



## Rural Women Delivering Babies in Non-Local Hospitals: Differences by Rurality and Insurance Status

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### Purpose

The purpose of this policy brief is to describe the extent to which rural pregnant women give birth in non-local hospitals, and to analyze current patterns of non-local delivery by rural women's health insurance status and residential rurality.

### Background and Policy Context

All women of reproductive age in rural areas may have an interest in ensuring access to appropriate maternity care services. Rural women with high-risk medical conditions and those who develop complications during pregnancy may require referral to non-local higher acuity settings for appropriate care. In addition, rural women with low-risk pregnancies may choose to deliver in non-local hospitals for other reasons. Non-medical factors that may influence an individual woman's delivery hospital include her health insurance coverage, how far she must travel for care, her socioeconomic resources, and her perceptions of the quality of care provided in local or non-local hospitals.<sup>1-3</sup>

### Key Findings

- In nine geographically-diverse states with substantial rural populations, 25.4% of rural pregnant women delivered their babies in non-local hospitals in 2010 and 2012.
- Rural women living in more densely populated rural areas were less likely to give birth in a non-local hospital (19.5%) than those in less densely populated rural areas, either next to a metropolitan area (35.9%) or not (33.7%).
- Privately-insured rural women were more likely to give birth in non-local hospitals than rural women who were covered by Medicaid (28.6% vs. 22.5%).
- Rural women with Medicaid coverage were more likely than privately-insured women to deliver their babies in a hospital where more than half of all births were covered by Medicaid (63.8% vs. 36.7%).

Single-state studies have found that women with greater social and economic resources are more likely to travel to non-local hospitals to deliver their babies. In Alabama, rural pregnant women who were older, white, and lived in counties with higher per-capita incomes were more likely to travel to give birth in hospitals located in urban areas, hospitals with high birth volumes, and hospitals with high-risk infant services.<sup>4</sup> High-risk women in California had stronger preferences for delivering at teaching hospitals and hospitals with Level III Neonatal Intensive Care Units (NICUs) than low-risk women; however, low-risk women covered by Medicaid were less likely than those with private insurance to give birth in a teaching hospital or a hospital with any level NICU, and more likely to give birth at a public hospital or a hospital with a Medicaid contract.<sup>5</sup>

Over the past two decades, Medicaid has financed an increasing proportion of births in the United States. Nearly half (48%) of all births were covered by Medicaid in 2010.<sup>6</sup> Federal law requires all state Medicaid programs to cover pregnancy-related services, including prenatal, delivery, and postpartum care for pregnant women with incomes up to 138% of the federal poverty level (FPL). Many states, including the nine states in this study, currently have higher income-eligibility levels for pregnant women (Table 1).

The majority of states contract with managed care organizations (MCOs) to serve some of the state's Medicaid beneficiaries, including pregnant women. In the nine study states, between 55% and 95% of Medicaid beneficiaries receive care through MCOs. All of the study states except North Carolina and Wisconsin have expanded Medicaid under the Affordable Care Act, which gave states the option of expanding Medicaid to nearly all non-elderly adults with incomes at or below 138% of the FPL.

## Approach

This project is a retrospective secondary analysis of hospital discharge data on all births to rural women using 2010 and 2012 Statewide Inpatient Data (SID) for nine states (Colorado, Iowa, Kentucky, New York, North Carolina, Oregon, Vermont, Washington, and Wisconsin) linked to American Hospital Association Annual Survey data on hospital characteristics. The SID is a 100% census of hospital discharge records for all payers within the state in a given year. These states were chosen based on the size of their rural populations, U.S. regional distribution, and because they permit use of patient zip codes and linkage with data on hospital characteristics from the American Hospital Association (AHA) Annual Surveys. Patient-level variables from the SID include maternal age, race/ethnicity, primary payer, and medical conditions defined by International Classification of Diseases—9th revision (ICD-9) diagnosis and procedure codes.

