BARRIERS TO FEDERAL HEALTH REFORM:

INVESTIGATING THE EFFECTS OF CULTURAL AND CONTEXTUAL FACTORS ON BIRTH WEIGHT OUTCOMES FOR BLACK AMERICAN MOTHERS

by

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Abstract

This dissertation investigates whether current government interventions positively and significantly affect birth weight for Black American Mothers (BAM) when controlling for political, social, and cultural factors.

Hierarchical linear modeling is used to evaluate the effect that federal reforms and program services geared towards health equity, such as adult Medicaid expansion and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Programs and Administrative Services, have on birth weight from 2010 to 2018.

Using a three-paper format, the first study tests whether state and local health policy factors, such as state adult Medicaid expansion status and bureaucratic factors, such as WIC Program and Administration (P&A) cost, respectively, impact county-level birth weight for BAM. The second study examines whether state-level interquartile measures (IQM) of Racism and Religiosity in Google search trends impacted county-level birth weight for BAM. The last study examines interactions between socioeconomic factors, bureaucratic factors such as WIC P&A cost, and policy factors such as adult Medicaid expansion status.

The findings across the three papers suggest that regional characteristics have a significant effect on increasing adverse outcomes for pregnant Black mothers. Birth weight outcomes are the worst in the Southern of the United States. As the natality data does not include individual factors such as marital status and

live birth order, I could not control differences in birth weight for single mothers, first-time mothers, or other factors that may affect birth weight. Future research should supplement this data by partnering with hospitals and with local agencies to address birth weight disparities. This would facilitate testing the impact of public and nonprofit services on birth weight outcomes in health systems in various regions across the United States.

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Chapter 1: Introduction

Beginning in 2010, the Health and Human Services (HHS) Secretary's Advisory Committee (SAC) has mandated that United States public health systems strive to achieve health equity and to eliminate health disparities (Amjad et al., 2019). Health disparity refers to differences in the quality of health and healthcare services across different demographic groups within a population (Amjad et al., 2019; Chae et al., 2018). The policy goal of health equity is therefore a normative goal, as it refers to the absence of disparities in controllable or remediable aspects of health. Despite these policy goals, the American healthcare system remains beset with health disparities and inequalities finding that those who are lowest in socioeconomic status (SES) are the least healthy, and middle-class people were also significantly less healthy than the wealthiest group (Braverman et al., 2010). Not only are there differences in health outcomes for people at all socioeconomic levels, but there are also meaningful differences between the access to healthcare experienced by people living in highly urbanized regions compared to that of people living in rural areas (Amjad et al., 2019; Chae et al., 2018). A study examining 2016 state-level data found that rural mortality exceeded urban mortality in all but three states due to the lower access to healthcare (Gong et al., 2019). Additionally, poverty and unemployment seem to have worse outcomes for rural residents compared to those for people living in urban areas. These differences in regional characteristics also include distinct cultural and ideological values that are widely associated with the region’s history. A study examining intersections of race and rurality found that Black people living in the rural South have worse mortality rates than white people living in both urban and rural non-Southern regions (Miller, 2021). Due to the higher proportion of rural land in Southern areas, the lower number of major cities that populate a Southern state means that health systems in rural areas are likely smaller, underfunded, and

sparsely located. However, this does not account for the racial disparities found in the South. Miller (2021) argues that macrosocial determinants of health--social determinants defined by the upstream, systemic, and structural conditions that influence population health and drive health inequities—explain how legal segregation, job discrimination, residential segregation, and white flight have resulted in disproportionate Black populations that lack health clinics, physicians, or municipal programs to support healthcare needs.

Fragmented Federalism and Health Disparities

Federalism, the system of government used in the United States (U.S.), is a combination of a general federal government at the national level and numerous state and local level governments (Jung & Ho, 2004; Krause & Bowman, 2005; Lewis et al., 2013; Luigjes & Vandenbroucke, 2021). The Tenth Amendment limits the federal government's ability to induce state compliance on policy areas that are not expressly stated as enumerated powers in the United States Constitution (Gluck, 2012; Moncrieff & Lawless, 2015; Rotulo et al., 2020; Ruger, 2012; Weeks, 2007). As a result, despite the unilateral executive power enjoyed by the President of the U.S. to coordinate agencies that address health inequities for Black people, the federal government lacks the power to fully address health disparity without direct cooperation from individual state governments.

Legal frameworks suggest that the U.S. federal government must rely on state-level participation to address health disparity (Gluck, 2012; Lewis et al., 2013; Ruger, 2012; Weeks, 2007). The Supreme Court has primarily contested laws designed to benefit a particular race or ethnicity by using the Fourteenth Amendment to apply strict scrutiny to the bill's language (Gottlieb, 2002; Ruiz, 1995). This requires that laws designed to address disparities among

vulnerable populations do so without specifying a targeted population protected by the Constitution.

It is important to note that historically, state legislatures had significantly greater healthcare governance autonomy before the 1930s (Gluck, 2012; Leonard, 2010; Lewis et al., 2013; Ruger, 2012; Weeks, 2007). However, it was perhaps due to the growing health disparities between Black and white people even following Emancipation during the Jim Crow era, in conjunction with the mass poverty inflicted by the Great Depression, that led the federal government to assume additional responsibilities for providing public health services over time (Gluck & Huberfeld, 2018; Riley, 2018).

This trend would continue uninterrupted until the development of Medicare and Medicaid in 1965, marking the importance of federally provided health insurance as a public service necessary for poor and older Americans to afford healthcare (Gluck, 2012). The relationship between the state and federal government as it relates to these two programs is best explained by the ideological pressure from conservative states to preserve state autonomy by limiting the oversight and implementation powers of the federal government, thus limiting Congressional support for future expansion. At the federal level, Medicare and Medicaid are administered by the Centers for Medicare & Medicaid Services (CMS) within the Department of Health and Human Services (HHS). The federal government serves as the overarching leadership for Medicare and Medicaid operations by developing broad rules and standards that states must follow to receive federal matching funds. However, states can provide their own versions of Medicaid and Medicare by exercising the discretion they have over how they plan to implement these programs within the federal statute's basic framework. In stark contrast to the envisioned standardized system and delivery of health insurance across all states, today, each state Medicaid

program is unique, reflecting each state's use of existing flexibility and waiver authority to design programs to meet their specific needs and priorities (Gluck, 2012; Lewis et al., 2013; Ruger, 2012; Weeks, 2007).

Recently, the division between federal and state authorities in healthcare came to a head with the passage of the Affordable Care Act (ACA) (Haeder & Weimer, 2015). Despite the ACA being associated with the expansion of federal influence in the health insurance industry, the bill preserved the states' capacity to create and change their health systems via their ability to create health insurance plans and to set the rates for people close to the federal poverty level (Gluck, 2012; Haeder & Weimer, 2015, 2015; Moncrieff & Lawless, 2015; Weeks, 2007). As a result, while the federal government provides overarching authority in health policy, implementing health reforms necessitates states' willingness to cooperate with the federal government.

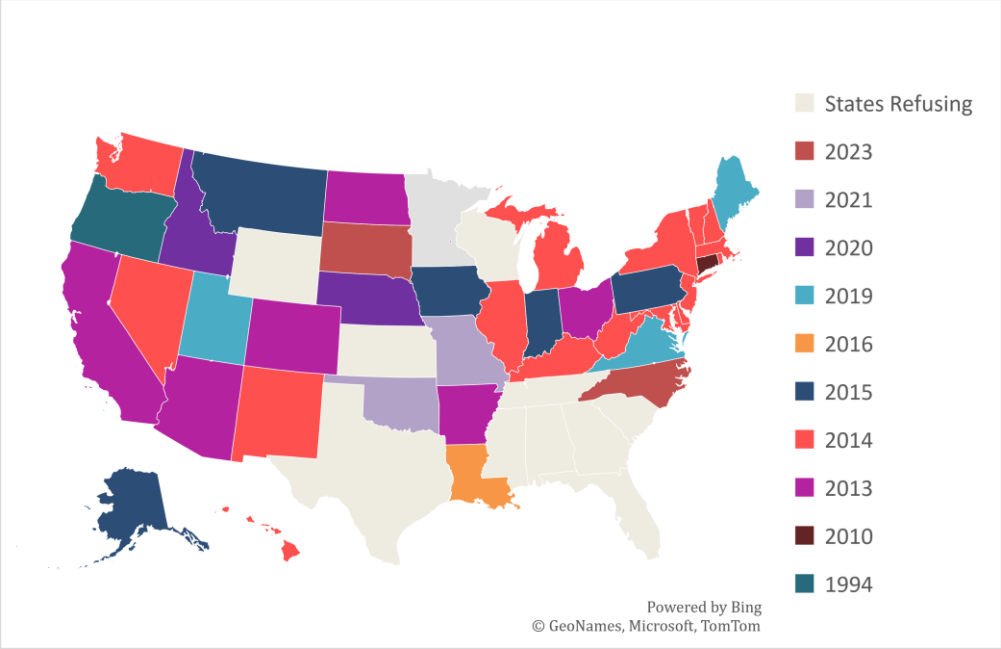
The complexity and overall cost of addressing health disparities for Black people in the U.S. would require Congress to allocate additional resources to existing federal agencies with missions to address health disparities for these groups (Gluck, 2012; Moncrieff & Lawless, 2015; Rotulo et al., 2020; Weeks, 2007). The ACA's initial requirement for all citizens to enroll in a health insurance plan provides a contemporary example of the fragility of unpopular laws designed to address health disparities at various socioeconomic levels (Haeder & Weimer, 2015). The Democrats in Congress could not pass the ACA without revising crucial features, such as by making state participation in the Medicaid coverage expansion optional (Haeder & Weimer, 2015). Not only did this change hinder the goal of health equity through universal coverage, but the optional structure of Medicaid expansion also created a political tool for the opposition to the bill to rally around by opting out of the Medicaid expansion (Gluck & Huberfeld, 2018; Haeder & Weimer, 2015; Leonard, 2010).

Although the Medicaid expansion option of the Affordable Care Act (ACA) was focused on increasing access to healthcare for poor adults, it has been found to increase coverage for children in the states that adopt it (Sosnovske, 2022; Rocco et al., 2020; Hudson & Moriya, 2017). While most poor children in these states were already eligible for public insurance through Medicaid or the Children's Health Insurance Program (CHIP), such coverage was not legally required in the ACA expansion. Rocco et al. (2020) provide evidence to suggest that greater access to healthcare opportunities for parents led to increased projected access to healthcare for their children. Hence, mothers giving birth in states that have opted for Medicaid expansion should experience better birth weight outcomes than mothers in states that have not. Additional research is needed to determine whether the spillover effects seen in previous studies are manifested in the differences in outcomes experienced by Black American mothers.

The Challenges of State-Federal Partnerships

Figure 1.1 provides a map of the United States depicting the status of adult Medicaid expansion by year. While 16 states implemented adult Medicaid expansion during the first year of the policy in 2014, late adopters would trickle in over time. Many of the late adopters are from rural and politically conservative states, suggesting that political and financial variations across the states influenced the expansion adoption. Currently, 41 states have opted into Medicaid expansion (Norris, 2023).

Figure 1.1 Medicaid Adoption, 1994 to 2023



Source: healthinsurance.org (Norris, 2023)

Current Focus

The U.S. government is limited both legally and politically in directly inducing the compliance of state actors regarding federal health mandates. Additionally, there are political and social incentives that may discourage certain state governments from cooperating with federal policies. Due to the above legal and political contexts, the federal government must work within the limitations of projecting public service delivery through funding collaborations with ideologically driven state-level governments to improve the health equity of their local health systems. However, evidence suggests that while the U.S. currently provides trillions of dollars in social welfare programs for equal access to public health services, health outcome disparities persist for Black people (Almond et al., 2005). Policy areas such as health equity might be suffering from lack of knowledge regarding the effects that policy implementation and bureaucratic capacity have on targeted policy outcomes. For example, many of the mandates related to the provision of healthcare for diverse populations tend to be unfunded, underfunded,

or tied to existing sources of revenue without a noticeable increase (Gluck & Huberfeld, 2018; Haeder & Weimer, 2015).

Low Birth Weight as a Health Disparity

Among health disparities in the United States, birth outcomes are among the worst disparities experienced by the Black population; Black American Mothers (BAM) in the United States are reported to have the worst outcomes related to low birth weight (LBW) compared to all other race and ethnicities (Amjad et al., 2019; Chae et al., 2018; Kramer et al., 2010). A meta-analysis found that BAM were 53% more likely to experience adverse events such as LBW (Amjad et al., 2019). Among the observed studies, the mother's race was the most predominant social determinant of LBW (Amjad et al., 2019). LBW is defined as when a baby weighs less than 5.8 pounds or 2500g (Chae et al., 2018; Kramer et al., 2010). Infants born at a low birth weight have a much higher risk (over 20 times) of postnatal mortality than infants born at an average weight (Amjad et al., 2019). Additionally, children born with LBW have short and long-term health complications, including an increased risk of adverse developmental outcomes in infancy and higher mortality rates through childhood, adolescence, and later adulthood (Amjad et al., 2019).

Institutional Racism

Institutional racism, as well as living in rural communities, inadequate education, and low socioeconomic status (SES) are all found to increase the risk of adverse pregnancy outcomes in BAM (Anthopolos et al., 2014; Debbink & Bader, 2011; Kramer, 1987; Riley, 2018). In addition, the historical and contemporary accounts of institutional racism in the United States seem to correlate with the current health outcomes of Black Americans (Anthopolos et al., 2014; Debbink & Bader, 2011; Kramer et al., 2010; Riley, 2018). Institutional racism is a form of

racial bias that uses discriminatory language in the laws and regulations of a society or an organization to reify views of the racial superiority of one group over another (Riley, 2018; Subramanian et al., 2018). Institutional racism has been exposed in many policy areas, such as criminal justice, public housing, public health, public education, and voting rights (Blessett, 2015; Blessett et al., 2019; Gooden, 2015; Riley, 2018; Subramanian et al., 2018).

Racial disparities in the justice system have been an essential topic in criminal and public administration since the 1960s (Gooden, 2015; Kim & Kiesel, 2018; Rocque, 2011; Spohn & Holleran, 2000; Steffensmeier et al., 1998; Warren et al., 2012). In the wake of the Civil Rights movement, trends toward punitive criminal justice policies and mass incarceration in recent decades have led to a dearth of literature focused on studying the disparities in outcomes such as the rates of imprisonment, sentencing, and parole (Kim & Kiesel, 2018; Zoorob, 2021). Studies find that Black people are five times more likely to be stopped and questioned by police without probable cause (Kim & Kiesel, 2018; Zoorob, 2021). This is known as racial profiling, whereby law enforcement targets individuals of specific populations for potential criminal activity. Additionally, 65% of Black adults have felt targeted because of their race, almost twice as high as the next two largest minority groups, Latino and Asian, combined (Kim & Kiesel, 2018; Zoorob, 2021).

Regarding education, the dispersal of federal and state funding has been linked to disparities in school funding across districts (Bifulco, 2005; Brunn-Bevel & Byrd, 2015). Disparities in funding have been found between high-wealth and low-wealth districts, as well as in family income and spending within a student's district (Bifulco, 2005). From these results, it appears resource exposure is a crucial mechanism linking patterns of disparities to student outcomes (Bifulco, 2005; Hess et al., 2022; Testa & Jackson, 2020). Studies looking into

education disparity argue that historical and contemporary forms of discrimination involve limited resource exposure for vulnerable populations (Kim & Kiesel, 2018; Zoorob, 2021). For example, residential segregation has been linked to disparities in district revenue generation (Bifulco, 2005). However, while resource exposure has been linked to disparities, it is less understood whether state politics influences resource exposure. As a result, further research is needed to test the effects of resource exposure on vulnerable populations in other disparities using additional political and societal factors.

Scholarship examining disparities in public housing has used indicators such as numbers of abandoned buildings, broken windows, and incidents of crime across the rural-urban continuum to measure how neighborhood quality differs by race/ethnicity (DeSilva & Elmelech, 2012; Ezeala-Harrison et al., 2008; Hess et al., 2022; Wachter & Megbolugbe, 1992). Disparities have been found in the exposure to neighborhood problems among racial and ethnic groups, with Black and Hispanic residents living outside of metropolitan areas being increasingly and disproportionately exposed to poor-quality neighborhoods.

Lastly, while equal access to voting is a core feature of democratic government, studies find both historical and contemporary disparities in access to voting facilities for people across ethnic groups (Blessett, 2015; Cachon & Kaaua, 2022; Chen et al., 2022; Hochberg, 2022; Mycoff et al., 2009; Ochs, 2006). Residential segregation has been linked to disparities in outcomes at polling sites (Cachon & Kaaua, 2022; Chen et al., 2022). For example, in the 2016 election, relative to entirely white neighborhoods, residents of entirely Black neighborhoods waited 29% longer to vote and were 74% more likely to spend more than thirty minutes at their polling place (Chen et al., 2022). In addition to disparities caused by historical discrimination, studies report that voter ID laws disproportionately impacted Black registrants (Chen et al.,

2022; Hochberg, 2022; Mycoff et al., 2009; Ochs, 2006). These disparities widen at lower socioeconomic levels, with Black voters who reported having economic hardships being less likely to vote in a strict-ID state than those who previously had identification (Hochberg, 2022; Mycoff et al., 2009). These trends in historical and contemporary forms of voter suppression cause barriers to participation, thereby creating a less representative government and a less inclusive society.

It is important to note how disparities within areas of government likely influence and exacerbate the health disparities for pregnant Black women. For example, the incarceration of the partners of pregnant women has adverse health consequences for infants. Using data from the Pregnancy Risk Assessment Monitoring System (PRAMS), 2009-2017, Testa and Jackson (2020) found that the incarceration of a pregnant woman or her partner is associated with low birth weight and preterm birth. In addition, socioeconomic factors such as education have been found to correlate with birth outcomes, and less educated mothers have been linked to LBW (Bifulco, 2005; Chae et al., 2018; Testa & Jackson, 2020; Weathers & Sosina, 2022). Additionally, factors such as the rate of high-school graduation within a district have been linked to the size and funding level of the district (Bifulco, 2005). As a result, a robust framework that explains the effects of federal outlays and state politics on health outcomes will require an investigation of the effects of socioeconomic, residential, and demographic factors on health disparities.

The consequences of the historical and contemporary forms of racial discrimination are likely felt in today's predominantly Black communities, which are often characterized as poorer compared to adjacent, predominantly white communities (Amjad et al., 2019; Anthopolos et al., 2014; Chae et al., 2018; Kramer et al., 2010; Masi et al., 2007). These findings strongly suggest

that racial discrimination may widen gaps in health equity, thereby necessitating further investigation of the implications of intrinsic factors such as racial sentiment as a social determinant of health in predicting BAM birth outcomes. Structural racism may therefore help to explain differences in Black birth outcomes as the product of mutually reenforcing forms of discrimination such as neighborhood deprivation (Riley, 2018), economic inequality (Masi et al., 2007), and differential access to resources such as health care and grocery stores (Anthopolos et al., 2014). As a result, any studies and policies that claim to better understand the context surrounding Black American health disparities must consider institutional racism as a factor important in explaining the persistence of health disparities for the Black population.

Fragmented Federalism, Health Reform, and Public Administration

The history of inequity for Black Americans, in conjunction with the history of U.S. health reforms, reflects not only the intractability of health inequality in a diverse populace but also the fragmented federalism and policy complexity that requires the U.S. government to rely on state-level collaborations and blanket health reforms to address disparities among vulnerable populations (Blessett et al., 2019; Gooden, 2015; Kincaid, 2017).

The federal government has several key tools to Induce one-way state and local cooperation in addressing health disparities (Kincaid, 2017). From a bureaucratic agency perspective, the federal government uses minimum national-standards schemes to ensure that state WIC and Medicaid programs operate within federal standards, with financial consequences tied to noncompliance (Testa & Jackson, 2021; Brown et al., 2019; Gluck, 2012). For example, a failure to meet standard performance in Medicaid program reporting could result in a reduction in federal matching funds that are otherwise provided with no limit (Brown et al., 2019).

