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IMPOSING POLICY ON RELUCTANT ACTORS: THE HOSPITAL DESEGREGATION CAMPAIGN AND BLACK POSTNEONATAL MORTALITY IN THE DEEP SOUTH

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Imposing Policy on Reluctant Actors: The Hospital Desegregation Campaign and Black Postneonatal Mortality in the Deep South

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ABSTRACT

In 1966, Southern hospitals were barred from participating in Medicare unless they discontinued their longstanding practice of racial segregation. Using data from five Deep South states and exploiting county-level variation in Medicare certification dates, we find that gaining access to an ostensibly integrated hospital had no effect on Black postneonatal mortality. Similarly, there is little evidence that the campaign contributed to the trend towards in-hospital births among Southern Black mothers. These results are consistent with descriptions of the hospital desegregation campaign as producing only cosmetic changes and illustrate the limits of anti-discrimination policies imposed upon reluctant actors.

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Of all the forms of inequality, injustice in health care is the most shocking and inhumane.

--Martin Luther King Jr.

1. INTRODUCTION

In the Jim Crow Era, Southern hospitals were racially segregated. Hospitals that focused on providing care to Black patients (i.e., "Black hospitals") were, with a few exceptions, understaffed and lacked the latest medical technology (Thomas 2006, 2011; McBride 2018). White-run hospitals could be "biracial" but Black patients were physically separated from their White counterparts and did not receive equal care (Reynolds 2004; Thomas 2006). Eradicating this entrenched system of racial discrimination and exclusion was a key objective of the American Civil Rights Movement (Washington et al. 2009).

Under political and legal pressure, a handful of hospitals in the South desegregated between 1962 and 1965 (Brown-Nagin 2011, p. 207; Smith 2016). Most, however, remained racially segregated until 1966, when the Johnson administration threatened to withhold Medicare funding from hospitals not in compliance with Title VI of the Civil Rights Act. The newly created Office of Equal Health Opportunity (OEHO) was tasked with determining whether hospitals were in Title VI compliance. Beginning in April of 1966, OEHO investigators, working closely with civil rights activists, visited hospitals across the country with the goal of identifying, and correcting, discriminatory practices (Nash 1968; Reynolds 1997). Six months later, more than 7,000 hospitals had been certified by the OEHO as eligible to receive Medicare funds; 214 Southern hospitals opted to remain racially segregated, forgoing all federal funding (Nash 1968; Reynolds 1997).

Although the federal effort to desegregate Southern hospitals has been described as a "powerful force for equal treatment" (Smith 2016, p. 181) and "among the most important Civil Rights achievements in U.S. history" (Sternberg 2015, para. 2), there is little quasi-experimental evidence that it tangibly improved the health of Southern Blacks. In this study, we estimate the

effect of the hospital desegregation campaign on mortality among Black one- through 11-month-old infants (i.e., Black postneonatal mortality) and its effect on the decision of Black mothers to give birth at home or in the hospital. We estimate the effect of the campaign on Black postneonatal mortality because, by the 1960s, therapies administered almost exclusively in hospitals (such as intravenous infusion of antibiotics and fluids for volume replacement) were successfully being used to treat gastroenteritis and pneumonia (Collins and Thomasson 2004; Almond et al. 2006; Nalin 2022). Gastroenteritis and pneumonia were among the leading causes of Black postneonatal mortality in the early 1960s, before Southern hospitals were integrated (U.S. Department of Health, Education, and Welfare 1963). Mechanical ventilation for neonates and medications used to delay preterm delivery were not widely available until the 1970s and 1980s (Cutler and Meara 2000).

Using detailed county-level data, much of it newly transcribed, from five states in which support for segregation was especially staunch (Alabama, Georgia, Louisiana, Mississippi, and South Carolina), we find no evidence that gaining access to a Medicare-eligible hospital affected Black postneonatal mortality. Our estimates are precise, indicating that we are leveraging sufficient cross-county variation in Medicare certification dates to distinguish between the effects of having access to an ostensibly desegregated hospital and secular trends. Similarly, we find no evidence that the hospital desegregation campaign contributed to the trend towards in-hospital births among Southern Black mothers originally documented by Chay and Greenstone (2000).

The litmus test for Medicare eligibility was race-blind assignment. OEHO investigators required that patients be assigned to physicians and hospital beds without regard to race, color, or national origin (Smith 2016, pp. 110-111). OEHO investigators could not, and were not asked to, address fundamental structural barriers that prevented minority patients from accessing high-quality healthcare (Smith 1998; Sarrazin et al. 2009; Chandra et al. 2017). Nor could they expunge difficult-to-observe racial attitudes and modes of communication that, to this day, shape the delivery of

healthcare in the United States (Cooper et al. 2003; Alsan et al. 2019; Greenwood et al. 2020; Hill et al. 2020).

In 1972, the Government Accounting Office (GAO) released an assessment of hospital Title VI compliance. The report concluded that the hospital desegregation campaign had virtually eliminated "overt" racial discrimination, while more "subtle" forms of racial discrimination persisted (Comptroller General 1972, p. 10). Our results suggest that correcting overtly discriminatory practices on the part of Southern hospitals was, at least in the short term, simply not enough to ensure that Black infants experienced the same health outcomes as their White counterparts. Although most Southern hospitals adhered to Title VI guidelines (Comptroller General 1972; Smith 2005, 2016), Black patients were often understandably reluctant to seek care from institutions that had, for generations, segregated or excluded them altogether (Bledsoe 1968; Comptroller General 1972; Quadagno 2000). Had the goals and values that motivated the campaign been more widely shared by Southern hospital administrators and physicians, its short-run effects on Black postneonatal mortality and Black mothers' choice of where to give birth may have been different.

The remainder of the paper is organized as follows. In Section 2, we provide historical context, discuss previous studies, and describe some of the challenges faced by Blacks today when trying to gain access to high-quality hospital care. In addition, we show that the Black-White postneonatal mortality gap declined faster in the Deep South than in other regions of the country, and we discuss potential drivers of this phenomenon. In Section 3, we report estimates of the effect of the hospital desegregation campaign on Black postneonatal mortality in the Deep South, and document why our estimates are so different from those of Almond et al. (2006), who found that the campaign reduced Black postneonatal mortality in Mississippi. In Section 4, we estimate the effect of the campaign on the choice of where to give birth. Section 5 concludes.

2. BACKGROUND

2.1. Hospital desegregation

Information on the extent of segregation in Southern hospitals is available from a 1955 survey coordinated by Cornely (1956, 1957). Sixty-seven urban general hospitals in seven Southern states were assessed by local affiliates of the National Urban League. Only four of the 67 hospitals admitted Black patients without restrictions. The remaining hospitals either refused to admit Black patients, had segregated wards, or had other "modifications of established segregated or discriminatory practices" (Cornely 1956, p. 1079).[1]

When the Civil Rights Act passed in 1964, nobody was certain how it would impact the health care system. The amendments to the Social Security Act that would eventually establish the Medicare and Medicaid programs had yet to be taken up by Congress, and most observers believed that the process of hospital desegregation would proceed slowly, dependent upon private initiative, voluntary compliance, and lawsuits brought by the victims of discrimination (Kenny 1965; Smith 2016, pp. 84-86; Largent 2018).[2]

Initially, the Johnson administration focused on encouraging hospitals to voluntarily comply with Title VI of the Civil Rights Act, which banned the allocation of federal funds to entities that

[1] See Cornely (1956, pp. 1078-1079) and Cornely (1957, pp. 8-9) for more details on how the survey was conducted and its results. Seventy-two hospitals in 3 border states (Maryland, Missouri, and Oklahoma) were also included in the study. Ten of these 72 hospitals admitted Black patients without restrictions (Cornely 1957, p. 9). Thomas (2006) describes the availability of North Carolina hospital beds in 1960: there were 919 hospital beds in Black hospitals and 2,905 beds in White-only hospitals; in "biracial hospitals," there were 1,758 beds reserved for Black patients and 8,822 beds reserved for White patients. According to Thomas (2006, p. 854), "[b]y 1960 the vast majority of both black and white patients were being treated in biracial hospitals, whereas nearly half of white hospitals had either opened their doors to black patients or shut down since the end of World War II."

[2] Joseph Califano Jr., who served as special assistant to President Johnson, was interviewed by Smith (2016, p. 82). According to Califano,

> No one understood Johnson's plan. The Civil Rights Act was passed in 1964 before the enactment of all the domestic programs the following year. No one anticipated the massive flow of federal funding that would begin in 1965. If the civil rights bill had been pushed after all of that subsequent legislation, it would have never passed.

discriminated on the basis of race (Largent 2018). This strategy, however, was only partially successful. In July-October of 1965, the U.S. Civil Rights Commission surveyed 39 hospitals in Southern and border states with the goal of determining whether they were in compliance. The Commission found that two hospitals, both of which were located in Maryland, had "desegregated substantially" before the passage of the Civil Rights Act; 11 of the 39 hospitals had made "significant changes in their discriminatory patterns of patient assignments, staff assignments, and access to public facilities" since its passage, while the other 26 still engaged in discriminatory practices (U.S. Civil Rights Commission 1966, p. 6). For instance,

> At the time of the Commission investigation, James Walker Memorial Hospital in Wilmington, North Carolina, which had been involved in a decade of litigation over its segregated facilities, continued to maintain a building for Negro patients at the rear of the main facility. Negro patients were wheeled from the separate structure into the main facility for surgery and other services. Some Negro patients were housed in segregated wards in the main building. The hospital also made staff assignments according to race although the administrator said some Negro nurses had been assigned to care for white patients since the passage of the Civil Rights Act (U.S. Civil Rights Commission 1966, p. 8).[3]

The Commission concluded that the pace of hospital desegregation was largely determined by local factors (e.g., the hospital "administrator or board") as opposed to efforts on the part of the Public Health Service (PHS), which was, in theory, responsible for ensuring Title VI compliance (U.S. Civil Rights Commission 1966, p. 14).[4]

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[3] To take another example of discriminatory practices documented by the Commission, the

> Macon Hospital in Georgia had made only minimal changes to comply with Title VI provisions. After passage of the Civil Rights Act, the hospital converted its formerly all-Negro building into a facility for welfare patients only. Negros account for 60 to 70 percent of the welfare patient load. No Negro and white patient occupied the same room or ward in this building at the time of the Commission staff visit (U. S. Civil Rights Commission 1966, pp. 8-9).

