THE RELATIONSHIP BETWEEN COUNTY-LEVEL RATES OF OBSTETRIC CARE PROVIDERS AND RATES OF PRETERM BIRTHS IN RURAL AND URBAN COUNTIES

by

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Lastly, I would like to thank God himself for all he has done for me and through me. He continues to extend grace and compassion to me and completing college was done By His Power and For His Glory.

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ABSTRACT

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Preterm births have been rising in the United States. Texas rural hospital closures are rising, which could contribute to fewer OB-GYNs and poorer birth outcomes. The purpose of the research was to determine correlations between OB-GYNs and preterm births in rural and urban Texas counties using secondary data from the Area Health Resources Files. The design was cross-sectional, descriptive, and correlational. There was a moderate, statistically significant correlation between preterm births and OB-GYNs in both rural (n=115, r_s= 0.53, p=<0.0001) and urban (n=72, r_s= 0.73, p=<0.0001) counties. On average, there was 1 OB-GYN per 10,000 female population aged 15-44 in rural counties compared to 3 OB-GYNs per 10,000 in urban counties.

Given that more urban OB-GYNs are available, further research is needed to understand factors influencing where rural women deliver babies (rural or urban hospitals),

and how factors contribute to preterm birth differences among women residing in rural and urban areas.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

1.1 Preterm Birth and Obstetric Care Resources across Rural and Urban Settings

This section will provide information regarding rates of preterm births and differences in obstetric care resource availability in both rural and urban settings.

1.1.1 Significance of Preterm Births in the United States

In the U.S., approximately 19% of the U.S. population lives in rural areas according to the U.S. Census Bureau (2020), and approximately 15% of births occur in rural areas (Well Beings, 2022). Preterm births in the United States (U.S.) are rising; overall, approximately 393,979 births are preterm (CDC, 2022). Premature neonates born at less than 37 weeks gestation are at greater risk of health problems such as respiratory instability (surfactant deficiency), cardiovascular anomalies (continued fetal circulation), and nutritional deficiencies (weak or absent suck and gag reflexes) (Ricci, 2020). Preterm neonates could remain hospitalized for up to four months (Seton, 2018), furthering the risk of complications.

1.1.2 Loss of Obstetric Care Services in Rural U.S.

Despite the continued need for obstetric care in rural areas, there is a loss of obstetric services in rural counties (Kozhimannil et al., 2018). According to Kozhimannil et al. (2018), obstetric services in rural areas have been declining over the years and with these decreasing trends, there is an associated increase in out-of-hospital births, preterm births, and births in hospitals without obstetric services. This can contribute to women's uncertainty about their birthing plans and being unprepared for possible complications.

1.1.3 Understanding Relationships Between Obstetric Care Resources and Preterm Births

Understanding relationships between obstetric care resources and preterm births in rural settings is significant because even though 80% of the population lives in urban areas that are in close proximity to urban hospitals, 19% of the US rural population equates to 60,000,000 Americans relying on rural hospitals (US Census Bureau, 2020). With fewer resources in rural hospitals, there may be an increased rate of transfers to more urban hospitals and longer wait times for emergency medical services. Due to a lack of resources, giving birth in rural areas may predispose mothers and infants to preventable morbidities and mortality (Womack et al., 2020).

1.2. Purpose of the Study

Given higher rates of maternal complications in rural counties and an increasing loss of rural obstetric resources (Kozhimannil et al., 2019), the purpose of this study was to answer the following question: "Is there a relationship between county-level healthcare system structures related to women's services, specifically the rate of county-level Obstetrics-Gynecology (OB-GYNs) available and the rate of preterm births in rural and urban counties?" Generating knowledge in response to this question may potentially shed light on the issue and inform appropriate organizations about where to allocate funds and resources to address preterm birth and its consequences. The results of this research may provide information about the inconsistencies of healthcare pertaining specifically to women services and neonatal care and how imperative it is to find alternatives to supplement healthcare that is being removed from areas where it is needed most.

CHAPTER 2

LITERATURE REVIEW

2.1 Previous Data Signifying a Lack of Women's Services and Resources in Rural Areas

The literature review illustrates the consequences of lacking women's services on maternal and fetal health. Sources discuss obstetric service closure, hospitals with no obstetric units, and a lack of OB-GYNs in rural areas, all compounded with higher maternal morbidities (Hyunjung Lee et al., 2020; Kozhimannil et al., 2018; Kozhimannil et al., 2019; Lin et al., 2020; Womack et al., 2020).

2.1.1 The Consequences of Lost Obstetrics Services

In a retrospective cohort study of over 4.9 million births in 1086 rural counties between 2004-2014, Kozhimannil et al. (2018) found that obstetric services were lost in rural counties, there were increased out-of-hospital births, increased births in hospitals with no obstetric services, increased preterm births, and decreased prenatal care use. For this study, birth certificates were linked to American Hospital Association Annual Survey data. Findings revealed the negative impact of obstetric services loss in rural hospitals on birth outcomes, which predisposes mothers and babies to complications. Insufficient prenatal resources may contribute to prenatal stress and anxiety for moms lacking peace of mind about where to seek care.

Hyunjung Lee et al. (2020) discussed the availability of OB-GYN services in rural areas and their decline. Data were gathered from the Medical Expenditure Panel Survey

(2010–2015) linked to the Area Health Resource File and rural-urban differences in past year office visit rates with health care providers were examined.

Kozhimannil et al. (2018) is similar to Hyunjung Lee et al. (2020) in terms of noting the loss of OB-GYN services in rural areas and equating losses to greater morbidity in infants, but the difference is that rural women in Hyunjung Lee et al.'s article reported seeing family medicine physicians and NPs as opposed to OB-GYNs. Even though seeing a general family medicine doctor is better than seeing no doctor during one's pregnancy, the general practitioners may not have as much obstetric expertise as an OB-GYN and could potentially miss important medical indications related to pregnancy.