We identified rural women based on their residence zip code location in

**Table 1.** Characteristics of Medicaid Programs in Nine Study States

|                | Medicaid Income Eligibility Levels (Percent of FPL) <sup>a</sup> | Percent of Medicaid Enrollees in Managed Care <sup>b</sup> | Medicaid Expansion under ACA <sup>c</sup> |
|----------------|--|--|---|
| Colorado       | 200%   | 94.9%  | Yes                                       |
| Iowa           | 380%   | 81.7%  | Yes                                       |
| Kentucky       | 200%   | 89.1%  | Yes                                       |
| New York       | 223%   | 69.0%  | Yes                                       |
| North Carolina | 201%   | 84.1%  | No  |
| Oregon         | 190%   | 96.9%  | Yes                                       |
| Vermont        | 213%   | 54.9%  | Yes                                       |
| Washington     | 198%   | 90.0%  | Yes                                       |
| Wisconsin      | 306%   | 61.3%  | No  |

<sup>a</sup>Brooks et al<sup>7</sup>

<sup>b</sup>CMS<sup>8</sup>

<sup>c</sup>Kaiser Family Foundation<sup>9</sup>

a micropolitan or noncore county as defined by the Office of Management and Budget.<sup>10</sup> All rural women who lived in these nine states, had a birth hospitalization in one of the states during 2010 or 2012, and were not transferred from a hospital to another hospital were included in the analysis. The final analysis encompassed 111,764 births in 581 hospitals for 2010, and 104,312 births in 565 hospitals for 2012.

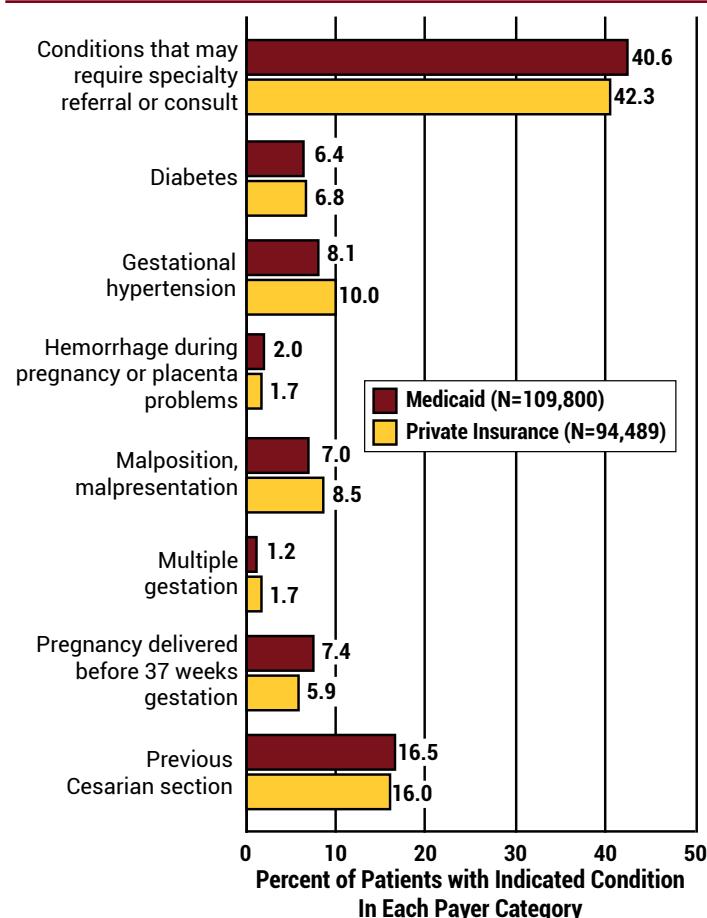
We defined local hospitals as any hospital in a patient's residential state that is either a) within 30 miles of the patient's zip code and provides obstetric services (at least 10 births in a given year) or b) the nearest hospital to the patient's zip code that provides obstetric services, regardless of distance, if there are no hospitals within 30 miles that provide obstetric services. (A patient may have more than one local hospital based on the first criterion.) The 30 mile distance criterion was selected based on prior research on access to perinatal services.<sup>11</sup> Pearson's Chi-squared tests were used to assess differences between Medicaid and privately-insured rural women.

## Results

In 2010 and 2012, a total of 216,076 rural women were hospitalized for childbirth in the nine study states. Of these births, 109,800 (50.8%) were covered by Medicaid and 94,489 (43.7%) were covered by private insurance. (The remaining 5.5% of births were financed through self-pay or covered by some other type of payment, such as charity care.) Overall, 61.9% of women resided in micropolitan areas, 22.8% in non-core areas adjacent to a metropolitan area, and 15.4% in non-core areas not adjacent to a metropolitan area.