[4] As late as April of 1966, the OEHO estimated that only 25 percent of hospitals in the South (and only 11 percent of hospital beds) were in compliance with Title VI (Reynolds 1997).

Under increasing pressure from civil rights groups, a profound shift in the federal government's strategy occurred in the beginning of 1966: hospitals that wanted to participate in the soon-to-be launched Medicare program would have to be certified as Title VI compliant and the OEHO (which was created in February of 1966 and was under the auspices of the PHS) would be in charge of the certification process. The OEHO quickly promulgated a detailed set of guidelines for participating hospitals. The litmus test of Title VI compliance was race-blind assignment: the new OEHO guidelines stipulated that patients were to be assigned to hospital rooms, wards, and buildings "without regard to race, color, or national origin"; likewise, medical staff were to be matched with patients "without regard to race, color, or national origin" (Smith 2016, pp. 110-111).[5]

The OEHO trained hundreds of investigators to conduct on-site inspections (Griffin 1966; Smith 2016). Working closely with local civil rights activists and Black hospital workers, they identified, and tried to correct, discriminatory practices. Although there are accounts of medical staff and administrators adopting the Title VI guidelines with little fanfare (Nash 1968; Brown-Nagin 2011; Smith 2005, 2016, pp. 120-128), the demands of the OEHO investigators were occasionally met with fierce resistance (Smith 2005, 2016, pp. 120-128). In fact, 214 Southern hospitals decided that they would forgo federal funding rather than integrate their facilities (Nash 1968; Reynolds 1997).

By November of 1966, the OEHO had certified more than 7,000 hospitals as Medicare-eligible (Nash 1968; Reynolds 1997).[6] A few months later, the OEHO was dismantled and enforcement of the Title VI guidelines fell to the Office of Civil Rights (OCR). Under the OCR, enforcement was not nearly as strict as it had been under the OEHO (U.S. House of

[5] Hospitals were also required to notify employees and persons previously excluded from services that they were in compliance with the Civil Rights Act (Reynolds 2004).

[6] For more information on the history of hospital desegregation and the efforts of the OEHO, see Nash (1968), Reynolds (1997, 2004) and Smith (2016).

Representatives 1973; Quadagno 2000). The OCR relied heavily on complaints of discrimination made by Medicare and Medicaid beneficiaries to identify non-compliant hospitals; on-site reviews were rare and there is anecdotal evidence of ostensibly desegregated hospitals having made only cosmetic changes, blatantly flouting Title VI guidelines (U.S. House of Representatives 1973; Quadagno 2000; Smith 2005).[7]

In July of 1972, the GAO released an assessment of hospital Title VI compliance. Focusing on four metropolitan areas (Atlanta, Birmingham, Detroit, and Los Angeles), it described the federal hospital desegregation campaign as having all but eliminated "overt" discrimination (Comptroller General 1972). GAO investigators did, however, observe that a "disproportionately large share of minority patients received their healthcare at government-owned hospitals" and that private hospitals routinely denied staff privileges to Black physicians (Comptroller General 1972, p. 10). The practice of denying privileges to Black physicians effectively barred their patients, who were themselves predominantly Black, from being admitted to private hospitals.[8] According to GAO investigators, public hospitals "attracted" minorities because they provided low-cost care to indigent patients, were easily accessible, and had a history of treating minority patients.[9] There is also

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[7] There were only 300 on-site hospital reviews conducted by the OCR in 1971 (Comptroller General 1972). In hearings before the Civil Rights and Constitutional Rights Subcommittee (U.S. House of Representatives 1973), Jeffrey Merrill, a representative of the American Public Health Association (APHA), testified that:

> Last year the APHA was involved in a study in Mississippi where we had the opportunity to examine a lot of hospitals within the delta area. There were two things we found out through this study. One is…that, on a given day when the hospital is forewarned of a visit by some sort of enforcement agency, beds are shifted and it is very simple to shift a bed on wheels. And so coincidentally, on that and maybe for a couple of days, the hospital appears totally integrated.

[8] Only 93 Black physicians were practicing medicine in Atlanta and Birmingham. Black patients in these cities relied heavily on outpatient clinics run by public hospitals, and the Black physicians who worked at these clinics and public hospitals did not want (or did not use) staff privileges at private hospitals because "of (1) loyalty to predominantly black-patient hospitals…, (2) the desire to have their patients near their offices, or (3) the time and expense of making rounds at several hospitals" (Comptroller General 1972, pp. 32-33).

[9] There were 24 Medicare-certified hospitals in Atlanta and Birmingham when the GAO conducted its investigation, all but two of which were private. In Atlanta, the county-run Grady Memorial Hospital served fully 58 percent of all Black patients during the period July 19-26, 1971. In Birmingham, University Hospital served 49 percent of Black patients. Five of the 22 private hospitals in Atlanta and Birmingham admitted a combined total of 12 Black patients and 442

anecdotal evidence that Black patients were reluctant to seek treatment at private hospitals that, for generations, had exclusively served White patients.[10]

2.2. Hospital desegregation and infant health

Over the past century, the Black infant mortality rate (i.e., deaths among Black zero- through 11-month-olds per 1,000 live Black Births) in the United States has fallen at an average annual rate of 2.6 percent (Singh and Yu 2019). However, because the infant mortality rate (IMR) among Whites has fallen at a faster rate over the past century (3.1 percent per year), the Black-White IMR ratio actually increased (Singh and Yu 2019).[11] Intriguingly, the Black-White IMR ratio fell by 13 percent during the period 1965-1971, from 1.9 to 1.65 (Chay and Greenstone 2000). Although there had been smaller, one- and two-year reductions in the Black-White IMR ratio since the end of World War II, this was the first sustained decline for 20 years.

Almond et al. (2006) attribute much of this decline to the hospital desegregation campaign in the South. They reach this conclusion by estimating the effects of the hospital desegregation campaign on postneonatal mortality rates (equal to deaths among one- through 11-month-olds per 1,000 live births) by race in Mississippi, arguing that "medical care was most successful in preventing deaths during the post-neonatal period" (Almond et al. 2006, p. 7). Almond et al. (2006) show that the Black postneonatal mortality rate (PNMR) fell much faster in counties served by at least one

White patients. According to the report, most Black patients in Atlanta and Birmingham knew that Medicare and Medicaid would cover their costs at private hospitals (Comptroller General 1972). Quadagno (2000) describes Black patients as fearing that they would be refused care at hospitals with a long tradition of exclusively serving White patients despite the fact that these hospitals were certified and ostensibly desegregated. Bledsoe (1968) provides additional accounts of Black patients being reluctant to use formerly White-only hospitals.

[10] Quadagno (2000) describes Black patients as fearing that they would be refused care at formerly White-only hospitals despite the fact that these hospitals were certified and ostensibly desegregated. Bledsoe (1968) provides additional accounts of Black patients being reluctant to use formerly White-only hospitals.

[11] In 1916, the Black IMR was 184.9 per 1,000 live births and the White IMR was 99.0; by 2017, the Black IMR had fallen to 10.8 per 1,000 live births and the White IMR had fallen to 4.9 (Singh and Yu 2019).

Medicare-eligible hospital as compared to counties served by hospitals that refused federal funding. The estimated effect on the Black PNMR is large enough to explain the entire convergence between Black and White IMRs in Mississippi over the period 1965-1971.[12]

Opposition to the hospital desegregation campaign was particularly fierce in Mississippi (Reynolds 1997; Smith 2005). Despite this opposition, most Black mothers in Mississippi had the option of delivering their baby at a Medicare-eligible hospital by the end of 1967.[13] By the end of 1969, all but five counties in the state were served by at least one Medicare-eligible hospital (or their residents had the option of receiving care at a certified hospital in a bordering county). This "modest variation" in Medicare certification dates precludes Almond et al. (2006, p. 15) from including year fixed effects in their regressions.[14] One of the advantages of using data from five Deep South states, as opposed to only Mississippi, is that we observe more than twice as many counties whose residents gained access to a Medicare-eligible hospital after 1967 (Appendix Table A1), which allows us to include year fixed effects in our regressions and distinguish the effect of gaining access to a Medicare-eligible hospital from common shocks to the Black PNMR.

Aside from the pioneering work of Almond et al. (2006), we do not know a great deal about the relationship between hospital desegregation and health.[15] Researchers have, however, attempted

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[12] Almond et al. (2006, p. 18) conclude that the "integration of hospitals in the rural South accounted for…25% (based on all post-neonatal fatalities) of the national 7.5 per 1,000 decline in the national black PNMR between 1965 and 1975." See also Finkelstein and McKnight (2008), who use data from the Mississippi Delta to examine the effect of having access to a Medicare-eligible hospital on mortality among the elderly. They find that access to a Medicare-eligible hospital was associated with a 35 percent reduction in non-White elderly pneumonia mortality.

