



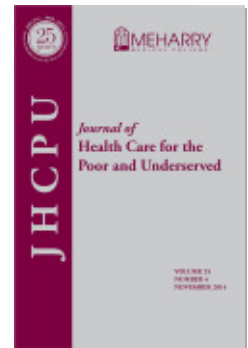
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State Policy and Health Disparities: An Examination of the Impact of State Offices of Minority Health

Dana Patton, PhD

Abstract: For over two decades, a concerted effort has been underway to tackle health disparities. State Offices of Minority Health (OMH) have led efforts in data collection, training, and policy development. Yet, little evidence exists regarding the effectiveness of these efforts. I address this dearth of knowledge by examining the impact of state Offices of Minority Health on Black infant mortality rates. I perform a longitudinal regression analysis controlling for political, economic, and policy variables. I find that state OMHs are associated with a decrease in Black infant mortality rates. Furthermore, when Medicaid spending is low, the implementation of a state OMH decreases Black infant mortality over time. As Medicaid spending increases, however, the effect diminishes. State OMHs and Medicaid are important tools to decrease Black infant mortality rates. States that invest relatively little in health care for the poor should consider increasing investments in their Offices of Minority Health.

Key words: Infant mortality rates, health disparities, Office of Minority Health, Medicaid, state policy.

For over two decades, the elimination of racial health disparities in the United States has been an important goal of numerous governmental and non-governmental organizations. Although civil rights advocates had long been aware of differences in health care outcomes between Black and White Americans, efforts to reduce them were significantly enhanced in the wake of the 1985 report released by a Department of Health & Human Services (DHHS) task force convened by then Secretary Margaret Heckler. In what has since become known as the Heckler Report, the task force provided the most comprehensive documentation to date on the staggering differences in health outcomes between Whites and minorities across a range of health conditions. According to the report, Black Americans experienced approximately 60,000 “excess deaths” each year due simply to the color of their skin.

Despite federal efforts spanning numerous agencies, as detailed below, health disparities have persisted. As Satcher *et al.* reported, “In 2002, Blacks suffered 40.5 percent more deaths (83,570 deaths) than would be expected if they had experienced the mortality rate of Whites.”¹[p.460] The most recent and thorough assessment was of the *Healthy People 2010* objectives related to health disparities. The U.S. Department of

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Health and Human Services reported that over the span of 2000–2010, of the many different health disparity outcomes that were tracked, the level of disparity decreased for only 7% of the outcomes. There was no change for 80% of the outcomes and disparities actually increased for 13%. Regarding these findings, the Director of the National Center for Health Statistics commented, “Addressing health disparities continues to be our greatest challenge.”

Although the national-level data paint a rather dismal picture, there has been significant variation in trends in health disparities across the states, with some states faring better than others over the last three decades. Can this variation be explained, at least in part, by the efforts that states have made to reduce health disparities? While much attention has been paid to the issue of health disparities, particularly in the previous decade, very little research has assessed which policies and programs have measurable effects on reducing racial and ethnic health disparities. As King *et al.* note, “Most of the research on disparities describes racial/ethnic disparities in health care rather than identifying best practices or proven strategies to address them.”²[p. 247] Similarly, Exworthy *et al.* lament that “there is surprisingly little high-quality evidence for the effectiveness of policy interventions to address [health disparities].”³[p.81] This is especially true regarding state efforts to reduce health disparities.

This research seeks to fill this gap in the literature by examining the impact of one of the most important state policy initiatives designed to reduce health disparities—the creation of state Offices of Minority Health. In a review of state legislative actions related to health disparities, Ladenheim and Groman note that the creation of state OMHs was the most common type of legislation aimed at reducing minority health disparities prior to 2001.⁴ Although there is an OMH in nearly every state today, there has been practically no research on the effectiveness of state OMHs in reducing racial health disparities. In this paper, I provide the first systematic evaluation of the impact of state OMHs on one of the most important and widely studied indicators of population health—infant mortality rates.

As I establish in detail below, states did not adopt OMHs in a uniform fashion. This provides an ideal quasi-experimental design to test the impact of state OMHs on state health disparities, as it helps reduce the potential confounding effect of national level forces. In the next section of the paper, I provide more detailed information about federal and state efforts to tackle health disparities and justify using Black infant mortality rates as a dependent variable. The results show that state Offices of Minority Health are associated with statistically significant declines in Black infant mortality rates. In addition, Medicaid spending significantly reduces Black infant mortality rates, though it does not have a statistically significant effect on White infant mortality rates.

Federal and state efforts to address health disparities. *Federal activities.* One of the most immediate results of the Heckler Report was the creation of the federal Office of Minority Health (OMH) in 1986. The OMH was charged with “improving health and healthcare outcomes for racial and ethnic minority communities by developing or advancing policies, programs, and practices that address health, social, economic, environmental and other factors which impact health.” The federal response spanned several agencies and initiatives. The National Institutes of Health began addressing minority health issues in 1990, and more recently through the establishment of the

National Center on Minority Health and Health Disparities in 2000. In 2003, the Institute of Medicine released a landmark book, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care**. In 2006, the National Partnership for Action to End Health Disparities was created and charged with creating a national strategy that focused on a “bottom up” approach.⁵ One of the two goals of *Healthy People 2010* was the elimination of health disparities. As previous iterations of the work did, the current *Healthy People 2020* focuses in a primary way on health equity. Finally, The Patient Protection and Affordable Care Act (ACA) of 2010 required the establishment of Offices of Minority Health in six agencies in the Department of Health and Human Services.

Simultaneously with these federal efforts, states have been addressing health disparities *via* the creation of state Offices of Minority Health. State Offices of Minority Health work to improve the health status of minority populations by raising public awareness about health disparities, collecting data, providing information to state policymakers, working with community organizations and other state agencies to address health disparities, providing cultural and linguistic competency training, focusing programming on specific health disparities such as diabetes, and more.