2.1.2 External Factors That Are Affected by a Loss of Obstetrics Services

Using retrospective data from the National Inpatient Sample through the Healthcare Cost and Utilization Project of the Agency for Healthcare Research and Quality, Kozhimannil et al. (2019) found rural areas had higher rates of severe maternal morbidities compared to urban areas. Severe maternal morbidities consisted of illnesses like chronic hypertension, chronic kidney disease, substance use, and higher rates of adolescent pregnancies, etc. In terms of a financial impact, Lin et al. (2020) noted that women hospitalized in rural areas had a higher medical bill compared to women who gave birth in urban locations. Regardless of a woman having severe maternal morbidities (SMM) or not, their hospitalization costs were higher in rural areas. Specifically, a woman without SMM had a hospital bill 3% higher in rural than urban areas. With SMM, their bill was 6% higher for rural compared to urban areas. Lin et al. (2020) attributed the difference in costs to the need for emergent blood transfusions for women with multiple SMM as more common in rural areas.

Womack et al. (2020) discussed infant mortality and morbidity disparities among races between urban and rural areas. Excess infant mortality rates (rate differences) by urban–rural classification were calculated relative to large metropolitan areas overall and for each racial/ethnic group. Womack et al. (2020) found that the highest mortality rates among infants were in nonmetropolitan (rural) areas and that nonmetropolitan and medium/small metropolitan areas had higher rates of infant deaths via congenital anomalies and sudden unexpected infant deaths (SUID). Those statistics applied to all racial and ethnic groups except Black, non-Hispanic infants whose cause of infant mortality was preterm related and SUID.

2.1.3 Overall Conclusion Drawn from Literature

From the literature above, it can be inferred that a lack of resources in rural areas in the United States has an influence throughout pregnancy; prenatal, intranatal, and postnatal care. From having fewer resources pertaining to OB-GYNs and higher incidences of SMM like chronic hypertension, giving birth in rural areas can lead to poorer outcomes that could potentially be avoided if one were to give birth in more well-resourced areas, often urban areas with more access to OB-GYNs. The gap this research will address is understanding if there is a difference in the association of OB-GYNs with preterm birth in rural compared to urban counties.

CHAPTER 3

METHODOLOGY

3.1 Conceptual Framework

The Donabedian-framework (1966) assists in evaluating health services and their quality of care. The three major concepts in this model to help evaluate health services include healthcare structures, processes, and outcomes. Donabedian (1966) proposes that there is a linear relationship between structures and processes, processes and outcomes, and structures and outcomes. The structure under investigation is the rate of OB-GYNs, and the outcome is the rate of preterm births. Although care processes could be influential to preterm births, such as the quantity and quality of appointments and checkups during pregnancy, the scope of this study will be limited to determining the relationships between the rate of OB-GYNs and the rate of preterm births and how these rates differ in rural and urban counties.

3.2 Design, Sample, and Setting

The design of this study is cross-sectional, drawing from multiple academic resources published during 2017 to 2023. The research project methodology will be thesis based. This method was chosen due to the abundance of research already published on the topic, having a strong foundation to build on. The setting is county-level and the sample will include counties in Texas with data available for the variables to be studied.

3.3 Data Source

The data source will be the county-level Area Health Resource Files (AHRF) provided by the Health Resources & Services Administration (HRSA). The AHRF consists of current and historic data on over 6,000 variables from the nation's counties, states, and the country as a whole. It covers information about healthcare in the United States ranging from healthcare professions to hospital expenditures and environments.

3.4 Variables

County-level variables will include 3-year average preterm births (2017-2019), rural-urban location, and rates of OBGYNs per 10,000 women of childbearing age. To calculate OB-GYN rates, the numerator will be the total number of OB-GYNs, and the denominator will be a new variable created from five AHRF variables to estimate the total female population of women of childbearing age (15-44) (Female population 15-19; Female population 20-24; Female population 25-29; Female population 30-34; Female population 35-44; OB-GYNs 19= (OBGYNs*10000/female pop)).

Table 3.1: Framework Concept, Study Concept, and Study Variables

Framework concept	Study concept	Study variable	Field codes	Year
Structure	OB-GYNs	OB-GYN General, Total	F11684-19	2019
Structure	Rural-urban	2013 Rural Urban continuum Code	F00020-13	2013
Outcome	Preterm births	3-year Averages for Preterm Birth	F13608-17	2017
		Population female 15-19	F06711-10	2010
		Population female 20-24	F06713-10	2010
		Population female 25-29	F06715-10	2010
		Population female 30-34	F06717-10	2010
		Population female 35-44	F06719-10	2010

3.5 Data Analysis

Data will be analyzed via SAS, a statistical analysis software, on the CONHI server. Under the guidance of Dr. Smith, I will interpret the output generated from a SAS program to limit the counties in the dataset to Texas (254 counties), calculate descriptive statistics (mean, standard deviation, minimum, and maximum) for each key variable, and compare results for each in rural and urban Texas counties. Assumptions for normality will be checked for each key variable, and depending on normality, the appropriate statistical tests will be selected to estimate the association between OB-GYNs and preterm birth in rural and urban counties (as separate groups: one rural group, and one urban group). Results will be discussed in relation to the literature, and a conclusion will be written to outline the interpretation of main findings and suggested next steps for future research

CHAPTER 4

FINDINGS

In this chapter, the following results will be reported: sample description, descriptive statistics for preterm births and OB-GYNs, the normality of each major variable, and the answer to the primary research question, which was, "Is there a relationship between county-level healthcare system structures related to women's services, specifically the rate of county-level Obstetrics-Gynecology (OB-GYNs) available and the rate of preterm births in rural and urban counties?"