Compared to privately-insured rural women, those covered by Medicaid were younger, more likely to be racial/ethnic minorities, and slightly more likely to live in rural noncore areas than privately-insured rural women. They were slightly more likely to have conditions which may require referral to or consultation with maternal-fetal specialists, hemorrhage or placenta problems during pregnancy, and preterm delivery, but less likely to have

**Figure 1. Clinical Conditions Among Rural Women with Childbirth Hospitalizations by Payer Status**



Note: All differences between Medicaid-covered and privately-insured rural women were significant at  $P < .05$ , based on Pearson's Chi-square tests. Conditions that may require specialty referral or consult were identified using maternal ICD-9 codes, based on clinical guidelines developed for the Arkansas ANGELS program.<sup>12</sup>

diagnoses of gestational hypertension, malposition or malpresentation, or multiple gestation (Figure 1).

Overall, 58% of rural women delivered their babies in rural Prospective Payment System (PPS) hospitals; 25% in urban PPS hospitals, and 17% in Critical Access Hospitals (CAHs) (Table 2, next page). Medicaid-covered women were significantly more likely than privately-insured rural women to deliver in rural PPS hospitals (64% vs. 51%) and significantly less likely to deliver in urban PPS hospitals (20% vs. 32%).

## Limitations

Although the states in this study are distributed across US Census regions and have significant rural populations, the results from these nine states may not be generalizable to other states. We could not determine the medical

They were also significantly less likely to give birth in hospitals with NICUs. Almost two-thirds of rural women with Medicaid coverage delivered in hospitals where Medicaid was the primary payer (that is, more than half of all births were financed by Medicaid).

In 2010 and 2012, one quarter (25.4%) of rural pregnant women gave birth in non-local hospitals (Figure 2, next page). More than one-third of rural women living in noncore areas delivered in non-local hospitals, compared to

less than 20% of those living in micropolitan areas. State-level rates of non-local deliveries ranged from 19% in Vermont to 32% in Kentucky (Figure 2). Overall, privately-insured rural women were more likely to deliver in non-local hospitals than those covered by Medicaid (Figure 2).

appropriateness of the delivery location, the specific obstetric care capacity of hospitals in the study, or a causal relationship between maternal factors and rates of non-local delivery.

## Discussion

Multiple factors may potentially influence a rural woman's decision to deliver her baby in a non-local hospital. These include 1) insurance coverage and provider networks, 2) social and economic resources, 3) distance from other facilities that provide obstetric and neonatal services, 4) medical necessity, and 5) perceptions about the quality of care provided in local and non-local hospitals. This study focused on the role of insurance type and rurality.

Given that the majority of Medicaid enrollees in these nine states are enrolled in Medicaid MCOs, our finding that women with Medicaid coverage are less likely than those with private insurance to deliver their babies in non-local hospitals may be due in part to limitations on the number of obstetric providers and delivery hospitals in their Medicaid MCO networks. The ability of privately-insured women to select their obstetric providers and delivery hospitals also may be constrained by a limited number of in-network providers and delivery hospitals as well as deductibles and copayments for out-of-network care. This may be especially true for privately-insured women with incomes just above Medicaid eligibility thresholds.

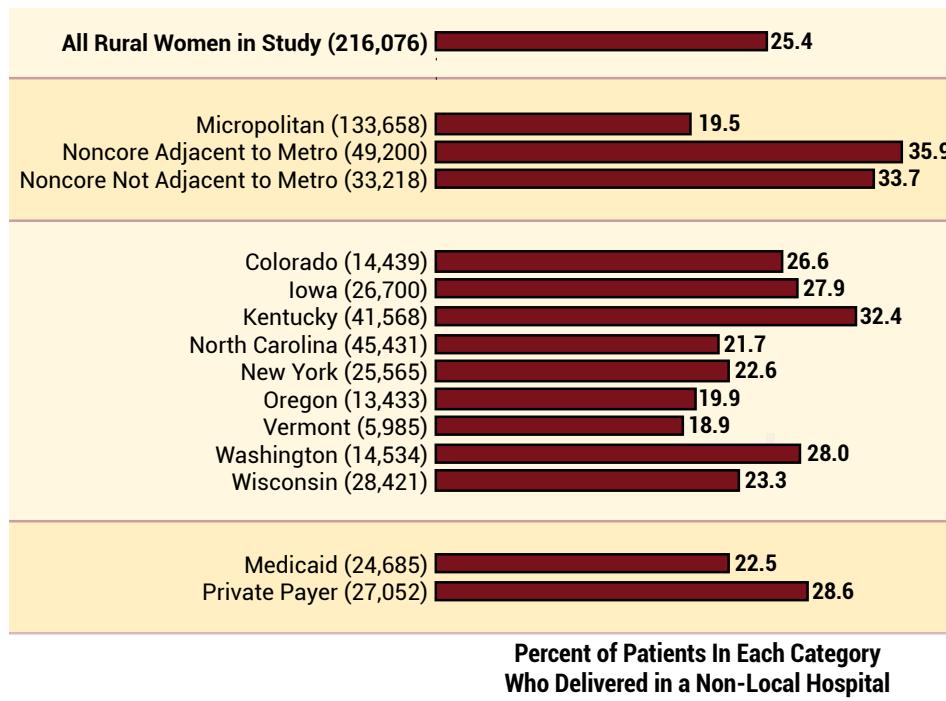
Because Medicaid eligibility is based on income, a woman's insurance status is also a marker of her socioeconomic status. Our findings are consistent