Ohio was the first state to establish an Office of Minority Health in 1987, with other states following their lead over the decades. As shown on the map in Figure 1, there is a fair amount of geographic clustering, but otherwise there is no obvious pattern to the order of adoption. Interestingly, some states with sizeable minority populations such as Louisiana and Mississippi were relatively late adopters (Louisiana in 1999 and Mississippi in 2003). Currently, only four states do not have an OMH devoted to minority health issues (Figure 1).

State Offices of Minority Health activities. State OMHs engage in a broad range of activities aimed at reducing health disparities. Trivedi *et al.* find that while state OMHs vary significantly in terms of state-allocated funding, their scope of activities were stable.⁶ Their findings suggest that in addition to targeted activities aimed at remediating particular health disparities, the state OMHs simultaneously engage in awareness-raising activities that may affect policy decisions that indirectly affect the health of minorities. For example, agencies or organizations seeking support for programs that improve maternal nutrition or provide free or low-cost prenatal care may be more successful in states with Offices of Minority Health that regularly collect data on minority infant mortality rates and report them to elected officials.

In 2010, the Association of State and Territorial Health Officers (ASTHO) conducted a comprehensive survey of state OMHs, covering topics such as organization, activities, funding, partnerships, strategic planning and more.** According to the ASTHO survey results, state Offices of Minority Health are addressing a range of health conditions such as diabetes, cancer, obesity, mental health, premature birth, prenatal care, teen pregnancy prevention, and more simultaneously.

* Smedley BD, Stith AY, Nelson, AR, eds. *Unequal treatment: Confronting racial and ethnic disparities in health care*. Washington, DC: The National Academies Press for the Institute of Medicine, 2003.

**Minority Health Survey, 2010. Arlington, Virginia: Association of State and Territorial Health Officials (ASTHO), 2010. Information available at <http://www.astho.org/Health-Equity/Health-Equity-Minority-Health-Survey/>.

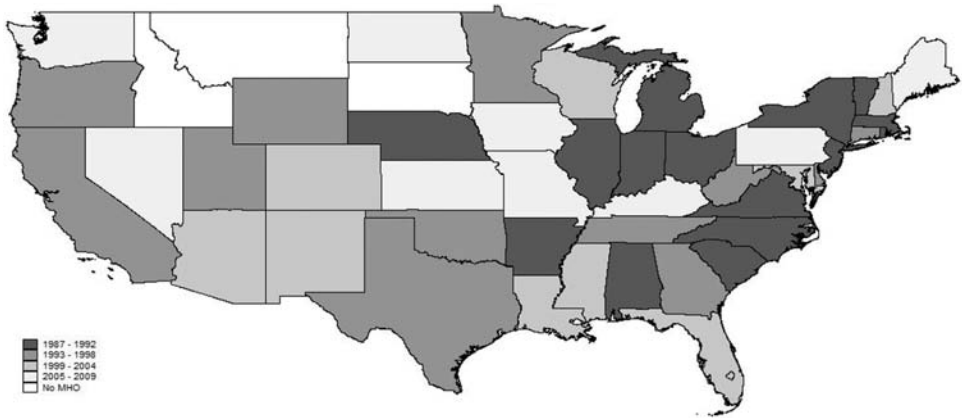


Figure 1. Map of diffusion of state Offices of Minority Health in the United States, 1987–2012.

In addition, the survey found that almost all state OMHs conduct training for state health assessment staff, community members, local health department staff, non-profit organizations, churches, hospitals, and nursing and pharmacy students regarding minority health issues. Providing training to such a wide range of individuals and groups suggests a strategy to address health disparities in multiple venues rather than simply focusing on patient education from physicians. Providing training to faith communities, for example, may increase awareness of the need for extra support for pregnant parishioners to help combat infant mortality risk.

The 2010 ASHTO survey reveals that state OMHs form partnerships with other agencies and organizations to address minority health issues and/or collaborate on activities. Partnerships were reported with local health departments, non-profit organizations, schools and universities, and faith-based organizations. The policies and activities of other state agencies may have an indirect effect on health. For example, state OMHs reported partnering with agencies such as the Transportation Department, the Housing Department, the Labor Department, and the Agriculture Department, though the survey found these collaborations occurred less frequently. The concerted effort of many state Offices of Minority Health to share information and coordinate activities indicates a determination to avoid becoming isolated and instead work across governmental agencies and non-governmental organizations to tackle health disparities.

Finally, the ASHTO survey revealed that state OMHs focus their programming and activities on improving data capacity, training, and education. Many noted they were actively involved in regional research projects, workforce diversity, improving communication regarding health disparities, program evaluation, and more.

Clearly, state OMHs are engaged in a wide range of activities across different governmental and non-governmental agencies and organizations to tackle health disparities. While existing studies and surveys tell us much about state OMH activities and partnerships, we are left wondering how effective these efforts have been in meeting the goal of improving minority health. In this research, I focus on the effect of state

OMHs on one persistent disparity, Black infant mortality rates. It is beyond the scope of this research to collect data on individual activities of each state OMH to determine the specific effect of a specific activity. Indeed, it is doubtful such data exist for all states over the time period I examine. This study posits that state OMH activity, broadly conceived and detailed above, affects Black infant mortality rates. Below, I provide historical information about infant mortality rates and justification for its selection as the dependent variable in this study.

