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Pregnancy Intention and Maternal Morbidity in Oklahoma and Mississippi: A Moderation Analysis of Abortion Restriction Policies

Vicki Johnson
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Walden University

College of Health Sciences and Public Policy

This is to certify that the doctoral study by

Vicki Johnson

has been found to be complete and satisfactory in all respects,
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the review committee have been made.

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Walden University

2025

Abstract

Pregnancy Intention and Maternal Morbidity in Oklahoma and Mississippi: A
Moderation Analysis of Abortion Restriction Policies

by

Vicki Johnson

MPH, Baylor University, 2022

BS MT, Cameron University, 1990

Doctoral Study Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Public Health

Walden University

February 2026

Abstract

More than half of all pregnancies are unintended (mistimed or unwanted), and women with unplanned pregnancies may face economic hardships for families and additional health consequences if they have pre-existing medical conditions. This quantitative study was conducted to examine the relationship between pregnancy intention levels and severe acute maternal morbidity, specifically chorioamnionitis, among women who gave birth in Oklahoma and Mississippi in 2022. Using secondary data (N=1939) from the Pregnancy Risk Assessment Monitoring System Automated Research Files and state-level abortion policy data from the Guttmacher Institute, this study employed Bronfenbrenner's social ecological model framework to investigate the relationship between pregnancy intention levels and chorioamnionitis, while controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care, as well as moderating effects caused by abortion restriction policies. Binary logistic regression models were used for data analysis. Unintended pregnancies were most prevalent (55%); inadequate prenatal care (Wald =5.129 p=0.024 Exp(B)=4.501 CI(1.224,16.546); marital status (Wald =5.812 p=0.016 Exp(B)=0.369 CI(0.164-0.830); and FPL (Wald =6.835 p=0.009 Exp(B)=0.272 CI(0.102, 0.722) each had positive association with chorioamnionitis. Chorioamnionitis incidence was very low (<1%), therefore evidence was insufficient to demonstrate statistically significant association with pregnancy intention or moderation effects by abortion restriction policies. However, data from this study was used to inform a policy memo, public health intervention plan, and infographic aimed to reduce rates of unplanned pregnancies, which may promote positive social change.

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Dedication

This work is dedicated to my mother, Joyce Johnson, my father, James Johnson Sr., my children, Dylan McMullen, Hollie McMullen, and Braden McMullen, and my grandchildren, Aspynn, Kameron, Owen, Memphis, and Demi. It is because of you that I chose to further my education and pursue a doctoral degree.

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Section 1: Foundation of the Study and Literature Review

Introduction

The topic of this research study is an analysis of pregnancy intention levels to see if there is an association with subsequent severe acute maternal morbidities. There are no studies in the United States, and specifically in Oklahoma and Mississippi, that have been done in the past 5 years to see if there is an association. Moreover, there are no studies to determine if different abortion restriction levels of policy influence the strength of the relationship between pregnancy intention and severe maternal morbidity, specifically chorioamnionitis, a life-threatening infection of the womb, that is associated with unsafe abortions, premature rupture of the membranes, and prolonged labor. In the current political landscape of abortion policies and the White House (2023) blueprint for improving maternal health, there is a call for additional public health research, interventions, and surveillance to promote positive social change, such as policy change, increased access to pre-conception care, reproductive health education and early interventions, adequate care during pregnancy, labor and delivery, and postpartum period. For this current study, the population being studied is women in Oklahoma and Mississippi who responded to the Pregnancy Risk Assessment and Monitoring System (PRAMS) surveys in 2022.

Background

In the United States, rates of severe maternal morbidity and maternal deaths continue to rise, and a significant disparity exists among Black women, Hispanic women, and Native American Indian women. In Oklahoma, between 2018-2020, it was reported

that the rate of maternal deaths was 25.2 per 100,000 live births (Oklahoma MMMR, 2022), and in Mississippi, a higher rate was reported, with 44.6 maternal deaths per 100,000 live births between 2020-2022 (Mississippi MMMR, 2023). Though some researchers concluded that socioeconomic differences did not significantly impact maternal health outcomes among singleton births (Adegoke et al., 2021), other have noted that maternal death rates are notably higher among Black and Hispanic women when compared to White women according (Brown et al., 2021). Further, the issue is not maternal deaths based on incidence, but rather severe acute maternal morbidities (Fink et al., 2023). According to Fink et al (2023), pregnancy related complications that result in lifelong challenges are 20-30 times more common than maternal deaths.

There is a need for improved data collection and surveillance, investigation of personal factors, population-level factors, and examination of health system factors that contribute to the public health crisis of severe maternal morbidities (Ahn et al., 2020). Health system factors that need to be examined include adequacy of prenatal care (Lima Dos Santos et al., 2024), as well as access to and utilization of, and quality of pre-pregnancy care (Wang et al., 2023). There are also state variations in rates, including higher rates of severe maternal morbidity among non-Hispanic Black women, compared to other racial groups of women who had Medicaid coverage; therefore, underlying issues still need to be identified when seeking public health interventions (Admon et al., 2023). Severe maternal morbidity incidence has increased over the past several years and is considered a “near miss” event that disproportionately affects women of color and significantly increases the likelihood of maternal death (Carmichael et al., 2022). These

studies support the need for additional public health research to examine other factors that may be associated with severe acute maternal morbidity, specifically clinical chorioamnionitis.

Over half of the pregnancies in the United States, and even more specifically, in Oklahoma and Mississippi, were not planned, and there are varying levels of pregnancy intention. Pregnancy intention has been categorized as unwanted, ambivalent, intended, and mistimed (Robbins et al., 2021). Although a pregnancy is not always considered unwanted, an unintended pregnancy can cause additional economic hardships for families that are already struggling financially and additional health consequences for women who have pre-existing medical conditions (Nelson et al., 2022). Furthermore, women with unintended pregnancies are also more likely to be at risk for intimate partner violence (Nelson et al., 2022). Pregnancy ambivalence and unwanted pregnancies showed a positive association with inadequate prenatal care, poor weight gain, increased rates of smoking during pregnancy, and increased rates of intimate partner violence (Robbins et al., 2021).

After the U.S. Supreme Court reversed the *Roe v. Wade* decision, the authority has been granted to each state legislative body to decide how restrictive their policies will be on abortion (Davis, 2022). Currently, there are varying levels of restriction on abortion, and there is a gap in the literature as it relates to the public health burden of unplanned pregnancy or severe maternal morbidity and the impact of abortion policies. Finally, abortion restriction policies vary from state to state, and according to the Guttmacher Institute (2024), 14 states have total abortion bans, 27 states have bans based

on gestational age, and more than 171,000 women in the United States traveled to other states to seek abortion services in 2023. Approximately 4,000 were from Oklahoma, and approximately 9,000 were from Mississippi (Guttmacher Institute, 2024). Considering the scope and magnitude of this issue, it is important to examine if abortion restriction levels influence the relationship between unplanned pregnancy and severe maternal morbidity, specifically chorioamnionitis.

Problem Statement

The situation or issue that prompted me to search the literature is that pregnancy complications and maternal deaths affect women in the United States each year, and Oklahoma and Mississippi have higher rates compared to the national average (Oklahoma Maternal Morbidity and Mortality Report, 2022; Mississippi Maternal Morbidity and Mortality Report, 2023). About 700 women in the United States die every year due to pregnancy or pregnancy-related complications (Noursi et al., 2020; White et al., 2022). A specific severe acute maternal morbidity known as clinical chorioamnionitis is a life-threatening infection that can occur during pregnancy, or labor and delivery, or post-partum and following unsafe abortions (Wall & Yemane, 2022). The incidence of chorioamnionitis is approximately 5% of all term births (Gomez-Slagle et al., 2022), 8-50% of preterm births (Fowler & Simon, 2023), < 1% of medically induced abortions, and 20-30% of all unsafe abortions (Aronoff & Marrazzo, 2023), yet a gap exists in the literature because the incidence rate of chorioamnionitis is unknown among women with unplanned pregnancies who delivered full-term infants. Pregnancy complications disproportionately affect Black and Hispanic women, and over half of maternal deaths

and severe morbidity are preventable (Brown et al., 2021). It has been reported that about half of the pregnancies in the United States are unintended (Nelson et al., 2022) and may result in economic hardships and pre-existing medical conditions that can complicate the pregnancy outcome (Gordon et al., 2022). Pregnancy intention is an important public health topic requiring identification of associated behaviors, health outcomes, and community factors (Dorney et al., 2022). Additionally, the Guttmacher Institute (2024) reported that 42% of unplanned pregnancies end in abortion. Women who have unintended pregnancies face difficult choices about continuing with the pregnancy, and if residing in a state with abortion restrictions, women who elect to terminate the pregnancy for any cause face additional economic challenges by having to secure funding to pay for travel to other states and to pay for the medically induced abortion.

Pre-pregnancy care, including assessment of pregnancy intention, health screenings, and reproductive health education are key recommendations for women of childbearing age. The American College of Obstetrics and Gynecology (2020) promotes pre-conception care in a primary health care setting for all women of childbearing age (Wang et al., 2023). Pre-pregnancy care is a strategy to educate women on healthy behaviors before and during their pregnancy, screen for any pre-existing health conditions that might affect the outcome of the pregnancy and empower women to make informed family planning decisions, including timing and intention (Benedetto et al., 2024). Furthermore, this strategy also can be used to encourage women to access prenatal during the first trimester and maintain adequate care throughout the entire pregnancy, labor and delivery, and post-partum period (Benedetto et al., 2024; Wang et al., 2023) as

well as educate women on signs and symptoms of chorioamnionitis that should be immediately reported to the prenatal care provider.

Although researchers have investigated this issue, no population-based studies have been completed to examine the relationship between pregnancy intention levels and chorioamnionitis, a specific acute maternal morbidity among women who have given birth in the United States, and even more specifically, in Oklahoma and Mississippi, while statistically controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care, nor have there been studies to assess the role of state-level abortion policies as a potential moderator of this relationship. The specific research problem is that it is unknown if a relationship exists between pregnancy intention and chorioamnionitis, a specific acute maternal morbidity among women who have given birth in the United States, and more specifically, in Oklahoma and Mississippi, when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care and if abortion policies moderate that relationship.

Purpose of the Study

The purpose of this quantitative study was to examine if there is a relationship between pregnancy intention levels and a specific severe acute maternal morbidity, chorioamnionitis, and if that relationship is moderated by abortion restriction policies when controlling for race, ethnicity, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care. Data from this study can inform policymakers and public health practitioners how to promote positive social change among women of childbearing

age, by improving access to reproductive health services. Data from this study can also be used to educate women of childbearing age about the importance of pre-pregnancy care, reproductive health planning, including health screenings, education on health behaviors during pregnancy, and the importance of early entry into prenatal care, and continuity of care throughout the entire pregnancy, labor and delivery, and post-partum period.

Research Questions and Hypotheses

RQ 1: What is the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in Oklahoma and Mississippi?

H_01 : There is no statistically significant relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

H_a1 : There is a statistically significant relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

RQ 2: To what extent is the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) moderated by

levels of abortion restriction policies, after controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi?

H₀₂: There is no statistically significant difference in the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) moderated by levels of abortion restriction policies, after controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

H_{a2}: There is statistically significant difference in the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) moderated by levels of abortion restriction policies, after controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

Theoretical Foundation for the Study

The theories and concepts that ground this study include the Urie Bronfenbrenner's social-ecological model (Bronfenbrenner, 1989). This theoretical model describes multiple layers of influences, including microsystems (biological influences, familial influences), mesosystems (school, church, and neighborhood influences), exosystems (community influences and political landscape), macrosystems (societal and cultural influences), and chronosystems (time, place, and historical factors). The logical connections between the framework presented and the nature of my study include constructs from the socioecological model (SEM) that provide an understanding

of how socioeconomic factors (poverty level, insurance status, marital status), individual factors (age, race, ethnicity) and policy factors (abortion restriction levels) influence health equity and reducing disparities of birth outcomes and maternal morbidity and mortality (Ajayi et al., 2021; Noursi et al., 2020). For this study, I specifically looked at the outcome variable of severe maternal morbidity, specifically chorioamnionitis.

Nature of the Study

To address the research questions in this quantitative study, the specific research design includes a cross-sectional study using secondary data (Wang & Cheng, 2020) from the PRAMS Automated Research Files from Oklahoma and Mississippi (OK PRAMS ARF, 2022; MS PRAMS ARF, 2022), and a publicly available map (Guttmacher Institute, 2022) that illustrates the level of restrictive policies for reproductive health in each state. This study design captures population characteristics at a given point in time, and the prevalence data for the selected outcomes (Wang & Cheng, 2020). This study included the use of a representative PRAMS ARF Dataset (2022) from the states of Oklahoma and Mississippi, which contains data from surveys, birth certificates, and operational variables. A map from the Guttmacher Institute which shows the level of abortion restriction levels in each state. Although causation cannot be determined, binary logistic regression can be used as a form of automated intelligence to make predictions about the relationship between the variables of interest (pregnancy intention as the independent variable, and a specific severe maternal morbidity, chorioamnionitis, as the dependent variable, covariates including race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care), and the

moderating variable of interest is levels of abortion restriction policies.

After institutional review board (IRB) approval was obtained the data file was downloaded, and descriptive statistics were performed to get a sense of the population characteristics including frequencies and population counts. Next, assumptions for logistic regression were tested, recoding was completed as appropriate, and logistic regression models were analyzed once the assumption tests passed. Results of the logistic regression model were reported as odds ratio with confidence intervals and an interpretation of those results as an answer to the research question. Analysis was conducted using SPSS software version 30.0.0.0 (172).

Literature Review Strategy

The keywords and databases searched included key words *unplanned pregnancy*, *pregnancy complications*, *pregnancy outcomes*, *birth outcomes*, *maternal morbidity*, *maternal mortality*, *maternal health*, and *maternal deaths*, *severe acute maternal morbidity*, and *abortion restriction policies*, and *chorioamnionitis*. Databases included PubMed database, the BMC database, as well as a multi-database search using the Walden Library and Google Scholar. Inclusion criteria included peer-reviewed articles published between 2020-2024 and exclusion criteria included articles that were in a language other than English. Selected articles were then reviewed and categorized into supporting literature for epidemiological background, variables of interest, theoretical framework, and chosen methodology.

Theoretical Framework

Theories and concepts that ground this study include Urie Bronfenbrenner's

social-ecological model (Bronfenbrenner, 1989). This theoretical model describes multiple layers of influences, including microsystems (biological influences, familial influences), mesosystems (school, church, and neighborhood influences), exosystems (community influences and political landscape), macrosystems (societal and cultural influences), and chronosystems (time, place, and historical factors).

Previous Application of Social-Ecological Model

Bronfenbrenner's social-ecological model has been previously applied in maternal health research. For example, Noursi et al. (2021) examined root causes of disparities in maternal health by seeking to understand the influences and interactions of individual factors including preconception health; interpersonal factors, including access to prenatal care, implicit bias among health care providers and its possible influence on obstetric care; community factors, including the existence of "maternity care deserts," and the need for quality improvement among Black-serving hospitals; and policy factors, such as parental leave, Medicaid coverage during pregnancy, and Medicaid expansion. Noursi et al. also applied the social-ecological model as a practical framework for the identification of effective interventions aimed to reduce disparities in maternal health. Carmichael et al. (2022) applied the social-ecological model, taking the position that maternal health has multidimensional influences, where social influences are stronger than biological influences.

