Who Gets Virtual Care? Urban-Rural Differences in Prenatal Care Access

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Introduction

- South Carolina (SC) persistently ranks poor on maternal/infant outcomes (e.g. low overall health ranking; markedly higher maternal mortality).
- A key driver is inadequate prenatal-care access, especially in rural areas.
- Telehealth, may reduce barriers, with evidence of fewer missed visits and better health literacy.

Research Questions

- *Has telehealth widened or narrowed the urban-rural divide to prenatal healthcare?*
- *How prenatal-care accessibility (In person, virtual) and demographics relate to Average Live Births?*

Data

- Census Bureau: Urban-Rural classification, Demographics, Internet Subscription.
- Medicaid Claims: Patient & Providers Data
- SC Community Assessment Network: (SCAN) Average Live Birth per ZIP Code Areas.
- Internet availability: Federal Communications Commission (FCC) Broadband

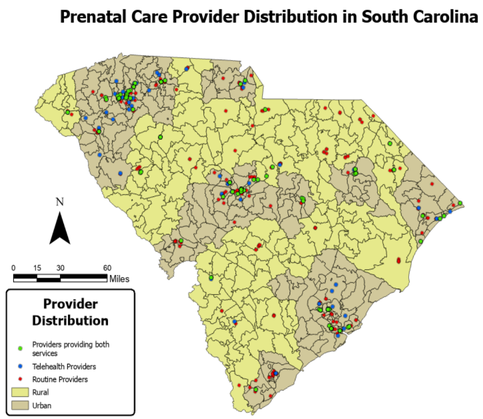

Figure 1: Providers Distribution in South Carolina

Data

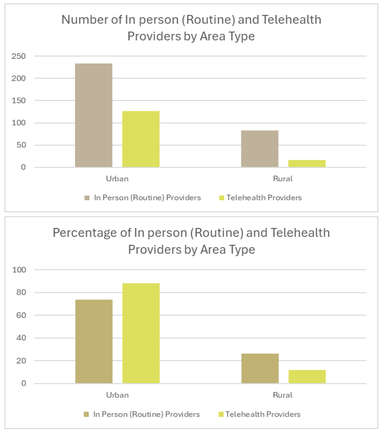

Figure 2: Number and Percentage of Prenatal Services by Area Type

Methodology

- **Accessibility models**:
- Enhanced 2 Step Floating Catchment Area (E2SFCA) for In person (Routine) and In person Telehealth access.
- Enhanced 2 Step Virtual Catchment Area (E2SVCA) for Virtual Telehealth access.
- **Inference:** Mann-Whitney U tests on seven indicators of Accessibility.
- **Ordinary Least Squares Regression (OLS):** Average live births regressed on accessibility scores and demographic variables.

Results

- **In person (Routine):** Parity in access, Urban 0.060 vs Rural 0.063.
- **In person Telehealth:** Urban ≈ 1.9× higher access. Overall, 64% drop from In person (Routine), Rural declines steeper (76%).
- **Virtual Telehealth**: 82% drop from In person Telehealth. Urban ≈ 1.7× higher access. Zero access ZIP Code Areas:11.5% in Urban vs 41.8% in Rural.