Health disparities and infant mortality rates. One of the most persistent disparities over the decades has been seen in the infant mortality rate, which is measured as the number of infant deaths (prior to age one year) per 1,000 live births. Infant mortality is considered an important indicator of a nation's overall health and well-being due to its association with education, availability and accessibility of health services, and income inequality.^{7,8,9} Among all races and ethnicities, there have been dramatic declines in infant death due to advances in medical care and medicine.¹⁰ For example, in 1935, the infant mortality rate was 81.9 per 1,000 live births for Blacks and 51.9 per 1,000 live births for Whites, a 58% difference. By 2007, the infant mortality rate for both races had plummeted to 13.2 per 1,000 for Blacks and 5.6 per 1,000 for Whites, yet the Black/White ratio increased to 135%, as illustrated in Figure 2.

Nationally, the infant mortality rate in 2007 was 6.8 deaths per 1,000 live births. The Centers for Disease Control and Prevention (CDC) reports the five leading causes of infant death for all races, in order, as congenital malformations, disorders related to short gestation and low birth weight, sudden infant death syndrome, maternal com-

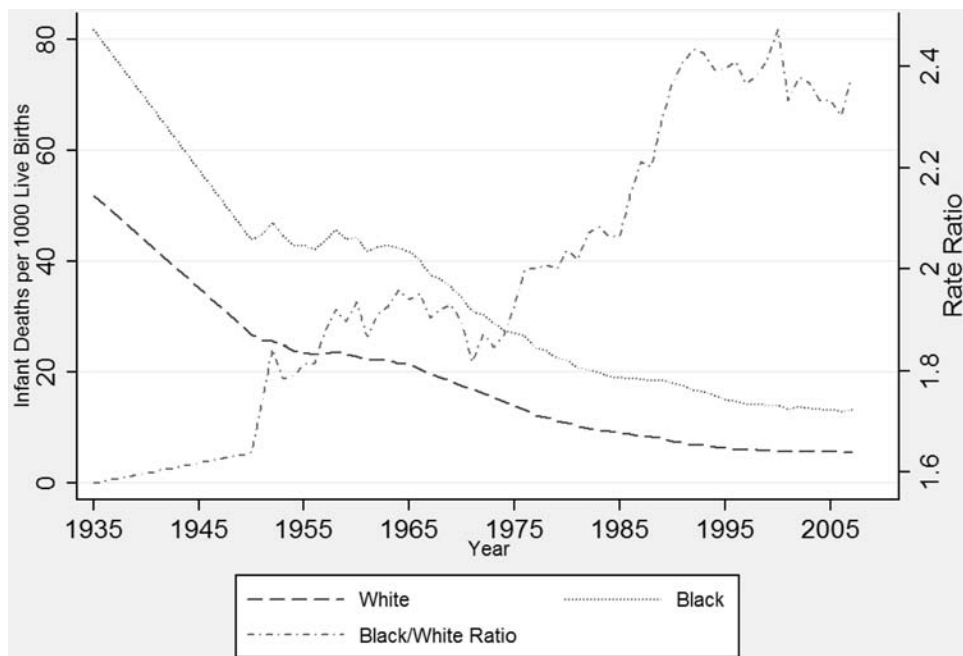


Figure 2. Infant mortality rates over time.

plications of pregnancy, and unintentional injuries. For non-Hispanic Blacks, however, low birth weight was the leading cause of infant death in the United States in 2007. The five leading causes of death accounted for 56% of all infant deaths in 2007.¹¹

Interventions to address infant death risk are generally considered to yield rapidly observable results based on the brief duration of pregnancy and classification of infant death as occurring within one year of birth.⁹ These characteristics make disparities in infant death rate a good dependent variable for assessing the potential impact of state Offices of Minority Health. State OMHs may work to directly educate minorities about the importance of not smoking during pregnancy, eating properly, and reducing stress levels. They may also serve as a bridge between governmental and non-governmental resources and minorities. For example, they may assist pregnant Black women with Medicaid enrollment and utilization of prenatal care.

Methods

Research design and hypotheses. To estimate the impact of state OMHs, I examine the impact of state OMH implementation on three alternative dependent variables: the Black infant mortality rate, the White infant mortality rate, and the Black-White infant mortality rate ratio. Many studies have examined the decline in infant death rates over the decades, as well as the persistent (and increasing) Black/White ratio.^{12,13,14,15,16} This study follows in that tradition of research, examining Black and White infant death rates, as well as the Black/White ratio.

I use state panel data for the period 1980–2007. Coefficient estimates are generated by OLS with panel corrected standard errors in parentheses.¹⁷ As I use state panel data, the model includes fixed effects for states and years. The inclusion of state fixed-effects allows me to control for the full set of state-specific, time-invariant factors that affect infant death rates. This feature of the design also restricts the model to explaining within-state variation in infant death rates (i.e. over time). The inclusion of year fixed-effects controls for the effects of national forces or other trends that are common to all states.¹⁸ Reliable yearly data for Black infant mortality rates are only available for 34 states, so the estimation sample is limited to 918 observations (34 states × 27 years). The model specification takes the form of a segmented regression analysis, which allows the researcher to identify both the immediate impact of an intervention, as well as its effect over time. The statistical software used for the analysis is Stata 12.0 (StataCorp. 2007. *Stata Statistical Software: Release 10*. College Station, TX: StataCorp LP). The model specification takes the following form represented in Equation 1.

$$\begin{aligned} \text{Infant Mortality}_{it} = & a_{it} + b_1 \text{State OMH}_{it} + b_2 \text{Years since State OMH Implementation}_{it} \\ & + S(b_1 X_{it}) + e_{it} \end{aligned} \quad [1]$$

Where:

Infant Mortality is measured alternatively as the Black infant mortality rate (the number of infant deaths, prior to age one year, per 1,000 live births), the White infant mortality rate, and the Black-White infant mortality rate ratio (Black infant mortality rate / White infant mortality rate).