Additionally, the federal government projects its public service delivery using state-level agencies and programs such as WIC and Medicaid to provide nutritional and administrative services otherwise not provided at the state and local levels (Testa & Jackson, 2021). While other tactics such as compliance-deadline extensions, court orders/consent decrees, and statutory/regulatory penalties can all apply to interactions between the federal government and the state/local level, this dissertation focuses on the institutional dollars used to impact health disparities directly (Testa & Jackson, 2021). That said, rather than focusing on what factors allow the federal capture of state and local health policy, the following studies examine whether institutional resources translate into reducing adverse health outcomes from multiple perspectives.

Contribution to Public Administration Literature

Public administrators recognize the need to address disparities in social outcomes but appear unenthusiastic in their examination. For example, Gooden (2015) reports that less than 5 percent (n= 208) of works published in Public Administration Review (PAR) between 1940 and 2013 examined or discussed social equity in their study. Further, Gooden (2017) provides evidence to suggest that local governments are seeking standardized measures to benchmark racial disparity. Disparities in health outcomes, such as the low birth weight among Black mothers, present obvious and persistent gaps in social outcomes. However, despite the salience of race as a factor in public health policymaking and policy implementation, there is a lack of theoretically driven research seeking to understand the barriers to the delivery of public service outcomes created by the attitudes, biases, and experiences of people who differ by race and culture.

The goal of social equity and eliminating social injustice requires that the diversity of stakeholders reflect all people affected in the population (Blessett et al., 2019; Gooden, 2015, 2017). Unfortunately, BAM are experiencing poor health disparities in birth outcomes (Chae et al., 2018). Negative perceptions of Black Americans stemming from historical injustices in the United States, such as slavery, disenfranchisement, and racial segregation, are expected to create gaps related to social determinants of health, causing numerous disparities in Black health outcomes (Amjad et al., 2019; Chae et al., 2018). The U.S. Constitution provides the basis for a dual or“"layer cak”" federal model in the case of health policy, whereby federal laws and mandates override state and local policies that conflict with them (Kincaid, 2013, 2017). However, to propose top-down healthcare reforms that will improve the birth outcomes for Black Americans across multiple states, studies must test the limitations of a framework grounded in the current one-way cooperative federalism surrounding health policy, resembling more so as a “semi-marbled cake” (Kincaid, 2017). As a result, this research and future related works are needed to better understand the impacts of current federal attempts to address health disparities from neutral policies and targeted multilevel collaborations.

Three-Paper Format

The following section introduces three studies that were used to investigate the effects of barriers to public service deliveries addressing birth-weight outcomes for BAM. The first paper examines the effect of state-level political and bureaucratic factors and county-level socioeconomic factors on the birth outcomes of BAM. The purpose of the first paper is to answer the following research question: To what degree do political and administrative factors explain the variations in health outcomes for BAM? The second paper examines the effect of state-level cultural and partisanship factors and county-level socioeconomic factors on the birth outcomes of

BAM. The purpose of the second paper is to answer the following research question: To what degree do ideological and cultural factors explain BA''s variations in health outcomes? Lastly, the third paper examines the interactive effect of socioeconomic, ideological, and cultural factors on the relationship between regional characteristics and the birth outcomes of BAM. The purpose of the third paper is to answer the following research question: To what degree do regional interaction effects explain differences in BA''s variations in health outcomes?

All three studies use birth weight data to test the relationship between political factors and low birth weight among BAM. All the studies use data from the Center for Disease Control (CDC) for the period 2010-2014. To overcome barriers in analysis associated with low outcomes for certain regions, the study will limit its data to counties with >200 births to Black mothers in the study period. This study aims to overcome any variability caused by limited samples in certain regions by capturing county outcomes across every state.

The Multilevel Approach

Multilevel modeling can assess complex relationships related to race, health, and environment that may influence and address health outcomes within a community at multiple levels (such as local and state) (Liyew et al., 2021; Matoba et al., 2019; Zhu & Wright, 2020). The following studies employ multilevel modeling (MLM) to investigate what factors influence LBW among Black infants at a county level using annual birth outcomes of BAM in the U.S. Social, cultural, behavioral, health, and socioeconomic factors are considered while building the models. By doing so, this dissertation aims to understand the societal factors in the LBW outcomes of BAM. In addition, the following aims to help explain the individual and local factors affecting infant mortality rates.

These multilevel models can be used as an assessment tool to identify, evaluate, and address areas with the most significant risk of LBW for BAM or the greatest vulnerability to the short and long-term effects of LBW for Black infants. Both health and policy science scholars can benefit from a better understanding of the impact that social and cultural factors have on the prevalence of health disparities, as these insights can help to determine and evaluate disparities in other policy areas. Furthermore, a multilevel model of LBW that captures cultural factors can help shed light on gaps in health policy and healthcare provider discretion as they relate to the facilitation and encouragement of diversity, equity, and inclusion that promote policies at the county and state levels.

First Paper

This first study uses birth-weight data to test the relationship between state partisanship and administrative factors on Black women's reproductive health.

Given the hierarchical yet limited nature of the U.S. government's attempts to ensure equal healthcare access, many scholars consider health reforms from a one-way cooperative federalist perspective (Kincaid, 2017). A cooperative federalist model suggests that not only are federal agency outputs important in addressing health disparities, but the structural limitations of the federal government to enforce health mandates also necessitate a multilevel partnership with state and local governments (Kincaid, 2013, 2017). This first study seeks to investigate the degree to which the differences in the state political structure that delivers healthcare leads to differences in health outcomes. The political landscape surrounding each state is expected to impact the level of access for vulnerable groups. For example, states that have opted for adult Medicaid expansion are likely to have better health outcomes than states that do not provide residents with expanded Medicaid.

Additionally, agencies such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program was designed to mitigate or reverse adverse low birth weight outcomes by addressing food insecurity and the inaccessibility of nutritional food for pregnant women, infants, and small children (Weber et al., 2018). In addition to providing vouchers for nutritional foods, WIC services include certifying participant eligibility, nutrition education, breastfeeding promotion, health care coordination, and referral, drug abuse education, clinic operations, food delivery, and warehousing. These additional factors help to facilitate the service delivery and participation of the WIC program. Agencies such as WIC have received budget cuts following the Senate Appropriations bill 2014 in large part due to Republican coalitions that criticized the agency's large administrative budget. It is unclear whether additional administrative capacity might impact health outcomes for the agency-targeted population. It is also unclear whether such differences in outcomes might also be influenced by a stat''s willingness to adopt health equity reforms such as the ACA that would require a significant financial commitment from the state. These differences in outcomes that may result from the resources, politics, culture, and ideology of state-level governments necessitate further examination of the political and social contexts surrounding such disparities. This is especially needed in policy areas that require individual state'' voluntary cooperation. As a result, the following uses federalism as a lens to explain the importance of multilevel collaborations by examining state-level variations as an explanatory factor for differences in health outcomes for vulnerable populations.

Second Paper

The second paper uses the internet query-based measure (IQM) area racism to measure the salience of racist ideology within a metropolitan region (Chae et al., 2018). Due to the negative social connotations associated with being considered a racist individual, collecting identifiable information that captures racist attitudes is very difficult. Chae et al. (2018) used area racism as a proxy measure for area-level racist attitudes using Internet searches to circumvent issues in capturing racist attitudes. Given that behavior on the internet is less susceptible to self-censorship, area racism is expected to provide meaningful geographic variations based on differences in social climates across the United States, (Chae et al., 2018). This variable measures Google search trends of the n-word across the United States metro areas between 2005-2009 and 2012-2019. They observe the word from the context of “"n***e”" as opposed to “"n***a”" as the latter has been largely dismissed by scholarship as a proxy for racism due to the use of the word in pop culture (Chae et al., 2018). The authors found that the proportion of Google internet traffic containing then “"n-word”" at the designated market area (DMA) level corresponded with disparities in preterm birth and low birth weight for Black mothers in the United States. (Chae et al., 2018).

In addition to area racism, the second paper includes area religiosity to measure religious ideology as a control variable for ideology. Stephens (2014) finds that the percent of Google searches that include the word “"God”" for example, explains more than 60% of the area-level variation in belief in God (Stephens-Davidowitz, 2014). Increasing evidence suggests that religiosity in the form of fatalistic attitudes may affect health outcomes within marginalized groups, particularly female Black Americans (Arbuckle, 2017; Schnabel, 2021). In such cases, patients may place their unborn baby's life into “God’s hands”, thereby exhibiting less motivation to visit a doctor. Other factors related to religiosity may pertain to modesty, as many

religions, such as conservative variants of Christianity, Judaism, and Islam, discourage women from having male OB-GYN specialists for fear that their exposure would diminish their moral integrity (Arbuckle, 2017; Herbert, 2013; Saroglou & Cohen, 2013). Lastly, because health systems in the U.S. largely emerged as extensions of church ministries and evangelical organizations, the salience of area religiosity might reflect an ideologically hostile environment for secular people, particularly unwed pregnant mothers seeking equitable healthcare (Herbert, 2013). As a result, a closer look into the relationship between religious ideology can help identify interactions between demographic trends that the prevalence of racist ideology could not explain.

The second study uses low birth weight to test the relationship between racism and religiosity and Black women's reproductive health.

Third Paper:

How do regional characteristics influence birth outcomes? Does the Southern region of the United States present worse health outcomes for Black Americans than other areas? Structural barriers might exist that reflect the exclusion or the inequality of health access for people with diverse political ideologies and cultures in the South that are distinct from the challenges Black people might face in other regions of the United States. Factors such as the historical use of legal segregation, residential segregation, and housing discrimination have created sub-populations of insular poverty. Insular poverty is associated with the discriminatory nature of past and recent state policies designed to benefit historically white wealthy landowners at the cost of poor and vulnerable groups (Amjad et al., 2019; Anthopolos et al., 2014; Debbink & Bader, 2011; Riley, 2018). The Southern region of the United States is expected to exhibit

worse health outcome for BAM as it is the only region to have historically enjoyed political support to enact and implement all manner of exploitative and oppressive tactics to repress Black development in the name of white supremacy.

Previous research that examined the political context of health disparities from a multilevel perspective is limited. Only one study used a multilevel perspective to examine whether a state's Medicaid expansion status influenced preterm birth and low birth weight outcomes (Brown et al., 2019). However, the study did not adequately control the effects of political, cultural, and religious differences between states as confounding factors that would influence the mediating effect of state-level birth outcomes (Brown et al., 2019). As a result, more research is needed to investigate the mediating effects of area racism and religiosity on the relationship between state politics and health outcomes.

The third study includes a multilevel analysis and examines the interaction effects of regional variation on the relationship between racist and religious ideology, socioeconomic factors, partisanship, and birth-weight outcomes of BAM. The third study differs from the previous two in that it uses interaction effects in an MLM model to investigate the effects of regional variations on key social determinants and theoretically significant constructs to explain birth weight outcomes.

Conclusion

This dissertation examines societal and political factors impacting low birth-weight outcomes of Black American mothers from the perspective of federalism. Using a federalist lens, these studies assess county and state-level influences on national outcomes. Additionally, through multilevel modeling, these studies investigate what societal and political factors impact low birth weight at various levels. This dissertation provides a more comprehensive model for

understanding and assessing the impact of culture, politics, and ideology on health disparities. Public administrators are vested in understanding the effect of ideological and political differences on birth outcomes. Additionally, pursuing health equity and eliminating health disparities requires a better understanding of the relationship between federal outlays and key policy outcomes.

Chapter 2: Examining Partisanship and Birth Weight Outcomes for Black American Mothers (BAM)

Introduction: Partisanship and Average Birth weight Outcomes for Black American Mothers

It is becoming increasingly important for policymakers and analysts to determine whether policies intended to diminish health disparities remain effective in various political and social environments (Anderson et al., 2020; Rocco et al., 2020; Michener, 2018; Pomeranz et al., 2017). The two-party political system in the United States (U.S.) represents increasingly polarized ideological traits consistent at the federal, state, and local levels (Michenor, 2018). However, it is unclear what the relationship is between the outcomes of policies designed to address disparities and the politics associated with the vulnerable populations receiving those policies.

For example, states opting out of the Medicaid Expansion program likely reflect Republican values that oppose greater federal authority over healthcare in the U.S.[1] (Rocco et al., 2020; Michenor, 2018). The primary argument of the states that choose not to expand their Medicaid program under the Affordable Care Act (ACA) is that they partly share the healthcare cost of expansion. While the ACA only requires a 10% contribution from individual states, many political elites feared that the required contribution would increase over time (Roco et al., 2020; Michenor, 2018). Political narratives emphasizing state autonomy regarding health policies are reflected in the pushback by Republican elites against the ACA individual mandate and the subsequent policy adjustment to make adult Medicaid expansion an option for states to choose rather than a sweeping federal mandate (Roco et al., 2020; Michenor, 2018). As of 2023, several states that are traditionally Republican dominated have trickled onto the list of states opting into the expansion program (State Health Facts, 2023). Given that political influence is a large component of differences in trends regarding expansion, it is worthwhile to examine whether partisanship trends in adult Medicaid expansion (including a lack thereof) affect average birth weight outcomes over time. The partisan landscape within each major geographic region of the United States may impact the context and quality of healthcare access for vulnerable groups (Anderson et al., 2020; Michener, 2018; Pomeranz et al., 2017). As a result, more research is needed to examine the impact of social and political factors on birth outcomes for BAM.

Policy initiatives such as the Medicaid expansion option of the Affordable Care Act (ACA) have been found to create externalities in the form of increased coverage for children in the state (Sosnovske, 2022; Rocco et al., 2020; Hudson & Moriya, 2017). While most children

[1] According to a Commonwealth Study, on June 2012, the US Supreme Court ruled that states may opt out of Medicaid expansion, as states are required to partly share in the cost. As of December 5, 2013, 40% (20 states) opted out of Medicaid expansion. Of the 25 states that opted out of the expansion, each state contained either a governor position or state legislature that was Republican dominated.

raised in low-income settings were already eligible for public insurance through Medicaid or the Children's Health Insurance Program (CHIP), coverage for children was not legally required. A study conducted by Hudson and Moriya (2017) suggests that programs such as the AC''s Adult Medicaid expansion increased the number of eligible children enrolled as part of a spillover or "welcome mat" effect. The study used American Community Survey data to provide the first national-level estimates of welcome-mat effects on post-ACA children's coverage. Over 700,000 low-income children were estimated to have gained coverage through these spillover effects. The children whose parents gained Medicaid eligibility under the ACA expansion were found to have higher public coverage than children whose parents were ineligible for Medicaid both pre- and post-ACA.

Lower average birth weight outcomes among Black women and non-white Hispanic women as compared to white women have been found. Chae et al. (2017) found that low average birth weight among Black American Women between 2005-2008 was more common in the South Census region when adjusting for factors such as poverty, the Black percentage of the state's total population, and a measure of anti-Black racial sentiment within a given area. However, the study did not consider hierarchical modeling to determine whether census region and state factors influenced average birth weight outcomes at the local county level. An earlier study conducted by Osypuk et al. (2009) compared the health outcomes of women of Mexican descent in the U.S. who were born in the United States with those who were foreign-born to test the implications of the so-called "healthy immigrant paradox," which claims that resource exposure for groups that otherwise have no experience better outcomes than more established minorities that were born in the developed country. The authors found evidence that nonwhite Hispanic women, specifically Mexican American women, had worse average birth weight

outcomes when grouped according to their place of birth, with non-US-born women having better outcomes. Osypuk et al. (2009) argue that nuances in resource exposure exist between foreign-born and domestic-born infants, caused by ethnic and cultural isolation, which leads to differences in average birth weight outcomes. A similar circumstance can be observed in Black non-Hispanic communities in the US, as many predominantly Black communities originated due to legal segregation found in the South or due to "white flight" from an increasing Black population in a predominantly white community, which has been observed to some degree in every region.

Southern racist ideology is intrinsically linked both historically and culturally to the relationship between white supremacy, black disparities, and power systems in the region (Anderson, 2020; Chae et al., 2018; Largent, 2018). The congressional debates over the Hospital Survey and Construction Act of 1942, otherwise known as the Hill-Burton Act, serves as a starting point to the challenges of a federally enforced health equity policy in the United States. While Midwest Senators William Langer (R-ND) and Harold Burton (R-OH) called for nondiscrimination in the use of federal funds, Southern senators, such as Senator Lister Hill (D-AL), argued for the right of state legislatures and local hospital authorities to set policy without federal interference (Anderson, 2020; Largent, 2018). Concession would ultimately be given to Southern elites, with the Hill-Burton Act containing a separate but equal provision. The separate but equal rule allowed for the discrimination of people based on race as acceptable if there was "equitable provision based on need for facilities and services of like quality for each such group." However, because of the wider context of economic and social discrimination, legal segregation effectively isolated Black populations from equitable access to public resources (Anderson, 2020; Largent, 2018). Health systems that served Black patients under segregated

political systems had fewer staff and lower quality or outdated medical technology compared to white patients (Anderson, 2020; Largent, 2018). Most Black communities today live farther from health system resources than their white counterparts (Anderson, 2020; Largent, 2018).

While this policy would be later overturned due to the Civil Rights Act of 1964, barring public funding (such as the eventual Medicare and Medicaid) from organizations that discriminated against people based on race, the CRA only removed overt racism, leaving the racist political structure and cultural norms intact (Anderson, 2020; Largent, 2018). Additionally, with the emergence of Medicare and Medicaid funding, public hospitals became increasingly associated with being the only health systems to provide low-cost care to indigent patients, accessible public healthcare, and a history of treating minority patients. However, Anderson et al. (2020) finds evidence of resistance to providing equitable healthcare by public hospitals in Southern health systems. The authors examined variations in Medicare certification dates from five Southern states to determine if the elimination of overt discriminatory practices in these hospital settings reduced Black post-neonatal mortality. Medicare certification dates were found to have no significance with post-neonatal mortality, suggesting that discrimination against Black mothers and infants continued at the hospital level. While Black populations are disproportionately more reliant on public hospitals for care, they are not immune barriers in the delivery of equitable healthcare caused by discriminatory norms and ideologies that are at least partly shaped by the historic treatment of Black people at the local, state, and regional level.

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) program was designed to mitigate and reverse adverse birth outcomes and infant natality. In addition to providing vouchers for nutritional foods, WIC services include certifying participant eligibility, nutrition education, breastfeeding promotion, health care coordination and referral,

drug abuse education, clinic operations, food delivery, and warehousing (Weber et al., 2018; Neuberger, 2011). These additional factors help to facilitate the service delivery and participation of the WIC program. Like Medicaid expansion, state and local variations can cause regional differences in how WIC services translate into outcome improvement for birth outcomes. For example, states can retain grant funding provided for WIC before distributing it across WIC agencies (Weber et al., 2018; Neuberger, 2011). Multiple factors, including the political context of the region as well as the size and structure of the WIC agency, can influence how much policy initiatives such as Medicaid expansion and WIC can impact birth outcomes for vulnerable populations. As a result, research is needed to examine the effects of policy initiatives such as WIC and Medicaid expansion on county birth outcomes at multiple levels, with the first being census region and county.

Current Study

Figure 2.1: MLM Framework

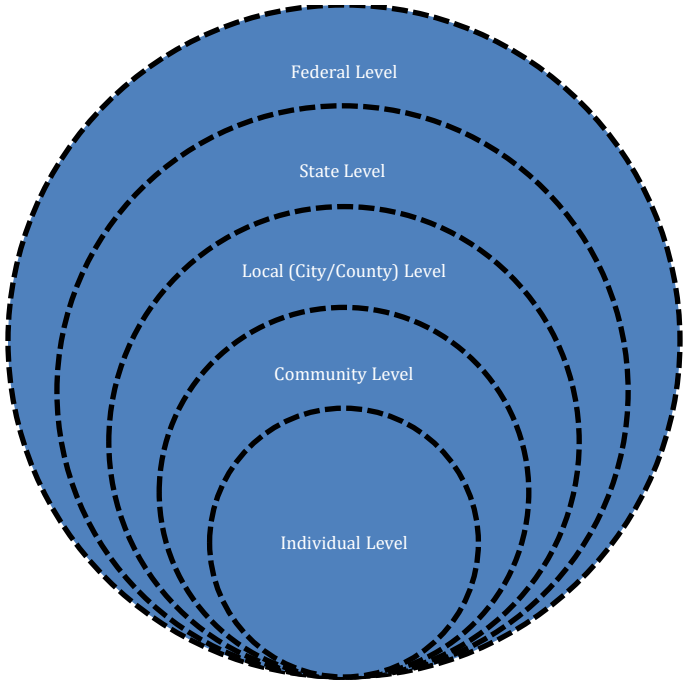


Figure 2.1 shows how individual outcomes are nested within spheres of broadening policy subsystems ranging from the community level to the federal level. From this perspective, BAM living in counties and states of a particular census region are experiencing the same or similar systematic conditions due to a similar political and social environment. For example, people living with the same state are expected to be influenced by state-wide political and social norms, while at the regional level, clusters of states are likely influencing and diffusing policies between state lines. These state and local policies subsequently influence the communities and the individuals who live in them.