Rationale for Use of Social-Ecological Model

The SEM is useful because it takes into consideration individual factors, societal factors, and policy factors that influence maternal health outcomes. By gaining a

thorough understanding of how socioeconomic factors (poverty level, insurance status, marital status), individual factors (age, race, ethnicity), and policy factors (abortion restriction levels) influence health equity and reducing disparities of birth outcomes and maternal morbidity and mortality (Ajayi et al., 2021; Noursi et al., 2021), positive social changes can be data driven. For this study, I specifically was looking at outcome variable chorioamnionitis, a severe acute maternal morbidity. Data analysis and conclusions were used to inform policy changes, health education and health promotion activities, based on the constructs of the ecological theory.

Strengths and Limitations of the Social-Ecological Model Framework

As mentioned, the SEM framework is a practical theoretical model for public health research. First, it has a wide range of applications and provides a framework for gaining understanding of non-medical drivers of maternal health (Ajayi et al., 2021; Carmichael et al., 2022; Noursi et al., 2021). Second, it is beneficial when planning interventions to improve maternal health outcomes (Noursi et al., 2021). Limitations of the SEM theoretical framework include the lack of specificity, and it can be difficult to operationalize in research (Beyera et al., 2022).

Literature Review Related to the Key Variables

Pregnancy Intention

Pregnancy intention provides context to help public health professionals understand health behaviors during pregnancy. Differences in pregnancy intention levels lead to increased risk associated with pregnancy ambivalence, unwanted pregnancies, and adverse behaviors during pregnancy, including intimate partner violence, smoking during

pregnancy and the post-partum period, and inadequate prenatal care (Robbins et al., 2021). Unplanned pregnancy has also been significantly associated with higher odds of maternal depression during pregnancy and post-partum, maternal experience of interpersonal violence, preterm birth, and infant low birth weight (Nelson et al., 2022). Moreover, unwanted or mistimed pregnancy is associated with increased rates of post-partum depression, especially among women of color, who were of a young age and had no college education (Mark & Cowan, 2022). Unplanned pregnancy also increases the odds of induced labor and delivery (Carlander et al., 2023).

Chorioamnionitis

While severe acute maternal morbidities include unexpected complications such as eclampsia, pre-eclampsia, uncontrolled hypertension, uncontrolled diabetes, and hemorrhage, the focus of this study was on a specific severe acute maternal morbidity known as chorioamnionitis. Chorioamnionitis is a life-threatening infection of the womb that can occur during pregnancy, during labor and delivery, and post-partum.

Chorioamnionitis can result in death of the mother and the baby if not treated promptly (Lukanovic et al., 2023) and is an emerging issue associated with unsafe abortions (Wall & Yemane, 2024). What is known is that there is a significant impact (a 30% increase) of the economic burden, as measured by years of potential life lost (YPLL) and value of statistical life (VSL) associated with maternal deaths and severe maternal morbidities (White et al., 2022), and it is estimated that clinical chorioamnionitis occurs in approximately 5% of all term births (Gomez-Slagle et al., 2022), 8-50% of preterm births (Fowler & Simon, 2023), <1% of medically induced abortions, and 20-30% of all unsafe

abortions (Aronoff & Marrazzo, 2023).

Race and Ethnicity

Race and ethnicity are population characteristics self-declared by individuals and are often used in public health studies to identify inequities (White et al., 2020), yet their lived experiences may be vastly different, depending on how the person is perceived, based on skin color or national origin. A study was conducted by Adegoke et al (2021), who retrospectively examined the relationship between race and nativity and adverse maternal and perinatal outcomes among women who delivered singleton births at Boston Medical Center between 2010 and 2015; the results of the study indicated that black women regardless of their nativity have a higher rate of poor outcomes. Moreover, structural racism, which is based on a person's appearance is a contributory factor of higher rates of maternal morbidity and mortality (Howell et al (2020; Njoku et al.,2023). Noursi et al (2020) reported that the magnitude of severe maternal morbidities, and that racial disparities are significant,, with about 700 maternal deaths every year and an estimated 50,000 “near misses,” disproportionately affecting Black women. Furthermore, in the study by Cruz-Bendezu et al (2020) collected data on racial characteristics of women who participated in the study, and their pregnancy intention, with 39.2% reporting that their pregnancy was unintended. Of these women with unintended pregnancy, 50.6% of women were Hispanic, 28.4% were White, 10.1% were Black, and 10.9% were other races. Data from these studies support the inclusion of race and ethnicity as variables in maternal health research.

Age

Age is a factor that has been strongly associated with pregnancy intention. Recent studies indicate that with women aged 18-24 and women over age 35 had a higher relative risk of unplanned pregnancy than women of other age groups (Testa et al., 2021). While this study focused on the effects of adverse childhood experiences, the regression model did not include any data for teenage girls, but overall results were stratified by age. Robbins et al (2021) however, reported that women aged 18-24 had lower rates of unintended pregnancy. The age characteristics of the mother should be controlled for in my study as a potential confounding factor.

Poverty Level

In the United States, the federal poverty guidelines serve as an important indicator in maternal health research. According to Cruz-Bendezu et al (2020), about 40% of pregnancies are unintended and disproportionately affect women of low socioeconomic status. Moreover, in a cross-sectional study of women eligible pregnant women in Kentucky (Feld et al., 2021), 62% of the women reported that their pregnancy was unintended. These studies support the inclusion of poverty level as a variable for this current study.

Pre-Conception Care

Pre-conception care, including assessment of pregnancy intention, health screenings, and reproductive health education are key recommendations for women of childbearing age. The American College of Obstetrics and Gynecology (2020) promotes pre-conception care in a primary health care setting for all women of childbearing age

(Wang et al., 2023). Pre-conception care is a strategy to educate women on healthy behaviors before and during their pregnancy, screen for any pre-existing health conditions that might affect the outcome of the pregnancy and empower women to make informed family planning decisions, including timing and intention, (Benedetto et al., 2024). Furthermore, this strategy also can be used to encourage women to access prenatal during the first trimester and maintain adequate care throughout the entire pregnancy, labor and delivery, and post-partum period (Benedetto et al., 2024; Wang et al., 2023)

Adequacy of Prenatal Care

The Kotelchuck Index is a categorical measurement that is used to describe the adequacy of prenatal care. This index was developed by Milton Kotelchuck (1994), and measures the adequacy of prenatal care by assessing the timing of prenatal care initiation, the number of prenatal visits, and adjusting for the interval between the initiation of prenatal care and the gestational age (Lima Dos Santos et al., 2024) The Kotelchuck index was developed based off of prenatal care guidelines set by the American College of Obstetricians and Gynecologists (Kotelchuck, 1994). In the PRAMS ARF (2022) categories of prenatal care include adequate plus, adequate, intermediate, and inadequate.

Marital Status

Marital status is a potential confounding factor that is related to pregnancy intention. Robbins et al (2021) reported that 42% of married women responded in the 2018 PRAMS survey that their pregnancy was unintended, while 58% of unmarried respondents categorized their pregnancy as unintended. Moreover, Zhang et al (2023) reported that women with a single status had higher rates of preterm labor (14.1%,

compared to 9.5%), which is associated with chorioamnionitis compared to married women. This data supports the inclusion of marital status as a demographic variable for this current study..

Abortion Restriction Policy Levels

Abortion restriction policies vary from state to state. Interestingly, Bossick et al (2023) examined rates of severe maternal morbidity, pregnancy-related mortality, and preterm birth rates, using a composite index to categorize reproductive health policy restrictions, and reported that the rate of SMM was significantly higher in states with enabling policies compared to most restrictive states. However, Bossick et al (2023) also reported that pregnancy-related mortality rates were significantly lower in states with enabling policies compared to those with restrictive policies. Moreover, Redd et al (2022) examined the relationship between abortion restriction policies and birth outcomes and reported that nationally the restrictions appeared insignificant, but regionally, there was an increased risk of adverse birth outcomes, and according to Stevenson et al (2022), as the number of unsafe abortions increase, states will start seeing higher rates of maternal mortality, because of criminalization of abortions. According to the Guttmacher Institute (2024), 14 states have total abortion bans, 27 states have bans based on gestational age, and more than 171,000 women traveled to other states to seek abortion services in 2023. Figure 1 illustrates the level of abortion policy across the US following Dobbs. V. Jackson. Hostile abortion policies and increased rates of women seeking abortion services (Gordon et al., 2022; Kheyfets et al., 2023) are evidence of a growing maternal health crisis in the United States, resulting in many women with unplanned pregnancies facing

Kotelchuck index variable in the PRAMS_ARF file. Codes and definitions are presented in Table 7.

Age: Data for the age variable will be obtained from the PRAMS ARF operational variable MAT_AGE. Codes and definitions are presented in Table 3. The data codes and definitions are presented in Table 6.

Chorioamnionitis: The dependent variable is an operational birth certificate variable MM_FEVER, which is an indicator of chorioamnionitis, the specific severe acute maternal morbidity on which this study will focus, and the responses are dichotomous (yes/no), where any unknowns would be assumed to be and grouped with the no responses. Codes and definitions are presented in Table 8.

Marital Status: this variable refers to the categories referenced in the PRAMS dataset only has three categories-unknown, married, and other. It is important to note that the “other status could refer to divorced women, or women who are in a civil union. Marital status will be obtained from the PRAMS ARF dataset from the operational variable MARRIED and corresponding PRAMS ARF codes and recoded definitions are listed in Table 4.

Poverty Level: Poverty levels are calculated based on the Federal Poverty Guideline tables and take into consideration the income level for the household, and number of household members. The operational variable and corresponding PRAMS ARF codes and recoded definitions are listed in Table 5.

Pre-Conception Care: This variable is derived from PRAMS core question 6, and the operational variable that corresponds in the OK and MS PRAMS ARF 2022 file is

PRE_VIST.

Pregnancy Intention: The independent variable (IV) of interest is pregnancy intention levels, coded in categories of ambivalence, unwanted, mistimed, and planned. Source data for this variable is PRAMS ARF Phase 8 Question 12, “Thinking back to just before you got pregnant with your new baby, how did you feel about becoming pregnant?” Dummy variables will be created as the following categories: wanted (“I wanted pregnancy then or sooner”), mistimed (“I wanted to be pregnant later”), ambivalent (“I wasn’t sure what I wanted”), and unwanted (“I didn’t want to be pregnant then or any time in the future”). Codes and definitions are presented in Table 1.

Race and Ethnicity: Race is a self-proclaimed identity, often based on skin color or physical appearance (Lett et al., 2022), while ethnicity is also a self-proclaimed identity, often based on national origin or tribal heritage. Because race and ethnicity are self-proclaimed, findings from this public health research will not necessarily reflect biological influences, but rather social experiences among a group of people with a similar identity. The corresponding data for race and ethnicity is obtained from the birth certificate data, is obtained from the PRAMS ARF birth certificate operational variables MAT_RACE_PU, (maternal race grouped), and HISPANIC (Hispanic ethnic group). Codes and definitions are presented in Table 2.

Assumptions

The first assumption is that women who self-report survey responses are good historians. The data from the PRAMS ARF can be meaningful to the extent that the participants were good historians, and using the data from Oklahoma and Mississippi can

allow for public health inferences about the population. Secondly, there is an assumption that all data for the surveys is entered correctly into the database. PRAMS research procedures included quality control measures were implemented during the data collection phase to ensure consistent and reliable reporting. Finally, the last assumption is that causation cannot be established, and the models in this study only test for association between the variables of interest. Furthermore, the moderating variable is not included in the PRAMS ARF data; thus, it can only be tested for a moderating effect based on the participant's state of residence.

Scope and Delimitations

The scope of this study is limited to women who had given birth during the calendar year 2022 who responded to the PRAMS Surveys in Oklahoma and in Mississippi and does not include women who died during childbirth. The research problem focuses on women whose birth outcome was documented on the birth certificate. This study will include participant survey data from selected states of residence and stratified according to their abortion restriction policy levels. Because of the way the states of residence are selected this prevents internal bias. This study does not differentiate between heterosexual and lesbian women, but rather, looks at the population of women who gave birth to a child during CY 2022 in Oklahoma and Mississippi, making the results more generalizable to the represented populations. Furthermore, it is possible that the results may be generalizable to women who reside in other states with similar demographics, pregnancy intention levels, and outcomes.

Limitations

Some of the limitations of this study include the use of secondary datasets and participant self-reporting. The PRAMS ARF research design and data collection methods were not used to answer my specific research questions. Secondly, the data from the surveys administered by the PRAMS research team were self-reported, except for the data from the birth certificates. Furthermore, an additional limitation is the use of a cross-sectional study of secondary data. Cross-sectional studies do not prove causation, nor do they provide the incidence of a given health condition. Rather, this type of study design will provide the overall prevalence of the health conditions for the data reporting period of calendar year 2022. The use of secondary data is useful, however, because of the considerable number of participants and stratified sampling procedures that prevent the underrepresentation of marginalized populations (Krukowksi et al., 2021). The final limitation of this study is that the effective dates of each state's abortion restriction policies may not fully align with the dates of the survey data from 2022 PRAMS ARF.

Significance

Non-medical drivers of maternal death rates have not been studied extensively. Restrictive abortion policies may require that the woman carry the pregnancy to term and without proper prenatal care, complications during delivery can occur that may subsequently result in maternal morbidity or maternal death. There is also a significant economic burden associated with maternal deaths, not to mention emotional, physical, and spiritual burdens (Gordon et al., 2022). This study has potential significance and implications for change and multiple levels of society. First, at the individual level, as

mentioned previously, women who experience unplanned pregnancies are more likely to engage in unhealthy behaviors and potentially experience pregnancy complications if they do not seek prenatal care, therefore this study has the potential to provide evidence to support the need for future public health interventions to reduce unplanned pregnancies (Yu et al., 2022). At the community level, this study could lead to improved community policies that promote comprehensive reproductive health education, which is a potential root cause of unplanned pregnancy. At a societal level, there are implications for policy changes such as contraceptive access, and family planning program funding, and modifications to abortion restriction policies (Gordon et al., 2022). A final implication of this study is that it has the potential to provide information needed to support improved surveillance efforts of pregnancy intention and severe maternal morbidities and opportunities for future public health research (MacDorman et al., 2021).

Summary and Conclusions

This study is significant in that non-medical drivers of health (poverty, intimate partner violence, inadequate housing, food insecurity, and lower educational attainment) can cause women to have negative feelings about unintended or poorly timed pregnancies. The first major theme identified in the literature was varying levels of pregnancy intention (Robbins et al., 2022) which range from wanted, unwanted, or ambivalent. Severe maternal morbidity was a second theme identified and described as a larger public health issue than maternal mortality (Fink, 2023). Abortion restriction policies have been clearly defined in state policies and summarized (Guttmacher Institute, 2024). The gap identified in the literature is a lack of knowledge about the relationship

between these dimensions of maternal health. This study aims to fill that gap by examining the relationship between pregnancy intention levels and severe acute maternal morbidity (specifically chorioamnionitis) and testing for moderating effects of abortion restriction policies, while controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care.