State OMH is a dummy variable taking on a value of 1 in the year of state OMH implementation and each year afterward, and 0 in the years prior to implementation.

Years since State OMH Implementation is a counter variable that takes a value of 0 in all years prior to state OMH implementation, and for years afterward equals the number of years since implementation.

X_i is a series of control variables (detailed below).

a_{it} represents a series of state-specific and year-specific fixed effects.

b_1 represents the immediate change in the infant mortality rate (level) following the implementation of the state OMH.

b_2 represents the change in the infant mortality rate trend (i.e. slope) in the years following the implementation of the state OMH.

Using this specification, I test three primary hypotheses for each version of the dependent variable:

H1. The implementation of state Offices of Minority Health will have a negative effect on Black infant mortality rates and the Black-White ratio (and therefore $b_1 < 0$).

H2. The implementation of state Offices of Minority Health will have no effect on White infant mortality rates (and therefore $b_1 = 0$).

H3. The implementation of state Offices of Minority Health will have a negative effect on the post-implementation trend in Black infant mortality rates and the Black-White ratio (and therefore $b_2 < 0$).

Independent variables. The World Health Organization notes that social policies, politics, and economics shape the social determinants of health, defined as the “circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness.”*** The control variables for this research are thus organized based on those three categories: policy, political, and socioeconomic.

Policy variables. I include three variables reflecting state policy decisions: Medicaid spending, the state imprisonment rate, and the state minimum wage. Medicaid is a federal-state program that provides health care to low-income pregnant women, children, the disabled, and poor elderly individuals. The federal government sets minimal eligibility requirements which states may sometimes exceed. For example, the federal government requires states to provide Medicaid coverage to pregnant women with family income below 133% federal poverty level (FPL), and states have the option to extend Medicaid coverage to pregnant women up to or over 185% FPL. The Medicaid program finances over 40% of births in the United States, provides sixty days of automatic post-partum coverage for the woman, and the newborn is automatically enrolled in Medicaid for one year.

These guidelines for Medicaid coverage for pregnant women and their newborns were not instituted until beginning in the late 1980s. Between 1987 and 1989, a significant expansion of Medicaid coverage for pregnant women and children occurred, spurred

****Social determinants of health, Commission on Social Determinants of Health, 2005–2008, Commission on Social Determinants of Health—final report, Backgrounder 3: Key concepts.* Geneva: World Health Organization. Available at http://www.who.int/social_determinants/thecommission/finalreport/key_concepts/en/.

by reports highlighting the high infant mortality rate in the United States.¹⁹ Medicaid expansion was expected to increase the use of prenatal care leading to reduced low birth weight and premature births, thus reducing the infant mortality rate.¹⁹ The connection between uninsured status and lack of initiation of prenatal care until late in pregnancy (or not at all) is well-documented, but the connection between early prenatal care and improved birth outcomes is mixed with some studies demonstrating positive effects and others no difference.^{20,21,22,23,24,25}

Studies examining the impact of Medicaid expansion report somewhat mixed results. Currie and Gruber examined state infant mortality rates between 1979–1992, finding a significant relationship between Medicaid expansion and a decrease in infant mortality rates.²⁶ Two other studies that focused on individual states, however, did not find significant effects of Medicaid expansion on infant mortality rates.^{27,28} Other studies suggest that increased medical spending is associated with lower infant mortality rates.^{29,30} To examine the effect of Medicaid spending on Black infant mortality rates, I include the variable *Medicaid Spending*, measured as *per capita* state Medicaid expenditures (deflated for state cost of living differences across states and years). I expect that Medicaid spending will have a negative effect on Black infant mortality rates.

State policies such as mandatory sentencing or three strikes laws, for example, have led to increased prison population in many states.³¹ Wildeman finds that the imprisonment rate may positively affect infant mortality rates due to lost household income or state shifts in spending away from welfare to prison costs.³² Others suggest depression and/or other psychosocial stressors are linked to infant mortality, which would likely be a factor if a partner were imprisoned.³³ Based this research, I include the state imprisonment rate as a control variable, reasoning that the disproportionate percentage of Blacks in prison may have a positive effect on Black infant mortality rates. *Imprisonment Rate* is measured as the number of prisoners per 100,000 state population, lagged one year. I expect a positive relationship between *Imprisonment Rate* and *Black Infant Mortality Rate*.

The third policy variable included is *state minimum wage*, measured in dollars. Increased minimum wage levels may provide more income stability, but may also reduce the demand for low-skilled workers.^{34,35} The outcome relative to Black infant mortality rates may be positive or negative. Higher paid low-skill women may earn too much to qualify for Medicaid, but not enough to afford employer-offered health insurance.

Political variables. Elected officials make decisions critical to the health of the citizenry such as how much money to allocate to health departments, support for education, environmental regulations, and many more. Liberal and Black elected officials have been shown in numerous studies to advocate increased government spending and programs to benefit minorities and the poor.^{36,37,38,39} I expect, therefore, that state government liberalism, as well as the percentage of Black legislators in the state legislature, will have a negative effect on Black infant mortality rates. *Government Ideology* data are from the Nominate 1960–2004 Government Ideology Series, with higher values indicating more liberal ideology.³⁸ The variable, *Black Legislators*, is measured as the average percentage of Black legislators across chambers, lagged one year.

Socioeconomic variables. I examine four indicators of state socioeconomic conditions. The economic status of a state affects governments' ability to provide services

that directly and indirectly affect health. In addition, poor economic conditions affect choices individuals make, such as housing and nutrition, that impact their health status. The state unemployment rate and the percentage of the population living below the federal poverty line are expected to have a positive effect on Black infant mortality rates, whereas *per capita* income is expected to have a negative effect.