Figure 2.1 provides a framework for understanding how individual health outcomes can be shaped by hierarchical structures that influence the accessibility and quality of public goods and services (Williams et al., 2007). From this perspective, this study offers three hypotheses regarding the relationship of federal policy interventions and state and local government on targeted birth weight outcomes for BAM.

Hypothesis #1: Differences in Black average birth weight outcomes are influenced by differences in historical legacies of white supremacist policy. Counties that are located in states in the South should have worse average birth weight outcomes than counties in other regions in the United States.

Examining state-level geographic differences in social and political environments is helpful in comparing outcomes. For example, de jure segregation and de facto residential segregation in housing were widespread tactics used to isolate Black communities in the Southern and Northeastern regions of the U.S., respectively.

Structural racism over time has been observed to create institutional legacies of discrimination that continue to produce disparities across health outcomes (Anderson, 2020; Largent, 2018). Counties that are in southern states are theorized to have a significant grouping effect on birth outcomes, with the southern region hypothesized to have the worst outcomes due to southern states' historic prioritization of white supremacy and Black inferiority as ideological tools to acquire and maintain political, economic, and social dominance.

Hypothesis #2: Differences in Black average birth weight outcomes are influenced by differences in partisanship arrangement within state governments. Counties in states with Democrat-unified chambers should have better average birth weight outcomes than Republican-unified or split chambers.

Research examining partisanship as a lens to better understand policy development often do so by observing inter-chamber and inter-governmental interactions (Rocco et al., 2020; Agranoff & Radin, 2015). Studies such as Rocco et al., (2020) find evidence that both inter-chamber and inter-branch effects has an effect on policy. The authors provide evidence that suggests that a unified chamber is more productive in producing ideologically driven policies

than chambers divided by party. From this perspective, inter-branch relationships between the governor and the legislature can influence policy outcomes when the two state branches are not aligned with the same party. Programs such as adult Medicaid expansion require state legislatures to opt into the policy. Historically, conservative opposition has been observed to have stalled the expansion of eligibility for Medicaid in many Republican-controlled states despite the policy's overall popularity and strong fiscal incentives (Roco et al., 2020). As a result, there are likely variations in birth outcomes based on the differences in policies associated with the political unity and identification of the state legislature. This study therefore sees the need to consider intergovernmental effects when examining partisanship, measuring both inter-chamber as a well as inter-branch effects.

Hypothesis #3: Differences in Black average birth weight outcomes are influenced by differences in administrative capacity among state WIC agencies. Since 2006, participation of infants, mothers, and children in WIC programs and services has continuously declined while other food security initiatives such as school lunch programs have steadily risen. Factors such as differences in the quality of service delivery as well as food autonomy have been cited as reasons for decreased WIC participation despite the growing food insecurity of low-income families in urban and rural environments. Culturally and individually tailored interventions such as nutritional services and food delivery would require agencies to have higher programs and administrative expenditures. This study, therefore, hypothesizes that differences in the program and service capacity of WIC agencies should influence differences in birth weight outcomes.

Hypothesis #4: Differences in Black average birth weight outcomes are influenced by differences in adult Medicaid expansion status. States that have opted for adult Medicaid expansion have more assistance to provide equitable and affordable health insurance to state

residents. While studies have reported spillover effects related to adult Medicaid expansion and child Medicaid coverage, it is unclear whether states with adult Medicaid expansion have better birth weight outcomes than states that do not. This study, therefore, hypothesizes that differences in Medicaid expansion status should influence differences in birth weight outcomes.

Methods

Operationalization

Dependent Variable: BAM Infant Average birth weight

This study uses birth weight data to test the relationship between geographic region, political factors, and average county average birth weight among BAM. Low birth weight is an infant weighing less than 2500 grams at birth (5 pounds, 8 ounces) (Amjad et al., 2019; Chae et al., 2018). This data comes from the Center for Disease Control (CDC) Wonder Natality database for the periods (2005-2022) (Centers for Disease Control and Prevention, 2005-2022). The CDC Natality Wonder database only records county-level observations from counties with at least 100,000 persons. As a result, the observations provided by CDC Natality Wonder reflect only counties with relatively robust populations.[2] This study aims to overcome any variability caused by limited samples in certain regions by capturing county outcomes across every state and multiple years.

WIC Cost

WIC Program and Administrative cost (known further as WIC P&A cost) includes data from 2010-2014 obtained by the USDA database (U.S. Department of Agriculture, 2010-2014;

[2] Due to the relatively lower concentrations of Black Americans caused in large part by historic legacies of enslavement and discrimination, there are multiple counties in predominantly white areas that will not be included in this sample.

2016-2018). WIC cost is a proxy measure for the size and structure of a given WIC agency per state. As program and administrative costs only constitute roughly 9 percent of a given agency's budget, this does not provide the most accurate picture of the overall size of WIC agencies within a given region. However, by comparing differences in administrative costs of agencies with varying sizes, this study uses WIC cost to determine whether higher outputs related to safeguarding the delivery of WIC benefits improve average birth weight outcomes for BAM.

To measure differences in sizes of WIC P&A cost, this study calculated the WIC P&A cost per participant by dividing the WIC P&A cost by the state participant population. This study examines both WIC P&A per participant as a continuous variable in unit of amounts expended by the state WIC agency per participant, as well as dichotomous variables for high and low WIC P&A cost per participant. A high P&A cost measures the frequency of any budget higher than 300 dollars per participant; a low P&A cost measures the frequency of any budget lower than 200 dollars per participant.

Adult Medicaid Expansion

Evidence of a spillover effect has been found, whereby adult Medicaid expansion participation improved Medicaid coverage for infants and children. A dichotomous variable was derived to test whether states have opted into adult Medicaid expansion (AME) and the birth weight outcomes for BAM. This data comes from the Kaiser Family Foundation-funded Medicaid Open Database, and ranges from 2016 to 2020 (State Health Facts, 2023).

Partisanship

The contentious politics of Republican and Democratic party campaigns often represent centralized vs. decentralized politics. States that have a high proportion of Republican state leadership are more likely to exhibit big-state political ideologies such as late adoption or non-

adoption of adult Medicaid Expansion. Partisanship is measured using both inter-chamber and inter-branch variables. This study uses multiple dichotomous variables to indicate the presence of Republican-dominated and Democratic-dominated state legislatures. To further examine the effects of inter-branch relationships at the state level, this study also includes dichotomous variables to indicate whether both state legislative chambers and the governor form a Republican trifecta or a Democratic trifecta. This data comes from multiple open-source Inter-university Consortium for Political and Social Research (ICPSR) databases for the years 2010-2014 and 2016-2018 (U.S. Department of Agriculture, 2010-2014; 2016-2018).

Control Variables

This study's control variables include county-level socioeconomic factors derived from U.S. census data, such as the percentage of unemployed people for 2010-2014 and 2016-2018 **(**U.S. Census Bureau, 2010-2014; 2016-2018). Additionally, the percentage estimates of female adults over the age of 25 acquiring a bachelor's degree or higher are included as an additional socioeconomic variable **(**U.S. Census Bureau, 2010-2014; 2016-2018).

To measure environmental factors, this study uses the census measure Rural-Urban Continuum Code (RUCC) for 2013 **(**U.S. Census Bureau, 2010-2014; 2016-2018). The RUCC uses nine categories to measure the urbanization of a given county and its adjacency to a metropolitan area. The RUCC code 9 categories are broken into 3 levels of metropolitan sizes and 6 levels of non-metropolitan sizes. The RUCC determines metropolitan counties based on the population size of their metro area. And nonmetropolitan counties by degree of urbanization and adjacency to a metro area.

The average age of the mothers is used as an additional county level factor (Centers for Disease Control and Prevention, 2005-2022). Increase in the average age of mothers is theorized

to improve the average birth weight of infants due to the association with having had more time as an adult to acquire resources such as an education, full-time employment, and a salary (Amjad et al., 2019; Chae et al., 2018;). However, there are counter-theories suggesting that the higher ages may lead to lower birth weights due to greater cumulative exposure to hardships (Amjad et al., 2019). This variable comes from CDC Wonder Natality database for the years 2007-2021. This variable captures the aggregate ages of mothers over 18 years old in counties with populations of over 100,000 persons[3].

Lastly, state-level demographic and health-related control variables include Black population percentage and obesity BMI prevalence, respectively. Obesity is expected to negatively impact average birth weight, as obese mothers are more likely to be medically induced into labor prior to the infant due date (Amjad et al., 2019; Pomeranz et al., 2017). Health risks related to obese mothers such as high blood pressure, blood clots, and poor blood circulation are common factors physicians will cite to encourage an early induction. Because pre-term birth is correlated strongly with low birth weight, this obesity variable also serves as proxy variable that measures the extent that average obesity of the mother leads to an early medical induction, and subsequently low birth weight (Amjad et al., 2019; Pomeranz et al., 2017). This data comes from the CDC Behavioral Risk Factor Surveillance System (BRFSS) state level database for the years 2010-2014; 2016-2018 **(**Centers for Disease Control and Prevention, 2010-2014; 2016-2018). The Black percentage of the state population needs to be measured to assess whether differences in the size of the Black population relative to the rest of the population has an effect on birth weight. A negative relationship is expected for BAM birth outcomes in areas where systematic discrimination is driving worsening birth outcomes (Chae et al., 2018). The

[3] This variable data source, CDC Wonder Natality database, only records counties with at least 100,000 persons. Smaller counties are aggregated into an “other counties” category for each state.

percentage of Black population in the state was derived from census data and included to test the above factors on BAM across all 50 states while considering differences in state populations **(**Centers for Disease Control and Prevention, 2010-2014; 2016-2018).

Data Analysis

Hierarchical linear modeling is used in this study rather than standard regression to test whether state grouping effects caused by differences in state and local governments impacts birth weight outcomes for BAM (Williams et al., 2007). As a result, the following multilevel models provide comparisons between county-level birth weight outcomes based on state-level characteristics. Because the analysis includes states from multiple years, year-fixed effects are included to control for factors that may vary from year to year, affecting the dependent variable that are not included in the analysis. For example, time changes the political landscape in various ways, such as the accumulation of late adopter states to adult Medicaid expansion over time and differences in the political party represented by the state Governor for states that are not highly polarized. Similarly, because the analysis includes data from the 50 states, state-level fixed effects are also included to control for the differences between states that are outside the scope of the analysis but may have some effect on the dependent variable. Across the models, for both year and state, one year (2010: Cost Administrative Models and 2016: Expansion Models) and one state (Alabama) are dropped from the models as the reference category. This study included census region as a dichotomous variable (South =1; other census regions =0). Southern states are those that U.S. Census bureau identifies as being in the Southern Census Region.

Results

Analysis

This study uses regression analysis to examine average birth weight outcomes for Black American Mothers. Specifically, this study uses multilevel modeling to examine differences in birth weight outcomes at the census region and state levels. All analyses were conducted using STATA version 18.0.

Descriptive Statistics

Table 2.1: Descriptive Statistics

Variable	Obs.	Mean	Std. dev.	Min	Max
County Level					
Black (non-Hispanic) births by county (numerical)	6,522	827.71	1545.46	10	16840
Average birth weight for BAM (in grams)	6,721	3148.07	103.75	2146	3931
Average age of BAM by county (numerical)	6,721	27.65	1.79	21.8	36.33
Percent estimate: Female with bachelor's degree or Higher	6,352	19.61	11.31	0	76.1
Unemployment Rate	5,844	6.94	3.03	1	21.7
State Level					
WIC P&A Cost (per participant)	2,678	218.35	25.95	152.03	416.9848
Adult Medicaid Expansion ever (count)	3,465	647676.9	1197978	0	5131554
Percent Obesity BMI Prevalence	4,989	29.11	4.06	18.7	42.7
Black Percentage of State Population	4,989	13.01	8.48	0	51.5
Rural Urban Continuum Code 2013 (numerical)	6,721	1.88	0.88	1	5

Table 2.1 provides the descriptive statistics for the variables selected for this study. The number of births varies widely between counties, with a minimum of 10 deliveries and a maximum in the tens of thousands. Similarly, the state population of Black non-Hispanic people has stark differences, ranging from over three thousand to over 3 million.

Table 2.2: Multilevel Regression Analysis

VARIABLES	Basic AME Model	Control AME Model	Basic WIC P&A (per participant) Cost Model	Control WIC P&A (per participant) Cost Model
Average Age of Mother	26.117** (1.881)	26.194** (1.917)	19.265** (1.247)	18.828** (1.338)
Rural Urban Continuum Code 2013		7.097* (2.866)		6.922** (2.151)
Percent estimate: Female with bachelor's degree or Higher	-0.172 (0.509)	-0.553 (0.569)	-0.326 (0.322)	-0.564+ (0.340)
Unemployment Rate		-5.042** (1.555)		-4.410** (0.748)
Percent Obesity BMI		0.358		-2.169 (1.334)

Prevalence		(1.601)		
Percent of State Black Population		-2.231** (0.848)		-1.069 (0.823)
Republican-Controlled Legislature	7.220 (12.723)	10.498 (11.774)		
Republican Trifecta	16.266 (18.830)	21.056 (17.549)	-3.976 (10.532)	-3.084 (10.393)
Democratic-Controlled Legislature	-7.140 (11.665)	-7.137 (11.306)	-1.746 (9.923)	-2.471 (9.782)
Democratic Trifecta	13.070 (16.889)	11.443 (16.116)	2.119 (10.359)	2.883 (10.274)
Medicaid Expansion Status (by year)	-0.581 (17.736)	0.243 (17.014)	12.364 (9.153)	9.992 (9.076)
WIC P&A Cost (per participant)			0.067 (0.136)	0.010 (0.136)
High WIC P&A Cost (per participant)			-4.876 (28.577)	-6.743 (28.831)
Low WIC P&A Cost (per participant)			5.305 (6.666)	6.804 (6.589)
2011			-3.222 (5.637)	-5.499 (5.609)
2012			6.273 (5.625)	1.494 (5.619)

2013			5.180 (5.716)	-1.067 (5.984)
2014			1.133 (6.138)	-9.106 (6.735)
2017	0.073 (5.302)	-2.303 (5.370)		
2018	-20.583** (6.196)	-25.050** (6.196)		
Southern Census Region	-50.511** (15.790)	-10.435 (19.283)	-68.903** (13.173)	-37.567* (18.262)
Constant	2,435.933** (51.275)	2,454.136** (74.292)	2,658.246**(58.258)	2,777.882**(70.417)
Observations	1,637	1,637	2,533	2,532
Number of groups	46	46	46	46

Standard errors in parentheses

** p<0.01, * p<0.05, + p<0.1

Table 2.2 provides the multilevel models that test the effects of partisanship and relevant policies on average birth weight outcomes. Four models are provided to capture both a basic model and a control model. The basic model contains only the dependent variable, the average age of the mother, the percent estimate of female adults over 25 with a bachelor's degree or higher, and the variables of interest, which are the partisanship dichotomous variables and the WIC P&A and ACA Adult Medicaid Expansion "enrolled ever" variables, respectively. The control variables include the variables found in the basic model and additional control variables

such as the unemployment rate, the rural-urban continuum code, BMI obesity prevalence, and the total state Black population.

AME MLM Basic Model

At the county level, in the basic AME model, the average age of mothers has a positive and significant relationship with average birth weight (b=26.12; p<0.01. This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than in counties with younger mothers. The percent average of female persons with a bachelor's degree or higher was insignificant.

At the state level in the basic AME model, the total count ever for AME and Medicaid expansion were not significant. No state-level partisanship variables were significant in the basic AME multilevel model.

AME MLM Control Model

At the county level, in the AME control model, the average age of mothers has a positive and significant relationship with average birth weight (b=26.19; p<0.01). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than in counties with younger mothers. The RUCC has a positive and significant relationship with average birth weight (b=7.09; p<0.05). In counties where urbanization is higher, babies are born weighing more than less urban counties. The unemployment rate has a negative and significant relationship with average birth weight (b=-5.042; p<0.01). In counties with higher unemployment rates, babies are born weighing less than in counties with lower unemployment rates. The percentage average of female persons with a bachelor's degree or higher was not significant.

At the state level, in the AME control model, the percentage of Black population has a significant and negative relationship with average birth weight (b=-2.231; p<0.01). In counties with higher Black populations, babies are born weighing less than in counties with smaller percentages of Black residents.

Obesity BMI prevalence has no significant effect on BAM birth weight. With the inclusion of additional control factors, the AME variables of interest were not significant in the control multilevel model. The partisan variables for both inter-chamber and inter-branch effects were also not significant.

WIC P&A MLM Basic Model

At the county level, in the basic WIC P&A model, the average age of mothers has a positive and significant relationship with average birth weight (b=19.27; p<0.01). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than in counties with younger mothers.

At the state level, in the basic WIC P&A model, the WIC P&A cost variable and the low and high WIC P&A cost variables, respectively, were not significant in the basic multilevel model. Likewise, the partisan variables for both inter-chamber and inter-branch effects were not significant in the basic multilevel model.

WIC P&A MLM Control Model

At the county level, in the WIC P&A control model, the average age of mothers has a positive and significant relationship with average birth weight (b=18.828; p<0.01). The RUCC has a positive and significant relationship with average birth weight (b=6.922; p<0.01). The unemployment rate has a negative and significant relationship with average birth weight (b=-

4.410; p<0.01). Counties with higher unemployment rates have worse birth weight outcomes than counties with lower unemployment rates.

At the state level, demographic and health factors such as the total Black population and the percentage obesity BMI prevalence were not significant in the control MLM. The WIC variables of interest were not statistically significant. Moreover, the dichotomous partisanship variables for both inter-chamber and inter-branch effects were also not significant in the basic multilevel model.

Census Region

Regarding census region, South has a negative and significant relationship in the basic AME model (b=-50.511; p<0.01), the WIC basic model (b=-68.903; p<0.01) and the control WIC model (b=-37.567; p<0.05). This means that in counties that are in the Southern census region, the average weight of babies born to BAM is significantly lower than the average weight of babies born to BAM in counties outside of the South .

Discussion

This first study aimed to examine what political and social factors influence average birth weight for BAM at the county and state level. Historical and institutional racism are theorized to affect BAM average birth weight outcomes (Anderson et al., 2020; Michener, 2018; Pomeranz et al., 2017). Additionally, political factors such as the partisanship relationships between both state chambers and state branches are also theorized to impact the shape and effectiveness of policies such as AME and program sizes such as WIC (Sosnovske, 2022; Rocco et al., 2020; Hudson & Moriya, 2017).

This study conducted a series of multilevel regression analyses to compare the influence of the variables selected on average birth weight with a consideration of fixed year and state grouping effects.

Individual and Socioeconomic Factors

At the county level, the study found that the average age of the mother has a positive and significant relationship with birth weight across all models. It is theorized that professional goals such as higher education and higher income increase the age at which women choose to have children (Amjad et al., 2019; Chia et al., 2019; Chae et al., 2018; Williams et al., 2007). It is also theorized that unemployment reduces resource exposure and worsens birth weight outcomes (Amjad et al., 2019; Chia et al., 2019; Chae et al., 2018; Williams et al., 2007). Lastly, simply waiting to have a child increases one's likelihood of having access to healthcare through employment or by marriage.