Section 2: Research Design and Data Collection

Introduction

The purpose of this quantitative study was to examine if there is a relationship between pregnancy intention levels and a specific severe acute maternal morbidity (chorioamnionitis) and if that relationship is moderated by abortion restriction policies when controlling for race, ethnicity, poverty level, marital status, pre-conception care, and adequacy of prenatal care. To address the research questions, a cross-sectional study using secondary data from the OK and MS PRAMS ARF were used as well as a publicly available map from the Guttmacher Institute (2022) that illustrates the level of restrictive policies for reproductive health in each state. The OK and MS PRAMS ARF contain data from surveys, birth certificates, and operational variables. A map from the Guttmacher Institute illustrates the abortion restriction levels in each state (Guttmacher Institute, 2022).

Research Design and Rationale

Cross-sectional studies using secondary data is an efficient, cost-effective, and timely method for obtaining the data for a quantitative research study (Kelly et al., 2024). This study design captures population characteristics at a given point in time, and the prevalence data for the selected outcomes (Wang & Cheng, 2020). Cross-sectional studies do not prove causation, nor do they provide the incidence of a given health condition. Rather, this type of study design will provide the overall prevalence of the health conditions for the data reporting period of calendar year 2022. The use of secondary data is useful, however, because of the number of participants and stratified

sampling procedures that prevent the underrepresentation of marginalized populations (Krukowski et al., 2021) This study includes the use of a moderate sized dataset, and although causation cannot be determined, logistic regression can be used as a form of automated intelligence to make predictions about the relationship between the variables of interest.

The data source chosen for this study is the OK and MS PRAMS ARF from 2022. The database includes variables that assessed in this study, including pregnancy intention level, age, race, poverty level, marital status, state of residence, pre-pregnancy care, and adequacy of prenatal care, and chorioamnionitis (Schulman et al., 2018). State of residence data were cross-referenced to an interactive map from Guttmacher Institute which details information about abortion restriction levels by state. The levels of restriction were assigned a numerical code for statistical analysis. With secondary data, time constraints are less challenging because the data has already been collected, and public health knowledge can be advanced using statistical modeling and predictions based on those models.

Methodology

For this study, 2022 PRAMS ARF participant data from all participating jurisdictions in Oklahoma and Mississippi was utilized. By stratifying the data by state to reflect levels of abortion restriction policy levels, these data contributed to the generalizability of the results because of the representative nature of the dataset, adequate number of respondents, and rigorous data collection methods and procedures, including quality control procedures to validate data entry, data responses from phone surveys, and

mail in surveys (CDC PRAMS, 2022), and more recently, the PRAMS data were linked to state databases, such as Medicaid, Birth Certificate Data, and WIC data, further lending to the credibility of the information collected. According to the PRAMS ARF (2022) methodology, PRAMS questionnaires consist of standardized core questions for all jurisdictions to utilize, and supplemental questions that are topic specific, and based on emerging issues. The study population includes women of childbearing age, who had a recent live birth identified from birth certificate files from participating jurisdictions of Oklahoma and Mississippi in 2022.

Sampling Strategy

PRAMS ARF (2022) sampling was a stratified random sampling procedure to allow for oversampling of specific subgroups (Krukowski et al., 2022), in which potential participants were selected from birth certificate files in participating jurisdictions, thus identifying women who had recently given birth. Extensive quality control procedures were followed to ensure the reliability of the research data (McCalla, 2021). Data contained within the Oklahoma and Mississippi PRAMS ARF (2022) include birth certificate data, method of data collection (mail, phone, or web), weighting variables, survey data, and analytical variables (Krukowski et al., 2022; McCalla, 2021).

Power analysis is used to establish a minimum sample size to prevent erroneous rejection of a null hypothesis and increase the likelihood of detecting a true effect or association of two variables (Giner-Sorolla et al., 2024). The total number of respondents for the 2022 PRAMS ARF dataset for the states of Oklahoma and Mississippi was 1,939 out of 4,481 women sampled. A priori power analysis was conducted using G*Power

version 3.1.9.7 for sample size estimation, based on data from Oklahoma and Mississippi PRAMS ARF 2022. To achieve a Cohen's D of 0.5, a desired statistical power of 0.8, and significance (p -value) of 0.05 a minimum sample size of 128 would be required for a two-tailed hypothesis, to yield results that measure the true effect and prevent erroneous rejection of the null hypothesis.

Operationalization of Constructs and Variables

This research study used secondary data from the Oklahoma and Mississippi's PRAMS ARF 2022 Data files. The data set provides a recent snapshot of pregnancy risk assessment survey data and birth certificate data necessary to conduct this study. McCalla (2021) evaluated the PRAMS data reliability and validity and reported that the quality control procedures effectively promote reliability and validity, making PRAMS a good secondary data source for public health research. Permission was requested from the CDC to access the data file; however, a change in the data sources was required because national PRAMS ARF data were removed from the repository after access was approved. Each state was contacted to request permission to access and use state data files. Of all the participating states, only Oklahoma and Mississippi granted permission to access the data. Data were not accessed or analyzed until the IRB was notified of the change, and IRB approval was received.

Independent Variable

The independent variable (IV) of interest is pregnancy intention levels. These levels include ambivalence, unwanted, mistimed, and planned. Pregnancy intention was assessed with the following PRAMS question: "Thinking back to just before you got

pregnant with your new baby, how did you feel about becoming pregnant?” Dummy variables were created as the following categories: wanted (“I wanted pregnancy then or sooner”), mistimed (“I wanted to be pregnant later”), ambivalent (“I wasn’t sure what I wanted”), and unwanted (“I didn’t want to be pregnant then or any time in the future”). Codes and definitions are presented in Table 1.

Table 1

Independent Variable: Pregnancy Intention

PRAMS ARF Question 12: Thinking back to just before you got pregnant with your new baby, how did you feel about becoming pregnant?		
Variable	PRAMS ARF Codes	New Code/Category
Pregnancy Intention (PGINT)	.B=BLANK	1=mistimed (later)
	1=LATER	2=planned (then, or sooner)
	2=SOONER	3=unwanted (did not want)
	3=THEN	4=ambivalent (not sure)
	4=DID NOT WANT THEN OR ANY TIME	0=Missing/Blank
	5=WAS NOT SURE	

Note. From PRAMS ARF Codebook (2022)

Covariates

Variables that controlled in this research study include race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care. The corresponding Oklahoma and Mississippi PRAMS ARF data for race and ethnicity is obtained from the birth certificate data. The operational variable and corresponding Oklahoma and Mississippi PRAMS ARF question, codes and definitions are presented in Table 2.

Table 2*Covariates: Race and Ethnicity*

PRAMS ARF Corresponding Data: Birth Certificate Variables		
Variable	Birth Certificate Codes	New Code/Category
Ethnicity (is mother Hispanic) HISP_BC	. U Unknown	0=unknown
	1=Yes	1=yes
	2=No	2=No
Maternal race MAT_RACE_PU	. U=UNKNOWN	0=Unknown
	2=WHITE	2=White
	3=BLACK	3=Black
	4=AM INDIAN	4=Am Indian
	10=AK NATIVE	10=AK Native
	21=ASIAN	21=Asian
	22=HAWAIIAN/OTH PAC ISLNDR	22=Hawaiian/OPI
	23=OTHER/MULTIPLE RACE	23=Other/Multiple Races

Note. From PRAMS ARF Codebook (2022)

Maternal age is a controlling variable from the Oklahoma and Mississippi ARF dataset, and the source of this data was birth certificates. The operational variable and corresponding Oklahoma and Mississippi ARF codes and recoded definitions are listed in Table 3.

Table 3*Covariate: Maternal Age*

PRAMS ARF Corresponding Questions or Data: Birth Certificate Variable		
Variable	PRAMS ARF Birth Certificate Codes	New Code/Category
Maternal Age MAT_AGE_PU	. U=unknown	1=17 or younger
	1=17 or less	2=18-24
	2=18-19	3=25-29
	3=20-24	4=30 or older
	4=25-29	
	5=30-34	
	6=35-39	
	7=40+	
	45=45 and older	

Note. From PRAMS ARF Codebooks (2022)

The next variable being controlled in this research study is marital status, which is an operational variable in the Oklahoma and Mississippi PRAMS ARF data that was obtained from the birth certificate files. Corresponding Oklahoma and Mississippi PRAMS Automated Research File variable codes and definitions are listed in Table 4.

Table 4

Covariate: Marital Status

Variable	PRAMS ARF Birth Certificate Codes	New Code/Category
Marital status	U = UNKNOWN	0 = unknown
	1 = MARRIED	1 = Married
MARRIED	2 = OTHER	2 = other

Note. From PRAMS ARF Codebooks (2022)

The next variable being controlled for is the poverty level, derived from the income question in the Oklahoma and Mississippi PRAMS ARF Survey. Poverty levels are derived from the Federal Poverty Guidelines and the income data and number of individuals in the home from Oklahoma and Mississippi PRAMS ARF will be recorded into the percent poverty levels, thus it is necessary to include data from the Income_NDEPEND variable to re-code the actual poverty level. The codes and definitions are listed in Table 5.

Table 5*Covariate: Poverty Level*

Corresponding Question or Data: Q50-During the 12 months before your new baby was born, what was your yearly total household income before taxes?		
Variable	PRAMS ARF Codes	New Code/Category
Income Level	. B=DK/BLANK	0-Blank/Unknown
INCOME8	1=\$ 0 TO \$16,000	1=0-50% to be recoded based number of dependents and income level
	2=\$16,001 TO \$20,000	2=51-100% to be recoded based on number of dependents and income level
	3=\$20,001 TO \$24,000	3=101-200% to be recoded based on number of dependents and income level
	4=\$24,001 TO \$28,000	4=201+% to be recoded based on number of dependents and income level
	5=\$28,001 TO \$32,000	
	6=\$32,001 TO \$40,000	
	7=\$40,001 TO \$48,000	
	8=\$48,001 TO \$57,000	
	9=\$57,001 TO \$60,000	
	10=\$60,001 TO \$73,000	
	11=\$73,001 TO \$85,000	
	12=\$85,001 OR MORE	
	13=\$ 0 TO \$10,000	
	14=\$10,001 TO \$16,000	
	15=\$85,001 TO \$99,999	
	16=\$100,000 OR MORE	
	17=\$85,001 TO \$99,000	
	18=\$99,001 TO \$109,000	
	19=\$109,001 OR MORE	
	20=\$ 85,001 TO \$100,000	
	21=\$100,001 TO \$120,000	
	22=\$120,001 OR MORE	
	101=\$ 0 TO \$ 20,000	
	102=\$20,001 TO \$ 25,000	
	103=\$ 25,001 TO \$ 30,000	
	104=\$ 30,001 TO \$ 36,000	
	105=\$ 36,001 TO \$ 40,000	
	106=\$ 40,001 TO \$ 50,000	
	107=\$ 50,001 TO \$ 60,000	
	108=\$ 60,001 TO \$ 71,000	
	109=\$ 71,001 TO \$ 75,000	
	110=\$ 75,001 TO \$ 91,000	
	111=\$ 91,001 TO \$107,000 112=\$107,001 OR MORE	
	201=\$ 0 TO \$ 18,000	
	202=\$18,001 TO \$ 23,000	
	203=\$23,001 TO \$ 28,000	
	204=\$28,001 TO \$ 33,000	
	205=\$33,001 TO \$ 37,000	
	206=\$37,001 TO \$ 46,000	
	207=\$46,001 TO \$ 55,000	
	208=\$55,001 TO \$ 65,000	
	209=\$65,001 TO \$ 69,000	
	210=\$69,001 TO \$ 84,000	
	211=\$84,001 TO \$ 98,000	
	212=\$98,001 OR MORE	
INC_NDEP	Number	
Income—dependents (self)		

Note. From PRAMS ARF Codebook (2022)

The corresponding PRAMS ARF data for pre-pregnancy care is obtained from the core Question 6. The operational variable and corresponding Oklahoma and Mississippi PRAMS ARF question, codes, and definitions are presented in Table 6.

Table 6

Covariate: Pre-Pregnancy Care

PRAMS ARF Corresponding Question or Data: Core 6		
Variable	PRAMS ARF Codes	New Code/Category
PR_VIST	.B=DK/BLANK	0=unknown
	.S=SKIP	1=no
	1=NO (UNCHECKED)	2=yes
	2=YES (CHECKED)	

Note. From Oklahoma and Mississippi PRAMS Phase 8 Codebook (2022)

The corresponding Oklahoma and Mississippi PRAMS ARF data for adequacy of prenatal care is obtained from the birth certificate data. The operational variable and corresponding Oklahoma and Mississippi PRAMS ARF question, codes and definitions are presented in Table 7 as the Kotelchuck index.

Table 7

Covariate: Kotelchuck Index (Prenatal Care Adequacy)

PRAMS ARF Corresponding Question or Data: Birth Certificate Variable		
Variable	OKLAHOMA AND MISSISSIPPI PRAMS ARF Birth Certificate Codes	New Code/Variable
Kotelchuck Index	.U=UNKNOWN	0=unknown
	1=INADEQUATE	1=inadequate
	2=INTERMEDIATE	2=intermediate
	3=ADEQUATE	3=adequate
	4=ADEQUATE PLUS	4=adequate plus

Note. From PRAMS ARF Codebook (2022)

Dependent Variable

The dependent variable is severe maternal morbidity and for 2022, the birth

certificate data includes a variable for chorioamnionitis. The Oklahoma and Mississippi PRAMS ARF variable codes and data definitions are listed in Table 8.

Table 8

Dependent Variable: Chorioamnionitis

PRAMS ARF Birth Certificate Variable MM_FEVER		
Variable	PRAMS ARF Birth Certificate Codes	New Code/Definition
Chorioamnionitis (MM_FEVER)	.U=Unknown	0=Unknown
	1=Yes	1=Yes
	2=No	2=No

Note. From Oklahoma and Mississippi PRAMS ARF Codebook (2022)

Moderating Variable

The variable that will be tested for moderating effects is abortion restriction levels. Abortion restriction policies are not included in the data from Oklahoma and Mississippi PRAMS ARF; therefore, dummy codes defined in Table 9 will be assigned for each participant's state of residence based on the restriction level published by the Guttmacher Institute (2022).

Table 9

Abortion Restriction Policies Variable Codes and Definitions

Variable	Coding Definitions
Most restrictive	1
Very restrictive	2
Restrictive	3
Some Restrictions	4
Protective	5
Very Protective	6
Most Protective	7

Data Analysis Plan

Research Questions and Hypotheses

RQ 1: What is the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in Oklahoma and Mississippi?

H_01 : There is no statistically significant relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

H_a1 : There is a statistically significant relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

RQ 2: To what extent is the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) moderated by levels of abortion restriction policies, after controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi?