Finally, individuals with higher levels of education have, on average, better health outcomes than those with lower levels of education. However, prior studies of infant mortality rates have found an “education paradox” in the United States. That is, White infant mortality rates are negatively associated with college education attainment whereas Black infant mortality rates are not similarly affected (due to low birth weight).^{40,23} Possible explanations for this counterintuitive finding include speculation that higher education does not confer the same economic and/or social benefits on Blacks as it does on Whites.⁴⁰ Schoendorf *et al.* also suggest that Blacks may have poorer pre-pregnancy health, higher levels of stress, or health care providers who do not adequately address the needs of college-educated Black women.²³ Finally, Din Dzietham *et al.* note that Black college-educated women may have higher levels of daily interactions with Whites in the workplace and/or in social settings than Black women with lower levels of education.⁴⁰ Black college-educated women may therefore be more likely to encounter racism in their daily lives, thus subjecting them to higher levels of stress resulting in premature birth and low birth weight babies. Thus, I expect an increase in *Black Female Ed* will be associated with an increase in the *Black/White Infant Mortality Rate Ratio*.

Results

The results for the estimation of equation 1 are presented in Table 1 and indicate strong support for H1 and H2. State Offices of Minority Health are associated with an immediate and statistically significant decrease (−.75) in Black infant mortality rates, holding other variables constant ($p \leq .02$). State OMHs are also associated with a narrowing of the Black/White infant mortality rate ratio (−.13, $p \leq .002$). State OMHs do not have a statistically significant effect on White infant mortality rates, as posited in H2. State Offices of Minority Health appear to have no significant cumulative effect on the trend in Black infant mortality rates (or ratios) after implementation, in contrast to the expectations summarized in H3. The results indicate an immediate and enduring effect decreasing Black infant mortality rates, but not a cumulative or snowballing effect.

As noted above, a variety of control variables representing state policies, politics, and socioeconomic conditions were used in the analysis to better estimate the relationship between state Offices of Minority Health and Black infant mortality rates. While the primary focus of this research is the effect of state Offices of Minority Health on infant death rates, the analysis revealed interesting relationships between some of the control variables and infant mortality rates as well. These results, though not the primary focus of the paper, provide additional information for policymakers who are interested in reducing infant mortality rates, particularly Black infant mortality rates.

Of all the control variables examined, *Medicaid Spending* appears to have the largest effect on Black infant mortality rates, as shown in Table 1. An increase of \$1,000 *per*

Table 1.

**THE EFFECT OF STATE OFFICES OF MINORITY HEALTH ON
BLACK INFANT MORTALITY RATES AND BLACK/WHITE
INFANT MORTALITY RATE RATIOS, 1980–2007^A**

	<i>Model 1</i> Black Infant Mortality Rate	<i>Model 2</i> White Infant Mortality Rate	<i>Model 3</i> Black/White Infant Mortality Rate Ratio
State Office of Minority Health	-.75** (.32)	.10 (.06)	-.13*** (.04)
State Office of Minority Health, Years in Existence	-.04 (.04)	.005 (.007)	-.006 (.005)
Unemployment	-.25*** (.09)	-.06*** (.02)	-.01 (.01)
State Minimum Wage	-.36* (.21)	-.02 (.05)	-.03 (.03)
Black Female Ed	.34*** (.07)	—	.02** (.01)
Medicaid Spending	-3.3*** (.95)	.30 (.22)	-.62*** (.13)
Government Ideology	-.02** (.01)	-.004** (.002)	-.0008 (.001)
<i>Per capita</i> Income	-.09 (.09)	-.03 (.02)	.02 (.01)
Imprisonment Rate	.004** (.002)	.001*** (.004)	.0002 (.0003)
Black Poverty	.03 (.07)	—	.006 (.009)
Black Legislators	-.01 (.04)	.01 (.01)	-.006 (.006)
White Female Ed	—	.01 (.01)	-.001 (.009)
White Poverty	—	.01 (.04)	.004 (.02)
Observations	918	918	918
R ²	.89	.97	.85
Wald chi ²	38835***	278108***	106995***

*p < .10

**p < .05

***p < .01

^ACell entries are unstandardized coefficients. Panel corrected standard errors in parentheses. Models include state and year fixed effects.

capita Medicaid expenditures reduces Black infant mortality by 3.3 infant deaths per 1,000 live births.

The other policy variables included in the model are statistically significant and in the expected direction. *Imprisonment Rate* has a statistically significant positive effect on both Black and White infant mortality rates, all else equal, though the effect on *Black Infant Mortality Rate* is larger. An increase of 1,000 prisoners per 100,000 state population is associated with an increase of 4 in the Black infant mortality rate. The effect of an equivalent increase in the state imprisonment rate on White infant mortality is 1 infant death per 1,000 live births.

State Minimum Wage also had a significant effect on the Black infant mortality rate (but not White infant deaths or the ratio). Based on the results in Table 1, an increase in the state minimum wage of one dollar results in a .36 decrease in the Black infant death rate ($p \leq .09$).

Black Female Education is positively associated with Black infant mortality rates as well as the infant mortality rate ratio. There is no statistically significant effect, however for *White Female Education* on *White Infant Mortality Rate* or the rate ratio. (See below for discussion of this point and its relationship to what has been found in prior research.)

As expected, as *State Government Ideology* becomes more liberal, the Black and White infant death rate declines, *ceteris paribus*. Increases in the percentage of Black legislators, however, did not significantly affect the Black or White infant death rate, nor did either variable have a significant effect on the Black/White infant mortality rate ratio.

Several other economic variables were included in the analysis but only one of these variables—the state unemployment rate—had a significant effect on both Black and White infant death rates. However, the direction of the effect was unexpected. As the unemployment rate increases, the infant mortality rate decreases. None of the economic variables had an effect on the Black/White infant mortality rate ratio.