[13] See Appendix Table A1. In 1967, 45 out of 82 Mississippi counties were served by a Medicare-certified hospital, while 12 counties had no hospital (certified or otherwise) but their residents had the option of receiving care at a certified hospital in a bordering county. During the period 1955-1975, 64 percent of Black births occurred in these 57 counties.

[14] In a footnote, Almond et al. (2006, p. 15) write that their estimates become statistically insignificant when year fixed effects are included on the right-hand side of their regression "due to the difficulty of separately identifying the year and event time fixed effects with the modest variation in Medicare certification dates."

[15] Building on the work of Almond et al. (2006), Chay et al. (2009, 2014) argue that hospital desegregation led to a narrowing of the Black-White PNMR gap in the South, ultimately leading to improvements in test scores, educational attainment, and earnings among Blacks. See also Thompson (2022b), who provides evidence that selective fertility during the period 1965-1971 drove these improvements.

to gauge the effects of school desegregation on various educational outcomes. These effects are, *a priori*, difficult to sign (Reber 2007; Reardon and Owens 2014), although several studies provide evidence that Black students benefit from attending integrated schools (Guryan 2004; Reber 2010, 2011; Johnson 2011).[16] There is also a large literature on anti-discrimination policies and labor market outcomes. In a review of this literature, Valfort (2018) concludes that the "punitive approach" (i.e., imposing sanctions on employers who discriminate) is not particularly effective because it does not counter prejudice or limit the expression of cognitive biases.

2.3. Racial prejudice and the health of Black infants

The Black-White infant mortality gap has existed in the United States since at least the turn of the 20th century, when reliable mortality data by race first became available (Ewbank 1987). Its causes are still being researched, and debated, today (Elder et al. 2016; Wallace et al. 2017; Smith et al. 2018; Taylor et al. 2019; Anderson et al. 2021a).[17]

Relatively crude measures of socioeconomic status (e.g., mother's age, education, and marital status) can explain approximately one-third of the Black-White infant mortality gap (Elder et al. 2014; Elder et al. 2016). The other two-thirds of the gap are attributable to myriad factors, including, but not limited to, local geography, hospital quality, physician behavior and characteristics,

[16] For instance, Guryan (2004) finds that desegregation led to an almost three percentage-point decline in the dropout rate of Black students but had no appreciable effect on White dropout rates. Reber (2010, 2011) finds that, after desegregation, predominantly Black school districts in Louisiana received more funding and were able to reduce class sizes, while funding and class sizes in predominantly White school districts did not change. Johnson (2011) finds that an additional year of court-ordered desegregation led to a one percentage-point increase in Black high school graduation rates but had no effect on White high school graduation rates. For more information on the relationship between school desegregation and student outcomes, see Ashenfelter et al. (2006), Billings et al. (2014), Bergman (2016), and Gamoran and An (2016). Relatedly, Thompson (2022a) finds that school desegregation led to a 42 percent reduction in Black teacher employment.

[17] Abramitzky (2015, pp. 1246-1247) presents an excellent discussion of other important open questions with deep historical roots, or what he calls "big think" questions in economic history.

and government policies.[18] Isolating the effects of racial discrimination has proven to be especially challenging (Wallace et al. 2017).

Greenwood et al. (2020) examine newborns delivered in Florida hospitals during the period 1992-2015. Matching the race of the attending physician to that of the newborns, these authors find that Black newborns cared for by a Black physician are more likely to survive than those cared for by a White physician. By contrast, physician race is essentially unrelated to White newborn mortality. Because differences in hospital and physician quality do not explain these results (the authors control for hospital and physician fixed effects), Black physicians appear to be systematically outperforming their White colleagues for other, difficult-to-measure reasons.

Racial prejudice could explain why Black physicians are better at treating Black newborns than their White counterparts. It is also possible that the estimates in Greenwood et al. (2020) are driven by mistrust between Black patients and their White physicians. Cooper et al. (2003) provide evidence that healthcare visits are shorter when Black patients are assigned to a White, as opposed to a Black, physician. Alsan et al. (2019) find that Black men are more likely to demand preventative care when randomly assigned to a Black physician.[19] These and similar results have prompted present-day observers to argue that Title VI of the 1964 Civil Rights Act "has not yet had its intended effect" (Frakt 2020, para. 24).

[18] Elder et al. (2014, 2016) include state indicators on the right-hand side of their regressions, but local geography can be an important obstacle to accessing high-quality healthcare. As noted by Chandra and Skinner (2004) and Chandra et al. (2017), providing health insurance and strictly enforcing Title VI does not make it any easier for minorities to access hospitals that are located far from where they live and work.

[19] See also Hill et al. (2020) and Alsan and Wanamaker (2018). Hill et al. (2020) find that, among patients admitted to the hospital through the emergency department, being attended by a same-race physician is associated with a 15 percent reduction in mortality. Alsan and Wanamaker (2018, p. 412) find that proximity to the Tuskegee study had long-lasting effects on whether Blacks "trust a doctor's judgement and whether they suspect that the medical establishment will deny them necessary treatment or services." Yoder and Hardy (2018, p. 4) cite "mistrust of medical providers" as a factor that has led to decreased prenatal care among Black mothers.

2.4. Trends in the Black-White postneonatal mortality gap, 1959-1973

We define the Black-White postneonatal mortality gap as the difference between Black postneonatal deaths (per 1,000 live Black births) and White postneonatal deaths (per 1,000 live White births).[20] Counts of postneonatal deaths by race come from the Multiple Cause-of-Death Files, published by the National Vital Statistics System (NVSS) and made available to researchers through the Public Use Data Archive of National Bureau of Economic Research.[21] Newly transcribed data on live births come from a wide range of sources, including direct correspondence with state vital records offices and through a series of inter-library loans. [22]

Figure 1 shows the evolution of the Black-White postneonatal mortality gap for three regions of the United States: the Deep South (Alabama, Georgia, Louisiana, Mississippi, and South Carolina), other Southern states, and non-Southern states. During the period 1959-1973, the Black-White postneonatal mortality gap in the Deep South fell by 57 percent, from 15.2 to 6.6. Although the Black-White postneonatal mortality gap also fell in other Southern states and in the non-South, the trend was most pronounced in the Deep South.[23]

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[20] It should be noted that our definition of Black postneonatal mortality includes "other" non-Whites. However, postneonatal deaths among "other" non-Whites never exceeded 0.75 percent of total postneonatal deaths in the South during the period under study.

[21] In 1972, due to personnel and budgetary restrictions, the mortality counts from the Multiple Cause-of-Death Files were based on information obtained from a 50-percent sample of death records, as opposed to the complete census of death records as in other years (U.S. Department of Health, Education, and Welfare 1976). In practice, this requires aggregating the mortality counts to the county level and multiplying by two. The NVSS mortality data are available at: https://www.nber.org/research/data/mortality-data-vital-statistics-nchs-multiple-cause-death-data.

[22] For instance, birth records for Louisiana were made available through correspondence with the Vital Records Central Office in the Louisiana Department of Health. To take another example, yearly volumes of natality data for Georgia were made available through inter-library loans with Cornell University, Georgia College and State University, and Georgia Southern University. The standard source for live births, the National Vital Statistics Natality Birth Files, did not consistently report information by race or attendant (e.g., physician versus midwife) during the period 1959-1973. Information on birth attendant is required when analyzing the decision of Black mothers to give birth at home or in the hospital (Section 4, below). The sources used to construct our unique county-level live-birth data set are listed in Appendix Table B1.

[23] Other Southern states include Arkansas, Delaware, the District of Columbia, Florida, Kentucky, Maryland, North Carolina, Oklahoma, Tennessee, Texas, Virginia, and West Virginia. The non-Southern region excludes Alaska, Hawaii, and New Jersey. New Jersey was dropped because information by race was not available for 1962 and 1963. In

In Figure 2, we focus on the evolution of postneonatal mortality by race in the Deep South.[24] The Black and White PNMRs are both trending downward, but the Black PNMR trend is steeper. During the period 1959-1973, the Black PNMR in the Deep South fell from 23.1 to 12.8, or 45 percent. By contrast, the White PNMR in the Deep South fell from 6.3 to 4.2, or 33 percent.

In theory, the narrowing of the Black-White postneonatal mortality gap in the Deep South could have been caused by any number of factors. There was, for instance, a sharp reduction in Black fertility immediately after the passage of the Civil Rights Act (Thompson 2022b), and Black Southerners made significant economic progress throughout the 1960s (Freeman 1981; Donohue and Heckman 1991; Wright 1999, 2013).[25] Other government interventions, including the rollout of Community Health Centers (CHCs) and the implementation of state Medicaid programs, could have also contributed to the observed infant mortality trends (Goldman and Grossman 1988; Bailey and Goodman-Bacon 2015; Goodman-Bacon 2018).[26]

3. Certified Hospital Access and Postneonatal Mortality

Did the hospital desegregation campaign contribute to the steep decline in Black postneonatal mortality in the Deep South during the 1960s and early 1970s? To distinguish the

Appendix Figure A1, we show the evolution of the Black-White infant mortality gap by region. During the period 1959-1973, the Black-White infant mortality gap in the Deep South fell by 51 percent, from 25.4 to 12.5.