H_02 : There is no statistically significant difference in the relationship between the

independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) moderated by levels of abortion restriction policies, after controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

H_{a2}: There is statistically significant difference in the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) moderated by levels of abortion restriction policies, after controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

Covariates

For this study, race, ethnicity, age, poverty level, marital status, pre-conception care, and adequacy of prenatal care are included as potential confounding variables, because each on their own, have been proven in the literature to be a contributing factor to the independent variable and the dependent variable. Testing these control variables allowed for the true effect to be seen when examining the relationship between the independent variable and the dependent variable.

Statistical Software

To perform data analysis, IBM SPSS (version 30.0.0.0 (172)) statistical analysis software was used to perform descriptive statistical analysis and multinomial regression analysis. This approach allowed for quality control assessment of the data. Assumptions for the binary logistic regression analysis were tested for violations as part of the quality control procedures. If violations were detected, or missing data is noted, then data was

recoded as necessary to eliminate missing data or weighting procedures were used as appropriate.

Six assumptions were tested to determine the suitability of the regression model for this research study. The first assumption was that the dependent variable had two outcomes. This assumption passed because the dependent variable included the presence or absence of severe maternal morbidity, chorioamnionitis (1=present, 0=not present). The second assumption was that there were two or more continuous, ordinal, or nominal independent variables. This assumption passed because the pregnancy intention was categorized into distinct levels, meaning at least one of the predictor variables was nominal or categorical. The third assumption, the independence of observations and mutually exclusive dependent variables passed because of the Oklahoma and Mississippi PRAMS ARF data collection methodology and quality control procedures, and the dependent variable had independent outcomes. The fourth assumption was that no multicollinearity exists. Statistical tests for this in SPSS included the Variance Inflation Factor (VIF). If <1 , or very close to 1, the assumption passed. The fifth assumption was that there needed to be a linear relationship between any continuous independent variables and the logit transformation of the dependent variable. The sixth assumption is that there were no outliers. This was tested when performing descriptive statistics. Any outliers resulted in recoding of the variables to remove the outliers, or the use of weighting procedures to correct the issue.

To test for moderating effect, states with varying abortion restriction levels were numerically coded and treated as an interaction term in the regression analysis, and the

model summary was tested for a change in the direction or strength of the relationship between the independent variable and dependent variable. If a statistically significant change occurred, then a moderating effect is observed (Hair et al., 2021). Results were reported with a B-value, Wald Value, and confidence interval. The B-value represented the slope or estimate of the relationship between the independent variable and dependent variable, with a 95% confidence interval of what the B-value could be, The Wald Value provided an estimate of the significance for each of the individual coefficients, indicating whether or not the individual predictor is statistically significant in the model The moderator effect would be observed by noting at least a 10% change in the B-value when the moderating variable is added to the regression model, and to be statistically significant, the corresponding p-value must be less than 0.05 (Griner-Sorrolla et al, 2024).

Threats to Validity

Reliability and validity are indicators of the quality, rigor, and credibility of the results of this research study. Reliability refers to the reproducibility of the statistical analysis and validity refers to the extent to which the instrument measures what it was designed to measure (Gidron, 2020). For this study, the Oklahoma and Mississippi PRAMS ARF (2022) data is a large secondary data set measured through self-reported survey instruments and birth certificate data. Large sample sizes and rigorous quality control procedures that are followed during Oklahoma and Mississippi PRAMS ARF (2022) data collection make this secondary data source a viable choice for public health research, and a well-documented research design and protocol will allow for reproducible

results (Burnard, 2024). Oklahoma and Mississippi PRAMS ARF secondary data is optimal for this cross-sectional study, and by stratifying the data by state, to reflect levels of abortion restriction policy levels, results can be generalized to the population, because of the size of the dataset, number of respondents, and rigorous data collection methods and procedures, including quality control procedures to validate data entry, data responses from phone surveys, and mail in surveys (CDC Oklahoma and Mississippi PRAMS ARF, 2022), and more recently, the data is linked to state databases, such as Medicaid, Birth Certificate Data, and WIC data, further lending to the credibility of the information collected. According to the Oklahoma and Mississippi PRAMS ARF (2022) methodology, questionnaires consist of standardized core questions for all jurisdictions to utilize, and supplemental questions that are topic specific, and based on emerging issues.

Threats to validity undermine the integrity and credibility of this research study. The first threat was selection bias, which can lead to erroneous conclusions and misrepresentation of the data (Rojas-Saunero et al., 2023). This study population includes women who had given birth in participating jurisdictions, during the survey period, and the stratified random sampling protocol used by Oklahoma and Mississippi PRAMS ARF researchers and the cross-sectional design of this study are procedural protections that were designed to prevent selection bias (Shelke, 2023; Wang & Chang; 2020). The data included for this study covers multiple jurisdictions across the Oklahoma and Mississippi, with varying levels of abortion restriction, thus allowing for better generalizability of the results to the population of interest. The second threat to validity is response bias caused by social desirability in the current political and religious landscape. To address this

threat this study has been designed from an academic perspective, to ask neutral research questions and use multinomial logistic regression modeling as a form of automated intelligence to prevent any personal bias.

Ethical Procedures

Human Participants and IRB Approval

This research study utilized secondary data from the Pregnancy Risk Assessment and Monitoring System Automated Research File (Oklahoma and Mississippi PRAMS ARF 2022) following Walden IRB approval. A request was initially sent to the CDC to request permission to access and download the United States PRAMS ARF Data file (2022). To get permission for the access and use of this data a data use agreement was required, and permission was granted. No data was accessed or analyzed. Due to recent changes with the CDC, the original dataset was taken offline, and no public access is allowed for research, even with IRB approval. Therefore, a change in methodology was required. Each individual state was contacted to request permission to access and use the data files, and the two states who were willing to grant permission to access state PRAMS ARF data included Oklahoma and Mississippi. Therefore, the scope of the data for this study has been limited to these two states, and IRB approval will be requested for this change in data selection. No data was accessed or analyzed until IRB Approval was obtained.

Privacy and Confidentiality

Permission was requested and received from the Center for Disease Prevention and Control to have access to the Oklahoma and Mississippi PRAMS ARF datasets. Data

contained an ID number from the birth certificate but no other specific identifiers. To protect the privacy and confidentiality of human subjects, the file has been maintained on an encrypted removable storage device, and I have been the sole person viewing the data, and only while at home. The storage device will be maintained for 5 years after the study is completed and then shredded per security standards.

Personal Interest

Because reproductive autonomy is such a polarized topic from a religious and political perspective, I must disclose that this study is purely examining the data from an academic perspective, rather than from a religious or political viewpoint. The purpose of this study was not to defend a particular point of view, but instead, examine the data to see if a relationship exists between the independent variable (pregnancy intention levels) and the dependent variable (severe maternal morbidities), and if any population factors influence the relationship, and if reproductive health policy enabling or restriction levels influence the relationship.

Summary

This quantitative study was to examine the relationship between pregnancy intention levels and) a specific severe acute maternal morbidity, chorioamnionitis, among women of childbearing age, who gave birth to a child in the Calendar Year 2022, and if that relationship was moderated by abortion restriction policies when controlling for race, ethnicity, poverty level, marital status, pre-conception care, and adequacy of prenatal care. To address the research questions, the specific research design included a cross-sectional study of secondary data (Wang & Cheng, 2020) of the Pregnancy Risk

Assessment Monitoring System Automated Research File (Oklahoma and Mississippi PRAMS ARF, 2022), and a publicly available map (Guttmacher Institute, 2022) that illustrates the level of restrictive policies for reproductive health in each state. Statistical analysis included descriptive statistics and logistic regression models to answer the research questions. Selection bias was controlled through the sampling methodology used for the Oklahoma and Mississippi PRAMS ARF data collection, and multiple factors are being controlled for (race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care). Moreover, the data was used from at least two states because of their varying levels of restrictions on abortion, making the results generalizable to the population of interest. Ethical considerations and procedures included protection of privacy, autonomy of participants, and beneficence to the population of interest.

Section 3: Presentation of Results and Findings

Introduction

The purpose of this quantitative study was to examine the relationship between pregnancy intention levels and a specific severe acute maternal morbidity (chorioamnionitis) for the presence of a positive or negative association between the two variables and if that relationship was moderated by abortion restriction policies when controlling for race, ethnicity, poverty level, marital status, pre-conception care, and adequacy of prenatal care in Oklahoma and Mississippi. A quantitative, cross-sectional study using secondary data of the OK and MS PRAMS ARF (2022) and a publicly available map (Guttmacher Institute, 2022) were used to answer the research questions:

- RQ 1: What is the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in Oklahoma and Mississippi?
- H_01 : There is no statistically significant relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.
- H_a1 : There is a statistically significant relationship between the independent variable (pregnancy intention levels) and the dependent variable

(chorioamnionitis) when controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

- RQ 2: To what extent is the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) moderated by levels of abortion restriction policies, after controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi?
- H_{02} : There is no statistically significant difference in the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) moderated by levels of abortion restriction policies, after controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.
- H_{a2} : There is statistically significant difference in the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis) moderated by levels of abortion restriction policies, after controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care among women who have given birth in the Oklahoma and Mississippi.

This section will present characteristics about the secondary data set that was used for

analysis, how representative it is of the larger population of interest, results of the statistical analysis, and answers to the research questions.

Accessing the Dataset for Secondary Analysis

Timeframe and Response Rate

The dataset included responses from women who had given birth between January 1, 2022 and December 31, 2022, and was drawn from the OK and MS PRAMS ARF (2022). Of 4,481 women who were sampled, a total of 1,939 women responded, giving a response rate of 43%. Oklahoma had a 52% response rate $n = 1,475$, $N = 2,822$; Mississippi had a response rate of 28%, $n = 464$, $N = 1,659$. The low response rate for Mississippi is likely one of the reasons why no cases of chorioamnionitis were observed in the sample data and therefore may not be a good representation of the actual population of interest from that state.

Discrepancies

One discrepancy identified in the examination of the dataset is that the response rate for Mississippi was less than 50%; therefore, it may result in underrepresentation of the population of interest. Moreover, the number of positive cases of chorioamnionitis ($n = 3$) in the Mississippi dataset was unexpected since chorioamnionitis, according to the literature, occurs in approximately 5% of all births (Gomez-Slagle et al., 2022). Based on CDC 2022 birth final data report for Oklahoma, of 48,332 births, 2,416 total cases of chorioamnionitis would have been expected, and from the sample, which represented 53% of the births, this means that roughly 82 cases, which would have been sufficient for analysis (Osterman et al., 2024). For the state of Mississippi, of 34,675 total births, 1,734

cases of chorioamnionitis would have been expected, and from the sample, at least 22 cases would have been expected. Therefore, a discrepancy exists with the actual number of total cases ($n = 19$), compared to the plan which would have included a sufficient sample number of cases ($n = 104$) of chorioamnionitis.

Missing Data

A missing data report was performed, and data are presented in Table 10. Income level is the only variable which had greater than 5% missing values. To treat missing data for the variable exceeding 5% threshold (Laerd Statistics, 2017), imputation strategies were used by replacing missing values with the estimated mean (Laerd Statistics, 2017). Other variables with missing data (Hispanic ethnicity, Pre-conception visit, Kotelchuck Index, Pregnancy Intention, Number of Dependents, and Maternal Race) all fell below the 5% threshold, and therefore listwise deletion strategies were used for the analysis (Laerd Statistics, 2017).

Table 10

Missing Data Report

	N	Mean	SD	Missing		No. of Extremes ^{a,b}	
				Count	Percent	Low	High
MM_FEVER	1939	1.99	.099	0	.0	.	.
HISP_BC	1938			1	.1		
PRE_VIST	1914			25	1.3		
KOTELCHUCK	1926			13	.7		
PGINTENT	1928			11	.6		
MARRIED	1939			0	.0		
INCOME8	1810			129	6.7		
INC_NDEP	1887			52	2.7		
MAT_RACE_PU	1911			28	1.4		
mat_age_pu	1939			0	.0		

FPL3	-.001	.196	.000	1	.994	.999	.679	1.468
Constant	5.431	1.951	7.752	1	.005	228.317		

a. Variable(s) entered on step 1: Preg -- intention, Marital status, Maternal Race grouped, Maternal Age grouped, Pre preg--health care visit, Kotelchuck Index, Mother Hispanic?, FPL3.

A baseline weighted binary regression model was performed to gain a better understanding of each of the predictor variables and their association with the dependent variable. Data for the weighted regression model is presented in Table 12, and Marital Status, $B = -0.840$, $Wald(1) = 4.169$, $p = 0.041$, $Exp(B) 0.432$ [CI (0.193-0.967)], Maternal Race $B = -0.43$, $Wald(1) = 5.258$, $p = 0.022$, $Exp(B) 0.957$ [CI (0.923-0.994)] each were statistically significant predictors of the dependent variable and warranted further investigation. Kotelchuck index $Wald(1) = 2.645$, and although not statistically significant, $p > 0.05$, warranted further investigation.

Table 12

Weighted Baseline Univariate Analysis

		B	SE	Wald	df	Sig.	Exp(B)	95% CI for EXP(B)	
								Lower	Upper
Step	Preg – intention	.040	.121	.110	1	.741	1.041	.821	1.319
1 ^a	Marital status	-.840	.411	4.169	1	.041	.432	.193	.967
	Maternal Race grouped	-.043	.019	5.258	1	.022	.957	.923	.994
	Maternal Age grouped	.024	.170	.020	1	.887	1.025	.734	1.430
	Pre preg--health care visit	-.209	.367	.324	1	.569	.811	.395	1.666
	Kotelchuck Index	.272	.167	2.645	1	.104	1.312	.946	1.821
	Mother Hispanic?	-.239	.550	.189	1	.664	.787	.268	2.315
	FPL3	.053	.148	.128	1	.721	1.054	.789	1.408
	Constant	6.006	1.619	13.769	1	<.001	406.041		

a. Variable(s) entered on step 1: Preg -- intention, Marital status, Maternal Race grouped, Maternal Age grouped, Pre preg--health care visit, Kotelchuck Index, Mother Hispanic?, FPL3.

Results

Demographic Characteristics

Of 1,939 respondents, characteristics of the sample revealed a diverse demographic, as presented in Table 13. With regard to ethnicity, the sample included 77.46% non-Hispanic women ($n = 1,502$). Racial characteristics of the sample included 35.89% Caucasian women ($n = 696$). Regarding marital status, the sample included 50.95% married women ($n = 988$) and 49.05% other ($n = 951$). The sample also included women age 17 or younger and between the ages of 18 and 30 or older. Regarding poverty levels, the sample included 48.58% women whose poverty level was 101-200% ($n = 942$).