The conditional effect of state minority health offices. For both the Black infant mortality rate and the Black/White infant mortality disparity, state OMHs have a significant immediate effect, but do not appear to affect the trend over time. Perhaps the trend effect varies depending on certain conditions in the state. Given the strong association between Medicaid spending and both the Black infant mortality rate and the Black/White disparity, I examine how *Medicaid Spending* moderates the effect of state OMHs on Black infant death and Black/White infant death disparity.

Table 2 presents the results of the model with the addition of the two interaction terms, *State Office of Minority Health*Medicaid Spending*, and *State Office of Minority Health Years in Existence*Medicaid Spending*. Based on the coefficient estimates for these interaction terms, the results suggest that *Medicaid Spending* moderates the effect of *State Office of Minority Health Years in Existence*. Specifically, the results suggest that when Medicaid spending is low, the implementation of a state OMH causes the slope of the trend in Black infant mortality to decrease each year after implementation. As Medicaid spending increases, however, the effect diminishes. In contrast to this result, the results in Table 2 suggest that this conditional effect is not found for the immediate effect of state OMHs. In other words, the immediate effect reported in Table 1 does not vary in magnitude based on the level of Medicaid spending. In addition, the results

Table 2.

**THE EFFECT OF STATE OFFICES OF MINORITY HEALTH ON
BLACK INFANT MORTALITY RATES AND BLACK/WHITE
INFANT MORTALITY RATE RATIOS, AS MODERATED BY
MEDICAID SPENDING, 1980–2007**

	<i>Model 1</i> Black Infant Mortality Rate	<i>Model 2</i> White Infant Mortality Rate	<i>Model 3</i> Black/White Infant Mortality Rate Ratio
State Office of Minority Health	-.78*** (.30) ^b	.10 (.07) ^b	-.15*** (.04) ^b
State Office of Minority Health, Years in Existence	-.15*** (.05) ^b	.004 (.010) ^b	-.02*** (.006) ^b
Unemployment	-.28*** (.09)	-.06*** (.02)	-.02 (.01)
State Minimum Wage	-.40* (.21)	-.02 (.05)	-.03 (.03)
Black Female Ed	.37*** (.07)	—	.03** (.01)
Medicaid Spending	-5.3*** (1.2)	.24 (.29)	-.87*** (.19)
Government Ideology	-.02** (.01)	-.004** (.002)	-.001 (.001)
<i>Per capita</i> Income	-.10 (.09)	-.03* (.02)	.02 (.01)
Imprisonment Rate	.005** (.002)	.002*** (.0004)	.0003 (.0003)
Black Poverty	.06 (.07)	—	.01 (.01)
Black Legislators	-.01 (.04)	.01 (.01)	-.01 (.01)
White Female Ed	—	.01 (.01)	.001 (.01)
White Poverty	—	.007 (.04)	.01 (.02)
Office of Minority Health (OMH) Medicaid Spending	1.2 (.19)	.04 (.20)	.17 (.15)
OMH Years in Existence Medicaid Spending	.23** (.10)	.0015 (.02)	.019 (.014)
Observations	918	918	918
R ²	.89	.96	.86
Wald chi ²	48360***	291185***	102215.80***

*p < .10

**p < .05

***p < .01

^aCell entries are unstandardized coefficients. Panel corrected standard errors in parentheses. Models include state and year fixed effects.

^bUnstandardized coefficients for State Office of Minority Health and State Office of Minority Health, Years in Existence reflect effect when Medicaid Spending is set at the mean level of spending for the sample.

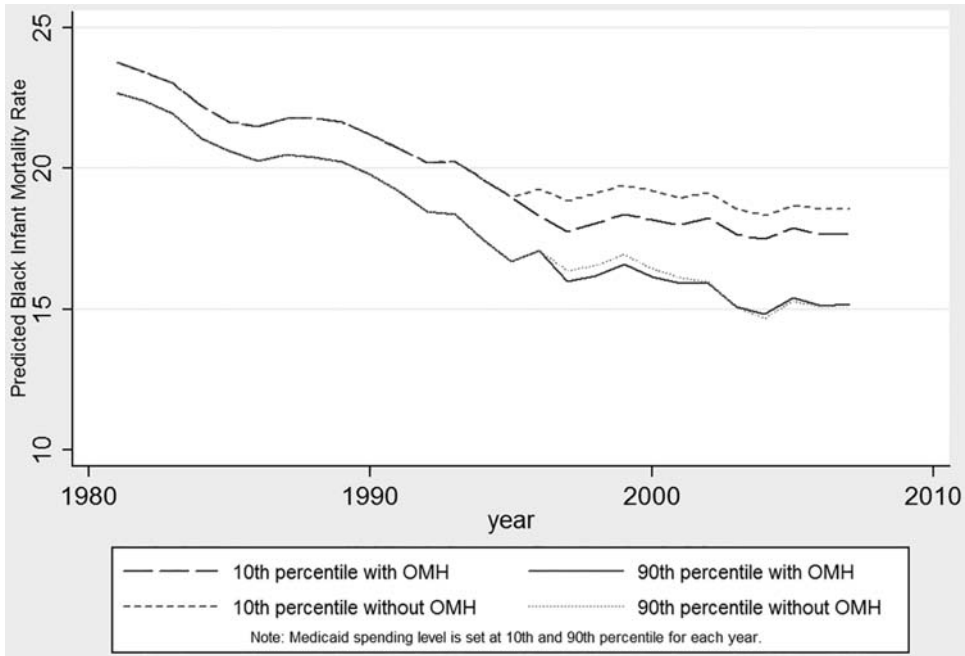


Figure 3. Predicted effect of state Office of Minority Health on Black infant mortality rate, by Medicaid spending level.

show no statistically significant effect of the interaction terms on the Black/White infant mortality rate ratio.