[24] Appendix Figure A2 shows the evolution of infant mortality by race in the Deep South.

[25] See Wright (2013, pp. 105-149) for an excellent description of Southern labor markets in the 1960s and the effects of the Civil Rights movement.

[26] The rollout of CHCs across the South began in 1965. Bailey and Goodman-Bacon (2015, p. 1075) note that "CHCs could have facilitated the diagnosis of potentially lethal diseases and afford medications for treatment, but they were not substitutes for hospitals' acute care for sick infants." In 1966, Louisiana became the first state in the Deep South to implement Medicaid. It was followed shortly thereafter by Georgia (1967), South Carolina (1968), Mississippi (1969), and Alabama (1970). Goodman-Bacon (2018) provides evidence that the introduction of state Medicaid programs reduced non-White infant mortality. Below, we report separate pre- and post-Medicaid estimates of the effect of having access to a desegregated (i.e., Title VI-compliant) hospital. Hospitals that were certified as Title VI-compliant could participate in both programs.

effect of the hospital desegregation campaign, which was launched in 1966, from the effects of Black economic progress and other government interventions, we exploit cross-county variation in Medicare-certification dates. Specifically, we estimate the following event-study regression by race:

$$(1) \qquad PNMR_{ct} = a_0 + \nu_c + \lambda_t + \sum_{y=-4}^{-2} \pi_y D_c 1\,(t - T_c^* = y) + \sum_{y=0}^{4} \pi_y D_c 1\,(t - T_c^* = y) + \varepsilon_{ct},$$

where $PNMR_{ct}$ is the postneonatal mortality rate in county c and year t = 1959…1973.[27] County fixed effects, ν_c, account for determinants of postneonatal mortality that were constant over time and year fixed effects, λ_t, account for common shocks across the Deep South to postneonatal mortality.

The event-year dummies, 1(t $-T_c^*$ = y), are equal to 1 when the year of observation, t, is y = −4,…,0,…,4 years from T_c^*, the year in which the first hospital in county c was listed as Medicare-eligible in "Guide Issues," published by the *Journal of the American Hospital Association* (*JAHA*).[28] If there were no hospitals in county c, then treatment status was determined based on whether there

[27] Although we report estimates based on the PNMR throughout the analysis, our results are similar if we take the natural log of one plus the PNMR or the quartic root of the PNMR. The quartic root function has been used by other researchers to account for zeros (Thomas et al. 2006; Tarozzi et al. 2014; Ashraf et al. 2015; Anderson et al. 2021b).

[28] The Medicare program was officially launched on July 1, 1966. The 1967 *JAHA* Guide Issue lists Medicare-eligible hospitals through February of 1967. If any hospital in county c was certified as Medicare-eligible in 1966 or in January/February of 1967, then the y = 0 event-year dummy is equal to 1 in t = 1967, and equal to 0 otherwise. The y = 1 event-year dummy is equal to 1 in t = 1968, and equal to 0 otherwise, and so forth. The 1968 *JAHA* Guide Issue lists Medicare-eligible hospitals through February of 1968. If the 1967 Guide Issue did not list any hospital in county c as certified but the 1968 Guide Issue did, then the y = 0 event-year dummy is equal to 1 in t = 1968, the y = 1 event-year dummy is equal to 1 in t = 1969, and so forth. The information on hospital Medicare-eligibility in the *JAHA* Guide Issues was transcribed by the authors. Appendix Figure C1 shows an image of a page from the 1967 Guide Issue. Approval code A-10 indicates that a hospital is Medicare-eligible. In an effort to confirm the accuracy of the certification dates in the Guide Issues, we spot checked them against information available in contemporary local newspaper articles. Almost without exception, the certification dates listed in the Guide Issues were consistent with these contemporary accounts. See the notes to Appendix Table B2 in Anderson et al. (2021c) for more information on Medicare certification listings. Note that the y = -4 event-year dummy is equal to 1 if t is 4 or more years before T_c^*. Likewise, the y = 4 event-year dummy is equal to 1 if t is 4 or more years after T_c^*. The results presented below are similar if we alternatively define the event-year dummies, y, as equal to 1 when the year of observation, t, is y = −5,…,0,…,5 years from T_c^*.

was a certified hospital in a bordering county. The indicator D_c is equal to 1 if county c was served by a Medicare-eligible hospital during the period under study (and is equal to 0 otherwise).[29]

The estimates of π_y (i.e., the coefficients of the event-year dummies) characterize the effects of having access to a general or maternity hospital that was certified as Medicare-eligible (and therefore ostensibly desegregated). Note that $y = -1$ is omitted, which normalizes the estimates of π_y to 0 in that year. The pre-treatment estimates of π_y can be thought of as falsification tests—their patterns and statistical significance allow us to investigate the parallel trends assumption. The difference-in-difference (DD) analogue of equation (1) is:

$$(2) \qquad PNMR_{ct} = a_0 + v_c + \lambda_t + a_1 Medicare_{ct} + \varepsilon_{ct},$$

where $Medicare_{ct}$ is equal to 1 if Black mothers in county c and year t had access to a general or maternity hospital that was certified as Medicare-eligible (and is equal to 0 otherwise).

Estimates of equations (1) and (2) for Black postneonatal mortality are reported in panel A of Figure 3.[30] They provide little evidence that the hospital desegregation campaign improved the health of Black one- through 11-month-old infants in the Deep South. In fact, all five of the post-treatment estimates of π_y are positive, although they are small in magnitude and statistically insignificant at conventional levels.

[29] Appendix Table A1 shows the number of counties in the Deep South in which Black mothers had access to a Medicare-eligible hospital by state and year. In 1967, Black mothers had access in 335 out of the 403 Deep South counties in our sample; by 1968, they had access in 378 of these counties; and by 1969 they had access in 385. Black mothers in 15 out of 403 counties gained access to Medicare-certified hospitals between 1970 and 1973, and three counties in our sample were, as of 1973, still not being served by a Medicare-eligible hospital. Fifteen Deep South counties are missing from our sample. Nine Alabama counties are excluded due to missing data on live Black births. Six Georgia counties are excluded because no Black births were recorded during the sample period.

[30] Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level (Bertrand et al. 2004). We report 90 percent confidence intervals in the event-study figures.

Including a vector of controls, $\boldsymbol{X}_{it}$, on the right-hand side of the estimating equation does not appreciably affect this basic pattern of results (panel B, Figure 3).[31] According to the DD estimate from the fully specified regression model, which summarizes the event-study estimates, gaining access to a certified hospital is associated with a 1.22 increase in the Black PNMR. Although statistically insignificant, the DD estimate is precise, indicating that we have sufficient cross-county variation in Medicare certification dates to distinguish between the effects of gaining access and secular trends in Black postneonatal mortality. Based on the lower bound of the 90 percent confidence interval of this estimate, gaining access to a Medicare-eligible hospital did not reduce the Black PNMR by more than -.244, or less than 3 percent of the actual change in the Black PNMR between 1965 and 1973.[32]

Event-study estimates for the White PNMR are reported in Figure 4. Again, there is no evidence of systematic pre-treatment trends. In the post-treatment period, four of the five estimates of π_y are negative, although they are small and statistically indistinguishable from zero. In Figure 5, we report event-study estimates based on a modified version of equation (1) in which the $PNMR_{it}$ is replaced with the difference between Black and White PNMRs. Not surprisingly given the results reported in Figures 3 and 4, there is no evidence that gaining access to a Medicare-eligible hospital reduced the Black-White postneonatal mortality gap.[33]

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[31] The controls are listed in Appendix Table A2, along with descriptive statistics, definitions, and sources. They include the percent of the county population that was 25 years of age or older with a high school diploma, direct health and hospital expenditures by the county government, and the county employment to population ratio. Missing values were calculated using linear interpolation and extrapolation.

[32] During the period 1965-1973, the Black PNMR in the Deep South fell from 21.8 to 12.8. In Appendix Figure A3, we explore the effects of the hospital desegregation campaign on Black infant mortality (i.e., mortality among Black children under the age of one) and Black neonatal mortality (i.e., mortality among Black infants under one month of age). Event-study estimates provide no evidence of systematic pre-treatment trends, and the post-treatment estimates of π_y are, without exception, small in magnitude and statistically indistinguishable from zero.

[33] Appendix Table A3 reports the estimates of π_y plotted in Figures 3-5. It also reports p-values calculated from the wild bootstrap procedure suggested by Cameron et al. (2008) and Cameron and Miller (2015).

3.1. Postneonatal mortality by cause

Gastroenteritis, influenza, and pneumonia were among the leading causes of Black postneonatal mortality in the early 1960s (U.S. Department of Health, Education, and Welfare 1963).[34] Event-study estimates of the effect of gaining access to a Medicare-eligible hospital on Black postneonatal mortality due to pneumonia/influenza are reported in panel A of Figure 6; the corresponding event-study estimates for diarrhea (i.e., dysentery and gastroenteritis) mortality are reported in panel B. The post-treatment estimates of π_y are uniformly positive but, with only one exception, statistically insignificant. Importantly, they are precise enough to rule out meaningful reductions in mortality due to these causes. Based on the lower bound of the 90 percent confidence interval of the DD estimate, gaining access to a Medicare-eligible hospital did not reduce Black postneonatal deaths due to pneumonia/influenza by more than -.297 per 1,000 live Black births; gaining access did not reduce Black postneonatal deaths due to diarrhea by more than -.284 per 1,000 live Black births.[35]

3.2. Robustness checks

If the effects of gaining access to a Medicare-eligible hospital on Black postneonatal mortality were heterogeneous, then our event-study estimates are potentially biased (Sun and Abraham 2021). To address this issue, we produce alternative event-study estimates restricting the

[34] Appendix Figures A4 and A5 show the evolution of pneumonia/influenza and diarrhea postneonatal mortality rates, respectively, in the Deep South. Pneumonia and gastroenteritis "were readily and necessarily" treated in hospitals, often with antibiotics, during the 1960s (Almond et al. 2006, p. 12). Appendix Table B2 lists the International Classification of Disease (ICD) codes that were used to generate postneonatal mortality counts by cause. During the period under study, the ICD underwent its 8th revision, taking effect in 1968. Because these changes applied to all counties in our sample, they are captured by the year fixed effects.