This study found that unemployment rates have a significant and negative relationship with birth weight outcomes for BAM. This study's findings provide evidence to suggest that reduced resource access caused by unemployment worsens birth weight outcomes for Black infants.

The RUCC had a positive relationship with county average birth weight in both control models. Urbanization is suggested to improve birth outcomes by improving the access and quality of public resources, as well as improving the environmental quality that mothers live in (Amjad et al., 2019; Chae et al., 2018;). As these positive trends were consistent when considering state-level hierarchical structure, the results provide further evidence that contextual factors related to the poor quality of a mother's physical environment at the county level impacts birth outcomes (Williams et al., 2007).

Social and Political Factors and Average Birth weight Disparities

This study's results suggest that systemic bias is likely occurring at the state level that negatively impacts Black birth outcomes (Chae et al., 2018). This study found evidence that the percentage of the state's Black population has a negative and significant relationship with BAM birth weight outcomes in a hierarchical model when controlling for public health, socioeconomic, and political factors. Systematic racism in the form of residential segregation, racial discrimination, and implicit bias in the delivery of public resources all likely impact the systemic nature of the Black population's relationship with average birth weight (Anderson et al., 2020; Largent, 2018). Further research is needed to test interactions between Black population sizes and perceptions of racial sentiment measured in each area. Areas with a more salient racist sentiment towards Black populations would be expected to have larger negative impacts on average birth weight for BAM.

Hypothesis Testing

It was hypothesized that the regional differences in the salience of white supremacist ideology in state policies should impact average birth weight, with the South expected to have the worst outcomes (Chae et al., 2018; Williams et al., 2007). This study found that the Southern Census region had a negative and significant relationship with average birth weight across all models. These findings suggest that the Southern Census region has significantly worse outcomes for BAM in counties, holding other factors constant, than other regions. This study therefore accepts the hypothesis that the historic legacies of racism and white supremacy in southern states continues to impact BAM. These findings suggest that the social and political environments BAM live in affect their infant's birth weight. These results provide further

evidence that the characteristics of racial health disparities are not divorced from the historical and contemporary acts of discrimination that create and sustain them.

It was also hypothesized that partisan arrangement in legislative chambers influenced birth outcomes, with Democrat unified chambers having the best outcomes (Anderson et al., 2020; Michener, 2018; Pomeranz et al., 2017). This study found no significant relationship between political parties or partisan consolidation on birth weight outcomes. This study therefore tentatively rejects the hypothesis that differences in Black average birth weight outcomes are influenced by differences in partisanship arrangement within state governments. This study does not claim that political factors do not influence Black birth outcomes. While white supremacy is an underlying factor in far-right conservative politics, it is unclear what specific partisan goals translate into worsening outcomes for BAM.

Differences in administrative capacity among state WIC agencies was expected to influence differences in Black average birth weight outcomes. This study finds that at the state level, WIC Program and Administrative Cost were not found to be significant indicators for basic and control models. This study therefore rejects the hypothesis that WIC agency administrative capacity influences BAM birth weight outcomes. It is currently unclear what are the specific functions related to WIC programs and administrative services and Medicaid expansion that leads to their hypothesized effects on birth outcomes (Sosnovske, 2022; Rocco et al., 2020; Weber et al., 2018; Hudson & Moriya, 2017; Neuberger, 2011). The relationship between policy interventions and program delivery on targeted outcomes must be further examined using mixed methods to identify and test causal mechanisms that are theorized to lead to improved birth outcomes.

Differences in state adult Medicaid expansion status was expected to influence differences in Black average birth weight outcomes. Adult Medicaid Expansion status was not found to be significant indicators for basic and control models. This study therefore rejects the hypothesis that adult Medicaid expansion status impacts BAM birth weight outcomes. This study does not conclude that this health reform policy has no relationship with birth weight. For example, the late adoption of adult Medicaid over time likely reduced the negative health impacts caused states who have not opted into AME. As a result, future research should apply similar examinations of health impacts on vulnerable populations using policies which exhibit deeper political cleavages over a wider span of time.

Limitations

This study used aggregate birth weight outcomes at the county level to make inferences about factors impacting individual BAM. While the results of this study provide insights into the relationship between resource exposure and birth weight outcomes, more research is needed that examines specific urban and rural environments and the differences in resources for individual mothers. This would require a partnership with a local hospital or clinic to collect individual data from mothers directly. This study could not include factors such as live birth order and marital status, as these variables are only available through the natality expanded database from 2016-2021. As a result, this study cannot test the extent that unemployment should be repeated in the future with a more contemporary data range. Additionally, while this study found that the age of the mother had a positive and significant relationship, this study did not include variables to capture factors such as access to contraceptives and industry background to better understand the environmental factors that impact birth outcomes. Lastly variations related to the county's access to resources such as transportation, support from local nonprofits such as food banks, health

system outreach initiatives such as trust-building and health literacy programs were not included in this study. Future studies seeking to further examine the implications of resource exposure should include additional variables to test the implications of what resources (e.g., financial, reproductive, social) and from what sources (commercial, nonprofit, public) are available to BAM in each state.

Conclusion

This study found evidence to suggest that social and political factors influenced birth weight outcomes of BAM in the United States between 2010-2014. These results provide further evidence that racial health disparities are socially and politically influenced, and these influences have group-level effects at the census and state levels. This first study is the first step in understanding the political and social environment nuances of vulnerable group disparities over time. Further research is needed to examine what social and ideological factors play a role in creating cultural and religious barriers for BAM.

Chapter 3: Examining Cultural and Religious Factors Affecting Birth Weight Outcomes for Black American Mothers (BAM)

Introduction

Health disparity refers to causes or differences in the quality of health and healthcare services across different demographics within a population (Amjad et al., 2019; Chae et al., 2018; Matsumoto & Nakayama, 2017; Stephens-Davidowitz, 2014). Therefore, health equity is a normative goal, as it refers to the absence of disparities in controllable or remediable aspects of health (Jackson et al. 2017). While the Health and Human Services Secretary's Advisory Committee (SAC) mandated that United States public health systems strive to "achieve health equity" and to "eliminate health disparities" (Braveman et al. 2010), Black American Women (BAW) in the US are experiencing poor health disparities in birth outcomes (Chae et al., 2018). Negative perceptions of Black Americans stemming from historical injustices in the United States such as slavery, disenfranchisement, and racial segregation are expected to form gaps related to social determinants of health, causing numerous disparities in Black health outcomes (Amjad et al., 2019; Chae et al., 2018; Matsumoto & Nakayama, 2017; Stephens-Davidowitz, 2014).

Infant-related health outcomes are among the worst disparities experienced by the Black population; BAM in the United States are reported to have the worst outcomes related to average birth weight compared to all other races (Amjad et al., 2019; Chae et al., 2018; Kramer et al., 2010). A meta-analysis found that BAM were 53% more likely to experience adverse events

such as lower average birth weight (Amjad et al., 2019). Among the observed studies, the mother's race was found to be the most predominant social determinant of average birth weight (Amjad et al., 2019). Average birth weight is defined as when a baby is born weighing less than 5.8 pounds (<less than 2500g) (Chae et al., 2018; Kramer et al., 2010). Infants born at a low birth weight have a much higher risk (over 20 times) of postnatal mortality than infants born at a normal weight (Amjad et al., 2019). Furthermore, children born with low birth weight have short and long-term health complications, including an increased risk of adverse developmental outcomes in infancy and higher mortality rates through childhood, adolescence, and later adulthood (Amjad et al., 2019). Agencies such as the National Institute of Health are currently seeking to address these disparities and are requesting tools to help improve their ability to monitor infant health, with average birth weight being the most common and easily recorded proxy variable for infant development (Chae et al., 2018; Kramer et al., 2010). Predictive models are perhaps the most essential tools to combat average birth weight disparity. Successful interventions to address average birth weight disparities will require policymakers and public health administrators to anticipate the likelihood of average birth weight pregnancies considering changing health trends, in addition to complex and deeply embedded relationships between race and health in the US. As a result, research seeking to create predictive modeling tools to monitor pregnancy and infant health must address ways to consider social and cultural factors when predicting birth outcomes.

The relationship between BAM and health systems in the region is inextricably bound up with Southern racist ideology (Anderson, 2020; Chae et al., 2018; Largent, 2018). An earlier instance of this can be seen in the congressional debates over the Hospital Survey and Construction Act of 1942, otherwise known as the Hill-Burton Act. (It is worth remembering at

this point that President Franklin Delano Roosevelt, as a Democrat, could only afford to push the racist Southern "Dixiecrats" in his party so far on racial issues in the New Deal because he depended on their votes, which accounts for some of the larger holes in New Deal protections, such as the exclusion of domestic workers from the original Social Security legislation. Northern and Midwest Senators like William Langer (R-ND) and Harold Burton (R-OH) called for nondiscrimination in the use of federal funds. However, Southern senators, such as Senator Lister Hill (D-AL), argued for the right of state legislatures and local hospital authorities to set policy without federal interference, a classic instance of the Southern white political use of the notion of "states' rights" to uphold legal segregation and the economic and political subjugation of Black people (Anderson, 2020; Largent, 2018). The Senate ultimately gave in to the Southern elites: the Hill-Burton Act as passed contained a "separate but equal" provision. The separate-but-equal rule allowed discrimination based on race as acceptable if there was "equitable provision on the basis of need for facilities and services of like quality for each such group." But given the wider context of severe economic and social discrimination, legal segregation effectively isolated Black populations from equitable access to public resources, notably public education. Health systems that served Black patients under segregation had fewer staff and lower-quality or outdated medical technology compared to those available to white patients (Largent, 2018). Still, today, most Black communities live farther from health-system resources than their white counterparts (Anderson, 2020; Chae et al., 2018; Largent, 2018).

This policy would be later overturned because the Civil Rights Act of 1964 barred public funding from organizations that discriminated against people based on race. However, the CRA only stopped overt racism, leaving much of the racist political structure and cultural norms intact. (This has been the case even given the Voting Rights Act of the previous year, whose

weaknesses are now being exposed as it is eroded by successive Supreme Court decisions). There is therefore a need for further research that examines the current climate of racial sentiment toward groups that have been disenfranchised and segregated and against whom informal discrimination persists in areas like residential real estate and treatment by law enforcement.

Intrinsic motivations such as religiosity are regarded in the literature as a prevalent aspect of identity for many physicians and patients in healthcare delivery, as spirituality is associated with quality of life and emotional and mental well-being (Chao & Yang, 2018; Hashmi et al., 2020; Musah & Hudak, 2016; Thomas et al., 2016; Wiener et al., 2013). It is widely known that the first hospitals in the West were designed to care for the general population were built by religious organizations and staffed by religious orders (Ntantana et al., 2017). However, with the advent of modern medicine, the holistic paradigm of spirituality and healthcare that was present in many cultures was eventually replaced by a dualistic approach that separated cure for the body from care for the soul (Ntantana et al., 2017). Studies within the past 23 years have become increasingly interested in studying the interface and interactions between spirituality, religion, and clinical care, as physicians and scholars are finding difficulty in ensuring patient compliance, with cultural values tied to religious practices being a common issue (Chao & Yang, 2018; Hashmi et al., 2020; Musah & Hudak, 2016; Thomas et al., 2016; Wiener et al., 2013). Religion often provides patients with specific moral, social, and dietary guidance, thereby influencing the decisions of patients on a variety of medical issues (Chao & Yang, 2018; Hashmi et al., 2020; Musah & Hudak, 2016; Thomas et al., 2016; Wiener et al., 2013). For religious groups such as Jews and Muslims, their religious beliefs also help to define their very identity and culture (Hashmi et al., 2020; Ntantana et al., 2017). Physicians unable to understand and reconcile these

religious beliefs with proper medical standards risk alienating patients from engaging in healthcare (Hashmi et al., 2020; Ntantana et al., 2017).

In addition to area racism, studies have also used religiosity as a lens to observe variations in social patterns through Google searches. Stephens (2014) finds that the percent of Google searches that include the word "God," for example, explains more than 60% of the area-level variation in belief in God (Stephens-Davidowitz, 2014). Increasing evidence suggests that religiosity in the form of fatalistic attitudes may affect health outcomes within marginalized groups, particularly female Black Americans (Fletcher & Kumar, 2014; Freund et al., 2019; Lee & Beanjenlee, 2004; Musah & Hudak, 2016; Wiener et al., 2013). In such cases, patients may choose to place their unborn baby's life into God's hands, thereby exhibiting less motivation to make doctor's visits (Maliepaard, Lubbers, and Gijsberts 2010; Musah and Hudak 2016). Other factors related to religiosity may pertain to modesty, as many religions such as Christianity, Judaism, and Islam discourage women from having male OBGYN specialists, for fear their exposure would diminish their moral integrity (Maliepaard, Lubbers, and Gijsberts 2010; Musah and Hudak 2016). A closer look into the relationship between religiosity and the usage of information technology can help identify interactions between demographic trends that race could not explain.

This study proposes a hierarchical framework for predicting the birth weight among Black infants at a county level using annual birth outcomes of BAM in the US. Williams et al., (2007) used multilevel modeling (MLM) to analyze the relationships between community level environmental data, individual risk factors, and birth outcomes for infants born in 2002 in Tennessee. The authors found that environmental factors such as air pollutants and socioeconomic factors such as the proportion of residents below poverty level had a negative and

significant effect on birth weight (Williams et al., 2007). Both health and policy science scholars can benefit from a better understanding of the impact that social and cultural factors have on the prevalence of health disparities such as low birth weight, as these insights can help to determine and evaluate disparities in other policy areas. As this multilevel study examines average birth weight outcomes at the county and state level, the results estimate the impact that state factors related to cultural and racial differences may cause at the county level. Furthermore, a multilevel prediction model of average birth weight that captures cultural factors can help shed more light on gaps in health policy and health provider discretion as they relate to cultural competency at the county and state level. The contribution of this study is as follows:

1. A comprehensive framework for investigating the determinants of Black American women (BAW) average birth weight is proposed.
2. Various factors are considered in our proposed models including socioeconomic status, urbanization, mother's nutrition, and racial sentiment.

It is important to note that very few studies have examined average birth weight from the perspective of BAM (Amjad et al., 2019; Anthopolos et al., 2014; Chae et al., 2018; Kramer et al., 2010; Masi et al., 2007). Most of the previous studies have focused more on traditional methodology such as linear regression and logistic regression (Amjad et al., 2019; Anthopolos et al., 2014; Chae et al., 2018; Kramer et al., 2010; Masi et al., 2007). For example, more recent methods use an interquartile measure (IQM) for area racism to capture racial resentment and then predict average birth weight (Chae et al., 2018). Furthermore, most prediction model designs reviewed used either linear regression (Debbink & Bader, 2011; Chae et al., 2018) or logistic regression (Kuhle et al., 2018) in predicting average birth weight.

Regarding the variable selection of early predictive models, social factors such as family structure (Reeb, 1987) and socioeconomic factors such as socioeconomic status (Roberts, 1997) were found to be important determinants of average birth weight. However, these studies produced little theoretical impact regarding how changes in the mother's environment can impact health disparities. Debbink and Bader (2011) advanced the literature on average birth weight disparity by testing the interactions between various factors of racial disparity by examining environmental factors from the lens of differences in quality versus differences in wealth and education. Debbink and Bader (2011) used generalized linear models to investigate the association between average birth weight and racial segregation while controlling for individual and residential characteristics such as income and residential quality. However, one of the limitations of Debbink and Bader (2011) is that the inclusion of only residential factors in reflecting environmental influences suggests that their research design failed to consider that average birth weight disparities were perhaps influenced by factors related to the prejudice and exclusionary culture that likely caused the differences in quality found in the residential segregation (Debbink & Bader, 2011).

Regarding factors that contribute to health disparities among Black mothers, numerous studies have found that birth outcomes have been exhibited to vary across different ethnicities, these individual factors may reflect cultural differences beyond the scope of socioeconomic factors (Amjad et al., 2019; Anthopolos et al., 2014; Chae et al., 2018; Kramer et al., 2010; Masi et al., 2007) One of the most common factors is racism, which can be defined as a system or ideology that reifies inequitable distributions of power and access to resources along racial lines (Amjad et al., 2019; Anthopolos et al., 2014; Chae et al., 2018; Kramer et al., 2010; Masi et al., 2007). Racism has generated distinct patterns in racial residential segregation (Chae et al., 2018)

The consequences of the historic legacy of racial residential segregation are likely felt in today's predominantly Black communities, which are often characterized as poorer compared to adjacent, predominantly white communities (Amjad et al., 2019; Anthopolos et al., 2014; Chae et al., 2018; Kramer et al., 2010; Masi et al., 2007). These findings suggest that racial discrimination may help to widen gaps in health equity, thereby necessitating the need to further investigate the implications of intrinsic factors such as racial sentiment as a social determinant of health in predicting BAW birth outcomes. Structural racism may therefore help to explain differences in Black birth outcomes as the product of mutually enforcing forms of discrimination such as neighborhood deprivation (Riley, 2018), economic inequality (Masi et al., 2007), and differential access to resources such as health care and grocery stores (Anthopolos et al., 2014).

Structural racism, living in rural residences, inadequate education, and low socioeconomic status (SES) are found to contribute to the risk of adverse pregnancy outcomes in young Black American Women (BAW) (Anthopolos et al., 2014; Debbink & Bader, 2011; Kramer et al., 2010; Riley, 2018). No studies were found to discuss distinct cultural and social factors alongside socioeconomic factors related to race as determinants of average birth weight among BAW (Anthopolos et al., 2014; Debbink & Bader, 2011; Kramer et al., 2010; Riley, 2018). For example, the measures provided by previous literature focus on the place or the position of individual mothers along a continuum of socioeconomics. However, socioeconomic factors provide little causal inferences related to how social factors may affect disparities in health outcomes (Anthopolos et al., 2014; Debbink & Bader, 2011; Kramer et al., 2010; Riley, 2018). Scholarship studying the implications of cultural competency on health outcomes suggests that areas with vulnerable populations are often associated with low cultural competency, resulting in disparate health outcomes (Freund et al., 2019; Musah & Hudak, 2016).

As a result, more research is needed to determine to what degree cultural barriers can predict average birth weight among Black infants in the US.

While the literature related to average birth weight suggests that individual, residential, SES, and cultural factors may contribute to infant weight, such studies fail to observe all three attributes simultaneously (Chae et al., 2018; Debbink & Bader, 2011; Díaz et al., 2009; Gao et al., 2019; Manzanares et al., 2020; Masi et al., 2007; Naimi et al., 2018; Park et al., 2021; Read & Stanley, 1993). Further, when evaluating the most prevalent factors of average birth weight, studies tend to focus on attributes that relate strongly to clinical or socioeconomic associations, such as the relationship between residential segregation and obesity on birth outcomes (Debbink & Bader, 2011). As a result, few studies provide rigorous empirical testing of all relevant factors of average birth weight, and as such the extent to which any one of these factors contributes to average birth weight is unclear. This study hypothesizes that considering the prevalence of area racism influences Black birth outcomes due to the prevalence of structural racism and literature which points to the need for culturally tailored health programs (Gu et al. 2020; Gulersen et al. 2020).

Additionally, while contemporary studies use standard linear regression to test the relationship between cultural factors to birth outcomes (Chae et al., 2018), this study will use hierarchical modeling to investigate the political determinants that impact birth weight outcomes such as partisanship, racism, and religiosity. This study aims to determine what factors influence birth weight among Black mothers to better understand the way social influences may impact disparities in health outcomes. This study takes one step in exploring and investigating what individual, county, and state-level factors impact birth outcomes.

This section presents the research framework and methodologies to develop a hierarchical model to explain how Black birth outcomes are impacted by cultural, socioeconomic, and individual factors.

Research Framework

Figure 3.1 depicts the research framework for this study. The state level political structure facilitates policy benefits that may or may not be accessible to BAM due to legacies of residential segregation. Differences in county level factors for BAM manifest due to differences in the resource exposure provided within the county. Lastly, individuals living within each county have different living experiences based on their socioeconomic placement within these counties. Both socioeconomics and geographic are theorized to widen the disparities caused by racist sentiment and religious norms.