4.1 Sample Description

Within the 254 Texas counties assessed within SAS, there were 82 urban counties and 172 rural counties before the exclusion of counties without available data for preterm births and OB-GYNs. The distribution of urban and rural Texas counties, as defined by the rural-urban continuum code, is presented in Table 4.1.

Table 4.1: Distribution of Rural and Urban Texas Counties

Urban Counties	N (%*)
Metro areas of 1 million population or more	35 (14%)
Metro areas of 250,000 – 1,000,000 population	25 (10%)
Metro areas of fewer than 250,000 population	22 (9%)
Rural Counties	
Urban population of 20,000 or more, adjacent to a metro area	13 (5%)
Urban population of 20,000 or more, not adjacent to a metro area	6 (2%)
Urban population of 2,500-19,999, adjacent to a metro area	65 (26%)
Urban population of 2,500-19,999, not adjacent to a metro area	39 (15%)
Completely rural or less than 2,500 urban population, adjacent to a metro area	20 (8%)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	29 (11%)

*Percentages may not add to 100 due to rounding.

After excluding counties with data missing for the preterm variable, the following counties were kept in the dataset for the final correlation analyses (Table 4.2).

Table 4.2: Distribution of Rural and Urban Texas Counties with data for Preterm Births

Urban Counties	N (%*)
Metro areas of 1 million population or more	35 (19%)
Metro areas of 250,000 – 1,000,000 population	19 (10%)
Metro areas of fewer than 250,000 population	18 (10%)
Rural Counties	
Urban population of 20,000 or more, adjacent to a metro area	13 (7%)
Urban population of 20,000 or more, not adjacent to a metro area	6 (3%)
Urban population of 2,500-19,999, adjacent to a metro area	60 (32%)
Urban population of 2,500-19,999, not adjacent to a metro area	28 (15%)
Completely rural or less than 2,500 urban population, adjacent to a metro area	7 (3%)
Completely rural or less than 2,500 urban population, not adjacent to a metro area	1 (1%)

*Percentages may not add to 100 due to rounding

4.2 Calculation of Descriptive Statistics

Utilizing the MEANS Procedure, for preterm births in urban counties, 82 counties were observed, but only 72 had available data. In urban counties, the average (mean) number of preterm births was 613, with a standard deviation of 1327, a minimum of 11 and maximum of 9035 (Table 4.3). In rural counties, 172 counties were observed, but 115 had available data. The average number of preterm births was 40, with a standard deviation of 32, a minimum of 10, and maximum of 222. A more detailed description of preterm births across rural and urban counties is shown in Table 4.4.

Table 4.3: Analysis Variable: Preterm

Variable	N	Mean	SD	Min	Max
Preterm Births					
Urban	72	613	1327	11	9035
Rural	115	40	32	10	222

Table 4.4: Analysis Variable: Preterm with Details

Variable	N	Mean	SD	Min	Max
Preterm Births					
Urban Counties					
Metro areas of 1 million population or more	35	910	1812	11	9035
Metro areas of 250,000 – 1,000,000 population	19	480	589	17	2303
Metro areas of fewer than 250,000 population	18	172	136	13	462
Rural Counties					
Urban population of 20,000 or more, adjacent to a metro area	13	86	44	48	222
Urban population of 20,000 or more, not adjacent to a metro area	6	97	44	45	169
Urban population of 2,500-19,999, adjacent to a metro area	60	33	16	10	98
Urban population of 2,500-19,999, not adjacent to a metro area	28	26	14	10	69
Completely rural or less than 2,500 urban population, adjacent to a metro area	7	18	9	13	38
Completely rural or less than 2,500 urban population, not adjacent to a metro area	1	10	0	10	10

Eighty-two urban counties had data for OB-GYNs. On average, there were 3 OB-GYNs per 10,000 female population aged 15-44 in urban counties with a standard deviation of 3.37, a minimum of 0, and a maximum of 12.1 (Table 4.5). Of the 82 urban counties, there were 29 (35%) that had a total of 0 OB-GYNs per county. One-hundred seventy-two rural counties had data for OB-GYNs. On average, there was 1 OB-GYN per 10,000 females

population aged 15-44 in rural counties with a standard deviation of 2, a minimum of 0, and a maximum of 9. Of the 172 rural counties, 122 (71%) had a total of 0 OB-GYNs per county. A more detailed description of OB-GYNs across rural and urban counties is shown in Table 4.6.

Table 4.5: Analysis Variable: OB-GYNs

Variable	N	Mean	SD	Min	Max
OB-GYNs					
Urban	82	3	3	0	12
Rural	172	1	2	0	9

Table 4.6: Analysis Variable: OB-GYNs with Details

Variable	N	Mean	SD	Min	Max
OB-GYNs					
Urban Counties					
Metro areas of 1 million population or more	35	4	3	0	11
Metro areas of 250,000 – 1,000,000 population	25	2	3	0	12
Metro areas of fewer than 250,000 population	22	3	3	0	8
Rural Counties					
Urban population of 20,000 or more, adjacent to a metro area	13	2	1	0	6
Urban population of 20,000 or more, not adjacent to a metro area	6	4	1	2	5
Urban population of 2,500-19,999, adjacent to a metro area	65	1	2	0	8
Urban population of 2,500-19,999, not adjacent to a metro area	39	1	2	0	9
Completely rural or less than 2,500 urban population, adjacent to a metro area	20	0	0	0	0
Completely rural or less than 2,500 urban population, not adjacent to a metro area	29	0	0	0	0

4.3 Normality

Utilizing the UNIVARIATE Procedure in order to assess the preterm variable, the Shapiro-Wilk *W* statistic reported a value of 0.280 (*p*=<0.0001) indicating the preterm variable is not normally distributed. Using the same procedure to assess the normality of the OB-GYN variable, the Shapiro-Wilk *W* statistic reported 0.722 (*p*=<0.0001) indicating the test is closer to being normally distributed compared to the preterm variable, but not strongly distributed normally. With normality being tested, it can be concluded that the sample of counties comes from a non-normal distribution, which can be seen in figures 4.1- 4.6 below.

