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Location of Childbirth for Rural Women: Implications for Maternal Levels of Care

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Maternal Levels of Care

- In 2015, ACOG/SMFM consensus statement encourages clarity around the specific capacities available in facilities that provide obstetric care.
- First coordinated effort to address appropriate triage of certain pregnant women to settings where their clinical needs can be met and the best possible outcomes achieved.



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Regionalization and Rural Maternity Care

- 1970s saw a new focus on developing referral systems to ensure access to facilities with adequate levels of care.
- Higher risk infants in rural and remote areas receive particular attention in discussions of regionalization, owing to the challenges in assuring local access to high-acuity services when necessary.
- Pregnant women deserve the same attention.



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Regionalization and Rural Maternity Care

- Half a million babies are born each year in rural US hospitals
- Fewer rural hospitals are providing obstetric care each year
 - The further women travel for maternity care, the worse their outcomes



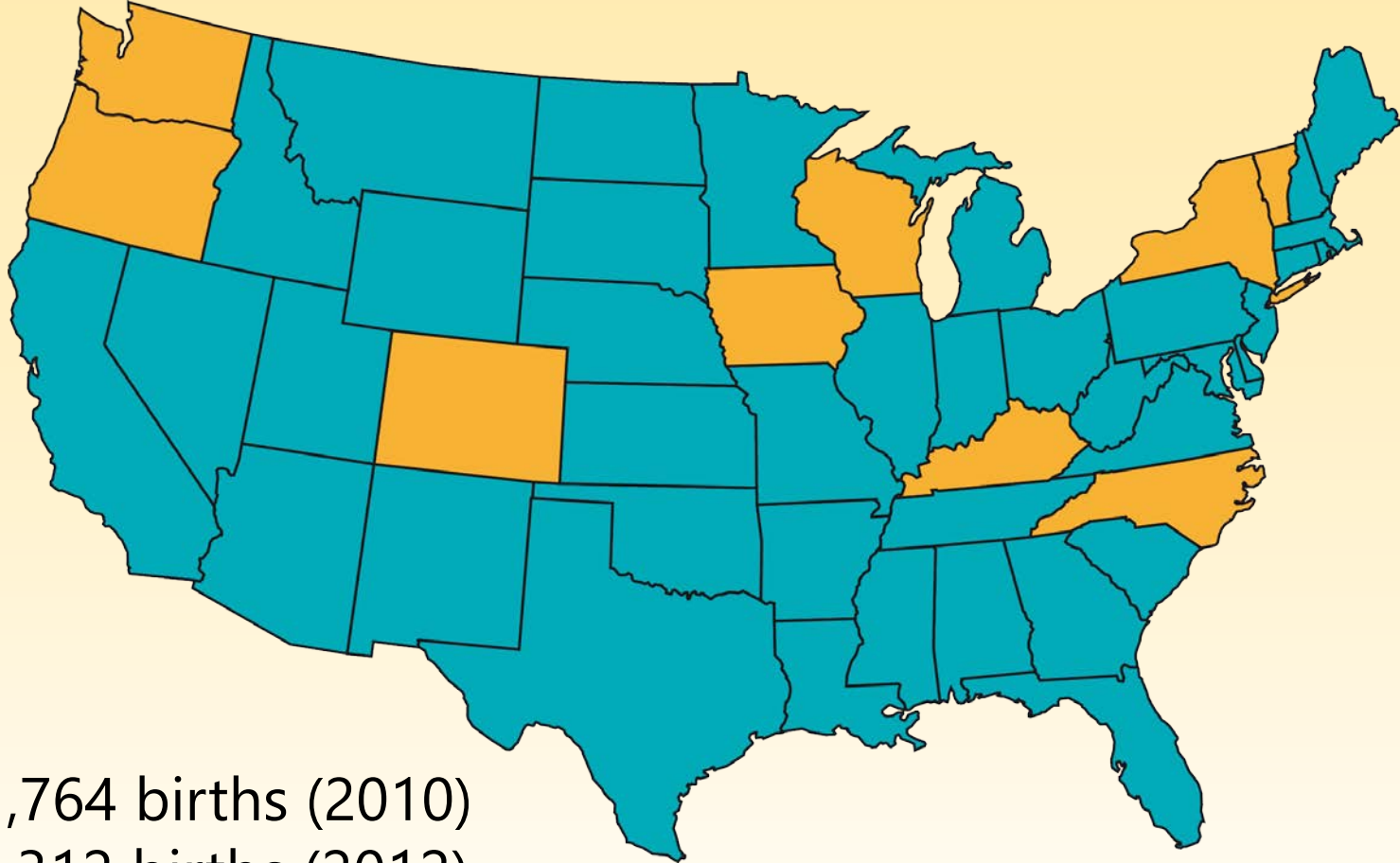
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Research Objectives

- Characterize rural women who give birth in non-local hospitals
- Measure local hospital characteristics and maternal diagnoses present at childbirth that are associated with non-local childbirth.