Figure 3.1: MLM Framework

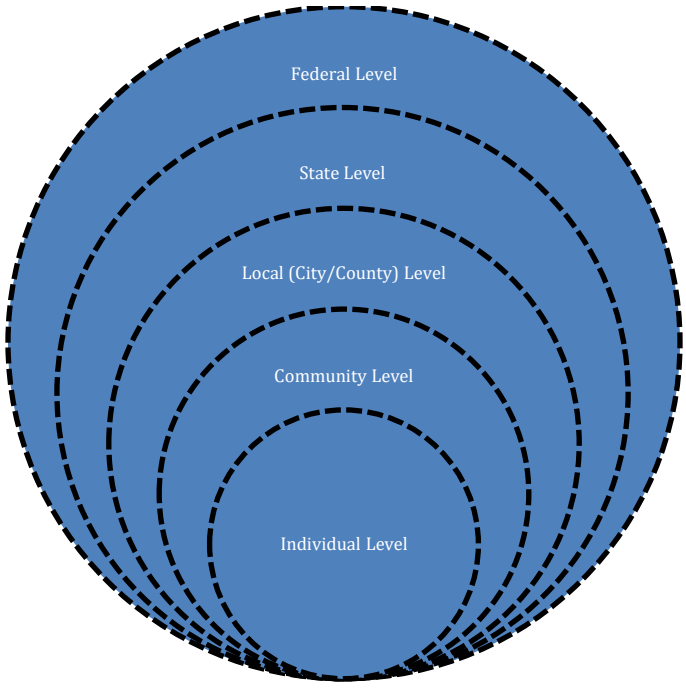


Figure 3.1 provides a framework for understanding how individual health outcomes can be shaped by hierarchical structures which influence the salience of racist signaling (Williams et al., 2007). From this perspective, this study offers three hypotheses regarding the relationship of racist signaling and state and local government on targeted birth weight outcomes for BAM.

Hypothesis #1: Differences in Black average birth weight outcomes are influenced by differences in historic legacies of white supremacy in political and social norms. Counties located in the southern region of the U.S. are expected to have worse average birth weight outcomes than areas in other census regions.

Additionally, examining state level geographic differences in social and political environments is helpful in comparing outcomes. For example, de jure segregation and de facto residential segregation using housing discrimination were widespread tactics used to isolate Black communities in the Southern and Northeastern regions of the US, respectively.

Structural racism over time has been observed to create institutional legacies of discrimination that continue to produce disparities across health outcomes (Anderson, 2020; Largent, 2018). Counties that are in states in the South are theorized to have a significant grouping effect on birth outcomes, with the southern region hypothesized to have the worst outcomes due to southern states' historic prioritization of white supremacy and Black inferiority as ideological tools to acquire and maintain political, economic, and social dominance.

Hypothesis #2: Differences in Black average birth weight outcomes are influenced by differences in partisan representation within state governments. Rocco et al., 2020, suggests that states with unified politics, whereby the governor and both chambers of legislature share the same party, have fewer obstacles in addressing ideologically driven policies. Counties in states

with Democrat-unified chambers should have better average birth weight outcomes than Republican unified chambers.

The fragmented federalism that resulted in programs like adult Medicaid expansion requiring state legislatures to opt in can also be observed from the perspective of intergovernmental relations, whereby overlapping jurisdictions emerge to fulfill policy needs (Agranoff & Radin, 2015). While conservative opposition has been observed to have mounted a political narrative against Medicaid expansion, conservative states have opted into the program overtime (Gluck & Huberfeld, 2018; Haeder & Weimer, 2015; Leonard, 2010. As a result, there are likely variations in birth outcomes based on the differences in policies associated with the political unity and identification of the state legislature. This study therefore sees the need to consider intergovernmental effects when examining partisanship, measuring both inter-chamber as a well as inter-branch effects.

Hypothesis #3: Differences in Black average birth weight outcomes are influenced by differences in racist sentiment within a given state. Implicit bias and overt discrimination of Black Americans have been well cited. The use of racist symbols such as hanging nooses as well as derogatory slurs such as "n****r" have been used to terrorize and humiliate Black people in the U.S. The widespread exchange and use of the n-word in Google search trends has been found in previous studies to correspond to both Black mortality as well as BAM birth weight and pre-term birth outcomes. Areas in the United States with a high prevalence for the use of the "n-word" are therefore expected to have worse outcomes for BAM in this study.

Hypothesis #4: Differences in Black average birth weight outcomes are influenced by differences in religious salience within a given state. Musah & Hudak (2016) studied the participation of Ghanaian immigrants in a culturally tailored program to increase breast cancer

screenings among their Muslim populations in the Bronx, New York City. The authors provided evidence that health decisions made by individuals living in ethnoreligious enclaves are internally guided and externally influenced by cultural and religious norms. These norms can act as barriers for health services if the health system appears maligned to the groups principles. A common example is the issue of modesty, whereby conservative strains of Islam as well as other strict religious customs require that a female patient must be served by a female physician, female nurses, and female staff to avoid the risk of exposing parts of their body to a male who is not their husband for father. Additional studies examining trends in the use of Planned Parenthood resources such as contraceptives find similar patterns of areas with greater religious salience being associated with shame, guilt, lower usage, and lower access to resources.

Due to the religious and culture barriers to health delivery, and the need for additional resources in the form of culturally tailored health initiatives to address the concern, this study theorizes a negative relationship between salience of both Christian and Islamic religiosity and birth weight outcomes for BAM.

Methods

Operationalization

Dependent Variable: BAM Infant Average Birth weight

This study uses birth weight data to test the relationship between geographic region, political factors, and county average birth weight among BAM. Low birth weight is an infant weighing less than 2500 grams at birth (5 pounds, 8 ounces) (Amjad et al., 2019; Chae et al., 2018). This data comes from the Center for Disease Control (CDC) Wonder Natality database for the periods (2005-2022) (Centers for Disease Control and Prevention, 2005-2022). The CDC Wonder only records county-level observations from counties with at least 100,000 persons. As a

result, the observations provided by CDC Wonder reflect only counties with relatively robust populations. However, due to the concentrations of Black Americans caused in large part by historic legacies of enslavement and discrimination, there are multiple counties in predominantly white areas that will not be included in this sample. This study aims to overcome any variability caused by limited samples in certain regions by capturing county outcomes across every state and multiple years.

Area-Racism

Generating internet query-based measures (IQM) to ascertain population-level characteristics is one promising new method to measure the effect racist attitudes towards Black US citizens have on area-level health outcomes (Chae et al., 2018). Due to the negative social connotations associated with being considered a racist individual, collecting identifiable information that captures racist attitudes is highly difficult (Chae et al., 2018). Chae et al. (2018) used proxy measures for area-level racist attitudes using Internet searches to circumvent issues in capturing racist attitudes. The authors found that the proportion of total Google searches containing the "n-word" at the designated market area (DMA) level was strongly associated with mortality rates for Black U.S. citizens (Chae et al., 2018) as well as disparities in pre-term birth and low birth weight (Chae et al., 2018). As with other Internet query-based measures, this proxy of area racism does not presume that all searches containing the "n-word" are necessarily motivated by racism; it only assumes that: (1) racism exists; (2) that there is geographic variation in the degree of racism; and (3) that those who hold racist beliefs are more likely to conduct searches of the "n-word" (Chae et al., 2018) Research has demonstrated that such "big data" approaches can be used to validly assess underlying population-level characteristics (Chae et al., 2018). Further, the method lends greater geographic variations in

socially unacceptable attitudes, given that behavior on the Internet is less susceptible to self-censorship (Chae et al., 2018).

State-level area racism is the racial sentiment variable in this IQM study (Stephen, 2014). This variable is derived from Google search trends of the n-word across the United States metropolitan areas between 2010-2018. The metropolitan trends are aggregated to produce the trend for each state, 2010-2018. Much like to Stephen (2014) this analysis observes the word from the context of "n***er" as opposed to n***a, as the latter has been largely dismissed by scholarship as a proxy for racism, due to the use of the word in popular culture (Chae et al., 2018).

Area Religiosity

Area Religiosity is an IQM measure used to identify the degree to which religious practice and beliefs help to shape and inform a patient's decision making (Chao & Yang, 2018; Hashmi et al., 2020; Musah & Hudak, 2016; Thomas et al., 2016; Wiener et al., 2013). Religiosity is defined as a strong religious feeling or belief (Chao & Yang, 2018). Typical methods for identifying religiosity can be expressed as church participation, donations made to local religious organizations, or via self-reported assessments of spirituality (Chao & Yang, 2018). However, all these factors are either tied to wealth and resources or require an individual who might be biased in their desire for a positive afterlife to project their affirmation of faith by overstating their religious values. As the goal is to measure how many times terms like "Jesus" or "Allah" are used within a given state, the study does not rely on the intentions of the individual searches. Using the IQM for religiosity therefore allows for an objective outlook on the significance of given religion in a location by the importance of iconic symbols in online communication.

Area-religiosity is used to measure to what degree religious feelings and area racism influence pre-term birth and low birth weight when controlling for area racism. The study uses the terms “Jesus” and “Allah,” respectively, as proxy measures to measure the salience of religiosity, using the words’ internet traffic to determine the level of prevalence iconic religious words and symbols have in a market area (Chae et al., 2018; Ntantana et al., 2017; Thomas et al., 2016). As a result, the religiosity variable is used as a proxy to measure the salience of Christian normative values, implicitly understood by way of cultural awareness.

Partisanship

The contentious politics of Republican and Democratic party campaigns often represent centralized vs. decentralized politics. States that have a high proportion of Republican state leadership are more likely to exhibit big-state political ideologies such as late or non-adoption of adult Medicaid Expansion. Partisanship is measured using both inter-chamber and inter-branch variables. This study uses multiple dichotomous variables to indicate the frequency of Republican-dominated and Democratic-dominated status of state legislatures in the observations. To further examine the effects of inter-branch relationships at the state level, this study also includes dichotomous variables to indicate whether both state legislative chambers and the governor form a Republican trifecta or a Democratic trifecta. This data comes from multiple open-source Inter-university Consortium for Political and Social Research (ICPSR) databases for the years 2010-2018 (U.S. Department of Agriculture, 2010-2018).

Control Variables

This study’s control variables include county-level socioeconomic factors derived from U.S. census data such as the percentage of the unemployed people for 2010-2018 **(**U.S. Census Bureau, 2010-2018). Additionally, the percentage estimates of female adults over the age of 25

acquiring a bachelor's degree or higher is included as and additional socioeconomic variable **(**U.S. Census Bureau, 2010-2018).

To measure environmental factors, this study employs the census measure Rural-Urban Continuum Code (RUCC) for 2013 **(**U.S. Census Bureau, 2010-2018). The RUCC uses nine categories to measure the urbanization of a given county and its adjacency to a metropolitan area. The RUCC code 9 categories are broken into 3 levels of metropolitan sizes and 6 levels of non-metropolitan sizes. The RUCC determines metropolitan counties based on the population size of their metro area. And nonmetropolitan counties by degree of urbanization and adjacency to a metro area.

The average age of the mothers is used as an additional county-level factor (Centers for Disease Control and Prevention, 2005-2022). Increases in the average age of the mother is theorized to improve the average birth weight of infants due to the association with having more time as an adult to acquire resources such as an education and a job salary (Amjad et al., 2019; Chae et al., 2018;). However, there are counter-theories suggesting that the higher ages may lead to lower birth weights due to greater cumulative exposure to hardships (Amjad et al., 2019). This variable comes from CDC Wonder Natality database for the years 2007-2021. The average of the mother represents aggregate ages of mothers over 18 years old in qualifying counties this study measures average age of mother at the state-level to examine interstate differences in birth weight outcomes [4].

Lastly, state-level demographic and health-related control variables include Black population percentage and obesity BMI prevalence, respectively. Obesity is expected to negatively impact average birth weight, as obese mothers are more likely to be medically

[4] This variable data source, CDC Wonder Natality database, only records counties with at least 100,000 persons. Smaller counties are aggregated into an "other counties" category for each state.

induced into labor prior to the infant due date (Amjad et al., 2019; Pomeranz et al., 2017). Health risks to to obese mothers such as high blood pressure, blood clots, and poor blood circulation are common factors physicians will cite to encourage an early induction. Because pre-term birth is corelated strongly with low birth weight, this obesity variable also serves as proxy variable that measures the extent that average obesity of the mother leads to an early medical induction, and consequently low birth weight (Amjad et al., 2019; Pomeranz et al., 2017). This data comes from the CDC Behavioral Risk Factor Surveillance System (BRFSS) state level database for the years 2010-2018 **(**Centers for Disease Control and Prevention, 2010-2018). The Black percentage of the state's population needs to be measured to assess whether differences in the size of the Black population compared to the rest of the population influences birth weight for BAMs. A negative relationship is expected for BAM birth outcomes in areas where systematic discrimination is driving worsening birth outcomes (Chae et al., 2018). The Black percentage of the state population was derived from Census data and included to test the above factors on BAM across all 50 states while considering differences in state populations **(**Centers for Disease Control and Prevention, 2010-2018).

Data Analysis

Hierarchical linear modeling is used in this study rather than standard regression to test whether state grouping effects caused by differences in state and local governments impact birth weight outcomes for BAM (Williams et al., 2007). As a result, the following multilevel models provide comparisons between county-level birth weight outcomes according to state-level characteristics. Because the analysis includes multiple states spanning multiple years, year-fixed effects are included to control for factors that may vary from year to year, affecting the dependent variables that are not included in the analysis. For example, time changes the political

landscape in various ways, such as the differences in the political party represented by the state Governor for states that are not highly polarized. Similarly, because the analysis includes data from the 50 states, state level fixed effects are also included to control for the differences between those states that are outside the scope of the analysis but may have some effect on the dependent variable. Across the models, for both year and state, one year (2010: Cost Administrative Models and 2016: Expansion Models) and one state (Alabama) are dropped from the models as the reference category. This study included census region as a dichotomous variable (South =1; other census regions =0). Southern states are those that U.S. Census bureau identifies as being in the Southern Census Region.

Results

Analysis

This study uses regression analysis to examine average birth weight outcomes for Black American Mothers. Specifically, this study uses multilevel modeling to examine differences in birth weight outcomes at the census region and state levels. All analyses were conducted using STATA version 18.0.

Descriptive Statistics

Table 3.1: Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
County Level					
Black (non-Hispanic) births by county (numerical)	6,522	827.7007	1545.445	10	16840
Average birth weight for BAM (in grams)	6,721	3148.069	103.7461	2146	3931

Average age of BAM by county (numerical)	6,721	27.65166	1.789095	21.8	36.33
Percent estimate: Female with bachelor's degree or higher	6,352	19.60822	11.30606	0	76.1
Unemployment Rate	5,844	6.939973	3.033415	1	21.7
State Level					
Racism	6,721	71.78738	7.802483	54	94
Jesus	6,721	75.73843	7.196417	55	100
Allah	6,721	76.33239	7.730327	56	100
Percent Obesity BMI Prevalence	4,989	29.1086	4.058026	18.7	42.7
Percent of State Black Population	4,989	13.01459	8.479306	0	51.5
Rural Urban Continuum Code 2013 (numerical)	6,721	1.875465	0.880405	1	5

Table 3.1 provides descriptive statistics for the variables selected for this study. The number of births varies widely between counties, with a minimum of 10 deliveries and a maximum in the tens of thousands. Similarly, the state population of Black non-Hispanic people has stark differences ranging from over three thousand to over 3 million.

Table 3.2: Multilevel Regression Analysis

VARIABLES	Basic Racism IQM Model	Control Racism IQM Model	Basic Jesus Model	Control Jesus Model	Basic Allah Model	Control Allah Model
Average Age of Mother	21.824** (0.977)	22.259** (1.025)	21.825** (0.977)	22.237** (1.025)	21.783** (0.976)	22.193** (1.024)
Rural Urban Continuum		8.178** (1.609)		8.109** (1.609)		8.089** (1.608)

Code 2013						
% Female with bachelor's degree or Higher	-0.218 (0.254)	-0.318 (0.270)	-0.213 (0.253)	-0.320 (0.270)	-0.205 (0.253)	-0.313 (0.270)
Unemployment Rate		-3.454** (0.630)		-3.477** (0.629)		-3.482** (0.629)
n****r IQM	1.770 (1.110)	1.226 (1.036)				
High Prevalence: n****r IQM	-18.430 (18.606)	-19.296 (17.059)				
Jesus IQM			1.827+ (1.095)	1.033 (1.037)		
High Prevalence: Jesus IQM			-22.262 (19.177)	-17.029 (17.811)		
Allah IQM					2.417* (1.165)	1.776 (1.082)
High Prevalence: Allah IQM					-34.078 (21.020)	-32.974+ (19.197)
Percent Obesity BMI Prevalence		-0.578 (1.008)		-0.508 (1.008)		-0.524 (1.008)
Percent of State Black Population		-1.370+ (0.735)		-1.313+ (0.745)		-1.383+ (0.731)

Democratic Controlled Legislature	12.493+ (7.363)	12.758+ (7.291)	12.112+ (7.341)	12.235+ (7.269)	12.366+ (7.337)	12.629+ (7.261)
Democratic Trifecta	3.631 (5.770)	2.186 (5.775)	3.611 (5.770)	2.222 (5.776)	3.602 (5.768)	2.177 (5.773)
Republican Controlled Legislature	8.107 (6.797)	8.411 (6.772)	8.227 (6.792)	8.664 (6.770)	8.665 (6.792)	9.137 (6.766)
Republican Trifecta	0.566 (5.653)	-0.428 (5.623)	0.523 (5.656)	-0.540 (5.630)	0.456 (5.649)	-0.591 (5.619)
Southern Census Region	-57.315** (13.403)	-29.787+ (17.051)	-63.707** (12.925)	-36.247* (17.084)	-62.588** (12.652)	-34.462* (16.484)
2011	-1.629 (5.461)	-3.750 (5.442)	-1.753 (5.457)	-3.936 (5.439)	-1.804 (5.455)	-3.977 (5.436)
2012	6.867 (5.535)	2.530 (5.549)	6.733 (5.531)	2.293 (5.545)	6.682 (5.528)	2.255 (5.541)
2013	4.865 (5.466)	-2.109 (5.676)	4.779 (5.464)	-2.359 (5.672)	4.723 (5.463)	-2.403 (5.671)
2014	2.049 (5.446)	-8.944 (5.959)	1.930 (5.442)	-9.289 (5.951)	1.897 (5.440)	-9.302 (5.950)
2015	-3.973 (5.748)	-18.066** (6.230)	-4.158 (5.742)	-18.441** (6.219)	-4.235 (5.740)	-18.496** (6.217)
2016	-30.589** (5.791)	-46.019** (6.596)	-30.775** (5.786)	-46.455** (6.582)	-30.833** (5.784)	-46.479** (6.582)
2017	-28.856** (5.889)	-45.601** (6.972)	-29.053** (5.883)	-46.097** (5.883)	-29.122** (5.881)	-46.125** (6.958)
2018	-48.487** (5.922)	-65.594** (7.646)	-48.676** (5.917)	-66.169** (7.629)	-48.741** (5.915)	-66.175** (7.632)

Constant	2,470.269** (82.499)	2,542.312** (81.313)	2,466.340** (81.988)	2,554.706** (82.257)	2,426.542** (86.024)	2,507.079** (84.298)
Observations	4,716	4,714	4,716	4,714	4,716	4,714
Number of groups	46	46	46	46	46	46

Standard errors in parentheses

** p<0.01, * p<0.05, + p<0.1

Table 3.2 provides the multilevel models that test the effects of partisanship and relevant policies on average birth weight outcomes. Four models are provided so as to capture both a basic model and a control model. The basic model contains only the dependent variable, the average age of the mother, the percent estimate of female adults over 25 with a bachelor's degree or higher, and the variables of interest, which are the partisanship dichotomous variables, the IQM variables, and the IQM dichotomous variables respectively. The control variables include the variables found in the basic model and additional control variables such as the unemployment rate, the rural-urban continuum code, BMI obesity prevalence, and the total state Black population.