[35] In Appendix Figure A6, we report event-study estimates of the effect of the hospital desegregation campaign on the Black-White postneonatal mortality gap due to pneumonia/influenza (panel A) and diarrhea (panel B). The post-treatment estimates of π_y are generally small and statistically insignificant.

counterfactuals to "not-yet-treated" counties (Callaway and Sant'Anna 2021).[36] Each event-study estimate in Figure 7 represents the average effect of gaining access to a Medicare-eligible hospital *y* years from T_c^*. They provide little evidence that gaining access to a Medicare-eligible hospital reduced Black postneonatal mortality (panel A), Black postneonatal mortality due to pneumonia/influenza (panel B), or Black postneonatal mortality due to diarrhea (panel C). The overall average treatment effect on the treated (ATT), which is the average of the estimated post-treatment ATTs, is actually positive for all three of these outcomes.[37]

Up to this point in the analysis, treatment has been defined according to when the first hospital in county *c* was certified as Medicare-eligible. In Table 1, we consider alternative treatments. Specifically, using data on hospital bed counts transcribed from the *JAHA* Guide Issues, we define treatment based on the following three thresholds: whether 25 percent (or more) of the hospital beds in county *c* belonged to Medicare-eligible hospitals, whether 50 percent of the hospital beds belonged to Medicare-eligible hospitals, and whether 75 percent of the hospital beds belonged to Medicare-eligible hospitals. Instead of event-study estimates, we report DD estimates for the sake of brevity. These estimates provide no evidence that the campaign to desegregate hospitals reduced Black postneonatal mortality.[38]

In Table 2, we report DD regression estimates from several additional robustness checks.[39] In the first three columns of Table 2, we explore alternative methods of controlling for underlying

[36] "Never-treated" counties are also included as counterfactuals, but there are only three never-treated counties in our sample.

[37] For computational purposes, this analysis is restricted to a balanced panel of counties and, consequently, is based on a slightly smaller sample (N = 5,955 as opposed to N = 6,033). In Figure 7, we report estimated ATTs for the five years before treatment, the year of treatment, and the five years after. Appendix Figure A7 shows estimated ATTs for the entire pre- and post-treatment periods.

[38] In Appendix Table A4, we list the proportion of treated counties by state and year based on these alternative thresholds.

[39] Event-study figures that correspond to the DD regression estimates reported in Tables 1 and 2 are available from the authors upon request.

trends in the Black PNMR. Controlling for county-specific linear time trends, the estimate of a_1 (i.e., the coefficient of $Medicare_{ct}$) is positive, small in magnitude, and statistically insignificant (column 1, Table 2). If we control for state-by-year fixed effects or detrend the dependent variable as suggested by Goodman-Bacon (2021), the results are similar (columns 2 and 3, Table 2).[40]

Seventy-five out of the 403 counties in our analysis were not served by a general or maternity hospital prior to 1967. Up to this point in the analysis, treatment for these counties has been based on whether there was a Medicare-eligible hospital operating in a bordering county. If we drop these no-hospital counties from the sample, the resulting DD estimate is small, positive, and statistically insignificant (column 4, Table 2). Results are similar if we instead include these counties in the sample and code them as never certified (column 5, Table 2).

In column (6) of Table 2, we control for the number of bordering counties with at least one Medicare-eligible hospital. Including this variable as a control has little effect on the estimate of a_1.[41] Similarly, not weighting by live births produces no evidence that gaining access to a Medicare-eligible hospital reduced Black postneonatal mortality (column 7, Table 2).

3.3. Extensions

Prior research has used support for Strom Thurmond in the 1948 presidential election as a proxy for underlying racial animus (Cascio et al. 2008). Thurmond, who ran as a Dixiecrat, was a staunch segregationist and carried four of five states in the Deep South in his bid for president

[40] Goodman-Bacon (2021) suggests estimating separate pre-treatment trends based on the timing of treatment (e.g., estimating a pre-treatment trend for counties that became Medicare eligible in 1967, another pre-treatment trend for counties that became Medicare eligible in 1968, and so forth). These pre-treatment trends are then projected onto the post-treatment period and used to detrend the dependent variable. For details on this procedure, see Appendix D of Goodman-Bacon (2021).

[41] We also explored replacing $Medicare_{ct}$ with an indicator equal to 1 if county c or any of its bordering counties had at least one Medicare-eligible hospital during year t (and equal to 0 otherwise). The estimated coefficient of this indicator was positive and statistically significant.

(Woolley and Peters n.d.).[42] In Figure 8, we report estimates of π_y by whether Thurmond won (panel A) or lost (panel B) in county c.[43] We find no evidence that having access to a Medicare-eligible hospital affected Black postneonatal mortality in counties that Thurmond won, nor is there evidence that the campaign was somehow more effective in counties that Thurmond lost.

In Table 3, we report DD regression estimates from three additional extensions.[44] As an alternative method of exploring the role of racial animus, we distinguish between counties in which the first hospital was certified as Medicare-eligible in 1966-1967 and those in which the first hospital was certified in 1968 or later. Presumably, non-compliance after 1967 is indicative of greater racial animus.[45] The estimates reported in column (1) suggest that, regardless of when certification occurred, Title VI compliance had no effect on Black postneonatal mortality.

To study the role of Black hospitals, we interact $Medicare_{ct}$ with an indicator, $Black\ Hospital_c$, equal to 1 if county c was served by at least one Black hospital in 1966 (and equal to 0 otherwise). The Black hospital indicator is based on information from Rice and Jones (1994), Wesley (2010), and contemporary sources (e.g., newspaper articles and historical volumes such as the *Negro Year*

[42] Thurmond won in Alabama, Louisiana, Mississippi, and South Carolina. He ultimately finished third in electoral votes (39 electoral votes), behind Truman (303 electoral votes) and Dewey (189 electoral votes).

[43] Data on historical county voting records for Georgia, Louisiana, Mississippi, and South Carolina come from ICPSR Study No. 8611 (Clubb et al. 2006). Alabama voting records were purchased from *Dave Leip's Atlas of U.S. Presidential Elections* (https://uselectionatlas.org/).

[44] Corresponding event-study figures are available from the authors upon request.

[45] Smith (2005) describes the process of desegregating the two private hospitals in Jackson, Mississippi. St. Dominic Hospital was part of a hospital system based in Springfield, Illinois. It quickly complied with Title VI guidelines and began receiving Medicare payments in July of 1966. By contrast, Baptist Hospital's board of trustees was composed of "white Mississippians" (Smith 2005, p. 262). Baptist Hospital remained segregated through April of 1969, when, under intense financial pressure, the board voted "to take steps to develop a plan for qualifying the hospital for Medicare and Medicaid patients" ("Hospital to Seek CR Okay" 1969). In response to this vote, the state field director of the National Association for the Advancement of Colored People (NAACP), Charles Evers, sent a telegram to Robert Finch, the Secretary of the U.S. Department of Health, Education, and Welfare, describing Baptist as "the most segregated hospital in Mississippi" (Associated Press 1969). Descriptions of hospitals certifying after 1967 in Alabama, Georgia, Louisiana, and South Carolina are available from contemporary newspaper articles. For instance, see: "Monroe Hospital Approved for Medicare" (1968), Constitution State News Service (1968), "Federal Examiner Orders HEW To Certify P&S Hospital Here" (1969), and "Tuomey Now on Medicare" (1969).

Book). The results of this exercise, reported in column (2) of Table 3, provide no evidence that having access to a Medicare-eligible hospital reduced Black postneonatal mortality in Deep South counties that were served by a Black hospital. Likewise, having access to a Medicare-eligible hospital is essentially unrelated to Black postneonatal mortality in Deep South counties that were not served by a Black hospital.

Finally, in column (3) of Table 3, we report estimates obtained by interacting $Medicare_{ct}$ with $Medicaid_{st}$, an indicator equal to 1 for whether state *s* had implemented Medicaid by year *t* (and equal to 0 otherwise). Participation in both of these programs required Title VI compliance.[46] The estimated coefficient of the interaction between $Medicare_{ct}$ and $Medicaid_{st}$ is small, positive, and statistically insignificant. This result suggests that, even if the Medicaid program in state *s* was operational, having access to a Title VI compliant hospital did not appreciably reduce Black postneonatal mortality.