Table 13

Demographic Characteristics by State

		MS SAMPLE		OK SAMPLE		Sample Total	
		Count	Proportion	Count	Proportion	Count	Proportion
Mother Hispanic?	Hispanic	20	4.31%	417	28.27%	437	22.54%
	Non-Hispanic	444	95.67%	1057	71.66%	1502	77.46%
Maternal Race grouped	White	252	54.31%	444	30.10%	696	35.89%
	Black	181	39.00%	308	20.88%	489	25.22%
	American Indian	2	0.43%	268	18.17%	270	14.03%
	Unreported	29	4.95%	0	0%	29	1.50%
	Alaskan Native	0	0%	0	0%	0	0%
	Unknown	0	0%	0	0%	0	0%
	Asian	0	0%	16	1.08%	16	0.83%
	Hawaiian or OPI Other or MTOR	0	0%	411	27.86%	411	21.20%
Maternal Age grouped	<=17	11	2.37%	93	6.31%	104	5.36%
	18-19	23	4.95%	770	52.20%	793	40.90%
	20-24	101	21.77%	612	41.49%	713	36.77%
	25-29	128	27.59%	0	0%	128	6.60%
	30-34	127	27.37%	0	0%	127	6.54%
	35-39	61	13.15%	0	0%	61	3.15%
Marital status	40+	13	2.80%	0	0%	13	0.67%
	Married	231	49.78%	757	51.32%	988	50.95%

FPL2	Other	233	50.22%	718	48.68%	951	49.05%
	0-100%	185	39.87%	538	36.47%	723	37.29%
	101-150%	57	12.28%	217	14.71%	274	14.13%
	151-185%	22	4.74%	152	10.31%	174	8.97%
	185-200%	23	4.95%	81	5.49%	104	5.36%
	>200%	177	38.15%	487	33.02%	664	34.24%
TOTAL		464	**	1475	**	1939	**

Healthcare factors analyzed included pre-conception care and adequacy of prenatal care, and results are presented in Table 14. The sample included 59.88% women received pre-pregnancy healthcare ($n = 1161$). Furthermore, the data also shows that 78.55% received adequate or adequate prenatal care ($n = 1523$).

Table 14

Healthcare Characteristics

		MS		OK		Total	
		Count	Proportion of MS Sample	Count	Proportion of OK Sample	Count	Proportion of Total Sample
Pre preg--health care visit	No-Preconception HC Visit	162	34.91%	591		753	
	Yes-Preconception HC Visit	297	64.00%	864		1161	
Kotelchuck Index (Adequacy of Prenatal Care)	Inadequate	61	13.15%	179	12.14%	240	
	Intermediate	25	5.4%	138	9.36%	163	
	Adequate	143	30.82%	777		920	
	Adequate plus	235	50.65%	368		603	
TOTAL		464		1475		1939	

Pregnancy Intention Levels

Descriptive statistics show that the sample included a variety of pregnancy intention levels, and results are presented in Table 15. The dataset included 34.34% ($n = 666$) of women whose pregnancy was mistimed, 26.92% ($n = 522$) whose pregnancy was unwanted, or the mother was ambivalent, and 38.16% ($n = 740$) of women who reported they wanted their pregnancy at that time.

Table 15*Pregnancy Intention Levels by State*

		MS		OK		Total	
		Count	Proportion of MS Sample	Count	Proportion of OK Sample	Count	Proportion of Total Sample
Preg -- intention	Later	103	+	320	+	423	+
	Sooner	63		180		243	
	Now	166		574		740	
	Ambivalent	41		129		170	
	Unsure	84		268		352	

Chorioamnionitis

Descriptive statistics are presented in Table 16, illustrating the overall incidence of chorioamnionitis was 0.98% ($n = 19$) out of 1,939 observations. Of those cases, 15.79% were attributed to Mississippi, and 84.21% were attributed to Oklahoma. However, it should be noted that the overall incidence in each state was 0.65% in Mississippi and 1.09% in Oklahoma, when compared to the total sample.

Table 16*Chorioamnionitis Incidence by State*

		MS		OK		Total	
		Count	Proportion of MS Sample	Count	Proportion of OK Sample	Count	Proportion of Total Sample
BC: mom had fever	Chorioamnionitis	3	0.65%	16	1.09%	19	0.98%+
	No Chorioamnionitis	461	99.35%	1459	99.59%	1920	99.02%

Additional demographic data are presented in Table 17, comparing demographic characteristics of women by pregnancy intention level and chorioamnionitis outcome. Of

the women who responded, 483 women with unintended pregnancy (mistimed, ambivalent, or unsure) had received inadequate or intermediate prenatal care, compared to 206 women who had a pregnancy that was wanted now. The data shows that among women age 18-24, there were 17 cases of chorioamnionitis out of the 19 total cases, and of this age group, 907 reported that their pregnancy was either mistimed, or that they were ambivalent or unsure about the pregnancy. Of the respondents who reported that they received no preconception care, 257 of those women had planned or well-timed pregnancies (wanted pregnancy now), compared to 474 women who had preconception care, that had planned or well-timed pregnancy. 406 women who were above 200% of FPL, compared to 506 women who were at or below 100% of FPL reported unintended pregnancies, with 6 of the observed cases of chorioamnionitis (31.58%) occurring in the latter category.

Table 17*Demographics of Sample by Pregnancy Intention Level and Chorioamnionitis Outcome*

		Preg – intention					BC: mom had fever	
		Later	Sooner	Now	Ambivalent	Unsure	Chorioamnionitis	No Chorioamnionitis
		Count	Count	Count	Count	Count	Count	Count
Maternal	Hispanic	102	47	190	36	62	4	433
Ethnicity	Non-Hispanic	321	196	549	134	290	15	1486
Maternal	White	123	112	310	40	105	6	690
Race	Black	136	43	129	63	115	4	485
	American Indian	51	45	105	19	49	2	268
	Other	113	43	196	48	83	7	477
Maternal Age	17 or younger	52	0	15	7	30	0	104
	18-24	315	195	594	133	264	17	1489
	25-29	21	16	57	7	24	1	127
	30-35	25	17	49	11	23	1	126
	35-40	8	13	22	7	10	0	61
	40+	2	2	3	5	1	0	13
Marital status	Married	148	174	479	60	121	6	982
	Other	275	69	261	110	231	13	938
Pre- Conception HC Visit	No- Preconception HC Visit	184	64	257	77	170	8	745
	Yes- Preconception HC Visit	235	176	474	93	176	11	1150
Kotelchuck Index	Inadequate	63	15	66	32	60	5	235
	Intermediate	39	19	55	15	34	3	160
	Adequate	194	113	395	76	137	5	915
	Adequate plus	126	93	218	47	118	6	597
Federal Poverty Level	0-100%	174	53	211	95	184	6	717
	101-150%	65	23	103	29	54	5	269
	151-200%	52	14	68	13	26	5	169
	>200%	132	153	358	33	88	3	765

Statistical Assumptions

Six assumptions were tested to determine the suitability of the regression model for this research study.

1. **Binary Outcome:** This assumption passed because the dependent variable, chorioamnionitis, only had two outcomes (chorioamnionitis=1, or no chorioamnionitis=2).
2. **One or More Categorical or Continuous Independent Variable(s):** This assumption passed because the model included one categorical independent variable (Pregnancy intention levels), and five categorical covariates (race, ethnicity, age, poverty level, pre-pregnancy care, and Kotelchuck Index), and two dichotomous control variables (Hispanic ethnicity, marital status), and one dichotomous moderating variable (abortion restriction policy levels).
3. **Independence of Observations:** This assumption passed because of the methodology used for data collection and quality control procedures to prevent duplicate responses from any participant.
4. **No Multicollinearity:** This assumption was also passed and was proven by the statistical test Variance Inflation Factor shown in Table 18, where values <1 demonstrate that multicollinearity does not exist (Laerd Statistics, 2017).

Table 18

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% CI for B		Collinearity Statistics	
	B	SE	Beta			Lower	Upper	Tolerance	VIF
<u>1</u> (Constant)	1.995	.019		106.400	<.001	1.958	2.032		

Preg – intention	.000	.002	.006	.265	.791	-.003	.004	.977	1.023
Mother Hispanic?	-.003	.006	-.012	-.486	.627	-.015	.009	.908	1.101
Maternal Race grouped	.000	.000	-.033	-1.362	.173	-.001	.000	.912	1.096
Maternal Age grouped	.001	.002	.008	.321	.749	-.004	.005	.882	1.134
Marital status	-.007	.005	-.033	-1.287	.198	-.017	.003	.820	1.219
FPL2	.001	.001	.011	.414	.679	-.002	.004	.790	1.265
Pre preg-- health care visit	-.001	.005	-.006	-.259	.795	-.011	.009	.897	1.115
Kotelchuck Index	.003	.002	.031	1.320	.187	-.002	.008	.964	1.038

a. Dependent Variable: BC: mom had fever

5. Sufficient Sample Size: This assumption also passed because there were a total of 1,939 total observations.
6. No Outliers: This assumption passed because there were no outliers identified in the descriptive statistics. However, the demographic characteristics indicated an imbalance between Hispanic vs Non-Hispanic participants, therefore weighting procedures were necessary to yield statistically a significant regression model.

Statistical Analysis and Findings

Research Question 1

Initial Unweighted Regression Model. The initial analysis was conducted using an unweighted logistic regression analysis to gain an initial understanding of the relationship between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis). This initial baseline model was used to determine if any relationship existed between the independent variable and the dependent variable. Results of the model were not statistically significant, as demonstrated by the Omnibus

Test of Coefficients in Table 19, which shows $\chi^2(4)=2.769$, p-value 0.597; since the p-value was >0.05 , this means that findings could be due to random variation, or possibly due to low incidence of chorioamnionitis in the dataset. Further investigation into the model was required.

Table 19

Omnibus Tests of Model Coefficients: Unweighted Regression Model

		Chi-square	Df	Sig.
Step 1	Step	2.769	4	.597
	Block	2.769	4	.597
	Model	2.769	4	.597

In the Model Summary presented in Table 20, Cox and Snell $R^2=0.001$ and Nagelkerke $R^2 = 0.014$, meaning that the model that includes Pregnancy Intention alone as a predictor variable explains only between 1-1.4% of the variance. With a low incidence rate of chorioamnionitis in the dataset, this model summary would have an inherently low explanatory value (Laerd Statistics, 2017).

Table 20

Model Summary

Step	-2 Log likelihood	Cox & Snell R^2	Nagelkerke R^2
1	210.596 ^a	.001	.014

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test in Table 21, along with the Contingency Classification in Table 22 were also evaluated for the goodness of fit of the data to the

model. For the unweighted model testing only pregnancy intention levels as predictors of chorioamnionitis, $\chi^2(3)=0.000, p=1.000$, indicating a good fit ($p>0.05$), and the contingency table shows that all 19 cases of chorioamnionitis were correctly predicted compared to the observed values. The HL statistical test is used to measure how well the data fits the logistic regression model by calculating the observed event rates compared to the expected event rates for the dependent variable, classified based on subgroups within the population, namely the categories of independent variable (pregnancy intention levels) and control variables (race, ethnicity, age, marital status, federal poverty levels, pre-conception care, and adequacy of prenatal care). As presented in Table 22, the Contingency Classifications for the unweighted model demonstrated the correct identification of each case of chorioamnionitis, thus explaining why the data statistically fit the model. The HL test compared the observed frequencies to the predicted frequencies, and calculated a chi-square test statistic, and a p-value, thus measuring the predictive power of the logistic regression model for the data that was analyzed. For the unweighted model testing pregnancy intention levels as predictors of chorioamnionitis, the p-value was >0.05 , indicating the goodness of fit of the data to the model.

Table 21

Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	.000	3	1.000

Table 22*Contingency Table for Hosmer and Lemeshow Test*

		BC: mom had fever = Chorioamnionitis		BC: mom had fever = No Chorioamnionitis		
		Observed	Expected	Observed	Expected	Total
Step 1	1	10	10.000	730	730.000	740
	2	2	2.000	168	168.000	170
	3	4	4.000	419	419.000	423
	4	2	2.000	350	350.000	352
	5	1	1.000	242	242.000	243

The classification table, presented in Table 23, illustrates the model's high degree of accuracy in predicting true negative cases of chorioamnionitis, but overall poor accuracy with predicting true positive cases of chorioamnionitis, due to the sparse number of true cases of chorioamnionitis; therefore, the predictability of this model should be interpreted with caution.

Table 23*Classification Table^a*

		Predicted		
		BC: mom had fever		
Observed		Chorioamnionit is	No Chorioamnionitis	Percentage Correct
Step 1	BC: mom had fever	Chorioamnionitis 0	19	.0
	No Chorioamnionitis	0	1909	100.0
Overall Percentage				99.0

a. The cut value is .500

The results of the unweighted regression model, where the independent variable, Pregnancy Intention levels were tested to see if there was an association with chorioamnionitis, are presented in Table 24. Pregnancy intention levels did not show a

statistically significant association with chorioamnionitis in the unweighted model.

However, the level PI-Wanted Now Wald Value(1)=1.265, although not statistically significant, warranted further investigation.

Table 24

Variables in the Equation

		B	SE	Wald	df	Sig.	Exp(B)	95% CI for EXP(B)		
									Lower	Upper
Step 1 ^a	Preg -- intention			2.360	4	.670				
	PI-Wanted Later	-.513	.869	.349	1	.555	.599	.109	3.287	
	PI-Wanted Sooner	.324	1.228	.070	1	.792	1.383	.125	15.336	
	PI-Wanted Now	-.874	.777	1.265	1	.261	.417	.091	1.914	
	PI-Ambivalent/Unsure	-.734	1.004	.534	1	.465	.480	.067	3.437	
	Constant	5.165	.709	53.047	1	<.001	175.000			

a. Variable(s) entered on step 1: Preg -- intention.

A second model was performed to answer RQ1 by including pregnancy intention level as a predictor variable when controlling for other predictor variables, including race, ethnicity, age, marital status, federal poverty level, pre-conception care, and adequacy of prenatal care.

Omnibus Test of Coefficients

Results of the model were not statistically significant, as demonstrated by the Omnibus Test of Coefficients in Table 25, which shows $\chi^2(22)=24.847$, p-value 0.304; since the p-value was >0.05 , this means that findings could be due to random variation. However, it is also plausible that the findings could be due to insufficient data, specifically, an exceptionally low incidence of chorioamnionitis within the dataset. The unweighted model was performed with an assumption that at least one of the predictor variables would be significant. However, because there a significant imbalance between

Hispanic and Non-Hispanic women in the sample, results would be expected to be statistically insignificant, particularly if 21% of the cases of chorioamnionitis occurring within the Hispanic group.

Table 25

Omnibus Tests of Model Coefficients

		Chi-square	Df	Sig.
Step 1	Step	24.847	22	.304
	Block	24.847	22	.304
	Model	24.847	22	.304

Model Summary. Additionally, in the Model Summary in Table 26, the Cox and Snell R Square=0.013, and Nagelkerke R Squared=0.123, meaning that the model explains between 1.3-12.3% of the variance, when all predictor variables are included. The change in the R Square values, even with a small number of positive cases of chorioamnionitis, signifies that the control variables are important to include in the regression model.

Table 26*Model Summary*

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	187.798 ^a	.013	.123

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Hosmer and Lemeshow Test. Hosmer and Lemeshow Test in Table 27, along

with the Contingency Classification in Table 28 were also evaluated for the goodness of fit of the data to the model. For the unweighted model testing only pregnancy intention levels as predictors of chorioamnionitis, $\chi^2(8)=5.638, p=0.688$, indicating a good fit ($p>0.05$), and the contingency table shows that all 19 cases of chorioamnionitis were correctly predicted compared to the observed values.