4.4 Tables and Graphics

The tables and graphics below depict the results tabulated from the SAS output. Figure 4.4 displays the distribution and probability plot for the rate of OB-GYNs per 10,000 female population aged 15-44. Figure 4.5 displays the distribution of OB-GYNs across all 254 Texas counties (there were no missing values for OB-GYNs, so all 254 counties were included in this figure). The Y-axis represents the percentage of the sample, and the X-axis represents the rate of OB-GYNs per 10,000 female population aged 15-44. The first bar on the left at 0.0 indicates that about 60% of counties across Texas (rural and urban combined) do not have an OB-GYN, which is over half of Texas counties whether rural or urban.

Figure 4.6 displays the quantile-quantile (Q-Q) plot for the rate of OB-GYNs across Texas counties, which indicates a non-normal distribution since rate of OB-GYNs per counties do not align on the plot line. Figure 4.7 displays a box plot graph for preterm births in urban and rural counties, with greater variation and high outliers noted in the urban sub-sample. Figure 4.8 displays a box plot graph for OB-GYNs in urban and rural counties, with greater variation noted in the urban sub-sample. Figure 4.9 shows positive correlation but notable heteroskedasticity noted in the scatterplots for preterm births and OB-GYNs in rural counties. Figure 4.10 shows positive correlation but heteroskedasticity noted in the scatterplots for preterm births and OB-GYNs in urban counties. Figure 4.11 shows positive correlation but heteroskedasticity noted in the scatterplots for preterm births and OB-GYNs in rural and urban counties, which is especially apparent in urban counties in this graph.

