negative effect a hospital closure or conversion can have on the local economy. This is of particular interest for rural areas that have less diversified economies and tend to rely more heavily on the health care sector, when present. Thus, the revenue loss to the local economy is that much higher (Ona and Davis 2011; Edmiston 2019).

Figure 1 (next page) maps obstetric service provision and loss of services at the county-level during the period studied. Counties which lost obstetric services (orange on the map) pepper the central and eastern portions of the United States. Some counties which experienced a rural hospital closure were able to maintain obstetric services in-county (light blue color).

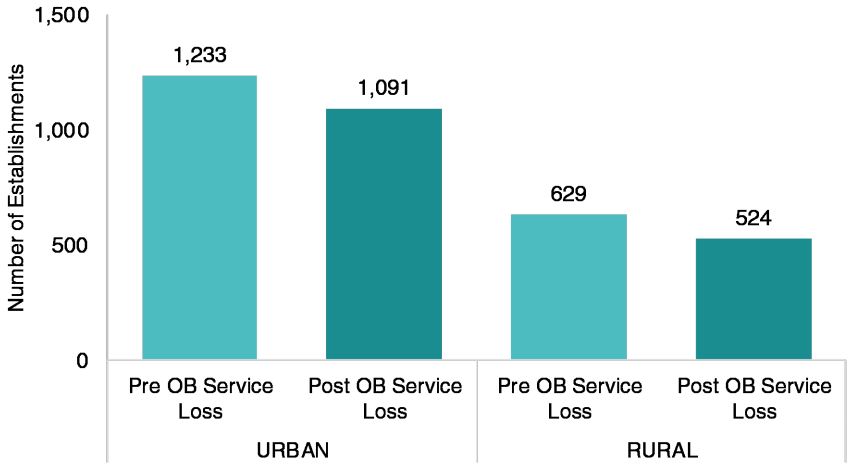
Figure 1. U.S. Obstetric Services and Hospital Closures by County



Sources: AHA; Center for Medicare and Medicaid Services POS file; UNC Sheps Rural Hospital Closures Data

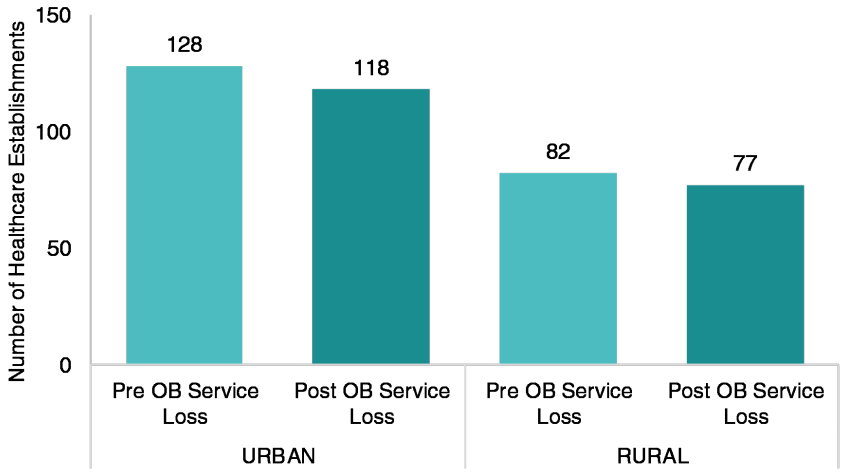
The analysis in this section includes only counties that experienced the loss of obstetric services within their borders either due to a hospital closure, conversion, or the closing of obstetric care services within the local hospital. In the period 2012 to 2019, we find that 148 counties lost obstetric care services. 113 of these counties are rural (77%). Figure 2 (next page) plots the mean business establishments in county-years prior to obstetric care closure and after obstetric closure by rural status. On average, rural counties that lost obstetric care services also experienced a 17% decrease in business establishments. By comparison, metropolitan and urban counties that lost obstetric care services experienced a 12% decline in the number of business establishments. When looking at the change in the number of establishments in the health care sector, rural losses are less severe (Figure 3, next page). Rural counties on average lost around 6% of their health care establishments compared to nearly 9% for metropolitan and urban counties. Across the rural and urban divide, counties losing obstetric care facilities also lost other health care establishments.

Figure 2. All Covered Establishments (County-Level Mean) in Counties that Lost Obstetric Service



Source: Quarterly Census of Employment and Wages, 2012-2019

Figure 3. All Covered Health Care Establishments (County-Level Mean) in Counties that Lost Obstetric Services



Source: Quarterly Census of Employment and Wages, 2012-2019

Counties that lost obstetric care services also experienced a decline in population, private health establishments, labor force, employed labor force, and number of women of reproductive age. Table 4 details the change in these indicators with population weighted averages, pre- and post-closure. Obstetric facility closures were not restricted to rural counties, and Table 4 includes figures for all counties that experienced such a closure.