3.4. Reconciling our results with those of Almond et al. (2006)

As noted above, Almond et al. (2006) use county-level data from Mississippi to examine the effect of hospital desegregation on Black postneonatal mortality. They find a strong, negative association between gaining access to a Medicare-eligible hospital and the Black PNMR. In Table 4, we explore why Almond et al.'s (2006) results are so different from ours. Specifically, we explore whether their estimates are robust to accounting for common shocks through the inclusion of year

[46] The Louisiana Medicaid program began issuing payments to hospitals as of July 1, 1966, which means that we cannot distinguish between the effects of gaining access to a Medicaid- versus Medicare-eligible hospital in Louisiana. In the other Deep South states, Medicaid implementation came after 1966. The Georgia Medicaid program was implemented in October of 1967; the South Carolina program was implemented in July of 1968; the Mississippi program was implemented in October of 1969; and the Alabama program was implemented in January of 1970. Estimating a regression model that also controls for the direct effect of Medicaid produces qualitatively similar results.

fixed effects. We show that, after accounting for common shocks, there is little evidence that gaining access to a Medicare-eligible hospital reduced Black postneonatal mortality in Mississippi.

The first two columns of Table 4 show event-study estimates taken directly from Almond et al. (2006, Table 4, columns 1a and 1b). Their fully specified model includes county-level controls, county fixed effects, and county-specific linear trends, but no year fixed effects. Their event-study estimates are negative, significant, and large enough to fully explain the narrowing of the Black-White infant mortality gap in Mississippi from 1965 to 1971. For instance, gaining access to a Medicare-eligible hospital for four years is associated with a 10.3 reduction in the Black PNMR.

Although we do not have the information necessary to perfectly reconstruct Almond et al.'s (2006) county-level controls, we are able to come reasonably close to reproducing their event-study estimates in columns (3) and (4) of Table 4.[47] In column (5), we omit the county-specific linear trends and instead add year fixed effects to their regression model. Consistent with our event-study estimates reported in Figure 3, the estimated effects of gaining access to a Medicare-eligible hospital on the Black PNMR become much smaller and lose statistical significance. In column (6), we include both county-specific linear trends and year fixed effects on the right-hand side of Almond et al.'s (2006) regression model. The standard errors become sufficiently large that we cannot reject the hypothesis that the estimates reported in column (6) are equal to those reported in either column (4) or (5). However, neither can we reject the hypothesis that the estimated effects on the Black PNMR are equal to the estimated effects on the White PNMR, which are also consistently negative and of roughly comparable magnitude (panel B of Table 4).[48]

[47] Specifically, Almond et al. (2006) control for the fraction of mothers across five age categories, the fraction of unmarried mothers, per-capita income, and per-capita transfer payments.

[48] In Appendix Table A5, we replicate and extend Almond et al.'s (2006, Table 4, columns 2a and 2b) analysis of the effect of hospital desegregation on postneonatal mortality due to pneumonia, influenza, and diarrhea in Mississippi. The results are similar to those reported in Table 1: when the county-specific linear trends are replaced with year fixed effects, the estimated effects of gaining access to a Medicare-eligible hospital on the Black PNMR lose statistical significance; when we include both the county-specific linear trends and year fixed effects on the right-hand side of

In the top panel of Figure 9, we reproduce event-study estimates from Almond et al. (2006, Figure 3) for the Black-White postneonatal mortality gap due to pneumonia, influenza, and diarrhea in Mississippi. The event-study specification used by Almond et al. (2006) does not include county fixed effects, year fixed effects, or county-level covariates. Their post-treatment estimates are negative and statistically significant, but four out of seven of these post-treatment estimates become positive (although not statistically significant) when county and year fixed effects are included on the right-hand side of the regression (panel B, Figure 9).

Finally, we adopt Almond et al.'s (2006) specification and estimate the effect of the hospital desegregation campaign on Black postneonatal mortality (panel A, Table 5) and Black postneonatal mortality due to pneumonia, influenza, and diarrhea (panel B, Table 5) in all five Deep South states. Without year fixed effects on the right-hand side, the estimated effects of gaining access to a Medicare-eligible hospital are uniformly negative and, with only one exception, statistically significant (column 2). However, when the county-specific linear trends are replaced by year fixed effects, there is little evidence that gaining access to a Medicare-eligible hospital led to reductions in Black postneonatal mortality (column 3). When we include year fixed effects and county-specific linear trends at the same time, the estimated effects of gaining access to a Medicare-eligible hospital on Black postneonatal mortality due to pneumonia, influenza, and diarrhea become positive and statistically significant (column 4), allowing us to formally reject the hypothesis that they are equal to those produced without controlling for year fixed effects.

Almond et al.'s (2006) regression model, the estimated effects on the Black PNMR are roughly equal to the estimated effects on the White PNMR.

4. In-Hospital Births and Maternal Mortality

During the period 1955-1965, out-of-hospital births to Southern Black mothers were declining steadily (Chay and Greenstone 2000). By 1965, less than 10 percent of Black infants in urban Southern counties were delivered at home, attended by a doctor or midwife; less than 30 percent of Black infants in rural Southern counties were born at home (Chay and Greenstone 2000).

Giving birth in the hospital did not, however, guarantee receipt of high-quality care for Black mothers and their babies. "Biracial hospitals" discriminated against Black patients, assigning them to separate wards or buildings, while Black hospitals were, with only a few exceptions, unaccredited, understaffed, and underequipped (Lee 1984; Reynolds 2004; Thomas 2006, 2011; McBride 2018).[49] After the introduction of Medicare and Medicaid, Black hospitals struggled financially and most eventually closed (Beardsley 1996; Odum 1992; Smith 2016, pp. 168-169). Black mothers living in the South were left with the choice of delivering in a formerly discriminatory (i.e., White-only or segregated) hospital or at home, attended by a midwife or physician, neither of whom was necessarily well trained in obstetrics (Mongeau et al. 1961; Houde et al. 1982; Ward 2003).[50]

In Figure 10, we report the in-hospital birth rate (i.e., the number of in-hospital births per 1,000 live births) by race in the Deep South for the years 1959-1973. In-hospital Black births were

[49] The practice of assigning Black patients to their own wards, floors, or buildings also had the effect of limiting access. To avoid overcrowding, Black patients could be refused admission despite the availability of "white beds" (U.S. Civil Rights Commission 1966, pp. 12-13). Black hospitals were often White-run but focused on providing care to Black patients (Rice and Jones 1994). According to Thomas (2011, p. 36), they:

> served a higher percentage of charity patients than did their white counterparts, resulting in perpetually strained budgets and an inability to modernize or even in many cases to make basic repairs. Poor facilities and equipment, in turn, compromised hospitals' ability to attract paying patients…

[50] During the period under study, midwives across the Deep South were required to be licensed (Anderson et al. 2020). According to contemporary accounts, licensing greatly improved the quality of midwifery services provided (South Carolina 1960; Bonaparte 2014). Nonetheless, midwives were not trained to attend complicated pregnancies (Dodd 1920; Mongeau et al. 1961).

rising steadily throughout this period. In 1959, the first year of our analysis, 57 percent of Black births took place in the hospital. By 1973, 94 percent of Black births were in-hospital.[51]

Did federal efforts to desegregate hospitals contribute to the trends shown in Figure 10? To answer this question, we use data from state vital statistics reports and the NVSS for the period 1959-1973.[52] In panel A of Figure 11, we report event-study estimates of the effect of having access to a Medicare-eligible hospital on *In-Hospital Black Births*$_{ct}$, equal to the number of in-hospital Black births per 1,000 live Black births in county *c* and year *t*. The results provide no evidence that the hospital desegregation campaign was responsible for the increase in the in-hospital birth rate among Black mothers during the period under study. In fact, gaining access to a Medicare-eligible hospital is associated with a statistically significant decrease in the Black in-hospital birth rate four or more years after treatment.[53]

[51] Appendix Figures A8 and A9 show the evolution of out-of-hospital physician-attended birth rates by race in the Deep South and the evolution of out-of-hospital midwife-attended birth rates by race in the Deep South, respectively. In Appendix Figure A10, we use data from the National Health Interview Survey to examine past-year hospital admissions among infants. The Black-White gap in hospital admission rates began trending upward in 1964, peaked in 1966, and then leveled off.

[52] Because the National Vital Statistics Natality Birth Files did not make information available on birth attendant type for the years 1960-1967, we transcribed records from individual state vital statistics reports. As noted above, Appendix Table B1 lists the sources used to collect information on county-level live births by location (i.e., in- versus out-of-hospital) and attendant (i.e., physician versus midwife). Another advantage to using state vital statistics records is that the Natality Files are missing data on live births by race for roughly 10 percent of the counties in our sample. Information on live births by attendant is unavailable at the county level from Alabama vital statistics records. As a result, Alabama is excluded from all birth location/attendant analyses in this section. Prior to 1975, information on whether a hospital birth was attended by a physician or a midwife was not included on the birth certificate. Presumably, however, the vast majority of these births were attended by a physician. In 1975, 97 percent of in-hospital births in the United States were attended by a physician. Of the remainder, 0.6 percent were delivered by midwives and 2.3 percent were delivered by "other" persons or persons for whom no status was specified (U.S. Department of Health, Education, and Welfare 1978)

[53] In panel A of Appendix Figure A11, we report event study estimates produced using the Callaway and Sant'Anna (2021) estimator. Again, these estimates provide no evidence that the hospital desegregation campaign was responsible for the increase in the in-hospital birth rate among Black mothers during the period under study. Likewise, controlling for county-specific linear time trends or state-by-year fixed effects in the OLS event-study model produced little evidence that the campaign caused the increase in the in-hospital birth rate among Black mothers.