To provide a clearer interpretation of these results, I present predicted Black infant mortality rates in Figure 3 for two hypothetical states, based on the results presented in Table 2. For state A, Medicaid spending is set at the 90th percentile for each year of the analysis. I calculate two sets of values for state A. One set of predicted values assumes that state A adopted a state OMH in 1997 (the median year of adoption) while the other set of predicted values assumes that state A never adopted one. For state B, the Medicaid spending level is set at the 10th percentile. As for state A, I calculate two sets of predicted values. One series assumes that state B adopted a state OMH in 1997 while other series assumes that state B never adopted one. In calculating these predicted values, all other variable values are set at the yearly mean (calculated across the entire sample).

Figure 3 illustrates three points. First, this simulation clearly illustrates the effect of Medicaid spending on Black infant mortality. Throughout the entire period, the high-spending state is predicted to have significantly lower rates of Black infant mortality than the low-spending state. Second, among the low-spending states the predicted Black infant mortality rate displays a significant decrease with the adoption of a state OMH. In contrast, the adoption of a state OMH in the high-spending state had virtually no effect. Finally, Figure 3 reveals a third conclusion that is not evident from the results in Table 2. As can be seen, beginning in the late 1990s, the gap in the Black infant

mortality rate between the high-spending and low-spending states begins to widen. This gap is primarily due to the significant growth in inequality across states in Medicaid spending. In other words, the spending gap between the 10th and 90th percentile states has significantly increased—in real terms—since the early 1990s.

Discussion

As federal, state, and local governments continue their decades-long focus on eliminating health disparities, state Offices of Minority Health should be considered key ingredients of success. This research presents strong evidence that state OMHs are statistically significantly associated with declines in Black infant mortality rates and narrow the Black/White infant mortality rate ratio.

In addition, the findings from this research suggest that increased investment in Medicaid may be a vehicle to reduce Black infant death rates and narrow the Black/White infant mortality rate ratio, in contrast to earlier studies of Medicaid expansion that largely found a weak effect of expansion on infant mortality rates (see Howell for a review).¹⁹ The longer time frame of this study compared with early studies of Medicaid expansion may partly explain the difference in findings. Currie and Gruber note that as many as half of the newly eligible and most vulnerable pregnant women did not take up Medicaid coverage within the first years of expansion and therefore this may have delayed its impact through access to prenatal care.²⁶

Policies seemingly unrelated to maternal or child health matter, too. In support of Wildeman's work, I find that as the imprisonment rate increases, Black and White infant death rates increase. Wildeman suggests imprisonment directly affects the socioeconomic status of a household, potentially contributing to increased infant death risk. He suggests that expanded state spending on incarceration may result in contracted welfare spending, leading to fewer financial and support services for partners and children left behind.³² Given the disproportionate number of Black men and women serving prison time compared with their White counterparts, it is unsurprising the effect of imprisonment on Black infant mortality rates is larger than on White infant mortality rates.

In this study, I found a statistically significant association between Black female education attainment and Black infant mortality rate, but no significant association between White education attainment and White infant mortality rate. Other scholars have found that completing 12 years of education reduces both Black and White infant mortality rates, but higher levels of education are only associated with greater decreases in White infant mortality rates.^{23,40} The finding here, that increases in the percentage of Black women with a high school diploma or higher actually has a statistically significant association with increased Black infant mortality is troubling and warrants further investigation in future studies.

The counter-intuitive finding regarding state unemployment rates may be due to both government-funded as well as non-profit social safety net programs increasing their services during economic downturns, thus resulting in greater support for low-income pregnant women and new mothers than would otherwise be available.

Political activists may note that states with governments scoring higher on liberal

ideology experience lower Black and White infant death rates than those with conservative ideology. Given ideological differences on policies such as the social safety net and crime and punishment, this finding is not surprising.^{32,37} Liberal state governments may expand welfare benefits or in times of fiscal stress, minimize cuts in resources that benefit low-income populations, particularly pregnant women and their newborns.

While the findings for many of the control variables will likely be of interest to different audiences, the key findings reported in this research are the effect of state Offices of Minority Health and Medicaid spending on Black infant death rates. Investing resources in state OMHs and Medicaid will help close the gap in at least one long-standing health disparity, Black infant mortality rates. State OMHs appear to be particularly important in states with low Medicaid spending levels. While the results presented in Figure 3 clearly indicate that higher Medicaid spending will produce better outcomes, states that are unable to increase spending may consider bolstering resources in their Offices of Minority Health.

Adverse infant outcomes are associated with lack of insurance, even when controlling for prenatal care utilization,^{41,22} suggesting that insurance coverage over time is important rather than initiation of coverage at onset of an event (e.g., pregnancy). Based on the recent Supreme Court decision regarding the Affordable Care Act of 2010, many states have been deeply embroiled in debates about whether or not to participate in Medicaid expansion. The findings from this study indicate that states that participate in Medicaid expansion will likely have larger reductions in Black infant mortality rates compared to states that decline Medicaid expansion. However, the findings from the second analysis suggest that states that have lower levels of spending on Medicaid, and/or decline Medicaid expansion, would be well-served to invest additional resources in their state OMHs in order to continue chipping away at Black infant mortality rates.

Of course, expanding or increasing spending on Medicaid alone will not eradicate health disparities. As noted by others, “non-financial barriers” must be addressed as well, such as a lack of providers willing to accept Medicaid patients^{42,27} and depression or other psychosocial stressors.³³ It is beyond the scope of this paper to specify the specific mechanism(s) by which state Offices of Minority Health are associated with declines in Black infant death, but they likely provide services or assistance to address non-financial barriers that contribute to poor minority health outcomes. The training programs they provide for both governmental and non-governmental organizations may also create a radiating effect across other agencies and organizations in terms of greater awareness of minority health disparities. Future studies may assess if state OMHs work as bridges between governmental and non-governmental services and minority communities, and/or if they effect change through direct programming or indirectly through work with other agencies *via* awareness-raising.