Table 27

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	5.638	8	.688

Table 28

Contingency Table for Hosmer and Lemeshow Test

		BC: mom had fever = Chorioamnionitis		BC: mom had fever = No Chorioamnionitis		Total
		Observed	Expected	Observed	Expected	
Step 1	1	8	8.215	181	180.785	189
	2	4	3.495	185	185.505	189
	3	3	2.255	186	186.745	189
	4	0	1.627	189	187.373	189
	5	1	1.188	188	187.812	189
	6	1	.872	188	188.128	189
	7	0	.640	190	189.360	190
	8	1	.450	188	188.550	189
	9	1	.247	188	188.753	189
	10	0	.010	190	189.990	190

The classification table, presented in Table 29, illustrates the model's high degree of accuracy in predicting true negative cases of chorioamnionitis, but overall poor accuracy with predicting true positive cases of chorioamnionitis, due to the sparse number of true cases of chorioamnionitis; therefore, the predictability of this model should be interpreted with caution.

Table 29*Classification Table^a*

		Predicted			
		BC: mom had fever			
Observed		Chorioamnionitis	No Chorioamnionitis	Percentage Correct	
Step 1	BC: mom had fever	Chorioamnionitis	0	19	.0
		No Chorioamnionitis	0	1873	100.0
Overall Percentage					99.0

a. The cut value is .500

The results of the unweighted regression model, where the independent variable, Pregnancy Intention levels were tested to see if there was an association with chorioamnionitis, are presented in Table 30. Although the overall model was not statistically significant, a granular analysis revealed that the Kotelchuck Index Level 2 (Inadequate Prenatal Care), $B=1.504$, $Wald(1)=5.129$, $p=0.024$, $Exp(B)=4.501$, $[CI(1.224,16.546)]$ was a statistically significant predictor of chorioamnionitis. It is important to note that while the odds are statistically significant, this does not prove causation.

Table 30*Variables in the Equation*

Step		B	SE	Wald	df	Sig.	Exp(B)	95% CI for	
								EXP(B)	
								Lower	Upper
	Preg -- intention			3.268	4	.514			
1 ^a	Preg -- intention(1)	-.483	.883	.299	1	.584	.617	.109	3.482
	Preg -- intention(2)	-.189	1.252	.023	1	.880	.828	.071	9.620
	Preg -- intention(3)	-1.184	.798	2.198	1	.138	.306	.064	1.464
	Preg -- intention(4)	-.801	1.018	.619	1	.431	.449	.061	3.301
	Mother Hispanic?	-.725	.630	1.326	1	.249	.484	.141	1.664
	MRACE5			2.022	3	.568			
	MRACE5(1)	.486	.697	.488	1	.485	1.627	.415	6.372
	MRACE5(2)	.547	.867	.398	1	.528	1.728	.316	9.455
	MRACE5(3)	-.356	.591	.362	1	.547	.701	.220	2.231
	Marital status(1)	-.952	.544	3.063	1	.080	.386	.133	1.121
	FPL2			4.772	3	.189			
	FPL2(1)	-.983	.633	2.411	1	.121	.374	.108	1.294
	FPL2(2)	-.944	.641	2.173	1	.140	.389	.111	1.365
	FPL2(3)	.207	.765	.073	1	.786	1.230	.275	5.513
	Maternal Age grouped			.891	6	.989			
	Maternal Age grouped(1)	-17.061	3793.526	.000	1	.996	.000	.000	.
	Maternal Age grouped(2)	-16.588	3793.526	.000	1	.997	.000	.000	.
	Maternal Age grouped(3)	-16.536	3793.526	.000	1	.997	.000	.000	.
	Maternal Age grouped(4)	-16.543	3793.526	.000	1	.997	.000	.000	.
	Maternal Age grouped(5)	-.082	6123.713	.000	1	1.000	.921	.000	.
	Maternal Age grouped(6)	.311	11277.585	.000	1	1.000	1.364	.000	.
	Pre preg--health care visit	-.094	.497	.035	1	.851	.911	.344	2.413
	Kotelchuck Index			5.866	3	.118			
	Kotelchuck Index(1)	.211	.763	.077	1	.782	1.235	.277	5.506
	Kotelchuck Index(2)	1.504	.664	5.129	1	.024	4.501	1.224	16.546
	Kotelchuck Index(3)	.712	.639	1.240	1	.265	2.038	.582	7.138
	Constant	23.515	3793.526	.000	1	.995	16302384888.408		

a. Variable(s) entered on step 1: Preg -- intention, Mother Hispanic?, MRACE5, Marital status, FPL2, Maternal Age grouped, Pre preg--health care visit, Kotelchuck Index.

A weighted logistic regression model was performed to compare results of the model. The variable used for weighting purposes was the Mother Hispanic variable, and for pregnancy intention alone. The results are presented in Table 31, and weighted regression results were statistically insignificant for each level of pregnancy intention, without testing other variables. It is worth noting that the observed Wald(1)=2.157 for pregnancies that were wanted later is significantly different from the hypothesized null value, even though the model test was statistically insignificant ($p=0.142$), and warranted further investigation.

Table 31

Weighted by Hispanic Variable

Pregnancy Intention Levels-Variables in the Equation							95% CI for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Step 1 ^a								
Preg – intention			4.511	4	.341			
PI-Wanted Later	1.560	1.062	2.157	1	.142	4.761	.593	38.193
PI-Wanted Sooner	-.207	.431	.231	1	.630	.813	.349	1.892
PI-Wanted Now	-.204	.616	.110	1	.740	.815	.244	2.728
PI-Ambivalent/Unsure	.550	.615	.801	1	.371	1.734	.520	5.784
Constant	4.522	.355	161.814	1	<.001	92.000		

a. Variable(s) entered on step 1: Preg -- intention.

Weighted Omnibus Test of Coefficients. The Omnibus Test of Coefficients, presented in Table 32, demonstrated that overall, the weighted logistic regression model was statistically significant $\chi^2(22)=53.630, p=0.<.001$, but did not specify which predictor variable(s) was the most influential, necessitating the analysis of each of the predictor variables for their degree of influence and the statistical significance of their inclusion in regression model.

Table 32*Omnibus Tests of Model Coefficients*

		Chi- square	df	Sig.
Step 1	Step	53.630	22	<.001
	Block	53.630	22	<.001
	Model	53.630	22	<.001

Weighted Model Summary. The weighted model summary result is presented in Table 33, and the Cox and Snell R Square=0.016, and Nagelkerke R Squared=0.148, meaning that the model explains between 1.6-14.8% of the variance, when all predictor variables are included. The slight change in the R Square values, compared to the unweighted model, even with a small number of positive cases of chorioamnionitis, indicates that the weighting did have a small effect on the model.

Table 33*Model Summary*

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	326.392 ^a	.016	.148

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

Weighted Hosmer and Lemeshow. A weighted Hosmer and Lemeshow Test in Table 34, along with the Contingency Classification in Table 35 were also evaluated for the goodness of fit of the data to the model. For the weighted model, testing pregnancy

intention levels, Hispanic ethnicity, maternal race, maternal age, marital status, federal poverty level, pre-pregnancy care, and adequacy of prenatal care as predictors of chorioamnionitis, $\chi^2(8)=11.537, p=0.173$, indicating a good fit ($p>0.05$), and the contingency table 35 shows that all 34 cases of chorioamnionitis were correctly predicted compared to the observed values.

Table 34

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	11.537	8	.173

Table 35

Contingency Table for Hosmer and Lemeshow Test

		BC: mom had fever = No Chorioamnionitis				Total
		BC: mom had fever = Chorioamnionitis		BC: mom had fever = No Chorioamnionitis		
		Observed	Expected	Observed	Expected	
Step 1	1	16	16.311	320	319.689	336
	2	10	6.366	328	331.634	338
	3	2	3.805	335	333.195	337
	4	0	2.632	337	334.368	337
	5	2	1.776	335	335.224	337
	6	1	1.313	336	335.687	337
	7	0	.891	337	336.109	337
	8	2	.608	335	336.392	337
	9	1	.293	334	334.707	335
	10	0	.004	330	329.996	330

In Table 36 it shows that there was a high degree of accuracy in negative predictive value (99%), but the positive predictive value was 0% meaning that the model was not reliable for detecting the small number of cases of chorioamnionitis ($n=34$) in the dataset.

Table 36*Classification Table^a*

		Predicted			
		BC: mom had fever		Percentage Correct	
Observed		Chorioamnionitis	No Chorioamnionitis		
		Step 1	BC: mom had fever	Chorioamnionitis	0
		No Chorioamnionitis	0	3327	100.0
Overall Percentage					99.0

a. The cut value is .500

The Variables in the Equation and their respective statistics are presented in Table 37 for the weighted regression model. In this model, marital status, federal poverty level, and Kotelchuck Index were each statistically significant variables to control for in the equation.

Table 37*Variables in the Equation*

	B	SE	Wald	df	Sig.	Exp(B)	95% CI for EXP(B)	
							Lower	Upper
Step 1 ^a			5.419	4	.247			
Preg -- intention								
Preg -- intention(1)	.841	1.079	.607	1	.436	2.318	.280	19.206
Preg -- intention(2)	-.577	.450	1.639	1	.201	.562	.232	1.358
Preg -- intention(3)	-.255	.633	.162	1	.687	.775	.224	2.678
Preg -- intention(4)	.511	.627	.666	1	.415	1.668	.488	5.697
Mother Hispanic?	-.752	.573	1.721	1	.190	.471	.153	1.450
MRACE5			4.673	3	.197			
MRACE5(1)	.392	.517	.575	1	.448	1.480	.537	4.076
MRACE5(2)	.324	.639	.258	1	.612	1.383	.395	4.840
MRACE5(3)	-.567	.468	1.467	1	.226	.567	.226	1.420
Marital status	-.997	.414	5.812	1	.016	.369	.164	.830
Maternal Age grouped			.418	6	.999			
Maternal Age grouped(1)	-17.171	2841.278	.000	1	.995	.000	.000	.
Maternal Age grouped(2)	-16.960	2841.278	.000	1	.995	.000	.000	.
Maternal Age grouped(3)	-16.946	2841.279	.000	1	.995	.000	.000	.
Maternal Age grouped(4)	-16.795	2841.279	.000	1	.995	.000	.000	.
Maternal Age grouped(5)	-.690	4494.518	.000	1	1.000	.502	.000	.
Maternal Age grouped(6)	-.040	8044.290	.000	1	1.000	.961	.000	.
FPL5			15.094	3	.002			
FPL5(1)	-1.093	.460	5.648	1	.017	.335	.136	.826
FPL5(2)	-1.302	.498	6.835	1	.009	.272	.102	.722
FPL5(3)	.511	.580	.775	1	.379	1.667	.534	5.200
Pre preg--health care visit	-.217	.376	.333	1	.564	.805	.385	1.682
Kotelchuck Index			9.552	3	.023			
Kotelchuck Index(1)	.198	.588	.114	1	.736	1.219	.385	3.860
Kotelchuck Index(2)	1.437	.496	8.385	1	.004	4.207	1.591	11.123
Kotelchuck Index(3)	.679	.476	2.034	1	.154	1.971	.776	5.010
Constant	24.565	2841.279	.000	1	.993	4662292		
						6808.591		

a. Variable(s) entered on step 1: Preg -- intention, Mother Hispanic?, MRACE5, Marital status, Maternal Age grouped, FPL5, Pre preg--health care visit, Kotelchuck Index.

Research Question 2

Moderation Analysis. For the moderation analysis, the model was not statistically significant when testing the moderation effects of abortion policies, $\chi^2(4)=2.808$, p-value 0.590; since the p-value was >0.05 , as presented in Table 38. One explanation is that the response rate for Mississippi was very low (28%), and only three of the respondents had a positive indicator for chorioamnionitis.

Table 38

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	2.808	4	.590
	Block	2.808	4	.590
	Model	2.808	4	.590

The model summary is presented in Table 39, and the Cox and Snell R Square=0.001, and Nagelkerke R Squared=0.014, meaning that the model explains between 0.1-1.4% of the variance, which is negligible.

Table 39

Model Summary

Step	-2 Log likelihood	Cox & Snell R^2	Nagelkerke R^2
1	210.774 ^a	.001	.014

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

The Hosmer and Lemeshow test, presented in Table 40 demonstrated a

statistically good fit logistic regression model $\chi^2(5)=1.392$, p-value 0.925, and in Table 41, the contingency table for Hosmer and Lemeshow test shows demonstrated that all but one positive case were accurately classified, and all the negative cases were classified correctly. However, in the classification table, presented in Table 42, which represents specificity and sensitivity of the model, specificity for negative cases was 99%, but the sensitivity for positive cases was 0%. Therefore, results should be interpreted with caution.

Table 40*Hosmer and Lemeshow Test*

Step	Chi-square	df	Sig.
1	1.392	5	.925

Table 41*Contingency Table for Hosmer and Lemeshow Test*

		BC: mom had fever = Chorioamnionitis		BC: mom had fever = No Chorioamnionitis		Total
		Observed	Expected	Observed	Expected	
Step 1	1	9	8.247	565	565.753	574
	2	1	2.055	165	163.945	166
	3	2	1.834	168	168.166	170
	4	4	3.603	419	419.397	423
	5	0	.589	91	90.411	91
	6	2	1.579	270	270.421	272
	7	1	1.094	242	241.906	243

Table 42*Classification Table^a*

Observed	Predicted		
	BC: mom had fever		
	No Chorioamnionitis	Chorioamnionitis	Percentage Correct

Step 1	BC: mom had fever	Chorioamnionitis	0	19	.0
		No Chorioamnionitis	0	1920	100.0
Overall Percentage					99.0

a. The cut value is .500

Finally, the variables in the equation, presented in Table 43, do not indicate any statistically significant moderating effect on the relationship between pregnancy intention and chorioamnionitis in Oklahoma and Mississippi. However, because of the low incidence rate of chorioamnionitis in each of the states, there is insufficient data to conclude whether abortion policies have a statistically significant moderating effect.

Table 43

Variables in the Equation

	B	SE	Wald	df	Sig.	Exp(B)	95% CI for EXP(B)	
							Lower	Upper
Step 1 ^a			2.531	4	.639			
ABORTMOD * Preg -- intention								
ABORTMOD by Preg -- intention(1)	.050	.084	.353	1	.552	1.051	.892	1.239
ABORTMOD by Preg -- intention(2)	-.025	.030	.706	1	.401	.975	.920	1.034
ABORTMOD by Preg -- intention(3)	-.009	.034	.072	1	.789	.991	.927	1.059
ABORTMOD by Preg -- intention(4)	.011	.026	.179	1	.672	1.011	.961	1.064
Constant	4.757	.512	86.231	1	<.001	116.404		

a. Variable(s) entered on step 1: ABORTMOD * Preg -- intention .

Post-Hoc Analysis. Post hoc analysis was conducted to further investigate the specificity, the sensitivity, and interaction effects associated with this regression analysis.