Racism MLM Basic Model

At the county level, in the basic Racism model, the average age of mothers has a positive and significant relationship with average birth weight (b=21.82; p<0.01). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than in counties with younger mothers. The percent average of female persons with a bachelor's degree or higher was not significant.

At the state level in the basic Racism model, the IQM variable and the dichotomous IQM variable were not significant. No state-level partisanship variables were significant in the basic Racism multilevel model.

Racism MLM Control Model

At the county level, in the control Racism model, the average age of mothers has a positive and significant relationship to average birth weight ($b=22.26$; $p<0.01$). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than in counties with younger mothers. The RUCC has a positive and significant relationship with average birth weight ($b=8.18$; $p<0.05$). In counties where urbanization is greater, babies are born weighing more than in counties that are less urban. The unemployment rate has a negative and significant relationship with average birth weight ($b=-3.45$; $p<0.01$). In counties with higher unemployment rates, babies are born weighing less than in counties with lower unemployment rates. The percent average of female persons with a bachelor's degree or higher was not significant.

At the state level, in the control Racism model, the percent of Black population did not have a significant relationship to average birth weight. Obesity BMI prevalence had no significant effect on BAM birth weight. With the inclusion of additional control factors, the Racism variables of interest were not significant in the control multilevel model. Additionally, the partisan variables for both inter-chamber and inter-branch effects were also not significant.

Jesus MLM Basic Model

At the county level, in the basic Jesus IQM model, the average age of mothers has a positive and significant relationship with average birth weight ($b=21.83$; $p<0.01$). This means

that, in counties where the average age of Black mothers is higher, babies are born weighing more than in counties with younger mothers.

At the state level, in the basic Jesus IQM model, the Jesus IQM variable as well as the high salience dichotomous variable, respectively, were not significant in the basic multilevel model. Additionally, the partisanship variables for both inter-chamber and inter-branch effects were also not significant in the basic multilevel model.

Jesus MLM Control Model

At the county level, in the control Jesus IQM model, the average age of mothers has a positive and significant relationship with average birth weight ($b=22.24$; $p<0.01$). The RUCC has a positive and significant relationship with average birth weight ($b=8.11$; $p<0.01$). The unemployment rate has a negative and significant relationship with average birth weight ($b=-3.48$; $p<0.01$). Counties with higher unemployment rate have worse birth weight outcomes than counties with lower unemployment rates.

At the state level, demographic and health factors such as the total Black population and the percentage of obesity BMI prevalence were not significant in the control MLM. The IQM Jesus variable as well as the high salience dichotomous variables were not statistically significant. Additionally, the dichotomous partisanship variables for both inter-chamber and inter branch effects were also not significant in the basic multilevel model.

Allah MLM Basic Model

At the county level, in the basic Allah IQM model, the average age of mothers has a positive and significant relationship with average birth weight ($b=21.78$; $p<0.01$). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than in counties with younger mothers.

At the state level, in the basic Allah IQM model, the Allah IQM variable has a significant and positive relationship with average birth weight ($b=2.42$; $p<0.05$). Counties with higher state-level IQM measures for Allah have better birth weight outcomes. The partisanship variables for both inter-chamber and inter- branch effects were also not significant in the basic multilevel model.

Allah MLM Control Model

At the county level, in the control Allah IQM model, the average age of mothers has a positive and significant relationship with average birth weight ($b=22.19$; $p<0.01$). The RUCC has a positive and significant relationship with average birth weight ($b=8.09$; $p<0.01$). The unemployment rate has a negative and significant relationship with average birth weight ($b=-3.48$; $p<0.01$). Counties with higher unemployment rate have worse birth weight outcomes than counties with lower unemployment rates.

At the state level, demographic and health factors such as the total Black population and the percentage obesity BMI prevalence were not significant in the control MLM. The IQM Allah variable as well as the high IQM salience dichotomous variable were not statistically significant. Additionally, the dichotomous partisanship variables for both inter-chamber and inter branch effects were also not significant in the basic multilevel model.

Census Region

Regarding census region, South has a negative and significant relationship in the basic Racism model ($b=-57.32$; $p<0.01$), the basic Jesus IQM model ($b=-63.71$; $p<0.01$); the control Jesus IQM model ($b=-36.25$; $p<0.05$), basic Allah IQM model ($b=-62.59$; $p<0.01$); and the control Allah IQM model ($b=-34.46$). This means that in counties in the Southern census region,

the average weight of babies born to BAM is significantly lower than the average weight of babies born to BAM in counties outside of the South.

Discussion

This second study aimed to examine what cultural and political factors influence the average birth weight for BAM at the county and state level. Historical and regional variations in racial sentiment are theorized to affect BAM average birth weight outcomes (Anderson et al., 2020; Chae et al., 2018; Michener, 2018; Pomeranz et al., 2017). Additionally, cultural factors such as religiosity as well as political factors such as the partisanship arrangements both between state chambers and between state branches are theorized to impact the access to programs that facilitate culturally tailored programs.

This study conducted a series of multilevel regression analyses to compare the influence of the variables selected on average birth weight with consideration of fixed year and state grouping effects.

County-Level Factors

At the county level, the study found that the average age of the mother has a positive and significant relationship with birth weight across all models. It is theorized that professional goals such as higher education raise the age at which women choose to have children (Amjad et al., 2019; Chia et al., 2019; Chae et al., 2018; Williams et al., 2007). It is also theorized that unemployment reduces resource exposure and worsens birth weight outcomes (Amjad et al., 2019; Chia et al., 2019; Chae et al., 2018; Williams et al., 2007). Additionally, this study found that unemployment rates have a significant and negative relationship with birth weight outcomes

for BAM. This study's findings provide evidence that reduced resource access caused by unemployment worsens birth weight outcomes for Black infants.

The RUCC had a positive relationship with county average birth weight in both control models. Urbanization is suggested to improve birth outcomes by improving the access and quality of public resources, as well as improve the environmental quality that mothers live in (Amjad et al., 2019; Chae et al., 2018;). As these positive trends were consistent when state-level hierarchical structure is a factor, the results provide further evidence that contextual factors related to the poor quality of a mother's physical environment at the county level impacts birth outcomes (Williams et al., 2007).

Hypothesis Testing

It was hypothesized that the regional differences in the salience of white supremacist ideology in state policies should impact average birth weight, with the South expected to have the worst outcomes (Chae et al., 2018; Williams et al., 2007). This study found that the Southern Census region had a negative and significant relationship with average birth weight across all models. This study therefore accepts the hypothesis that racist historic legacies in the Southern region leads to worse birth weight outcomes for BAM. These findings suggest that the Southern Census region has significantly worse outcomes for BAM in rural counties, holding other factors constant, than in other regions. The findings further suggest that the social and political environments BAM live in affect their infant's birth weight. These results provide further evidence that the characteristics of racial health disparities are not divorced from the historical and contemporary acts of discrimination that in fact create and sustain them.

It was also hypothesized that partisan proportionality in legislative chambers influenced birth outcomes, with Democrat-unified chambers having the best outcomes (Anderson et al.,

2020; Michener, 2018; Pomeranz et al., 2017). This study found no significant relationship between political parties or partisan consolidation on birth weight outcomes. This study therefore rejects the hypothesis that differences in partisanship proportions lead to differences in birth weight outcomes for BAM. However, this study does not claim that political factors do not influence birth outcomes. While white supremacy is an underlying factor in conservative politics, it is unclear what specific partisan goals translate into worsening outcomes for BAM. As a result, more research is needed that examines contentious politics whose narratives attract racially polarized political coalitions.

Area-racism was expected to have a negative relationship with birth weight outcomes for BAM; however, there was no significant relationship. As discussed previously, area racism holds promise in its ability to identify areas of high issue salience related to race relations. However, there are limits to what area racism can capture. For example, it is unclear to what extent Black mothers perceive the salience of area racism. The current methodology for the use of IQM cannot effectively explain how Black mothers receive the negative signaling in the first place. Additionally, methodological hurdles include the high average of area racism in Google search trends, suggesting that the use of the racial slur online is relatively high in every state. This may result in current challenges to find significant differences in area racism in at the state level.

It was expected that the religiosity variables “Jesus” and “Allah” would correspond negatively to birth weight outcomes for BAM due to the additional resources needed to bridge cultural competency gaps in health delivery caused by devout religious practice. Surprisingly, the religiosity variable for Allah in the basic MLM was the only IQM variable to have a relationship with average birth weight for BAM. However, the religiosity variable for Allah was not significant when controlling for additional confounding factors.

Religiosity provides context as to why the Allah measure was positive and significant while racism was not, despite having similarly high averages across all states. Literature related to Islamic religiosity and health suggests that the prevalence of "Allah" is likely capturing the salience of modesty and marriage as religious social tools to control female reproduction (Freund et al., 2019; Musah & Hudak, 2016). Cases have been documented related to the need for culturally tailored health programs for Islamic women due in large part to their reluctance to disrobe in the presence of a male physician or healthcare worker (Freund et al., 2019; Musah & Hudak, 2016). Islam is the second largest religion for Black people in the United States, and Black Muslims (Nation of Islam) account for roughly one fifth of all Muslims in the United States (Bowen, 2022). Historic Black figures such as Marcus Garvey, Muhammed Ali, and Malcolm X were closely associated with Black Muslim culture and used the Quran to make public speaking addresses (Simmons, 2008; Leonard, 2003; Lincoln, 1994). One of the most notable areas of Muslim conversion has been seen in the prison and incarceration programs in the United States, whose converts then continue to practice Islam in their communities when they are released (Bowen 2022; Simmons, 2008; Leonard, 2003; Lincoln, 1994). Communities of Black Muslims have been documented in the United States from the Orthodox Sunni Black Muslims to the urban communities founded by the Nation of Islam, with the common denominator that both groups worship and revere Allah as the one and only supreme being (Bowen, 2022; Simmons, 2008; Leonard, 2003; Lincoln, 1994). However, research is limited regarding the positive effects of Islamic community building as factors for higher birth weight outcomes for BAM. This study could not include factors such as live birth order and marital status, as these variables are only available through the natality expanded database from 2016-2021. As a result, this study is unable to test the extent that marriage in a social and cultural

context might impact birth weight outcomes. As Islam is the second largest religion among Black America women, we can infer that the prevalence of Allah can reflect both further evidence as well as nuance in determining the importance of religiosity as a social determinant of health.

This study accepts the hypothesis that religiosity impacts birth weight outcomes for BAM, but more research is needed that closely examines the relationship between religiosity and socioeconomic factors such as urbanicity, and employment, as well as demographic and health-related factors such as the percentage of Black population and obesity. Additionally, further research is needed to test whether the socioeconomic factors such as association prevalence to capture the size of religious communities could bridge the theoretical gap between religiosity and socioeconomic factors.

Limitations

This study used aggregate birth weight outcomes at the county level to make inferences about factors impacting individual BAM. While the results of this study provide insights into the relationship between resource exposure and birth weight outcomes, more research is needed that examines specific urban and rural environments and the differences in resources for individual mothers. This would require a partnership with a local hospital or clinic to collect individual data from mothers directly. This study could not include factors such as live birth order and marital status, as these variables are only available through the natality expanded database from 2016-2021. As a result, this study cannot test the extent that unemployment should be repeated in the future with a more contemporary data range. Additionally, while this study found that the age of the mother had a positive and significant relationship, this study did not include variables to capture factors such as contraceptive use, and industry background. Lastly, variations related to

the county population's access to resources such as transportation, to support from local nonprofits such as food banks, and to health-system outreach initiatives such as trust-building and health literacy programs were not included in this study. Future studies seeking to further examine the implications of resource exposure should include additional variables to test the implications of what resources (e.g., financial, reproductive, social) and from what sources (commercial, nonprofit, public) are available to BAM in each state.

Conclusion

This study found evidence to suggest that individual, cultural, and socioeconomic factors influenced birth weight outcomes of BAM in the United States between 2010 and 2018. These results provide further evidence that racial health disparities are socially and politically influenced, and these influences have group-level effects at the census and state levels. This first study is the first step in understanding the political and social environmental nuances of vulnerable-group health disparities over time. Further research is needed to examine what social and ideological factors play a role in creating cultural and religious barriers for BAM.

Chapter 4: Examining Interactions in Between Socioeconomic, Political, and Cultural Factors Affecting Birth Weight Outcomes for Black American Mothers (BAM)

Introduction

Resources and Birth weight Disparities for BAM

Scholars examining birth weight disparities for Black American Mothers (BAM), such as Debbink & Bader (2011), have found evidence to suggest that interactions between the characteristics of vulnerable racial groups and access to resources are tied to the social arrangements of their environment. Debbink & Bader (2011) used generalized linear models to investigate the association between average birth weight and racial segregation while controlling for individual and residential characteristics such as income and residential quality. Social discrimination in the form of residential segregation had worsened the effect of socioeconomic factors on birth weight outcomes. However, one of the limitations of Debbink & Bader (2011) is that the inclusion of only residential factors in reflecting environmental influences suggests that their research design failed to consider that average birth weight disparities were perhaps influenced by factors related to the prejudice and exclusionary culture that likely caused the differences in quality found in the residential segregation (Debbink & Bader, 2011).

Socioeconomics Revisited

Socioeconomic status (SES) is frequently included in clinical and public health studies as a control variable to capture differences related to access to resources, infrastructure, financial value, and human capital. In health policy and econometrics SES is often the variable of interest at the expense of cultural and political factors that shape the context of the relationship between individual characteristics and policy outcomes.

Literature strongly suggests that racial and ethnic differences persist in income at a given educational level and in wealth at a given income level. This suggests that contextual factors related to culture and politics are likely shaping differences in how human capital indicators such as education provide less benefit to some races than others. Empirical evidence also shows that racial and ethnic health disparities are influenced by SES indicators such as income, wealth,

education, occupation, neighborhood socioeconomic characteristics, or past socioeconomic experiences.

This study critically examines the interactions between standard SES measurement approaches and demographic, cultural, and political factors. A better understanding of the intersecting relationships between resources of a given area and the characteristics of vulnerable groups on public health outcomes could affect research findings and conclusions, with implications for practice and policies designed to address health disparities.

Southern racist ideology is inextricably linked to the relationship between BAM and health systems in the region (Anderson, 2020; Chae et al., 2018; Largent, 2018). A key starting point in this discussion are the congressional debates over the Hospital Survey and Construction Act of 1942, otherwise known as the Hill-Burton Act. While Northern and Midwest Senators William Langer (R-ND) and Harold Burton (R-OH) called for nondiscrimination in the use of federal funds, Southern senators, such as Senator Lister Hill (D-AL), argued for the right of state legislatures and local hospital authorities to set policy without federal interference (Anderson, 2020; Largent, 2018). Concession would ultimately be given to Southern elites, with the Hill-Burton Act containing a separate but equal provision. The separate but equal rule allowed the discrimination of people on the basis of race as acceptable if there was "equitable provision on the basis of need for facilities and services of like quality for each such group." However, because of the wider context of economic and social discrimination, legal segregation effectively isolated Black populations from equitable access to public resources. Health systems that served Black patients under segregated political systems had fewer staff and lower quality or outdated medical technology compared to white patients (Largent, 2018). Most Black communities today

live farther from health system resources than their white counterparts (Anderson, 2020; Chae et al., 2018; Largent, 2018).

This study presents a multilevel-interaction approach that considers an outcome in birth weight and a social group—Black American mothers—to examine the relationship between SES group characteristics and politics on birth weight outcomes for BAM at the state level and census region. This section presents the research framework and methodologies to develop an interactive hierarchical model to explain how Black birth outcomes are impacted by cultural, socioeconomic, and individual factors.

Research Framework

Figure 4.1 depicts the research framework for this study. The state-level political structure facilitates policy benefits that may or may not be accessible to BAM due to the legacies of residential segregation. Differences in county-level factors for BAM broadly correlate with differences in the resource exposure provided within the county. Lastly, individuals living within each county have different living experiences based on their socioeconomic placement within these counties. Both socioeconomic factors and geography are theorized to widen the disparities caused by racist sentiment and religious norms.

Figure 4.1: MLM Framework

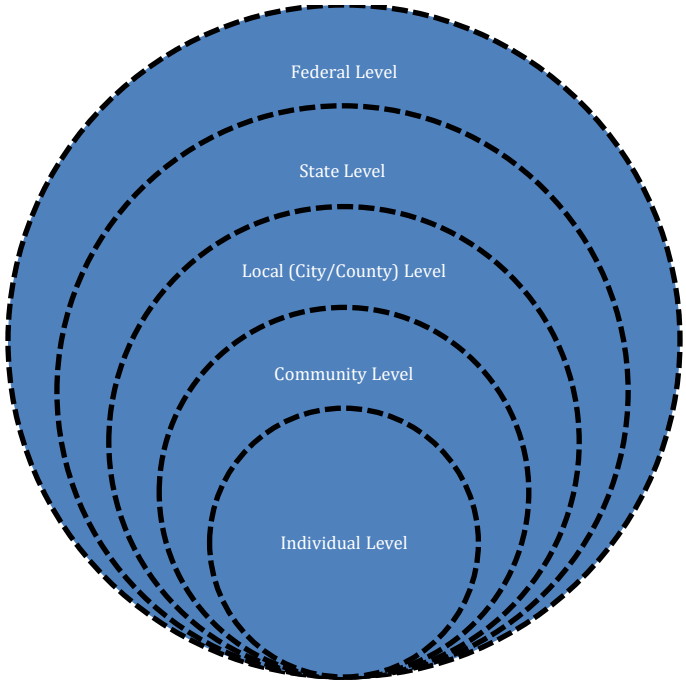


Figure 4.1 provides a framework for understanding how individual health outcomes can be shaped by hierarchical structures that influence the salience of racist signaling (Williams et al., 2007). From this perspective, this study offers three hypotheses regarding the relationship of racist signaling and state and local government on targeted birth weight outcomes for BAM.

RQ: Do socioeconomic, political, and cultural factors impact birth weight differently in states located in different census regions?

Hypothesis No. 1

Differences in Black average birth weight outcomes are influenced by differences in the interaction between socioeconomic factors and birth weight outcomes in states located in different census regions. This study will test this hypothesis by examining the interaction effects of the Southern census region on the relationship between educational attainment birth weight outcomes. Studies such as Echevarria & Lorch (2022) used birth data obtained from birth certificates to construct logistic models to predict low birth weight (LBW) for infants in the

United States across multiple races. The authors found that maternal educational level did not appear to be associated with risk of low birth weight (LBW) in any of the basic and adjusted models. The authors theorized that educational attainment might have varying effects on birth weight outcomes in areas with higher poverty or wider racial disparities. However, the study population only had 2.3% Black observations, and largely uses the insights of previous studies which used either single-state studies (Braveman, 2015; Nicholaidis et al., 2004) or studies such as Shmueli & Cullen (1999) who examined Connecticut and Virginia, to inform their working theory. The interaction between educational attainment and regional characteristics is likely impacted by structural racism over time (Anderson, 2020; Largent, 2018). Counties that are in southern states are theorized to have a significant grouping effect on the effects of socioeconomic factors on birth weight outcomes, with the southern region hypothesized to have worst outcomes due to southern states' historic prioritization of white supremacy and Black inferiority as ideological tools to acquire and maintain political, economic, and social dominance. These differences in historic legacies likely help to explain differences in the way educational attainment impacts LBW outcomes, with areas like Connecticut and Washington State having different interaction effects with educational attainment than Southern states such as Virginia. The lack of studies examining regional differences in birth weight across multiple years and states is needed to fully test the hypothesis of whether educational attainment in counties located in poorer regions in the U.S. is expected to have larger impact on average birth weight outcomes than areas in other census regions.

Hypothesis No. 2

Differences in Black average birth weight outcomes are influenced by differences in how BAM interact with different metropolitan sizes in different regions. This study will test this

hypothesis by examining the interaction effects of the Southern census region on the relationship between rural-urban development and average birth weight outcomes for BAM. Environmental infrastructure is theorized to improve birth weight outcomes by providing mothers access to greater resources and social welfare, which is expected to translate into greater financial and professional opportunities. Researchers such as Fogleman et al. (2015), examining disparities in preventative cancer outcomes, found that Rural-Urban Continuum Code (RUCC) was associated with fewer health resources in smaller metropolitan areas. In keeping with the insights from Echevarria & Lorch (2022), the region in which a BAM lives may impact the effect size of the relationship between metropolitan size and birth weight. This study, therefore, expects to see a decrease in birth weight in areas such as the Southern census region, with more rural land and fewer metropolitan areas, compared to metropolitan areas that are not in the Southern census region.