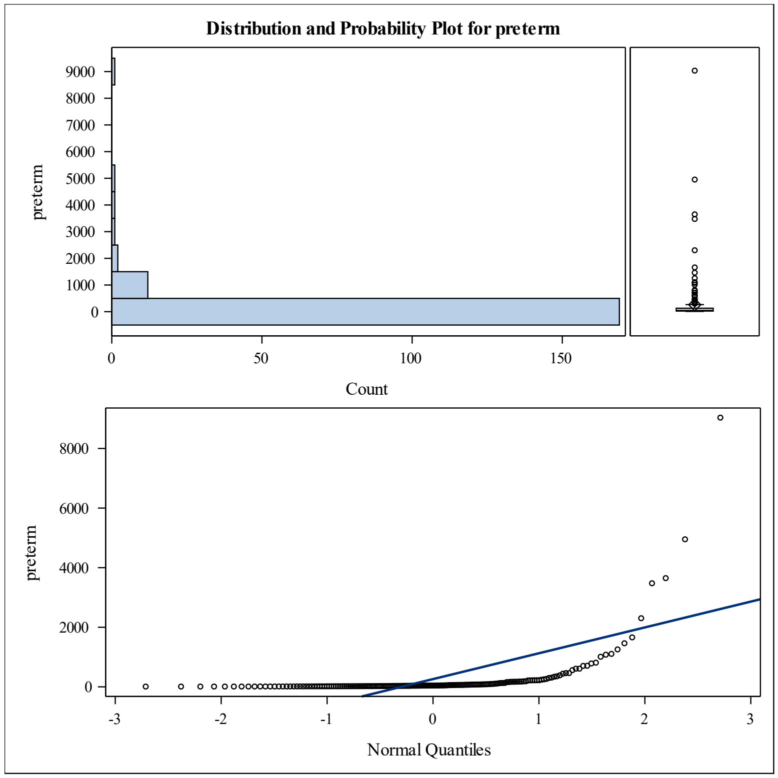

Figure 4.1: Distribution and Probablity Plot for Preterm Birth

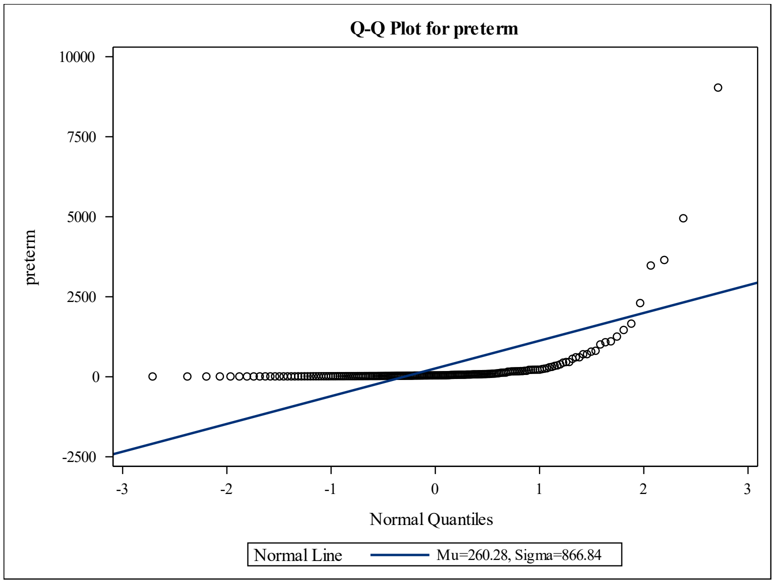

Figure 4.2: Q-Q Plot for Preterm Births

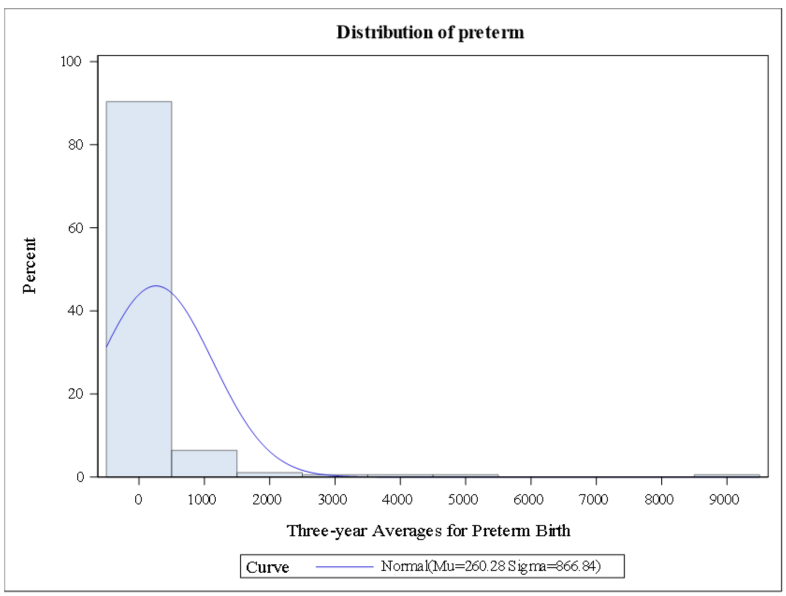

Figure 4.3: Histogram of Preterm Birth Distribution

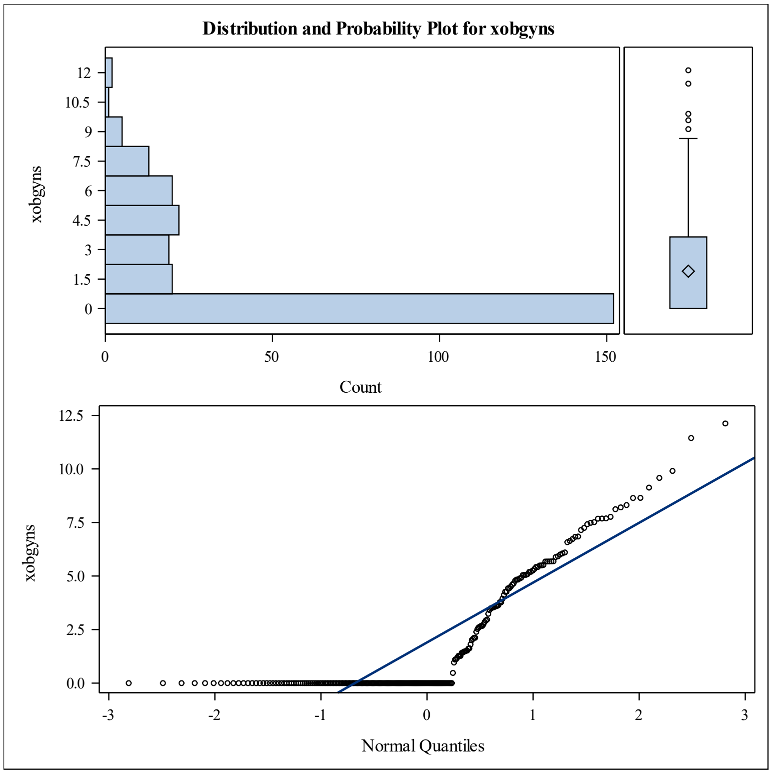

Figure 4.4: Histogram of Distribution and Probability Plot for OB-GYNs

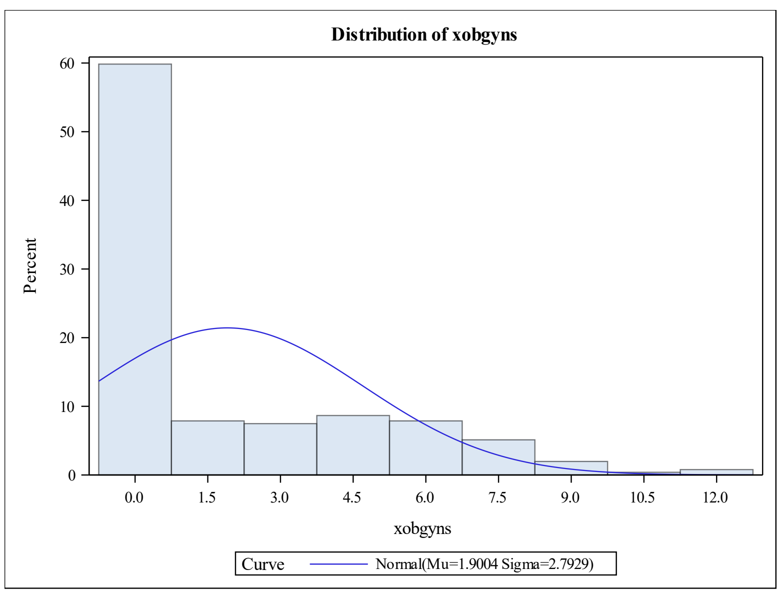

Figure 4.5: Distribution of OB-GYNs

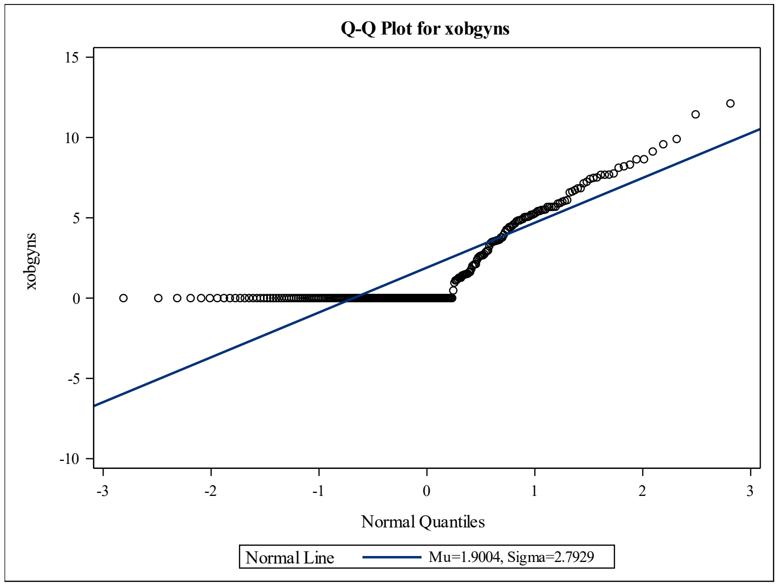

Figure 4.6: Q-Q Plot for OB-GYNs