**Table 2.** Percent of Rural Women Who Delivered in Each Category of Hospitals by Payer Status

|   | Rural Women<br>(N=216,076) | Medicaid<br>(N=109,800) | Private<br>(N=94,489) | P-value |
|---|----------------------------|-------------------------|-----------------------|---------|
| <b>Hospital Type</b>                              |                            |                         |                       |         |
| Urban Prospective Payment System (PPS)            | 25.2                       | 19.5                    | 31.6                  | P<.001  |
| Rural PPS   | 57.9                       | 64.3                    | 50.8                  | P<.001  |
| Critical Access Hospital                          | 16.9                       | 16.2                    | 17.6                  | P<.001  |
| <b>Neonatal Care Level</b>                        |                            |                         |                       |         |
| Neonatal Intensive Care Unit (NICU)               | 31.2                       | 27.7                    | 35.2                  | P<.001  |
| Neonatal Intermediate Care Unit (NINT) only       | 10.6                       | 11.7                    | 9.6                   | P<.001  |
| No NICU or NINT                                   | 58.2                       | 60.6                    | 55.2                  | P<.001  |
| Hospitals with >50% of births covered by Medicaid | 50.7                       | 63.8                    | 36.7                  | P<.001  |

Note: p-value refers to the significance level of the differences in delivery hospital characteristics by payer status, based on Pearson's Chi-square tests.

**Figure 2.** Non-Local Delivery Rates by Rurality, State, and Insurance Type



with prior studies<sup>4-5</sup> showing that rural women with higher incomes and access to more resources had a higher likelihood of non-local delivery. While we can distinguish differences in

patterns of non-local delivery, our data do not reveal whether the decision to give birth at a local hospital may have resulted in better or worse clinical outcomes for Medicaid beneficiaries.

Future multivariate analyses may reveal whether the odds of non-local childbirth remain elevated among Medicaid beneficiaries with conditions that may require higher-acuity care.

In addition to differences in non-local delivery rates for rural women based on insurance status, this study also found differences based on whether they lived in a micropolitan or non-core rural area. These differences are probably due at least in part to the greater likelihood that micropolitan residents will have a local hospital that offers specialized obstetric and neonatal services, compared to noncore residents.

From a quality-of-care perspective, it is critical that high-risk rural women and those who develop complications during pregnancy are referred to non-local higher acuity settings for childbirth care when it is medically indicated.<sup>13</sup> However, out-migration of low-risk women may contribute to the loss of revenue and potentially also to closure of obstetric units in local hospitals by reducing volume to a point where it is not feasible from a financial perspective or advisable from a quality perspective to maintain the service line.

Important considerations for future work which we could not determine in this analysis are 1) whether the level of care sought in either local or non-local facilities was appropriate to a woman's clinician condition, and 2) whether the decision to deliver in a local or non-local hospital affected maternal or neonatal health outcomes. Our future research will continue to examine the relationships between maternal

factors, hospital factors, and delivery hospitals for rural women. The goal of this research is to help inform health policies that support rural women receiving obstetric care in a setting that is medically-appropriate for them and their infants, while taking into consideration key non-medical factors that are important to their decision-making. ■

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