Sensitivity Analysis. As presented in Table 23, 29 and 42, the sensitivity analysis was completed to determine the regression model's ability to correctly identify true positive cases of chorioamnionitis, compared to true negative cases of chorioamnionitis. The sensitivity was 0%, meaning that the model could not predict any of the true positive cases of chorioamnionitis, because of the small number of true positive cases. Because of

poor positive predictability and small number of true positive cases, there is insufficient evidence to accept either of the null hypotheses.

Specificity Analysis. As presented in Table 23, 29 and 42, the true negative rate was 99%, meaning that the model had a very high degree of accuracy in measuring negative cases. The specificity did not change even after weighting the data based on the ethnicity variable. Because of the high degree of sensitivity, but poor sensitivity, the results of the model, there is insufficient evidence to accept either of the null hypotheses.

Interaction Effects. Interaction terms were examined to determine if there was a statistically significant influence between each of the control variables that would cause a stronger or weaker association between the independent variable and the dependent variable. Each of the control variables were tested for their interaction with the independent variable to see if the strength of the relationship changed.

Interaction Terms-Omnibus Tests of Model Coefficients. The model was statistically significant when testing interaction effects between control variables and the independent variable, and the outcome of chorioamnionitis, $\chi^2(7)=16.915$, p-value=0.018; since the p-value was <0.05 , as presented in Table 44. This means that at least one of the control variables have a statistically significant synergistic effect with the independent variable in the predictive relationship with chorioamnionitis.

Table 44

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	16.915	7	.018
	Block	16.915	7	.018

Model	16.915	7	.018
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Interaction Terms-Model Summary. The model summary is presented in Table 45, and the Cox and Snell R Square=0.005, and Nagelkerke R Squared=0.047, meaning that the model explains between 0.5-4.7% of the variance, which also means that there appear to be possible synergistic effects between control variables and the independent variable, compared to the original unweighted model summary in Table 26, and the weighted model summary in Table 33.

Table 45

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	363.107 ^a	.005	.047

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Interaction Terms-Hosmer and Lemeshow Test. The Hosmer and Lemeshow test, presented in Table 46 demonstrated a statistically good fit logistic regression model $\chi^2(7)=9.549$, p-value 0.216. The contingency table for Hosmer and Lemeshow test, presented in Table 47 showed that the model was able to correctly classify the cases.

Table 46

Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	9.549	7	.216

Table 47*Contingency Table for Hosmer and Lemeshow Test*

		BC: mom had fever =		BC: mom had fever = No		Total
		Chorioamnionitis		Chorioamnionitis		
		Observed	Expected	Observed	Expected	
Step 1	1	13	9.704	324	327.296	337
	2	4	4.939	335	334.061	339
	3	0	4.038	338	333.962	338
	4	4	3.520	332	332.480	336
	5	6	3.070	330	332.930	336
	6	0	2.630	337	334.370	337
	7	4	2.169	332	333.831	336
	8	1	1.727	336	335.273	337
	9	0	1.385	337	335.615	337
	10	2	.819	326	327.181	328

Interaction Terms-Classification. The classification table, presented in Table 48 shows that there was a high degree of accuracy in negative predictive value (99%), but the positive predictive value was 0% meaning that the model was not reliable for the detection of the small number of cases of chorioamnionitis (n=34) in the dataset, and the results should be interpreted with caution.

Table 48*Classification Table^a*

Observed		Predicted		
		BC: mom had fever		
		Chorioamnionit is	No Chorioamnionitis	Percentage Correct
Step 1	BC: mom had fever	0	34	.0
	No Chorioamnionitis	0	3327	100.0

Overall Percentage	99.0
a. The cut value is .500	

Interaction Terms-Variables in the Equation. A statistically significant synergistic interaction was detected between marital status and pregnancy intention levels, as well as Kotelchuck Index and Pregnancy Intention Levels when testing the relationship with chorioamnionitis. Even though the Omnibus Test of Coefficients indicates that the model is statistically significant, the model has very low explanatory power, and poor positive predictability for chorioamnionitis. Therefore, it must be emphasized that due to poor specificity, there is insufficient data to accept Ho1 or Ho2.

Table 49

Variables in the Equation

		B	SE	Wald	df	Sig.	Exp(B)	95% CI for EXP(B)	
								Lower	Upper
Step	Mother Hispanic? by Preg	.162	.123	1.723	1	.189	1.176	.923	1.497
1 ^a	– intention								
	Kotelchuck Index by	.126	.047	6.985	1	.008	1.134	1.033	1.244
	Preg – intention								
	Marital status by Preg –	-.219	.102	4.594	1	.032	.803	.658	.981
	intention								
	FPL5 by Preg – intention	.014	.043	.107	1	.744	1.014	.932	1.103
	MRACE5 by Preg –	-.069	.044	2.492	1	.114	.933	.856	1.017
	intention								
	Preg -- intention by	.011	.050	.052	1	.820	1.011	.917	1.116
	Maternal Age grouped								
	Preg -- intention by Pre	-.081	.103	.608	1	.436	.923	.754	1.130
	preg--health care visit								
	Constant	4.434	.397	124.682	1	<.001	84.308		

a. Variable(s) entered on step 1: Mother Hispanic? * Preg -- intention , Kotelchuck Index * Preg -- intention , Marital status * Preg -- intention , FPL5 * Preg -- intention , MRACE5 * Preg -- intention , Preg -- intention * Maternal Age grouped , Preg -- intention * Pre preg--health care visit .

Summary

For RQ 1, neither the null hypothesis (H_01) or the alternative hypothesis (H_{a1}) were accepted due to insufficient evidence from the dataset and the model's inability to correctly classify a small number of positive cases of chorioamnionitis. It is possible that pregnancy intention levels could be associated with the outcome of chorioamnionitis, but further studies are needed with a larger dataset that contains a sufficient number (at least 15) of positive cases of chorioamnionitis per population subgroup.

The moderation analysis did not show a statistically significant change in the relationship between pregnancy intention levels and chorioamnionitis. However, the model was not statistically significant and demonstrated a negligent explanation of variation. This is likely due to insufficient number of true positive cases of chorioamnionitis within the dataset. Therefore, further studies are needed using a larger dataset containing a sufficient number of true positive cases of chorioamnionitis for each population subgroup. While it remains possible that abortion restriction policies could have a statistically significant moderating effect on the relationship between pregnancy intention levels and the outcome of chorioamnionitis, after controlling for race, ethnicity, age, marital status, poverty level, pre-pregnancy care, and adequacy of prenatal care in Oklahoma and Mississippi, there was insufficient data for this study to accept the alternative hypothesis; therefore, further research studies using larger data are needed.

The binary logistic regression model was used to examine the relationship

between pregnancy intention levels and chorioamnionitis while controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care. For RQ 1, the null hypothesis (H_01) or the alternative hypothesis could not be accepted due to insufficient evidence and the model's inability to correctly classify a small number of positive cases of chorioamnionitis, before and after controlling for other variables. For RQ 2, the moderation analysis did not change the goodness of fit or the misclassification of positive cases, therefore neither the null hypothesis (H_02) or the alternative hypothesis (H_{a2}) could be accepted due to insufficient evidence, both before and after controlling for other variables. While the evidence from this study indicates that further studies are needed with larger datasets, there are still opportunities for public health interventions, because the findings do confirm that public health interventions are needed to address mistimed or unwanted pregnancies, and to promote pre-conception healthcare and adequate prenatal care.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

The purpose of this quantitative study was to examine the relationship between pregnancy intention levels and a specific severe acute maternal morbidity (chorioamnionitis) to see if a positive or negative association was observed and if that relationship was moderated by abortion restriction policies when controlling for race, ethnicity, poverty level, marital status, pre-conception care, and adequacy of prenatal care. The incidence of chorioamnionitis was lower than what has been reported in the literature. According to the literature, chorioamnionitis occurs in approximately 5% of all births (Gomez-Slagle et al., 2022). The incidence of chorioamnionitis within the dataset was only .98% ($n = 19$) and because of such a low incidence, there were not enough positive cases to support either of the null hypotheses. It is possible that there is a statistically significant relationship between pregnancy intention levels and the outcome of chorioamnionitis, but further research is necessary to better understand the relationship.

Interpretation of Findings

Key Findings and Peer Reviewed Literature

Pregnancy Intention Levels

Pregnancy intention levels were confirmed to be an important public health issue in this study. Data from this study confirmed that unintended pregnancy accounted for 54.87% of the pregnancies among the women who responded from Oklahoma and Mississippi. Robbins et al (2021) described differences in pregnancy intention levels and

an increased risk associated with pregnancy ambivalence, unwanted pregnancies, and adverse behaviors during pregnancy, including intimate partner violence, smoking during pregnancy and the post-partum period, and inadequate prenatal care. Of the women who responded, 483 women with unintended pregnancy had received inadequate or intermediate prenatal care, compared to 206 women who had a pregnancy that was wanted now. These data confirms the peer reviewed literature regarding increased likelihood of women with unintended pregnancies and inadequate prenatal care. This is a significant opportunity for a public health intervention to improve the rates of adequate prenatal care and reduce the rates of unintended pregnancy.

Race and Ethnicity

Race and ethnicity are population characteristics self-declared by individuals and are often used in public health studies to identify inequities (White et al., 2020), yet their lived experiences may be vastly different, depending on how the person is perceived, based on skin color or national origin. Adegoke et al (2021) retrospectively examined the relationship between race and nativity and adverse maternal and perinatal outcomes among women who delivered singleton births at Boston Medical Center between 2010 and 2015; the results of the study indicated that black women regardless of their nativity have a higher rate of poor outcomes. Race was not confirmed to be a contributory factor to the outcome of chorioamnionitis. Hispanic ethnicity, although used for weighting analysis, was not confirmed to have a statistically significant predictive association with chorioamnionitis.

Age

Age was confirmed to be a factor associated with pregnancy intention. However, data from this study indicates that the higher rates of unintended pregnancy were among women age 18-24, compared to peer-reviewed literature by Robbins et al. (2021), who reported lower rates of unintended pregnancies among women age 18-24. While demographic data showed that 17 of the 19 cases were observed in women age 18-24, age was not a statistically significant predictor of chorioamnionitis in the regression model.

Marital Status

Marital status was confirmed to be a key factor to control for when examining the relationship between pregnancy intention levels and chorioamnionitis. Analysis confirmed that 46% of married participants reported that their pregnancy was unintended, and 63.74% of unmarried participants reported that their pregnancy was unintended, which confirms what has been reported in the literature. Robbins et al. (2021) reported that 42% of married women responded in the 2018 PRAMS survey that their pregnancy was unintended, while 58% of unmarried respondents categorized their pregnancy as unintended. Marital status, when added to the weighted regression model, was a statistically significant control variable, when examining the relationship between pregnancy intention and chorioamnionitis.

Federal Poverty Level

In the dataset for this study, approximately 61% of the women who reported that their pregnancy was mistimed or they were ambivalent or unsure about their pregnancy were also living at or below 200% of the federal poverty level. This confirms the

importance of inclusion of FPL as an indicator in maternal health research. The findings from this study confirm results from a cross-sectional study of women eligible pregnant women in Kentucky (Feld et al., 2021), in which 62% of the women reported that their pregnancy was unintended. In the weighted regression model, federal poverty level was a statistically significant control variable when testing the association between pregnancy intention levels and chorioamnionitis.

Pre-Pregnancy Care

Findings from this study confirmed pre-pregnancy care was associated with 44% of women who wanted their pregnancy now, compared to 21% of women who had no pre-pregnancy care. This finding aligns with data from peer-reviewed literature that this strategy is effective for pregnancy planning (Benedetto et al., 2024). Furthermore, this strategy also can be used to encourage women to access prenatal during the first trimester and maintain adequate care throughout the entire pregnancy, labor and delivery, and post-partum period (Benedetto et al., 2024; Wang et al., 2023). However, this control variable was not found to be a statistically significant control variable when testing the association between pregnancy intention levels and chorioamnionitis.

Adequacy of Prenatal Care (Kotelchuck Index)

The Kotelchuck Index is a categorical measurement that is used to describe the adequacy of prenatal care. This index measures the adequacy of prenatal care by assessing the timing of prenatal care initiation, the number of prenatal visits, and adjusting for the interval between the initiation of prenatal care and the gestational age (Lima Dos Santos et al., 2024). The Kotelchuck Index was developed based off of

prenatal care guidelines set by the American College of Obstetricians and Gynecologists (Kotelchuck, 1994). In the PRAMS ARF (2022) categories of prenatal care include adequate plus, adequate, intermediate, and inadequate. This index was an important control variable that had a predictive association with chorioamnionitis when testing the pregnancy intention levels and the association with chorioamnionitis. Women who had less than adequate prenatal care had much higher likelihood of developing chorioamnionitis than women who had adequate prenatal care, and a synergistic effect is observed between the Kotelchuck Index and pregnancy intention variable when testing an association with chorioamnionitis.

Application of Theoretical Framework

The SEM framework provided an understanding of how socioeconomic factors (poverty level, and marital status), individual factors (age, race, ethnicity) and policy factors (abortion restriction levels) influence health equity and reducing disparities of birth outcomes and maternal morbidity and mortality (Ajayi et al., 2021; Noursi et al., 2021). For this study, the framework was specifically applied when examining the relationship between pregnancy intention levels and the outcome of chorioamnionitis, when controlling for demographic variables, socioeconomic variables, community factors, and then testing for moderating effects of policy factors. The first research question aligned with individual factors (race, ethnicity, and age, pregnancy intention) and interpersonal factors (marital status) and the association with severe maternal morbidities (chorioamnionitis), while the second research question aligns with policy factors (abortion restriction policies) that potentially may influence the association

described between pregnancy intention and severe maternal morbidities. For this study, the data analysis and conclusions can be used to inform policy changes, design health education infographics, and health promotion activities, based on the constructs of the SEM framework.

The findings from this study confirmed the importance of these individual and interpersonal factors as well as socioeconomic factors when conducting maternal health research. While it is also possible that abortion restriction policies have a statistically significant influence on the relationship between pregnancy intention levels and chorioamnionitis, additional data and further research is needed to better understand the dynamics of that relationship. Finally, it is possible that the results of this study could be generalized to similar populations of women in other states with similar abortion restriction policies, and similar population characteristics. However, further research is needed to fully understand the association between pregnancy intention levels and chorioamnionitis, when controlling for race, ethnicity, age, marital status, poverty level, pre-pregnancy care, and adequacy of prenatal care. States with larger populations of Hispanic women of childbearing age should interpret these results with caution but conduct additional studies with larger datasets to determine whether a true association between pregnancy intention levels and chorioamnionitis exists.

There are a few strengths to this study. First was the use of the PRAMS ARF secondary data from Oklahoma and Mississippi, which made the study cost-efficient, time-efficient, and suitable for public health research. The data collection method employed by the PRAMS ARF team included stratified random sampling to prevent

underrepresentation of marginalized populations, leading to improved generalizability of the populations. Second, the cross-sectional design also allowed the data to be examined at a specific period of time and to assess multiple variables that could affect the relationship between pregnancy intention levels and chorioamnionitis. Third, controlling for race, ethnicity, age, poverty level, marital status, pre-pregnancy care, and adequacy of prenatal care, the analysis of the association between pregnancy intention levels and chorioamnionitis allowed interactions between variables to be identified and any effect they had on the association between the independent variable and the dependent variable.