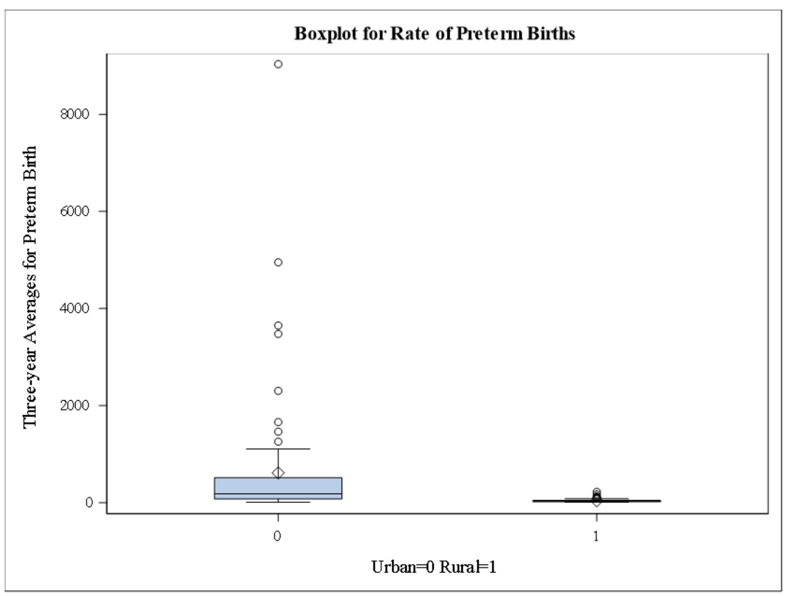

Figure 4.7: Boxplot for Rate of Preterm Births.

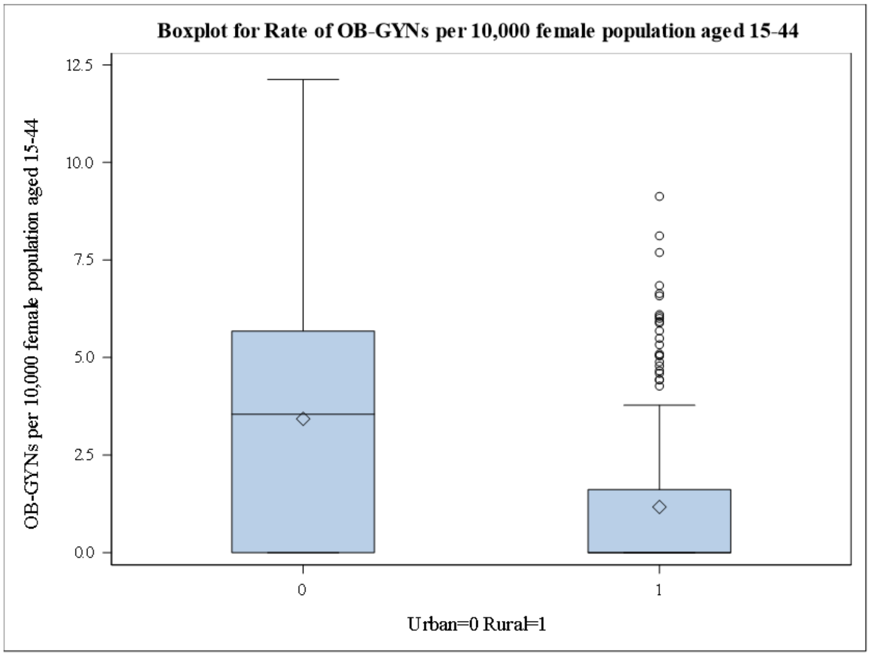

Figure 4.8: Boxplot for rate of OB-GYNs per 10,000 females aged 15-44

Using the Spearman's Rho correlation test, there was a moderate, statistically significant correlation between preterm births and OB-GYNs in rural counties ($r_s = 0.53$, p=<0.0001) (Table 4.7). For urban counties, one can see a stronger correlation between preterm births and OB-GYNs ($r_s = 0.73$, p=<0.0001) (Table 4.7).