Limitations. I fill an important gap in the literature by assessing the effect of state Offices of Minority Health on Black infant mortality rates. Though state OMHs have been in existence in some states for decades, previous studies focused on their activities, organizational characteristics, and funding rather than formally assessing the impact of the state OMHs on population health outcome variables. This research provides the first systematic evaluation of the impact of state Office of Minority Health on one of the

most important and widely studied indicators of population health—infant mortality rates. There are, however, three limitations to this study to consider.

First, I do not fully capture the potential and important effect of racism on Black infant death rates. An individual-level study suggests that the accumulation of racial experiences over a long period of time may affect pregnancy outcomes.⁴³ While I acknowledge the role of racism and psychosocial stressors in general as potential contributing factors to infant mortality, I do not directly measure racism. Racial discrimination is much more difficult to operationalize in a state-level study such as this one, but future studies may include measures of neighborhood or school segregation as a proxy variable.

Second, this study focuses on Black infant death rates relative to White, excluding other racial and ethnic minority groups. This study, probably like many on this topic, focuses on the Black/White disparity as it has been historically highlighted in research and the popular media. As Latinos become a larger proportion of the United States population, however, it will be increasingly important to expand examinations such as this one to improve our understanding of Latino infant mortality rates.

Third, I do not measure the mechanism by which state Offices of Minority Health affect Black infant death rates. I suggest different activities state OMHs may engage in (e.g., health fairs to educate pregnant women about nutrition). I also speculate that state OMHs may serve as a bridge between governmental and/or non-profit organizations and minority women, thus connecting them with beneficial services (e.g., assisting Black women with Medicaid enrollment).

Future studies of state Offices of Minority Health should take these three limitations into consideration.

Appendix A

DATA APPENDIX

Variables	Measurement	Source
State Office of Minority Health	1 = year state established Office of Minority Health.	National Partnership for Action to end Health Disparities
Unemployment	Percentage of unemployed.	Bureau of Labor Statistics, Local Area Unemployment Statistics (LAUS) program, accessed <i>via</i> the University of Kentucky Center for Poverty Research website.
State Minimum Wage	State minimum wage in dollars.	U.S. Employment Standards Administration, U.S. Department of Labor, accessed <i>via</i> the University of Kentucky Center for Poverty Research website.
Black Female Education	Percent of non-Hispanic Black females 25 years and over with a high school diploma or higher. Data for 1980, 1990 and 2000 with intervening years interpolated. Value for 2007 estimated using 5-year average from 2005–2009, with values for 2000–2007 interpolated.	U.S. Census and Current Population Survey
White Female Education	Percent of non-Hispanic White females 25 years and over with a high school diploma or higher. Data for 1980, 1990 and 2000 with intervening years interpolated. Value for 2007 estimated using 5-year average from 2005–2009, with values for 2000–2007 interpolated.	U.S. Census and Current Population Survey
Medicaid Spending	<i>Per capita</i> state Medicaid expenditures deflated for state cost of living differences across states and years, in thousands.	Centers for Medicare & Medicaid Services. Deflated using the updated state price deflator developed by Berry, Fording and Hanson (2000). Berry, William D., Richard C. Fording and Russell L. Hanson. 2000. "An Annual Cost of Living Index for the American States, 1960–95." <i>Journal of Politics</i> 62(2): 550–567.

(continued on p. 1999)

Appendix A. (continued)

Variables	Measurement	Source
Government Ideology	Nominate 1960–2004 Government Ideology Series. Higher values indicate more liberal ideology.	Berry, William D., Richard C. Fording, Evan J. Ringquist, Russell L. Hanson and Carl Klarner: 2010. Measuring Citizen and Government Ideology in the American States: A Re-appraisal. <i>State Politics and Policy Quarterly</i> 10(2): 117–135.
<i>Per capita</i> Income	State <i>per capita</i> income in 2007 dollars (adjusted for state cost of living using the state price deflator developed by Berry, Fording and Hanson, 2000).	U.S. Department of Commerce, Bureau of Economic Analysis. Downloaded from University of Kentucky Center for Poverty Research. "State-Level Data of Economic, Political, and Transfer-Program Information for 1980–2010." (www.ukcpr.org)
Imprisonment Rate	The number of prisoners per 100,000 state population, lagged one year.	Bureau of Justice Statistics, Correctional Populations in the United States (various years).
Black Poverty	Percentage of Blacks in poverty, lagged one year.	U.S. Census Bureau, Decennial Census (intervening years estimated by linear interpolation). Yearly estimates available from the Current Population Survey Table Creator beginning with 2003 (http://www.census.gov/cps/data/cpstablecreator.html)
White Poverty	Percentage of Whites in poverty, lagged one year.	U.S. Census Bureau, Decennial Census (intervening years estimated by linear interpolation). Yearly estimates available from the Current Population Survey Table Creator beginning with 2003 (http://www.census.gov/cps/data/cpstablecreator.html)
Black Legislators	Average percentage of Black legislators across chambers, lagged one year.	Data for 1980–2000 were obtained from the Joint Center for Political and Economic Studies (www.jointcenter.org). Data for 2000–2007 were obtained from the National Conference of State Legislators (www.ncsl.org).
Black Infant Mortality Rate	Black infant deaths under one year of age and per 1,000 live births.	Centers for Disease Control and Prevention, Vital Statistics of the United States.
Black/White Infant Mortality Rate Ratio	Black infant death rate/White infant death rate.	Calculated by author.

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