Limitations of the Study

This study has several limitations. First, the secondary data set was not created for the purpose of my study, and therefore the survey questions and self-reporting of participants are inherent limitations because the questions were not designed to answer my specific research questions. Another limitation is that cross sectional studies do not prove causation between the independent variable (pregnancy intention levels) and the dependent variable (chorioamnionitis). The data did show low incidence of chorioamnionitis, which leads to the third limitation, where the low incidence of chorioamnionitis made the positive predictive value of the regression model undesirable. A fourth limitation was inequitable representation of Hispanic ethnicity in the datasets, and inequitable age distribution, and even with the inclusion of weighted and unweighted models the positive predictive value did not improve, but in both weighted and unweighted models, there was high accuracy (99%) in predicting true negative cases.

Recommendations

This study only looked at a snapshot in time and did not differentiate between pregnancies and births prior to the *Dobbs v. Jackson* decision, compared to pregnancies and births that occurred post *Dobbs v. Jackson*. Therefore, further research is needed to examine the association between pregnancy intention levels and chorioamnionitis, specifically comparing data for pregnancies and births prior to the *Dobbs v. Jackson* decision to data collected for pregnancies and births post-*Dobbs v. Jackson* to see if there is any change. Moreover, additional studies should be completed to examine abortion restriction levels for all states to see if there is any association with the incidence of chorioamnionitis. Finally, pregnancy intention levels, although could not be statistically shown to be associated with chorioamnionitis due to insufficient evidence, should still be a public health topic for which interventions should be developed, given that approximately 50% of pregnancies are mistimed or unplanned.

Public Health Practice and Field Products

Pregnancy intention remains an important topic in maternal health, and the data from this study support the need for public health interventions to reduce unplanned or mistimed pregnancies. Such interventions include a policy brief memo to state officials, legislators, and public health officials, as well as a public health education program aimed to reduce unintended pregnancies, and educational infographic support for the interventions. Field product 1 (Appendix A) is a policy brief memo to state officials, legislators, public health officials and state school officials proposing policy changes that would solve the issue of unintended pregnancies through improved education programs

about reproductive health, and improved access to contraception. Field Product 2 (Appendix B) is a proposed public health intervention plan, which involves coalition building and the use of community health workers to deliver culturally and linguistically appropriate education about reproductive health to the target population (women age 18-24). Field Product 3 (Appendix C) is a visual aid to illustrate the core activities of the public health intervention plan. Field Product 4 (Appendix D) is an infographic designed to educate women about the rates of unintended pregnancies and the choices that are available to them for prevention.

Positive Social Change

Findings from this study have potential significance and implications for change and multiple levels of society. First, at the individual level, women who experience unplanned pregnancies are more likely to engage in unhealthy behaviors and potentially experience pregnancy complications if they do not seek prenatal care (Yu et al., 2022); therefore, the data from study provides evidence to support the need for future public health interventions to reduce unplanned pregnancies, particularly among women age 18-24, who had a high rate of unintended pregnancies. At the community level, findings from this study could lead to improved community policies that promote comprehensive reproductive health education, which is a potential root cause of unplanned pregnancy. Third, at a societal level, there are implications for policy changes such as contraceptive access, and family planning program funding (Gordon et al., 2022). Further studies are needed to assess the effect of abortion restriction policies on maternal health outcomes, specifically, chorioamnionitis. A final implication of the findings from study is that the

data supports the need for improved surveillance efforts of pregnancy intention and severe maternal morbidities and opportunities for future public health research. Even though the data show that chorioamnionitis occurred in approximately 1% of the cases, 42% of the cases of chorioamnionitis occurred in pregnancies that were either mistimed, unwanted, or the mother was unsure if she wanted to be pregnant or not. In Oklahoma and Mississippi there is a significant opportunity for positive social change, by offering evidence-based reproductive health education materials that are culturally and linguistically appropriate by utilizing community health workers to do education programs in the communities within each state. Lastly, by encouraging and facilitating adequate prenatal care once a pregnancy is confirmed, and by making care affordable, geographically accessible, and culturally and linguistically appropriate positive social change can be made for the populations served.

Conclusion

This study did not differentiate between births that occurred before the *Dobbs v. Jackson* decision and those births occurring after the decision; therefore, further research is needed to examine the association between pregnancy intention levels and chorioamnionitis and should be inclusive of data from all states to see if there is any association with the incidence of chorioamnionitis. Finally, pregnancy intention levels, although they could not be statistically associated with chorioamnionitis due to insufficient evidence, should still be a public health topic for which interventions should be developed, given that the data from this study shows that approximately 55% of pregnancies were mistimed or unplanned. In Oklahoma and Mississippi there is a

significant opportunity for positive social change by offering family planning education in schools, colleges and universities, churches, and during primary care visits, and encouraging and facilitating adequate prenatal care once a pregnancy is confirmed, by making care affordable, geographically accessible, and culturally and linguistically appropriate for the populations served.

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Appendix A: Field Product 1

Policy Memo: Addressing Unintended Pregnancy in Oklahoma and Mississippi

Introduction

Unintended pregnancy remains a significant public health challenge in Oklahoma and Mississippi. Unintended pregnancies are associated with increased risks of inadequate prenatal care, adverse maternal and infant health outcomes, and greater economic and social burdens (Robbins et al., 2021).

Scope of the Problem

Oklahoma and Mississippi have rates of unintended pregnancies that are higher than the national average. Moreover, women aged 18-24 in the states of Oklahoma and Mississippi have the highest rates of unintended pregnancies, and are more likely to experience inadequate prenatal care, poor weight gain, increased smoking during pregnancy, and higher rates of intimate partner violence.

Current Approaches

There are a few approaches that have been implemented to reduce unplanned pregnancy, including increased access to contraception and abstinence only education. While Oklahoma has made considerable progress in improving access to contraception, Mississippi has faced challenges in passing similar legislation. Abstinence is the only curriculum offered in schools in both states, but parents are required to consent to their teens participating in this curriculum. The best public health approach is two pronged. First, pass legislation that requires comprehensive reproductive health education in schools, which would equip young women with improved knowledge to make informed choices about sexual behavior, contraception, and taking care of her body. Second, for Mississippi, pass legislation that improves access to contraception.

Major Constituents: Representatives, Senators, Governors, State School Board Members

Conclusion

Reducing unintended pregnancies is essential for improving maternal and infant health outcomes in Oklahoma and Mississippi. By expanding access to contraceptive services and enhancing reproductive health education, policymakers can make meaningful progress toward healthier families and communities.

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Appendix B: Field Product 2

Public Health Intervention Plan (PHIP)

Problem Definition

Unintended pregnancy remains a significant public health challenge in Oklahoma and Mississippi. Unintended pregnancies are associated with increased risks of inadequate prenatal care, adverse maternal and infant health outcomes, and greater economic and social burdens (Robbins et al., 2021). Oklahoma and Mississippi have rates of unintended pregnancies that are higher than the national average. Moreover, women aged 18-24 in the states of Oklahoma and Mississippi have the highest rates of unintended pregnancies, and are more likely to experience inadequate prenatal care, poor weight gain, increased smoking during pregnancy, and higher rates of intimate partner violence, as well as potentially seek abortion services, whether medically induced in a state which allows such services, or by unsafe abortion methods, which can in turn cause serious infections, sterility, hemorrhaging, and potentially even death.

Goal Setting

1. Form a coalition of stakeholders who will work together to develop a program to improve awareness about reproductive health and family planning
2. Reduce rates of unplanned pregnancies

Target Population

The target population will include all women aged 18-24 who live in Oklahoma and Mississippi. These women have the highest rates of unintended pregnancies, and are more likely to experience inadequate prenatal care, poor weight gain, increased smoking during pregnancy, and higher rates of intimate partner violence, as well as potentially seek abortion services.

Intervention Strategies

1. Create a community based coalition that is focused on reduction of unintended or unwanted pregnancies.
2. Implement an education program that is delivered to women age 18-24 in convenient areas such as student lounges, dorm reception areas, church college and career ministries, and coffee shops, using trained community health workers.

Implementation Plan

Year 1: Planning and Startup of Services, Initial Evaluation

Year 2: Continuous delivery of education to women age 18-24, Evaluation
 Year 3: Continuous delivery of education to women age 18-24, Evaluation
 Year 4: Continuous delivery of education to women age 18-24, Evaluation
 Year 5: Continuous delivery of education to women age 18-24, Evaluation

Evaluation Plan

The components of the program evaluation will be based on the following goals and objectives in the areas of oversight and compliance, program improvement, and merit and worth. Funding agencies potentially may offer a web based evaluation tool, to keep the costs reduced.

Oversight and Compliance

Goal: Demonstrate to funding sources that there is sufficient compliance and oversight activities for the program.

Objective: By the end of the first program year, the Coalition committee will have conducted quarterly compliance reviews of all program activities, ensuring that 100% of expenditures and operational procedures align with program requirements, as documented in quarterly audit reports.

Evaluation Questions	Measures and Indicators	Data Collection Methods
1. Are there regular reviews of program activities by an oversight agency or committee?	<ul style="list-style-type: none"> Quarterly coalition meeting minutes with review of activities and recommendations 	Committee minutes with review of activities and recommendations
2. Are financial resources being utilized for activities promised?	<ul style="list-style-type: none"> Budgeted items compared to expenditures should not have major variation. 	Review of expenditures compared to budgeted items.

Program Improvement

Goal: To systemically review and improve areas of the program for efficiency and effectiveness

Objective: By the end of each program year, the coalition committee will review program activities and identify at least one performance improvement opportunity and implement an evidence based strategy to improve efficiency and effectiveness.

Evaluation Questions	Measures and Indicators	Data Collection Methods
1. Is the quality of training that is provided to the community health workers meeting their needs for delivery of program curriculum?	<ul style="list-style-type: none"> Employee Productivity Employee Knowledge 	<ul style="list-style-type: none"> Productivity reports Post-training assessments Competency

- | | | |
|---|--|---|
| <p>2. Is the curriculum being delivered to the target population at an acceptable rate or is there room for growth?</p> | <ul style="list-style-type: none"> • Daily Schedule vs. Demand Reports • Monthly Schedule vs. Demand Reports | <p>assessments</p> <ul style="list-style-type: none"> • Employee Surveys <p>Productivity Reports</p> |
|---|--|---|

Merit and Worth

Goal: To review the program for the value it brings to the communities and target populations that are being served.

Objective: At the end of each program year, the Coalition Committee will conduct a comprehensive review of all program expenditures, activities, and use storytelling to demonstrate the merit and worth of the program and demonstrate a 5% improvement each year in performance.

Evaluation Questions

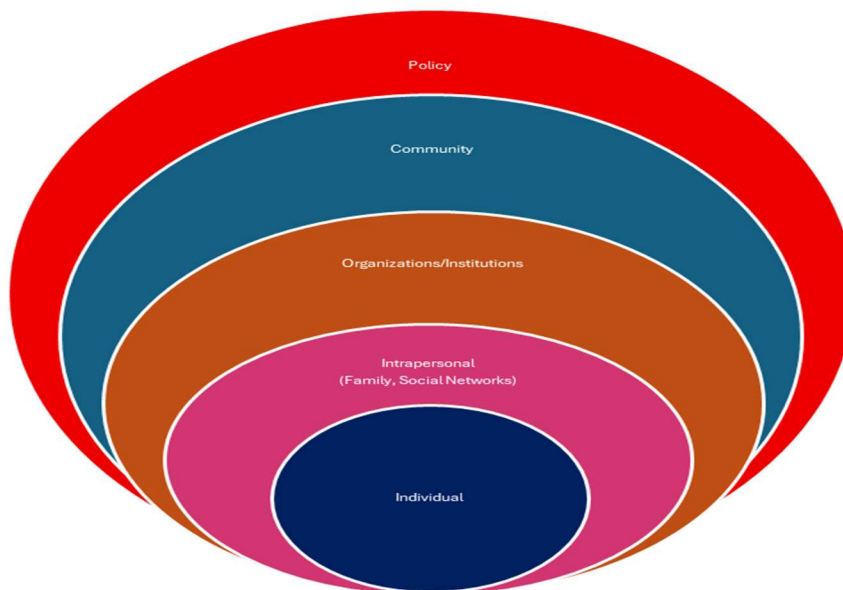
Measures and Indicators

Data Collection Methods

- | | | |
|--|--|--|
| <p>1. To what extent has the population of interest experienced a reduction in unplanned pregnancies in the past 12 months?</p> | <ul style="list-style-type: none"> • Community/county/state data on unplanned pregnancies | <ul style="list-style-type: none"> • Survey data • PRAMS Data collection |
| <p>2. Is there a success story to share that shows the impact of how the program activities has helped an individual in the target population?</p> | <ul style="list-style-type: none"> • Success stories | <p>Testimonials</p> |

Appendix C: Field Product 3

Visual Representation of PHIP



Framework (SEM Framework, Bronfenbrenner, 1989) Individual <ul style="list-style-type: none"> • Biological factors (age, gender, race, ethnicity) and personal decisions • Income level 	Intervention Educate via community health workers
Interpersonal (Family and Social Network) <ul style="list-style-type: none"> • Marital Status • Family Size • Family and Social Support System 	Educate about resources in the communities that are available.
Organizational/Institutional <ul style="list-style-type: none"> • School Curriculum • Access to Care 	Coalition building with representatives from schools, churches, medical community, public health department, and other key stakeholders
Community <ul style="list-style-type: none"> • Cultural beliefs about pregnancy and reproductive health 	Needs Assessment will include survey of community beliefs and cultural practices
Policy <ul style="list-style-type: none"> • Policies concerning school curriculum • Policies concerning contraception 	Policy Recommendation

References:

Bronfenbrenner U. Ecological systems theory. In Vasta R, ed. *Annals of Child Development Vol. 6*. London, UK: Jessica Kingsley Publishers; 1989: 187-249

Appendix D: Field Product 4

Title: Infographic: Unintended Pregnancies

UNINTENDED PREGNANCY

55%

Fifty-five percent of all pregnancies are unintended (PRAMS ARF, 2022), highlighting the need for effective education and prevention strategies to empower individuals in making informed choices about their sexual health. In the United States, in 2022, over 600,000 pregnancies ended in abortion, (CDC, 2022) .



Be Informed About Your Choices to Prevent Unintended Pregnancy

- **100% of all pregnancies can be prevented by abstinence.**
- **Contraception is also an effective way to prevent pregnancy.**



"Women have a better chance to secure freedom and protect themselves from violence, from abuse, from injustice, if they are well-educated and know their rights."
Laura Bush

Unintended pregnancies can have significant impacts on families and society. Factors contributing include lack of access to contraception, insufficient sex education, and economic instability. Understanding these causes is essential for developing effective solutions and support systems to reduce rates.

Consequences of unintended pregnancies often include financial strain, emotional distress, and health risks for both mothers and children. Solutions involve improving access to reproductive health care, expanding education programs, and promoting responsible family planning to empower individuals to make informed decisions about their sexual health.

Learn more now!