Table 4.7: Spearman Rho Correlation Coefficients for Preterm Births and OB-GYNs per 10,000

	Preterm Births	
	Rural Counties	Urban Counties
	N = 115	N = 72
OB-GYNs	0.53	0.73
	<.0001	<.0001

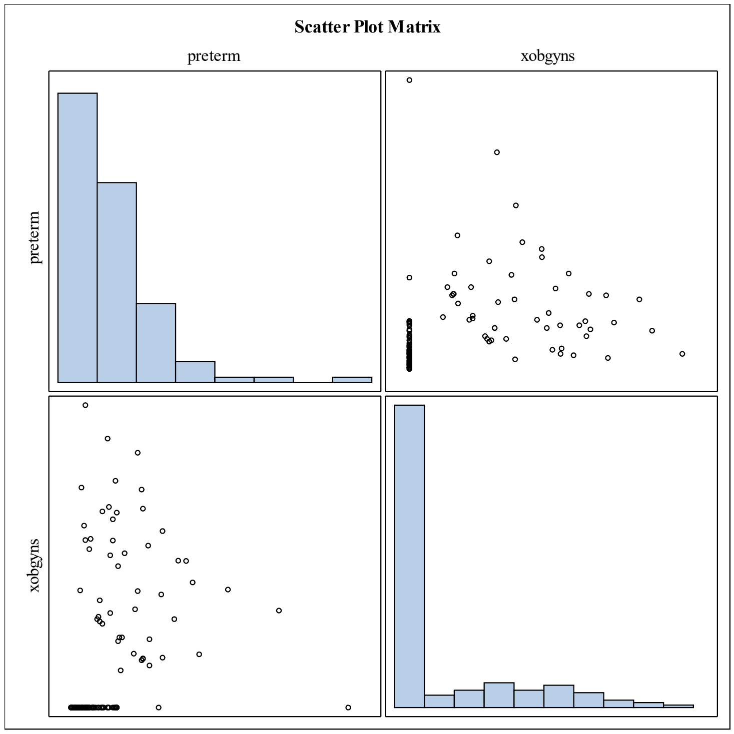

Figure 4.9: Rural Histograms and Scatterplots for Preterm Births and OBGYNs

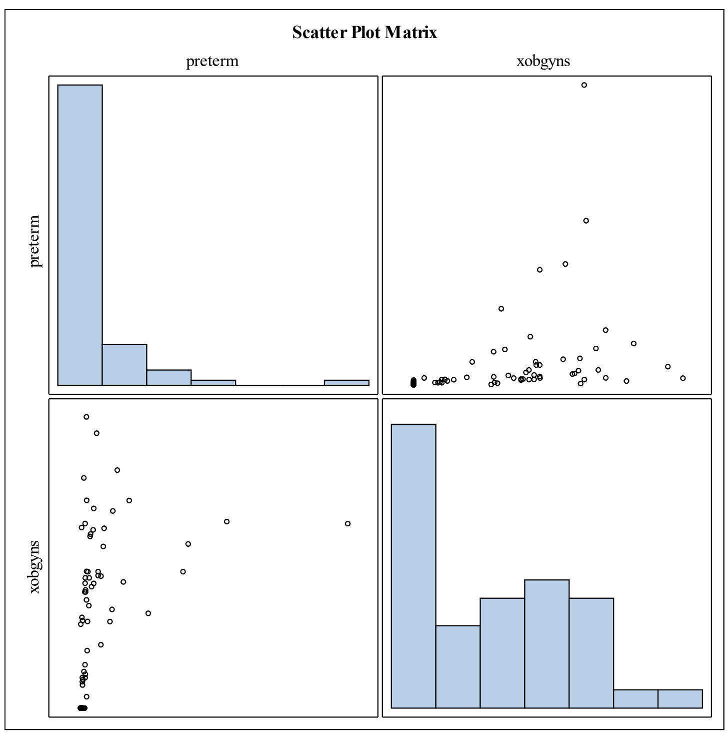

Figure 4.10: Urban Histograms and Scatterplots for Preterm births and OBGYNs

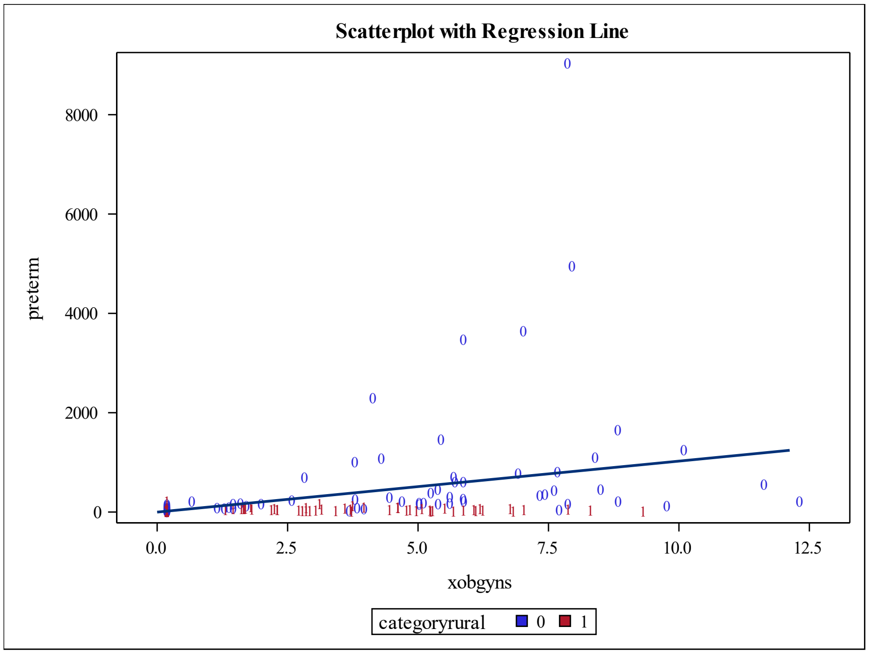

Figure 4.11: Rural and Urban Scatterplot with Regression Line

CHAPTER 5

DISCUSSION

5.1 Overall Discussion

On average, in urban counties, there is a higher average number of preterm births (M=613; SD=1327), compared to rural counties (M=40; SD=32). There is also a higher rate of OB-GYNs per 10,000 female population aged 15-44 in urban areas as well. This is an anticipated finding, as there is a larger population of people living in urban areas. In order to gauge the magnitude of the difference in the relationship between rural and urban preterm births, further analysis to scale the number of preterm births in proportion to the total female population aged 15-44 may need to be performed. With a scale set in place to truly evaluate the information in relation to the population, even though urban counties yielded raw higher numbers due to more people residing in them, rural counties may have a higher rate of preterm births in relation to population size (total female population aged 15-44).