Table 4. Population Weighted Means of Demographic and Economic Indicators, All Counties Experiencing an Obstetric Closure

	Pre-Closure (n=615 county-years)	Post-Closure (n=569 county-years)
Population	57,677	54,539
Women Aged 15-49	12,412	11,755
Labor Force	27,811	25,723
Employed	26,060	24,525
Private Health Establishments	146	131

Source: AHA; NCHS Bridged-Race Population Estimates 2012-2019; BLS Local Area Unemployment Statistics 2012-2019; QCEW 2012-2019

The findings illustrate a general economic and population contraction in counties facing loss of obstetric care services, despite the fact that the period studied was one of general national economic and demographic expansion. The figures presented here do not allow for any causal connection as preexisting underlying demographic trends may be driving both economic decline as well as obstetric care closures.

LIMITATIONS

The AHA survey data are limited to what hospital officials answered the survey, their knowledge, and the relative importance the hospital administration places on responding accurately to the surveys. Even for responding hospitals, some data fields are missing, indicating that they did not answer all survey questions.

This report analyzes data at the county level which is a useful way to describe geographic variation but is not without limitations. Counties vary considerably in size across the U.S. In some parts of the country, like Shelby County, Kentucky, no in-county obstetric services may mean only a short drive across a county border to a neighboring town. In other areas, such as San Bernardino County, California, reaching an in-county obstetric care provider may still require a drive of well over an hour. For these reasons, future researchers may look at estimated travel time to obstetric care as a distinct variable of interest with regard to health care access.

CONCLUSION & POLICY IMPLICATIONS

Overall, our findings support other recent research suggesting that a lack of obstetric care services is potentially a significant problem in the rural United States. In general, metropolitan counties and counties adjacent to metropolitan areas have more obstetric care facilities relative to their rural counterparts. The majority of rural counties do not have an obstetric care provider in-county. Counties that currently lack obstetric care facilities have populations which

are economically marginalized along a variety of indicators, such as income, poverty, employment, and health insurance coverage. Importantly, this analysis finds an association between obstetric service closure and a decreasing number of business establishments across all industries and for the health care cluster separately . This is consistent with previous findings that illustrate a similar relationship, at least in the short term (Manlove and Whitacre 2017), and other research has demonstrated a link between the presence of a critical access hospital and economic growth (Ona and Davis 2011). The link between economic growth and health remains salient as scholars continue to find a robust association between socio-economic status, economic development and morbidity, mortality, and life expectancy (Zang and Bardo 2019; Chetty, Hendren, and Katz 2016; Case and Deaton 2017).

The descriptive findings presented here suggest that access to obstetric care may be thought of as an economic development issue as well as a health care issue. Rural areas seeking a comprehensive economic growth and population retention strategy may need to prioritize maintaining obstetric care services as a tool for keeping and attracting adults and families of reproductive age. With a greater share of fixed costs than urban hospitals, rural hospitals face difficulties in economies of scale (Rhoades, Whitacre, and Davis 2021). Policymakers may need to develop creative solutions to reach underserved populations in rural areas such as the global budget payments system adopted in Maryland (Roberts et al. 2018; Done, Herring, and Xu 2019; Roberts 2019).

In the shorter run, programs to increase access to out-of-hospital birth services may reduce the strain on rural health care facilities while also providing a safe delivery alternative for expectant mothers in underserved counties. Out-of-hospital births could include dedicated birth centers separate from hospitals. While Medicaid covers more than 40% of pregnancies and deliveries in the United States, many birth centers struggle to participate in Medicaid's coverage options due to a variety of factors including difficulty securing contracts, covering costs, and delays in eligibility determination (Dubay et al. 2020). Additionally, Medicaid's reimbursement rates to birth centers are much less than to hospitals and obstetricians for the same services (Howell et al. 2014). The Center for Medicare and Medicaid Service's own pilot program found that birth center deliveries resulted in improved outcomes for infants and mothers as well as cost savings (Dubay et al. 2020; Hill et al. 2019)

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In the short to medium term, the loss of a community's obstetric care service provision associates with decreased economic activity and population loss. Furthermore, the loss of these vital health care facilities means losing not only an essential health care service necessary for family formation but also part of the professional-class workers necessary to run and support such a facility.

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