Hypothesis No. 3

Differences in Black average birth weight outcomes are influenced by the interaction between racist sentiment within a given state and their census region. This study will test this hypothesis by examining the interaction effects of the Southern census region on the relationship between area racism and average birth weight outcomes for BAM. The use of racist symbols such as hanging nooses as well as derogatory slurs such as “n****r” have been used to terrorize and humiliate Black people in the U.S (Chae et al., 2018). The widespread exchange and use of the n-word in Google search trends has been found in previous studies to correspond to both Black mortality as well as BAM birth weight and pre-term birth outcomes. Areas in the Southern census region of the United States with a high prevalence for the use of the “n-word” are expected to have worse outcomes for BAM in this study.

From chattel slavery to Jim Crow era, to Nixon's Southern Strategy, the Southern census region have deep historical ties to anti-Black policies guided by white supremacist rhetoric. The most recent example includes the Alt Right Party, a political movement emerging the 2010s made up of young conservative white males who were responding to the Obama Administration and the Black Lives Matter Movement (Anderson, 2020; Chae et al., 2018; Largent, 2018). Counties in states with high area racism and located in the Southern census region should have worse average birth weight outcomes than counties in states that are not in the South and have lower area racism.

Hypothesis No. 4

Differences in Black average birth weight outcomes are influenced by differences in state religious salience and regional location. This study will test this hypothesis by examining the interaction effects of the Southern census region on the relationship between Christian religiosity salience and average birth weight outcomes for BAM. Musah & Hudak (2016) studied the participation of Ghanaian immigrants in a culturally tailored program to increase breast cancer screenings among their Muslim populations in Bronx New York. The authors provided evidence that health decisions made by individuals living in ethnoreligious enclaves are internally guided and externally influenced by cultural and religious norms. These norms can have regional characteristics caused by variations in the size of their political and social coalitions and ultimately act as barriers to health services if the health system appears misaligned to the group's principles.

Common examples of the relationship between religiosity and census region include the Republican-dominated evangelical Midwest and Southern census regions of the United States and the structural sexist policymaking consistent with support of values such as abortion-

banning and abstinence until marriage being taught in public schools in place of comprehensive sexual education, access to contraceptives, and access to safe clinical abortions (Nagle & Samari, 2021; Patterson et al., 2022). There is likely a need for additional resources in Southern and Midwest states in the form of culturally tailored health initiatives to address gaps in services for nonreligious women or women of a different religion (Nagle & Samari, 2021; Patterson et al., 2022). This study, therefore, theorizes a negative interaction between Christian religiosity and Southern census region on birth weight outcomes for BAM.

Methods

Operationalization

Dependent Variable: BAM Infant Average birth weight

This study uses birth weight data to test the interactive relationship between geographic region, political factors, and average county birth weight among BAM. Low birth weight is an infant weighing less than 2500 grams at birth (5 pounds, 8 ounces) (Amjad et al., 2019; Chae et al., 2018). This data comes from the Center for Disease Control (CDC) Wonder Natality database for the periods 2005-2022 (Centers for Disease Control and Prevention, 2005-2022). The CDC Wonder only records county-level observations from counties with at least 100,000 persons. As a result, the observations provided by CDC wonder reflect only counties with relatively robust populations. However, due to the concentrations of Black Americans caused in large part to historic legacies of enslavement and discrimination, there are multiple counties in predominantly white areas that will not be included in this sample. This study aims to overcome any variability caused by limited samples in certain regions by capturing county outcomes across every state and multiple years.

Area-Racism

Generating internet-query--based measures (IQM) to ascertain population-level characteristics is one promising new method to measure the effect racist attitudes towards Black United States citizens have on area-level health outcomes (Chae et al., 2018) Due to the negative social connotations associated with being considered a racist individual, collecting identifiable information that captures racist attitudes is by no means easy (Chae et al., 2018) Chae et al. (2018) used proxy measures for area-level racist attitudes using Internet searches to circumvent issues in capturing racist attitudes. The authors found that the proportion of total Google searches containing the "n-word" at the designated market area (DMA) level was strongly associated with mortality rates for Black United States citizens (Chae et al., 2018) as well as disparities in pre-term birth and low birth weight (Chae et al., 2018) As with other Internet-query--based measures, this proxy of area racism does not presume that all searches containing the "n-word" are necessarily motivated by racism; it only assumes that: (1) racism exists; (2) that there is geographic variation in the degree of racism; and (3) that those who hold racist beliefs are more likely to conduct searches of the "n-word" (Chae et al., 2018) Research has demonstrated that such "big data" approaches can be used to validly assess underlying population-level characteristics (Chae et al., 2018) Further, the method lends greater geographic variations in socially unacceptable attitudes, given that behavior on the Internet is less susceptible to self-censorship (Chae et al., 2018).

State-level area racism is the racial sentiment variable in this IQM study (Stephen, 2014). This variable is derived from Google search trends of the n-word across the United States metropolitan areas between 2010-2018. Metropolitan level scores have been aggregated to produce state level scores. They observe the word from the context of "n***er" as opposed to

"n***a," as the latter has been largely dismissed by scholarship as a proxy for racism, due to the use of the word in pop culture (Chae et al., 2018).

Area Religiosity

Area Religiosity is an IQM measure used to identify the degree to which religious practice and beliefs help to shape and inform a patient's decision making (Chao & Yang, 2018; Hashmi et al., 2020; Musah & Hudak, 2016; Thomas et al., 2016; Wiener et al., 2013). Religiosity is defined as a strong religious feeling or belief (Chao & Yang, 2018). Typical methods for identifying religiosity can be expressed as church participation, donations made to local religious organizations, or by self-reported assessments of spirituality (Chao & Yang, 2018). However, all these factors are either tied to wealth and resources or require an individual who might be biased in their desire for a positive afterlife to project their affirmation of faith by overstating their religious values. As the goal is to measure how many times terms like "Jesus" are used within a given state, the study does not rely on the intentions of the individual searches. Using the IQM for religiosity therefore allows for an objective outlook on the significance a given religion has in a location by the importance of iconic symbols in online communication.

Area-religiosity is used to measure to what degree religious feelings and area racism influence pre-term birth and low birth weight when controlling for area racism. The study uses the term "Jesus" as a proxy indicator to measure the salience of religiosity, using the word's internet traffic to determine the level of prevalence iconic religious words and symbols have in a market area (Chae et al., 2018; Ntantana et al., 2017; Thomas et al., 2016). As a result, the religiosity variable is used as a proxy to measure the salience of Christian normative values, implicitly understood by way of cultural awareness.

Partisanship

The contentious politics of Republican and Democratic party campaigns often represent centralized vs. decentralized politics. States that have a high proportion of Republican state leadership are more likely to exhibit big state political ideologies such as late or non-adoption of adult Medicaid expansion. Partisanship is measured using both inter-chamber and inter-branch variables. This study uses multiple dichotomous variables to indicate the frequency of Republican-dominated and Democratic-dominated status of state legislature in the observations. To further examine the effects of inter-branch relationships at the state level, this study also includes dichotomous variables to indicate whether both state legislative chambers and the governor form either a Republican trifecta or a Democratic trifecta. This data comes from multiple open-source Inter-university Consortium for Political and Social Research (ICPSR) databases for the years 2010-2018 (U.S. Department of Agriculture, 2010-2018).

Control Variables

This study's control variables include county-level socioeconomic factors derived from U.S. census data such as the percentage of unemployed people for 2010-2018 **(**U.S. Census Bureau, 2010-2018). Additionally, the percentage estimates of female adults over the age of 25 acquiring a bachelor's degree or higher is included as an additional socioeconomic variable **(**U.S. Census Bureau, 2010-2018).

To measure environmental factors, this study measures the census measure Rural-Urban Continuum Code (RUCC) for 2013 **(**U.S. Census Bureau, 2010-2018). The RUCC uses nine categories to measure the urbanization of a given county and its adjacency to a metropolitan area. In the RUC code, 9 categories are broken into 3 levels of metropolitan sizes and 6 levels of non-metropolitan sizes. The RUCC codes metropolitan counties according to the population size of

their metro area, and nonmetropolitan counties by their degree of urbanization and adjacency to a metro area.

The average age of mothers is used as an additional county-level factor (Centers for Disease Control and Prevention, 2005-2022). The average age of the mother is theorized to improve the average birth weight of infants due to the association with having more time as an adult to acquire resources such as an education and a job salary (Amjad et al., 2019; Chae et al., 2018;). However, there are counter-theories proposing that higher ages may lead to lower birth weights due to greater cumulative exposure to hardships (Amjad et al., 2019). This variable comes from the CDC Wonder Natality Database for the years 2007-2021. This variable captures the aggregate ages of mothers over 18 years old in counties with populations over 100,000 persons[5].

Lastly, state-level demographic and health-related control variables include Black population percentage and obesity BMI prevalence, respectively. Obesity is expected to negatively impact average birth weight, as obese mothers are more likely to be medically induced into labor prior to the infant due date (Amjad et al., 2019; Pomeranz et al., 2017). Health risks related to obese mothers such as high blood pressure, blood clots, and poor blood circulation are common factors that physicians will cite to encourage an early induction. Because pre-term birth is corelated strongly with low birth weight, this obesity variable also serves as proxy variable that measures the extent that average obesity of the mother leads to an early medical induction, and subsequently low birth weight (Amjad et al., 2019; Pomeranz et al., 2017). This data comes from the CDC Behavioral Risk Factor Surveillance System (BRFSS) state level database for the years 2010-2018 **(**Centers for Disease Control and Prevention, 2010-

[5] This variable data source, CDC Wonder Natality database, only records counties with at least 100,000 persons. Smaller counties are aggregated into an “other counties” category for each state.

2018). The percentage of the state Black population needs to be measured to assess whether differences in the percentage of the Black population in the total population influence birth weight. A negative relationship is expected for BAM birth outcomes in areas where systematic discrimination is driving worsening birth outcomes (Chae et al., 2018). The percentage of the state Black population was derived from census data and included to test the above factors on BAM across all 50 states while considering differences in state populations **(**Centers for Disease Control and Prevention, 2010-2018).

Data Analysis

Hierarchical linear modeling is used in this study rather than standard regression to test whether state grouping effects caused by differences in state and local governments impacts birth weight outcomes for BAM (Williams et al., 2007). As a result, the following multilevel models provide comparisons between county-level birth weight outcomes based on state-level characteristics. Because the analysis includes state data from multiple years, year-fixed effects are included to control for factors that may vary from year to year affecting the dependent variable that are not included in the analysis. For example, time changes the political landscape in various ways, such as the differences in the political party represented by the state Governor for states that are not highly polarized. Similarly, because the analysis includes data from the fifty states, state-level fixed effects are also included to control for the differences between those states that are outside the scope of the analysis but may have some effect on the dependent variable. Across the models for both year and state, the year 2010 and the state of Alabama are dropped from the models as the reference category. This study included census region as a dichotomous variable (South =1; other census regions =0). Southern states are those that U.S. Census bureau identifies as being in the Southern Census Region.

Results

Analysis

This study uses regression analysis to examine average birth weight outcomes for Black American Mothers. Specifically, this study uses multilevel modeling to examine differences in birth weight outcomes at the census region and state levels. All analyses were conducted using STATA version 18.0.

Descriptive Statistics

Table 4.1: Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
County Level					
Black (non-Hispanic) births by county (numerical)	6,522	827.7007	1545.445	10	16840
Average birth weight for BAM (in grams)	6,721	3148.069	103.7461	2146	3931
Average age of BAM by county (numerical)	6,721	27.65166	1.789095	21.8	36.33
Percent estimate: Female with bachelor's degree or Higher	6,352	19.60822	11.30606	0	76.1
Unemployment Rate	5,844	6.939973	3.033415	1	21.7
State Level					
Racism	6,721	71.78738	7.802483	54	94
Jesus	6,721	75.73843	7.196417	55	100
Allah	6,721	76.33239	7.730327	56	100
Percent Obesity BMI Prevalence	4,989	29.1086	4.058026	18.7	42.7
Percent of State Black Population	4,989	13.01459	8.479306	0	51.5
Rural Urban Continuum Code 2013 (RUCC)(numerical)	6,721	1.875465	0.880405	1	5

Table 4.1 provides descriptive statistics for the variables selected for this study. The number of births varies widely between counties, with a minimum of 10 deliveries and a maximum in the tens of thousands. Similarly, the state population of Black non-Hispanic people has stark differences ranging from over three thousand to over 3 million.

Table 4.2: Multivariate Regression Analysis

VARIABLES	Basic H1	Control H1	Basic H2	Control H2	Basic H3	Control H3	Basic H4	Control H4
Average age of BAM	21.964** (0.977)	22.316** (1.024)	22.971** (1.011)	21.891** (1.024)	21.81** (0.977)	22.23** (1.025)	21.81** (0.98)	22.24** (1.025)
Percent estimate: Female with bachelor's degree or Higher	-0.758* (0.302)	-0.885** (0.319)	0.152 (0.258)	-0.274 (0.270)	-0.221 (0.254)	-0.320 (0.271)	-0.228 (0.254)	-0.327 (0.271)
Southern Census Region	-83.030** (14.139)	-50.590** (17.471)	-31.096* (13.610)	-4.413 (17.499)	71.057 (128.911)	30.047 (119.557)	151.519 (125.486)	119.136 (117.579)
Percent estimate: Female with bachelor's	1.225** (0.361)	1.224** (0.362)						

degree or higher x Southern Census Region								
RUCC 2013		7.809** (1.608)	13.541** (1.860)	12.928** (1.857)		8.120** (1.608)		8.139** (1.608)
Southern Census Region x RUCC 2013			-15.605** (3.124)	-15.756** (3.112)				
Racism					1.292 (0.794)	0.508 (0.755)		
Racism x Southern Census Region					-1.808 (1.765)	-0.881 (1.652)		
Jesus							1.524+ (0.796)	0.767 (0.762)
Jesus x Southern Census Region							-2.778+ (1.626)	-2.017 (1.538)
Unemployment Rate		-3.547** (0.628)		-3.481** (0.626)		-3.453** (0.630)		-3.442** (0.630)
Percent		-0.768		-0.389		-0.45		-0.36

Obesity BMI Prevalence		(1.000)		(0.990)		(1.352)		(1.01)
Percent of State Black Population		-1.486* (0.730)		-1.473* (0.720)		-1.352+ (0.749)		-1.304* (0.742)
Republican Controlled Legislature	7.859 (6.794)	8.192 (6.762)	9.144 (6.740)	8.808 (6.745)	8.214 (6.793)	8.631 (6.778)	8.245 (6.785)	8.593 (6.769)
Democratic Controlled Legislature	10.558 (7.338)	10.982 (7.249)	12.484+ (7.277)	12.287+ (7.227)	12.530+ (7.365)	12.378+ (7.297)	12.859+ (7.356)	12.823+ (7.290)
Republican Trifecta	0.642 (5.651)	-0.197 (5.614)	-0.138 (5.615)	-0.542 (5.602)	0.735 (5.656)	-0.361 (5.629)	0.914 (5.655)	-0.252 (5.630)
Democratic Trifecta	3.397 (5.766)	1.893 (5.769)	3.140 (5.736)	2.143 (5.758)	3.623 (5.770)	2.241 (5.776)	3.658 (5.767)	2.305 (5.775)
2011.year	-1.948 (5.452)	-4.131 (5.432)	-2.053 (5.424)	-3.910 (5.423)	-1.692 (5.459)	-3.918 (5.443)	-1.667 (5.455)	-3.821 (5.440)
2012.year	6.518 (5.526)	2.143 (5.535)	6.185 (5.496)	2.270 (5.525)	6.800 (5.533)	2.304 (5.549)	6.824 (5.529)	2.383 (5.545)
2013.year	4.671 (5.460)	-2.238 (5.658)	3.882 (5.434)	-2.426 (5.647)	4.797 (5.465)	-2.404 (5.675)	4.776 (5.462)	-2.461 (5.671)
2014.year	1.898 (5.438)	-9.033 (5.932)	0.732 (5.414)	-9.347 (5.918)	1.995 (5.444)	-9.305 (5.957)	1.995 (5.440)	-9.358 (5.950)
2015.year	-4.174 (5.737)	-18.110** (6.195)	-8.274 (5.747)	-18.768** (6.179)	-3.993 (5.747)	-18.400** (6.229)	-3.912 (5.742)	-18.335** (6.219)

2016.year	-30.839** (5.781)	-45.939** (6.548)	-35.559** (5.811)	-46.716** (6.528)	-30.600** (5.791)	-46.451** (6.592)	-30.519** (5.786)	-46.462** (6.581)
2017.year	-29.133** (5.878)	-45.448** (6.914)	-34.270** (5.919)	-46.387** (6.890)	-28.860** (5.889)	-46.105** (6.968)	-28.770** (5.884)	-46.154** (6.955)
2018.year	-48.721** (5.911)	-65.161** (7.573)	-54.296** (5.967)	-66.526** (7.539)	-48.486** (5.922)	-66.246** (7.643)	-48.404** (5.918)	-66.418** (7.628)
Constant	2,600.806** (26.551)	2,640.817** (41.027)	2,531.888** (28.657)	2,621.213** (40.616)	2,497.661** (66.372)	2,584.705** (69.960)	2,475.342** (68.627)	2,559.589** (72.543)
Observations	4,716	4,714	4,716	4,714	4,716	4,714	4,716	4,714
Number of groups	46	46	46	46	46	46	46	46

Table 4.2 provides multilevel models that test the effects of partisanship and relevant policies on average birth weight outcomes. Four models are provided to capture both a basic model and a control model. The basic model contains only the dependent variable, the average age of the mother, the estimated percentage of female adults over 25 with a bachelor's degree or higher, and the interaction variables of interest to test the study's hypotheses, which include socioeconomic variables, the partisanship dichotomous variables, and the IQM variables. The control variables include the variables found in the basic model and additional control variables such as the unemployment rate, the rural-urban continuum code, BMI obesity prevalence, and the total state Black population.

H1 MLM Basic Model

This model tested the H1, which expects to see differences in Black average birth weight outcomes associated with differences in the interactions between socioeconomic factors such as educational attainment and regional norms with historic legacies of white supremacy in political and social norms. This model examined the interactions between the estimated percentage of female individuals with a bachelor's degree or higher and a dichotomous variable to measure the variations of states in the Southern census region.

At the county level, in the basic H1 model, the average age of mothers has a positive and significant relationship with average birth weight ($b=21.96$; $p<0.01$). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than counties with younger mothers. The percent average of female persons with a bachelor's degree or higher has a negative and significant relationship with average birth weight ($b=-758$; $p<0.01$). In counties where the percentage estimate of educational attainment for women over 25 is a bachelor's degree or higher, the average county Black birth weight is lower than in other counties.

The basic H1 model found that the interaction effect of the estimated percentage of female educational attainment with a bachelor's degree or higher and the dichotomous Southern census region variable has a positive and significant relationship with county-level average birth weight ($b=1.23$; $p<0.01$). Southern census areas with higher percentages of female persons with a bachelor's degree or higher have higher county-level birth weight averages than counties outside of the South.

H1 MLM Control Model

At the county level, in the control H1 model, the average age of mothers has a positive and significant relationship with average birth weight (b=22.32; p<0.01). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than in counties with younger mothers. The RUCC has a positive and significant relationship with average birth weight (b=7.81; p<0.01). In counties where urbanization is higher, babies are born weighing more than in counties that are less urban. The unemployment rate has a negative and significant relationship with average birth weight (b=-3.55; p<0.01). In counties with higher unemployment rates, babies are born weighing less than in counties with lower unemployment rates. The average percentage of female persons with a bachelor's degree or higher has a negative and significant relationship with average birth weight outcomes. Counties with higher percentages of educational attainment at bachelor's degree or higher have lower average birth weight outcomes for BAM than counties with lower educational attainment.