In panels B and C of Figure 11, we explore whether gaining access to a Medicare-eligible hospital affected Black out-of-hospital births by attendant type (i.e., physician versus midwife).[54] Three or four years after treatment, having access to a Medicare-eligible hospital is associated with an increase in out-of-hospital Black births attended by a midwife. Event-study estimates for Black out-of-hospital births attended by a physician exhibit a downward trend in both the pre- and post-treatment periods.

Event-study estimates for Black out-of-hospital births by attendant type produced using the Callaway and Sant'Anna (2021) estimator are reported in panels B and C of Appendix Figure A11. The pre-treatment estimates based on this procedure are, without exception, small and statistically insignificant; the post-treatment estimates exhibit the same basic patterns as those shown in panels B and C of Figure 11. We should note, however, that the event-study estimates reported in panels B and C of Figure 11 are quite sensitive to model specification and should be interpreted cautiously. For instance, controlling for county-specific linear trends produces no evidence that the hospital desegregation campaign increased Black out-of-hospital births attended by a midwife, and no evidence that it deceased Black out-of-hospital births attended by a physician.

Lastly, we report event-study estimates of the effect of gaining access to a Medicare-eligible hospital on the Black maternal mortality rate, defined as deaths due to complications from pregnancy or childbirth per 1,000 live births (panel D, Figure 11). These estimates provide little support for the notion that the hospital desegregation campaign improved the maternal health of Black mothers in the Deep South during the period 1959-1973.[55]

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[54] During this period, birth certificates recorded whether an out-of-hospital birth was attended by a physician, midwife, or other/not specified attendant (U.S. Department of Health, Education, and Welfare 1978). We included out-of-hospital births by "other/not specified" in the count of out-of-hospital births attended by a midwife. Based on our own calculations, over 90 percent of births in this combined category were attended by midwives.

[55] In Panel D of Appendix Figure 11, we report event-study estimates of the effect of having access to a Medicare-eligible hospital on Black maternal mortality produced using the Callaway and Sant'Anna (2021) estimator. These estimates provide no evidence that the hospital desegregation campaign affected Black maternal mortality. Likewise,

5. CONCLUSION

According to Title VI of the Civil Rights Act of 1964, no person "on the ground of race, color, or national origin" should be denied the benefits of any program receiving federal financial assistance (U.S. Department of Labor n.d.). When the Civil Rights Act was passed, most U.S. hospitals did not rely on federal money and the discriminatory practices of Southern hospitals continued largely unabated. The landscape radically changed, however, when President Johnson signed Medicare into law on July 30, 1965, promising to generously pay for the health care of millions of people. The threat of withholding Medicare funding, coupled with the efforts of investigators from the newly created Office of Equal Health Opportunity who were tasked with identifying hospitals that were not in compliance with Title VI, led to the eventual desegregation of even the most notoriously segregated hospitals in the South (Associated Press 1969).

Using county-level mortality data from five Deep South states, we estimate the effect of the federal hospital desegregation campaign on Black postneonatal mortality for the period 1959-1973. Our results suggest that gaining access to a Medicare-eligible hospital had little, if any, effect on Black postneonatal mortality. Specifically, we find that having access to a certified hospital is associated with 1.22 additional Black postneonatal deaths per 1,000 live Black births. Although this estimate is not statistically significant, it is sufficiently precise to reject the hypothesis that the hospital desegregation campaign contributed meaningfully to the steep decline in Black postneonatal mortality in the Deep South during the 1960s and early 1970s.

Using newly transcribed data on live births by race, location (in-hospital versus out-of-hospital), and attendant type (physician versus midwife) available from annual state vital statistics

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controlling for county-specific linear time trends or state-by-year fixed effects produces OLS event-study estimates that provide little evidence that the campaign reduced maternal mortality among Black mothers. Maternal mortality counts included women in the "puerperal state," which lasted through pregnancy and continued for 42 days after delivery (Guyer et al. 2000).

reports, we find no evidence that the hospital desegregation campaign accelerated the trend towards in-hospital births among Southern Black mothers, which was originally documented by Chay and Greenstone (2000). There is, however, some evidence—albeit sensitive to model specification—that gaining access to a Medicare-eligible hospital led to fewer Black births attended by a physician and more out-of-hospital Black births attended by a midwife.

The effort to desegregate Southern hospitals was met with considerable resistance. Two hundred and fourteen hospitals in the South initially refused to integrate their facilities, forgoing all federal funding (Nash 1968; Reynolds 1997); ostensibly integrated hospitals openly flouted Title VI guidelines (U.S. House of Representatives 1973; Quadagno 2000; Smith 2005); and Black patients were reluctant to seek care at hospitals that had traditionally excluded them (Comptroller General 1972; Quadagno 2000). Had the goals of the federal effort been embraced by White-run hospital administrators and physicians, its short-run effects on Black postneonatal mortality and Black mothers' choice of where to give birth may have been different from those we document above.

Our empirical strategy prevents us from exploring the longer-run effects of the hospital desegregation campaign on the racial attitudes of physicians in the Deep South and the treatment received by their Black patients. It is, however, worth noting that the Black-White infant mortality gap has been closing steadily in several Southern states over the past two decades (Speights et al. 2017). Identifying the factors that contributed—and continue to contribute—to the narrowing of the Black-White infant mortality gap will depend on leveraging well-defined natural experiments and carefully accounting for secular trends.

REFERENCES

Abramitzky, Ran. 2015. "Economics and the Modern Economic Historian." *Journal of Economic History*, 75(4): 1240-1251.

Almond, Douglas, Kenneth Chay, and Michael Greenstone. 2006. "Civil Rights, the War on Poverty, and Black-White Convergence in Infant Mortality in the Rural South and Mississippi." MIT Department of Economics Working Paper No. 07-04, Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=961021.

Alsan, Marcella, Owen Garrick, and Grant Graziani. 2019. "Does Diversity Matter for Health? Experiment Evidence from Oakland." *American Economic Review*, 109(12): 4071-4111.

Alsan, Marcella and Marianne Wanamaker. 2018. "Tuskegee and the Health of Black Men." *Quarterly Journal of Economics*, 133(1): 407-455.

Anderson, D. Mark, Ryan Brown, Kerwin Kofi Charles, and Daniel I. Rees. 2020. "Occupational Licensing and Maternal Health: Evidence from Early Midwifery Laws." *Journal of Political Economy*, 128(11): 4337-4383.

Anderson, D. Mark, Kerwin Kofi Charles, Daniel I. Rees, and Tianyi Wang. 2021a. "Water Purification Efforts and the Black-White Infant Mortality Gap, 1906-1938." *Journal of Urban Economics*, 122(March): 103329.

Anderson, D. Mark, Kerwin Kofi Charles, and Daniel I. Rees. 2021b. "Re-Examining the Contribution of Public Health Efforts to the Decline in Urban Mortality." *American Economic Journal: Applied Economics*, In Press.

Anderson, D. Mark, Kerwin Kofi Charles, and Daniel I. Rees. 2021c. "The Federal Effort to Desegregate Southern Hospitals and the Black-White Infant Mortality Gap." NBER Working Paper No. 27970.

Ashenfelter, Orley, William J. Collins, and Albert Yoon. 2006. "Evaluating the Role of Brown v. Board of Education in School Equalization, Desegregation, and the Income of African Americans." *American Law and Economics Rev*iew, 8(2): 213–248.

Associated Press. 1969. "Evers to Battle Hospital Funds." *Clarion-Ledger,* April 12.

Ashraf, Nava, Diego Aycinena, Claudia Martinez, and Dean Yang. 2015. "Savings in Transnational Households: A Field Experiment among Migrants from El Salvador." *Review of Economics and Statistics*, 47(2): 332-351.

Bailey, Martha and Andrew Goodman Bacon. 2015. "The War on Poverty's Experiment in Public Medicine: Community Health Centers and the Mortality of Older Americans." *American Economic Review*, 105(3): 1067–1104.

Beardsley, Edward H. 1996. "Desegregating Southern Medicine, 1945-1970." *International Social Science Review*, 71(1/2): 37-54.

Bergman, Peter. 2016. "The Effects of School Integration: Evidence from a Randomized Desegregation Program." CESifo Working Paper Series No. 6119.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. 2004. "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics*, 119(1): 249-276.

Billings, Stephen, David Deming, and Jonah Rockoff. 2014. "School Segregation, Educational Attainment, and Crime: Evidence from the End of Busing in Charlotte-Mecklenburg." *Quarterly Journal of Economics*, 129(1): 435–476.

Bledsoe, Christena. 1968. "Hospital Integration: Don't Rock the Boat." *Atlanta Journal and Constitution*, August 25.

Bonaparte, Alicia. 2014. "'The Satisfactory Midwife Bag': Midwifery Regulation in South Carolina, Past and Present Considerations." *Social Science History*, 38(1&2): 155-182.

Brown-Nagin, Tomiko. 2011. *Courage to Dissent: Atlanta and the Long History of the Civil Rights Movement*. New York, NY: Oxford University Press.

Callaway, Brantly and Pedro H.C. Sant'Anna. 2021. "Difference-in-Differences with Multiple Time Periods." *Journal of Econometrics*, 225(2): 200-230.

Cameron, A. Colin, Jonah Gelbach, and Douglas Miller. 2008. "Bootstrap-based Improvements for Inference with Clustered Errors." *Review of Economics and Statistics*, 90(3): 414-427.

Cameron, A. Colin and Douglas Miller. 2015. "A Practitioner's Guide to Cluster-Robust Inference." *Journal of Human Resources*, 50(2): 317-372.