Study population: all births to rural women in 9 US states (2010, 2012)



N=111,764 births (2010)

104,312 births (2012)

Total = 216,076 births

Data=HCUP SID



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Methods

- Repeat cross-sectional design
- Hospital discharge data
- Outcome: childbirth in a non-local hospital (>30 mi)
- Predictors:
 - Clinical diagnoses
 - diabetes, hypertension, hemorrhage, placenta problems, malpresentation, multiple gestation, preterm, prior cesarean
 - Composite of conditions that may require MFM
 - Age, race, payer, rurality
 - Local hospital characteristics



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Characteristics of Rural Women Delivering in Non-Local Hospitals

	All Rural Women (n=216,076)	% of All	Non-local delivery	P-Value
		100%	25.4%	
Age	20 or Younger	16.4%	20.8%	<.001
	21 – 25	30.2%	23.8%	<.001
	26-30	28.9%	26.8%	<.001
	31-35	17.2%	28.2%	<.001
	Age 36 or Older	7.3%	30.1%	<.001
Primary Payer	Unknown	0.2%	29.2%	<.001
	Medicaid	50.8%	22.5%	<.001
	Private	43.7%	28.6%	<.001
	Self	1.9%	28.0%	<.001
	Other Payment	3.4%	25.5%	0.858



Maternal Conditions of Rural Women Delivering in Non-Local Hospitals

All Rural Women (n=216,076)		% of All	Non-local delivery	P-Value
		100%	25.4%	
Conditions which may require maternal fetal medicine services or consultation	Yes	41.4%	28.6%	<.001
	No	58.6%	23.1%	<.001
Multiple Gestation	Yes	1.4%	47.1%	<.001
	No	98.6%	25.1%	<.001
Delivery Before 37 Weeks Gestation	Yes	6.7%	43.5%	<.001
	No	93.3%	24.1%	<.001



Distribution of Delivery Hospital Characteristics by Rural Women's Delivery Hospital (Local or Non-Local)

All Rural Women (n=216,076)	% of All	Non-local	Local
		100%	25.4%
Hospital Type			
Critical Access Hospital	16.9%	7.2%	20.2%
Rural Non-CAH	57.9%	28.4%	68.0%
Urban Hospital	25.2%	64.4%	11.9%
Neonatal Care Capacity			
NICU	31.2%	60.6%	21.3%
NINT Only	10.6%	11.1%	10.4%
Neither	58.2%	28.4%	68.3%



Determinants of Delivery at Non-Local Hospital: Maternal Condition (p<.001)

All Rural Women (n=216,076)	Adjusted Odds Ratio (95% CI)	Average Marginal Effects
Conditions which may require maternal fetal medicine services or consultation	1.28 (1.22, 1.35)	4.5%
Malposition, Malpresentation	1.16 (1.08, 1.24)	2.7%
Multiple Gestation	1.82 (1.58, 2.1)	12.3%
Delivery Before 37 Weeks	2.41 (2.17, 2.67)	18.7%
Prior Cesarean Section	1.25 (1.17, 1.34)	4.2%



Determinants of Delivery at Non-Local Hospital: Maternal Condition (p<.001)

All Rural Women (n=216,076)	Adjusted Odds Ratio (95% CI)	Average Marginal Effects
20 Years Old or Younger	0.82 (0.74, 0.9)	-3.5%
21-25 Years Old	0.91 (0.86, 0.97)	-1.6%
31-35 Years Old	1.04 (1.01, 1.07)	0.8%
36 Years Old or Older	1.12 (1.04, 1.21)	2.2%
Primary Payer: Medicaid	0.76 (0.68, 0.86)	-4.9%
Race/Ethnicity: Black	0.67 (0.60, 0.76)	-6.5%
Race/Ethnicity: Hispanic	0.70 (0.56, 0.88)	-5.9%
Residence: Noncore Adjacent to Metro	2.29 (1.77, 2.96)	15.9%
Residence: Noncore, Not Adjacent	1.88 (1.13, 3.16)	11.6%



Determinants of Delivery at Non-Local Hospital: Neonatal Care Capacity ($p < .001$)

All Rural Women (n=216,076)	Adjusted Odds Ratio (95% CI)	Average Marginal Effects
Local Hospital Has NINT Only	1.77 (1.25, 2.51)	9.4%
Local hospital has no NICU or NINT	1.94 (1.64, 2.31)	11.3%



Key Findings

- About 75% of rural women gave birth at local hospitals
- More likely to deliver at non-local hospitals:
 - Rural women with preterm births and clinical complications
 - Rural women without local access to higher-acuity neonatal care
- Less likely: rural Medicaid beneficiaries
 - Indicates potential access challenge



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Implications for Policy and Practice

- Implementing maternal levels of care will help clarify to patients and clinicians the types of obstetric services available in different facilities.
- Use of these care-level designations may improve triage and referral of rural pregnant women
- Low-income rural Medicaid beneficiaries face access barriers for maternal care which warrant attention



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Thank You!



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