The control H1 model found that the interaction effect of the percentage estimate of female educational attainment with a bachelor's degree or higher and the dichotomous Southern census region variable have a positive and significant relationship with county level average birth weight (b=1.22; p<0.01). Southern census areas with higher percentages of female persons with a bachelor's degree or higher have higher county level birth weight averages than counties outside of the South.

At the state level, in the control H1 model, the percentage of Black population has a negative significant relationship with average birth weight (b=-1.486; p<0.05). Counties with higher percentages of the Black population have lower average birth weight outcomes than areas with smaller Black populations. Obesity BMI prevalence has no significant effect on BAM birth

weight. The partisan variables for both inter-chamber and inter-branch effects were also not significant.

H2 MLM Basic Model

This model tested the H2, which expects to see differences in Black average birth weight outcomes are influenced by differences in how metropolitan size interacts with states in different census regions. This model examined the interactions between the RUCC and a dichotomous variable to measure the variations of states in the Southern census region.

At the county level, in the basic H2 model, the average age of mothers has a positive and significant relationship with average birth weight ($b=22.97$; $p<0.01$). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than counties with younger mothers. The RUCC has a significant and positive relationship with average birth weight outcomes ($b=13.54$; $p<0.01$). Counties with larger metropolitan areas have higher birth weight outcomes than counties with smaller metropolitan areas.

The basic H2 model found that the interaction effect of the RUCC and the dichotomous Southern census region variable has a negative and significant relationship with county level average birth weight ($b=-15.605$; $p<0.01$). Southern census areas with larger metropolitan areas have lower county-level birth weight averages than similar counties outside the South. The partisan variables for both inter-chamber and inter branch effects were also not significant in the basic multilevel model.

H2 MLM Control Model

At the county level, in the control H2 model, the average age of mothers has a positive and significant relationship with average birth weight ($b=21.89$; $p<0.01$). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than

in counties with younger mothers. The RUCC has a positive and significant relationship with average birth weight (b=12.93; p<0.01). Counties with larger metropolitan areas have higher birth weight outcomes than counties with smaller metropolitan areas. The unemployment rate has a negative and significant relationship with average birth weight (b=-3.48; p<0.01). Counties with higher unemployment rate have worse birth weight outcomes than counties with lower unemployment rates.

The control H2 model found that the interaction effect of the RUCC and the dichotomous Southern census region variable has a negative and significant relationship with county level average birth weight (b=-15.756; p<0.01). Southern census areas with larger metropolitan areas have lower county-level birth weight averages than similar counties outside the South. The partisan variables for both inter-chamber and inter-branch effects were also not significant in the basic multilevel model.

At the state level, demographic factors such as the total Black population has a negative significant relationship with average birth weight (b=-1.47; p<0.05). Counties with higher percentages of Black population has lower average birth weight outcomes than areas with smaller Black populations. Health factors such as the percentage of obesity BMI prevalence were not significant in the control MLM. The dichotomous partisanship variables for both inter-chamber and inter-branch effects were also not significant in the basic multilevel model.

H3 MLM Basic Model

This model tested the H3, which expects to see differences in county-level Black average birth weight outcomes corresponding to differences in the relationship between anti-Black racial sentiment and the Southern census region. This model examined the interactions between the

area racism IQM and a dichotomous variable to measure its prevalence among Southern region states.

At the county level, in the basic H3, the average age of mothers has a positive and significant relationship with average birth weight (b=21.81; p<0.01). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than counties with younger mothers.

At the state level in the basic H3 model, the area racism IQM variable was not significant. No state-level partisanship variables were significant the basic Racism multilevel model.

The basic H3 model found no significant interaction effect between area racism and the Southern census region on average birth weight for BAM.

H3 MLM Control Model

At the county level, in the control H3 model, the average age of mothers has a positive and significant relationship with average birth weight (b=22.22; p<0.01). The RUCC has a positive and significant relationship with average birth weight (b=8.12; p<0.01). The unemployment rate has a negative and significant relationship with average birth weight (b=-3.45; p<0.01). Counties with higher unemployment rate have worse birth weight outcomes than counties with lower unemployment rates.

At the state level in the control H3 model, the area racism IQM variable was not significant. No state-level partisanship variables were significant in the basic Racism multilevel model. Demographic factors such as the total Black population did not have a significant relationship with average birth weight. Health factors such as the percentage of obesity BMI prevalence were not significant in the control MLM.

The control H3 model found no significant interaction effect between area racism and the Southern census region on average birth weight for BAM.

H4 MLM Basic Model

This model tested the H4, which expects to see differences in county-level Black average birth weight outcomes corresponding to differences in the relationship between Christian religious salience and states in the Southern census region. This model examined the interactions between the area Christianity IQM and a dichotomous variable to measure the prevalence of Christianity in Southern states.

At the county level, in the basic H4 IQM model, the average age of mothers has a positive and significant relationship with average birth weight ($b=21.80$; $p<0.01$). This means that, in counties where the average age of Black mothers is higher, babies are born weighing more than in counties with younger mothers.

At the state level, in the basic H4 model, the Jesus IQM variable has no significant relationship with average birth weight for BAM. The partisan variables for both inter-chamber and inter-branch effects were also not significant in the basic multilevel model.

The basic H4 model found no significant interaction effects between Republican partisanship and area racism on average birth weight for BAM.

H4 MLM Control Model

At the county level, in the control H4 model, the average age of mothers has a positive and significant relationship with average birth weight ($b=22.24$; $p<0.01$). The RUCC has a positive and significant relationship with average birth weight ($b=8.13$; $p<0.01$). The unemployment rate has a negative and significant relationship with average birth weight (b=-

3.44; p<0.01) that is, counties with higher unemployment rates have worse birth weight outcomes than counties with lower unemployment rates.

At the state level, demographic factors such as the total Black population have no significant relationship with average birth weight. Health factors such as the percentage of obesity BMI prevalence were not significant in the control MLM. The dichotomous partisanship variables for both inter-chamber and inter branch effects were also not significant in the basic multilevel model.

Census Region

Regarding census region, South has a negative and significant relationship in the basic H1 model (b=-83.03; p<0.01), the control H1 model (b=-50.59; p<0.01), the basic H2 model (b=-31.09; p<0.05). This means that in counties that are in the Southern census region the average weight of babies born to BAM is significantly lower than the average weight of babies born to BAM in counties outside of the South .

Discussion

This third study aimed to examine what interaction effects between socioeconomic, cultural, and political factors influence the average birth weight for BAM at the county and state level. Historical and regional variations in racial sentiment are theorized to affect BAM average birth weight outcomes (Anderson et al., 2020; Chae et al., 2018; Michener, 2018; Pomeranz et al., 2017). Additionally, cultural factors such as religiosity as well as political factors such as the partisanship arrangements both between state chambers and between state branches are also theorized to impact the access to programs that facilitate culturally tailored programs.

This study conducted a series of multilevel regression analyses to compare the influence and to test the hypothesized interaction effects of the variables selected on average birth weight with consideration of fixed year and state grouping effects.

County Level Factors

At the county level, the study found that the average age of the mother has a positive and significant relationship with birth weight across all models. It is theorized that professional goals such as higher education increase the age of women choose to have children (Amjad et al., 2019; Chia et al., 2019; Chae et al., 2018; Williams et al., 2007). It is also theorized that unemployment reduces resource exposure and worsens birth weight outcomes (Amjad et al., 2019; Chia et al., 2019; Chae et al., 2018; Williams et al., 2007). Additionally, this study found that unemployment rates have a significant and negative relationship with birth weight outcomes for BAM. This study's findings provide evidence to suggest that reduced resource access caused by unemployment worsens birth weight outcomes for Black infants.

Hypotheses Testing

This study hypothesized that female educational attainment and Southern census region would have a negative interaction effect with average birth weight due to differences in the way higher education translates to greater opportunities in different regions. This study found that interactions between female educational attainment in Southern region counties improved birth weight outcomes for BAM. This study therefore rejects the hypothesis that the impact of educational attainment on birth weight is affected by differences between census regions. This evidence suggests the contrary: that in regions understood to have less infrastructure and greater levels of rurality, educational attainment translates into greater resource opportunities for BAM.

This study also hypothesized that interaction effects between the differences in metropolitan sizes within a rural census region would worsen birth weight outcomes. The interaction effects of RUCC and Southern census region had a negative and significant relationship with county average birth weight, despite RUCC having positive and significant results in every control model. Urbanization is suggested to improve birth outcomes by improving the access and quality of public resources, as well as improve the environmental quality that mothers live in (Amjad et al., 2019; Chae et al., 2018;). This study therefore accepts the hypothesis that the effects of metropolitan infrastructure on birth weight outcomes is negatively impacted by differences in census region. While the control models provide further evidence that contextual factors related to the quality of a mother's physical environment at the county level impacts birth outcomes (Williams et al., 2007), the interaction effects found in both the basic and control models that tested H2 suggest that regional characteristics related to the norms and systems that facilitate the metropolitan areas are likely creating barriers for BAM to fully engage in the resources found in such areas. Literature cites factors such as residential segregation as potential causes for why certain ethnic groups receive less benefit from living in proximity to metropolitan areas (Debbink & Bader, 2011). Further research is needed that examines the interactions between socioeconomic factors and residential segregation across different regions.

Regional differences in the salience of white supremacist ideology in state policies were expected to impact average birth weight, with the South expected to have the worst outcomes (Chae et al., 2018; Williams et al., 2007). This study found that the Southern Census region had a negative and significant relationship with average birth weight across all models. These findings suggest that the Southern census region has significantly worse outcomes for BAM in counties,

holding other factors constant, than do other regions. These findings further suggest that the social and political environments BAM live in affect their infant's birth weight. These results provide further evidence that the characteristics of racial health disparities are not divorced from the historical and contemporary acts of discrimination that create and sustain them. It was also hypothesized that consolidated Republican state partisanship and anti-Black racial sentiment influenced birth outcomes, with Republican-dominated states expected to have significantly worse outcomes (Anderson et al., 2020; Michener, 2018; Pomeranz et al., 2017). This study found no significant interactions between racism and partisanship arrangement on average birth weight for BAM.

However, this study did not find a significant relationship when examining the hypothesized interactions between racism and the Southern census region on birth weight. Additionally, area racism was not found to have a significant relationship on birth weight in any of the tested models. As discussed previously, area racism holds promise in its ability to identify areas of high issue-salience related to race relations. However, there are limits on what area racism can capture. For example, it is unclear to what extent Black mothers perceive the salience of area racism. The current methodology for the use of IQM cannot effectively explain how Black mothers receive negative signaling in the first place. Additionally, methodological hurdles include the high average of area racism in Google search trends, suggesting that the use of the racial slur online is relatively high in every state. This may result in the current difficulties in finding significant differences in area racism in at the state level. It may be a reason why interactions between census region and area racism were not shown in this study to impact average birth weight for BAM.

This study therefore fails to support the hypothesis that the interaction between area racism and the Southern census region correspond to negative birth weight outcomes for BAM. While this study did not find evidence to support the hypothesis, however, this study does not claim that political and cultural factors within a census region do not interact with racist sentiment to influence disparities in birth outcomes for BAM. Patriarchal (male) white supremacy is an underlying factor in the gendered and racist elements of conservative politics in the United States Southern region; still, it is unclear what specific partisan goals translate into worsening outcomes for BAM (Patterson et al., 2022). Hence more research is needed that examines regional differences between controversial statewide policies whose narratives attract racially polarized political coalitions.

Finally, no interactions or significant results were found when studying the possible effects of the relationship between religiosity and the Southern census region on birth weight. This study therefore rejects the hypothesis that the interaction between Christian religious salience and the Southern census region negatively impacts BAM birth weight outcomes. Religiosity likely provides mixed externalities related to family and community structure, as well as social and community support, that this study was unable to capture with the variables selected (Nagle & Samari, 2021; Patterson et al., 2022). This study could not include factors such as live birth order and marital status, as these variables are only available through the Wonder Natality expanded database from 2016-2021. As a result, this study is unable to test the extent that marriage in a social and cultural context might impact the ability of factors such as religiosity to influence birth weight outcomes (Echevaria & Lorch, 2022; Nicolaids et al., 2004). While these results were not significant in the control model, further research is needed to test

whether the socioeconomic factors such as association prevalence to capture the size of religious communities could bridge the theoretical gap between religiosity and socioeconomic factors.

Limitations

This study used aggregate birth weight outcomes at the county level to make inferences about factors impacting individual BAM. While the results of this study provide insights into the relationship between resource exposure and birth weight outcomes, more research is needed that examines specific urban and rural environments and the differences in resources for individual mothers. This would require a partnership with a local hospital or clinic to collect individual data from mothers directly. This study could not include factors such as live birth order and marital status, as these variables are only available through the natality expanded database from 2016-2021. As a result, this study cannot test the extent that unemployment should be repeated in the future with a more contemporary data range. Additionally, while this study found that the age of the mother had a positive and significant relationship, this study did not include variables to capture factors such as contraceptive use, and industry background. Lastly, variations related to the county population's access to resources such as transportation, support from local nonprofits such as food banks, health-system outreach initiatives such as trust-building and health literacy programs were not included in this study. Future studies seeking to further examine the implications of resource exposure should include additional variables to test the implications of what resources (e.g., financial, reproductive, social) and from what sources (commercial, nonprofit, public) are available to BAM in each state.

Conclusion

This third study found evidence to suggest that interaction effects between socioeconomic, cultural, and political factors influenced the average birth weight for BAM at the

county and state level in the United States between 2010 and 2018. These results provide further evidence that racial health disparities are socially driven, and that these influences have group-level effects at the census and state levels. This study is a first step in understanding the interactions between the political and social environmental nuances of vulnerable group disparities over time. Further research is needed to examine interactions of social and political factors using as a variable a policy that is racially targeted and politically polarizing in nature.

Chapter 5: Reflection & Conclusion

The purpose of this dissertation was to investigate the political and contextual factors that influence birth weight outcomes for BAM in the United States using publicly accessible data. The this dissertation was also intended to provide a demonstration of the uses of easily sourced but less sensitive data such as birth certificate data, self-reported data, and interquartile browser data as well as to call for additional research that uses data and variables created in partnership with public health systems and public health and human services agencies.

The studies detailed in chapters 2-4 provide insight into the extent that factors such as resource exposure have on BAM birth weight outcomes. In Chapter 2, the first study aimed to examine what political and social factors influence the average birth weight for BAM at the county and state level. Historical and institutional racism are theorized to affect BAM average birth weight outcomes (Anderson et al., 2020; Michener, 2018; Pomeranz et al., 2017). Additionally, political factors such as the partisanship relationships both between state chambers and between state branches are also theorized to impact the shaping and effectiveness of policies such as AME and program sizes such as WIC (Sosnovske, 2022; Rocco et al., 2020; Hudson & Moriya, 2017). In Chapter 3, the second study aimed to examine what cultural and political factors influence the average birth weight for BAM at the county and state level. Historical and regional variations in racial sentiment are theorized to affect BAM average birth weight outcomes (Anderson et al., 2020; Chae et al., 2018; Michener, 2018; Pomeranz et al., 2017). Additionally, cultural factors such as religiosity as well as political factors such as the partisanship arrangements both between state chambers and between state branches are also theorized to impact the access to programs that facilitate culturally tailored programs. In Chapter 4, the third study aimed to examine what interaction effects between socioeconomic, cultural,

and political factors influence the average birth weight for BAM at the county and state level. Historical and regional variations in racial sentiment are theorized to affect BAM average birth weight outcomes (Anderson et al., 2020; Chae et al., 2018; Michener, 2018; Pomeranz et al., 2017). Further, cultural factors such as religiosity as well as political factors such as the partisanship relationships both between state chambers and between state branches are also theorized to impact the access to programs that facilitate culturally tailored programs.

Racism and Politics

The evidence provided in Chapters 2 & 3 suggest that systematic racial disparities exist among Black Americans, with the percent of the state Black population consistently having a negative and significant relationship with average county birth weight outcomes. Factors such as residential segregation have been linked to systematic disparities in health outcomes. Areas that are residentially segregated are theorized to influence the relationship between minority populations and health outcomes. Racist policies such as residential segregation are often linked to political ideologies that stem from racist cultural norms. Systemic racial disparities are also likely captured in variables such as census region, whereby variations of birth weight outcomes in the South are worse than in other census regions in the United States.

While none of the studies provide evidence to support the hypothesis or a relationship between Republican ideology and racism on birth weight outcomes, this study does not claim that political factors do not interact with racist sentiment to influence disparities in birth outcomes for BAM. Patriarchal white supremacy is an underlying factor in the gendered and racist elements of far-right conservative politics in the United States, which the Republican party champions to secure elections each cycle. Politically polarizing laws such as restrictions to abortion and outright bans may translate into worse birth weight outcomes for BAM than other

groups (Redd et al., 2022). As a result, more research is needed that examines contentious politics such as reproductive rights, whose narratives attract racially polarized political coalitions.

Policy and Administrative Factors

In Chapter 2, the state-level variables for WIC Program administrative cost, and Adult Medicaid expansion status were not found to be significant indicators for basic and control models. This dissertation does not conclude that these policies have no relationship with birth weight. It is currently unclear what are the specific functions related to WIC programs and administrative services and Medicaid expansion that leads to their hypothesized effects on birth outcomes (Sosnovske, 2022; Rocco et al., 2020; Weber et al., 2018; Hudson & Moriya, 2017; Neuberger, 2011). The relationship between policy interventions and program delivery on targeted outcomes must be further examined using mixed methods to identify and test causal mechanisms that are theorized to lead to improved birth outcomes.

Racism and Religiosity

Agencies within The Department of Health and Human Services, such as the National Institutes of Health (NIH), are currently seeking to address these disparities and are requesting tools to help improve their ability to monitor infant health, with LBW being the most common and quickly recorded proxy variable for infant development (Chae et al., 2018; Kramer et al., 2010). Successful interventions to address LBW disparities will require policymakers and public health administrators to anticipate the likelihood of adverse birth weight outcomes in relation to changing health trends and complex and deeply embedded relationships between race and health in the U.S. As a result, research seeking to use advanced approaches to monitor pregnancy and

infant health must address ways to consider social and cultural factors when predicting birth outcomes.

The interquartile measures for area racism had no significant results in this dissertation. It is theorized that the high salience of area racism across all observed states likely impacted the significance of variations in area racism leading to differences in birth weight. The area religiosity IQM for Jesus and Allah had limited results, with the salience of Allah in Google search trends having a significant effect on birth weight only in the basic model in Chapter 3. While the basic model lacks additional socioeconomic and demographic factors such as unemployment rates and the percentage of Black people in the population, educational attainment of bachelor's degrees or higher and partisanship are still included. As a result, future studies should explore whether factors such as area religiosity impact health outcomes at different levels of employment in different industries.

Regional Differences

It was hypothesized that the regional differences in the salience of white supremacist ideology in state policies should impact average birth weight, with the South expected to have the worst outcomes (Chae et al., 2018; Williams et al., 2007). Evidence was found across all three studies that the Southern census region has a negative and significant relationship with average birth weight in both basic and control models. These findings suggest that the Southern census region has significantly worse outcomes for BAM in counties, holding other factors constant, than for other regions. The Southern census region is the central location of the most aggressive and persistent forms of anti-Black policies, norms, and rhetoric in the United States, from chattel slavery to legal segregation and disfranchisement. These results provide further evidence that racial health disparities are not divorced from the historical and contemporary acts

of discrimination that create and sustain them. These findings confirm that the social and political environments BAM live in affect their infant's birth weight.

Additionally, the importance of environmental and socioeconomic factors such as regional differences and Rural-Urban Continuum across all three studies suggests the need to further examine the impact of infrastructure and resource exposure on birth weight outcomes. This dissertation did not test whether differences in access to health-related infrastructure such as the distance to nearest hospital, commute to primary physician, or availability of a Planned Parenthood program influenced birth weight outcomes for Black American mothers. Future research should incorporate variables that assess the operations and administrative capacity of health-related infrastructure to further test whether access and health capacity size impact birth weight outcomes.

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