Results support a correlation between preterm births for both rural and urban counties, with a stronger correlation being present in urban counties. (As the average number of preterm births increase, so does the average number of OB-GYNs). However, the distribution of preterm births varies substantially within and across rural and urban counties. Compared to the number of preterm births, there are relatively few OB-GYNs per 10,000 female population aged 15-44 to serve the needs of residents across all counties. Moreover, there are unique considerations for rural counties that should be noted interpreting these findings. According to the results in the previous chapter, there is on average one OB-GYN per 10,000 female age 15-44 in rural counties (Table 4.5). One can see this is concerning when considering there is, on average, 40 preterm births across rural counties. The lack of specialty care in obstetrics can lead to longer drive times during emergent situations, a greater extent of injury due to prolonging initial treatment, and a decrease in both maternal and fetal health during pregnancy.

Limitations to note are that the design of the study limits what can be inferred from results. Correlation does not equal causation. In other words, just because values are positively correlated according to the Spearman's Rho test does not mean that one causes the other. As the literature supports, there are many factors that can contribute to preterm births. It is substantial, however, that there are such wide variations between the number of preterm births per OB-GYN, and how some counties have 0 OB-GYNs. This is a risk factor for the women of childbearing age who live in these counties and should not be discounted.

5.2 Comparison of Findings to the Literature

Findings contribute to the literature in terms of justifying how imperative it is for rural areas to be able to have access to healthcare, including specialty healthcare. Rural women are more likely to have severe maternal morbidities like chronic hypertension, chronic kidney disease, and higher rates of adolescent pregnancies according to

Kozhimannil et al. (2019). This study's finding that the lower proportion of OB-GYNs in rural compared to urban areas is consistent with Hyunjung Lee et al.'s (2020) findings that noted a declining availability of OB-GYN services in rural areas. After concluding that there are far fewer OB-GYNs for rural populations, these SMM become much more significant and detrimental to those living and choosing to bear children in rural counties.

In addition to OB-GYNs, future studies may want to incorporate looking at the distribution of doulas across rural and urban counties in Texas to understand the extend of OB care support that is available for mothers depending on where they live. According to the Merriam-Webster dictionary, a doula provides support, advice, information, and physical comfort to a mother prior to, during, and after giving birth. In addition, midwives are those that also assist women in childbirth. The difference between the two is a midwife can be trained in the field of nursing. Even though a doula is not a medically trained professional, they can still make a world of difference for mom, baby, and family. It has been shown that women who are of lower socioeconomic status and also had an obstetrician as their primary provider, a male provider, and no doula reported lower quality maternity care (Ibrahim et. al, 2022). It can also be noted that women in rural areas are shown to be more predisposed to certain factors like adolescent pregnancy, chronic hypertension, and kidney disease. With these factors often being seen in rural areas, doulas would offer support needed. Ibrahim et. al. also found that participants with a midwife were 3.5 times more likely to report higher quality maternity care than those with only an obstetrician (Ibrahim et. al, 2022). Therefore, future research could incorporate a more comprehensive assessment of the maternal health workforce and how it differs in rural and urban counties in Texas, and how this relates to birth outcomes.

CHAPTER 6

CONCLUSION

Although the number of OB-GYNs may not directly have an effect on the number of preterm births in rural and urban counties, it is notable that there are fewer OB-GYNs available in rural counties. Fewer OB-GYNs could lead to higher chances of high-risk pregnancies due to a lack of prenatal, intranatal, and postnatal care. Using these findings and other evidence from the literature, the appropriate government entities could have rationale to allocate resources to rural counties resembling mobile clinics, developing reliable telehealth communication able to withstand poor connections, or properly funding the few rural hospitals still open, and providing them with more resources than the average rural hospital in order to serve a wider geographic area.

6.1 Future Research

Future research can stem from the inquiry of what external factors may cause preterm births and how to minimize those occurrences, not just in rural, but urban locations as well. Evidence suggests that there are fewer OB-GYNs in rural areas; however, rural female populations aged 15-44 are at risk of developing severe maternal morbidities. Individuals residing within these rural counties may benefit from gaining access to research like this and many others. With said information, they could potentially plan for their births with implementing individuals like doulas, a trained professional who provides services that support experiences like childbirth and what comes before and after.

Midwives may also be considered. These individuals, however, would not replace an OB-GYN in cases of more dire situation. Programs could be introduced to provide doulas and midwives more knowledge similar to OB-GYNs to equip them with the resources lacking in OB-GYNs availability. Since research has highlighted that 122 rural counties and 29 urban counties have 0 OB-GYNs, researching the number of doulas and/or midwives in the area can show us the extent of support received from doulas and/or midwives and if there is also a change in the aftermath of birthing stories and outcomes with their stepping into a more hands-on independent role. No individual should ever have to choose between where they live and whether or not they will have access to healthcare they may need.

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BIOGRAPHICAL INFORMATION

Toni-Ann Samuels began her college career in the Fall of 2019 at The University of Texas at Arlington and finished her Honors Bachelor of Science in Nursing degree at UTA. From an early age, Toni-Ann has always been interested in working with children and has focused her research on Pediatrics. She has devoted research to Pediatric Spinal Muscular Atrophy, the pathophysiology of Tetralogy of Fallot, Covid-19's Propagation and Containment of a Pandemic, The Gut Microbiome, and its Correlation to Depression and Anxiety, and the effects greater nurse-patient ratios have on nurses and how it affects their duties. Future plans for Toni-Ann consist of beginning her nursing career in the Neonatal Intensive Care Unit (NICU) and later becoming a Neonatal Nurse Practitioner (NP).