Results

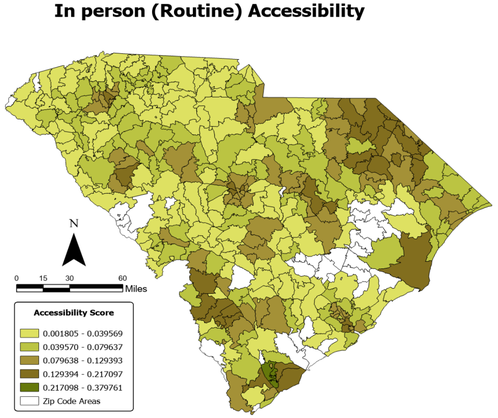

Figure 3: In Person Routine Accessibility

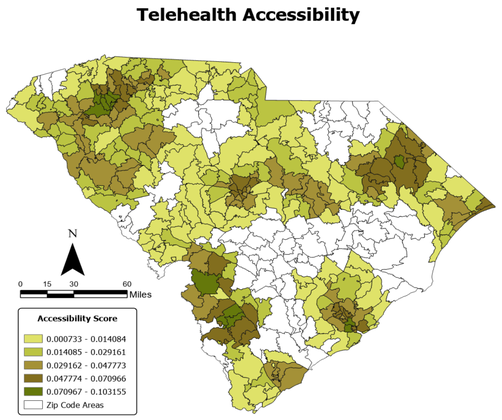

Figure 4: In Person Telehealth Accessibility

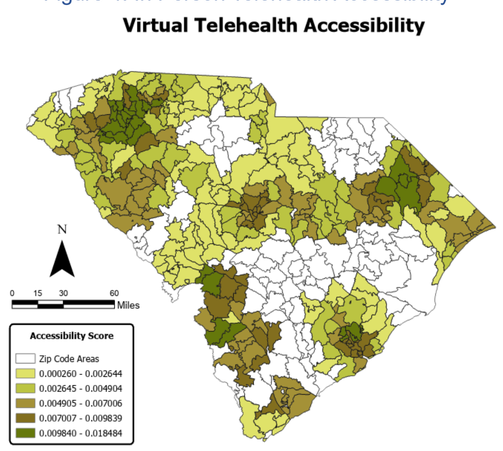

Figure 5: Virtual Telehealth Accessibility

Results

Variable	Sig.
No. of in person Providers	**
No of in person patients	**
In person Accessibility	
No. of telehealth Providers	***
No. of telehealth Patients	***
In person telehealth Accessibility	***
Virtual Telehealth Accessibility	***
p < .05, ** p < .01, *** p < 0.01	

Table 1: Mann Whitley test Urban - Rural difference

Variable	Coefficient (β)	Sig.
Less than High School educated	−5.997	**
Minority (%)	+1.103	*
Urbanity Indicator (1=urban, 0=rural)	+267.398	**
Virtual Accessibility Score	+25.134	†
Interaction: In person Accessibility * Urbanity	+44.775	†
In person Routine Accessibility Score	−2.115	
Median Income	+0.125	
† p < .10, * p < .05, ** p < .01		

Table 2: Results OLS Regression

- Individuals with less than a high school education have fewer births reflecting small, rural, out-migrating areas.
- Areas with greater minority share have a slightly higher births with most of their concentration in urban areas.
- Virtual access positively associated with births.

Results

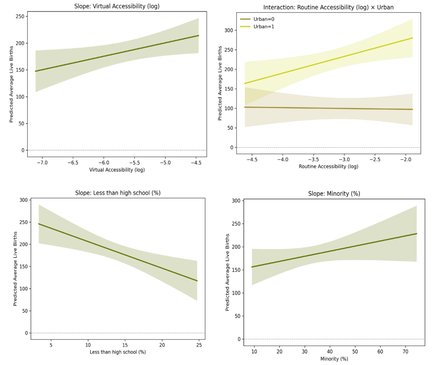

Figure 6: Model-predicted average live births association with variables

Discussion/Conclusion

- Routine Access shows parity because of low demand in rural area; Urban areas have more providers and patients.
- Telehealth service alone delivered from existing centers does not equalize prenatal access.
- **Why**: Three links must align, Providers offering telehealth, Reliable Internet Infrastructure and Subscription.
- Rural areas often miss one or more leading to Virtual access deserts.
- OLS: Urban ZIP Code areas have higher delivery volumes even after controls, consistent with rural maternity-care deserts and urban service concentration.

Follow-up Study

Our next study explores prenatal care experiences through **focus groups and surveys** to identify barriers and improve maternal healthcare..

Funded by:
South Carolina Center for Rural and Primary Healthcare (*An org. for promoting rural health through research, and workforce development.*)

Scan to be a part of the upcoming study