Cascio, Elizabeth, Nora Gordan, Ethan Lewis, and Sarah Reber. 2008. "From Brown to Busing." *Journal of Urban Economics*, 64(2): 296-325.

Chay, Kenneth and Michael Greenstone. 2000. "The Convergence in Black-White Infant Mortality Rates during the 1960's." *American Economic Review*, 90(2): 326-332

Chay, Kenneth, Jonathan Guryan, and Bhashkar Mazumder. 2009. "Birth Cohort and the Black-White Achievement Gap: The Roles of Access and Health Soon After Birth." NBER Working Paper No. 15078.

Chay, Kenneth, Jonathan Guryan, and Bhashkar Mazumder. 2014. "Early Life Environment and Racial Inequality in Education and Earnings in the United States." NBER Working Paper No. 20539.

Chandra, Amitabh, Michael Frakes, and Anup Malani. 2017. "Challenges to Reducing Discrimination and Health Inequity through Existing Civil Rights Laws." *Health Affairs*, 36(6): 1041-1047.

Chandra, Amitabh and Jonathan Skinner. 2004. "Geography and Racial Health Disparities." In N.B. Anderson, R.A. Bulatao, and B. Cohen (eds.), *National Research Council (US) Panel on Race, Ethnicity, and Health in Later Life*. Washington, D.C.: National Academies Press.

Clubb, Jerome M., William H. Flanigan, and Nancy H. Zingale. 2006. "Electoral Data for Counties in the United States: Presidential and Congressional Races, 1840-1972." Inter-university Consortium for Political and Social Research, Study No. 8611.

Collins, William J., and Melissa A. Thomasson. 2004. "The Declining Contribution of Socioeconomic Disparities to the Racial Gap in Infant Mortality Rates, 1920-1970." *Southern Economic Journal*, 7(4): 746-776.

Comptroller General. 1972. "Compliance with Antidiscrimination Provision of Civil Rights Act by Hospitals and Other Facilities Under Medicare and Medicaid." Report to the Committee on the Judiciary House of Representatives, Department of Health, Education, and Welfare.

Constitution State News Service. 1968. "Hawkinsville Hospital Is Accredited." *Atlanta Constitution*, July 5.

Cooper, Lisa, Debra Roter, Rachel Johnson, Daniel Ford, Donald Steinwachs, and Neil Powe. 2003. "Patient-Centered Communication, Ratings of Care, and Concordance of Patient and Physician Race." *Annals of Internal Medicine*, 139(11): 907-915.

Cornely, Paul B. 1956. "Segregation and Discrimination in Medical Care in the United States." *American Journal of Public Health*, 46(September): 1074-1081.

Cornely, Paul B. 1957. "Trend in Racial Integration in Hospitals in the United States." *Journal of the National Medical Association*, 49(1): 8-10.

Davis, Karen. 1975. "Equal Treatment and Unequal Benefits: The Medicare Program." *Milbank Memorial Fund Quarterly*, 53(4): 449-488.

Cutler, David M. and Ellen Meara. 2000. "The Technology of Birth: Is It Worth It?" In A. Garber (ed.), *Frontiers in Health Policy Research* (Volume 3). Cambridge, MA: MIT Press.

Dodd, Ruth. 1920. "Midwife Supervision in South Carolina." *Public Health Nurse*, 12(12): 863-867.

Donohue, John and James Heckman. 1991. "Continuous Versus Episodic Change: The Impact of Civil Rights Policy on the Economic Status of Blacks." *Journal of Economic Literature*, 29(4): 1603-1643.

Elder, Todd, John Goddeeris, and Steven Haider. 2016. "Racial and Ethnic Infant Mortality Gaps and the Role of Socio-Economic Status." *Labour Economics*, 43(December): 42-54.

Elder, Todd, John Goddeeris, Steven Haider, and Nigel Paneth. 2014. "The Changing Character of the Black–White Infant Mortality Gap, 1983–2004." *American Journal of Public Health*, 104(S1): S105-S111.

Ewbank, Douglas. 1987. "History of Black Mortality and Health before 1940." *Milbank Quarterly*, 65(Suppl 1): 100-28.

"Federal Examiner Orders HEW To Certify P&S Hospital Here." 1969. *Shreveport Journal*, January 10.

Finkelstein, Amy and Robin McKnight.2008. "What Did Medicare Do? The Initial Impact of Medicare on Mortality and Out of Pocket Medical Spending." *Journal of Public Economics*, 92(7): 1644–1668.

Frakt, Austin. 2020. "Bad Medicine: The Harm That Comes From Racism." *New York Times*, January 13. Available at: https://www.nytimes.com/2020/01/13/upshot/bad-medicine-the-harm-that-comes-from-racism.html.

Freeman, Richard B. 1981. "Black Economic Progress after 1964: Who Has Gained and Why?" In Sherwin Rosen (ed.), *Studies in Labor Markets*. Chicago, Illinois: University of Chicago Press for the National Bureau of Economic Research.

Gamoran, Adam and Brian An. 2016. "Effects of School Segregation and School Resources in a Changing Policy Context." *Education Evaluation and Policy Analysis*, 38(1): 43-64.

Goldman, Fred and Michael Grossman. 1988. "The Impact of Public Health Policy: The Case of Community Health Centers." *Eastern Economic Journal*, 14(1): 63-72.

Goodman-Bacon, Andrew 2018. "Public Insurance and Mortality: Evidence from Medicaid Implementation." *Journal of Political Economy*, 126(1): 216-262.

Goodman-Bacon, Andrew. 2021. "Difference-in-Differences with Variation in Treatment Timing." *Journal of Econometrics*, 225(2): 254-277.

Greenwood, Brad, Rachel Hardeman, Laura Huang, and Aaron Sojourner. 2020. "Physician–Patient Racial Concordance and Disparities in Birthing Mortality for Newborns." *Proceedings of the National Academy of Sciences*, 117(35): 21194-21200.

Griffin, Robert. 1966. "Racial Discrimination in Hospitals." *Congressional Record—Senate*, July 19, pp. 16145-16147.

Guryan, Jonathan. 2004. "Desegregation and Black Dropout Rates." *American Economic Review*, 94(4): 919–943.

Guyer, Bernard, Mary Anne Freedman, Donna Strobino, and Edward Sondik. 2000. "Annual Summary of Vital Statistics: Trends in the Health of Americans During the 20th Century." *Pediatrics*, 106(6): 1307-1317.

Hill, Andrew, Daniel Jones, and Lindsey Woodworth. 2020. "Physician-Patient Race-Match Reduces Patient Mortality." Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3211276.

"Hospital to Seek CR Okay." 1969. *Clarion-Ledger*. April 9.

Houde, John, Joan Humphrey, Beverly Boyd, and Robert Goldenberg. 1982. "Out of Hospital Deliveries in Alabama, 1940–1980." *Journal of the Medical Association of the State of Alabama*, 52(2): 20-21.

Johnson, Rucker C. 2011. "Long-Run Impacts of School Desegregation and School Quality on Adult Attainments." NBER Working Paper No. 16664.

Kenny, John A. 1965. "Civil Rights in Medicine." *American Journal of Orthopsychiatry*, 35(1): 26-37.

Largent, Emily. 2018. "Public Health, Racism, and the Lasting Impact of Hospital Segregation." *Public Health Reports*, 133(6) 715-720.

Lee, Andre L. 1984. "Black Community Hospitals: A Quest for Survival." *Urban Health*, 13(March): 46-47.

McBride, David 2018. *Caring for Equality: A History of African American Health and Healthcare* London, England: Rowman and Littlefield Publishing.

Mongeau, Beatrice, Harvey Smith, and Ann Maney. 1961. "The 'Granny' Midwife: Changing Roles and Functions of a Folk Practitioner." *American Journal of Sociology*, 66(5): 497-505.

"Monroe Hospital Approved for Medicare." 1968. *Montgomery Advertiser*. September 14.

Nash, Robert M. 1968. "Compliance of Hospitals and Health Agencies with Title VI of the Civil Rights Act." *American Journal of Public Health*, 58 (2): 246-251.

Nalin, David R. 2022. "The History of Intravenous and Oral Rehydration and Maintenance Therapy of Cholera and Non-Cholera Dehydrating Diarrheas: A Deconstruction of Translational Medicine: From Bench to Bedside?" *Tropical Medicine and Infectious Disease* 2022 Mar; 7(3): 50.

Odum, Maria. 1992. "7 Black Hospitals Struggle to Find A Modern Role." *New York Times*, August 12.

Quadagno, Jill. 2000. "Promoting Civil Rights through the Welfare State: How Medicare Integrated Southern Hospitals." *Social Problems*, 47 (1): 68-89.

Reardon, Sean and Ann Owens. 2014. "60 Years After Brown: Trends and Consequences of School Segregation." *The Annual Review of Sociology*, 40: 199–218.

Reber, Sarah J. 2007. "School Desegregation and Educational Attainment for Blacks." NBER Working Paper No. 13193.

Reber, Sarah J. 2010. "School Desegregation and Educational Attainment for Blacks." *Journal of Human Resources*, 45(4): 893–914.

Reber. Sarah J. 2011. "From Separate and Unequal to Integrated and Equal? School Desegregation and School Finance in Louisiana." *Review of Economics and Statistics*, 93(2): 404-415.

Reynolds, P. Preston. 1997. "The Federal Government's Use of Title VI and Medicare to Racially Integrate Hospitals in the United States, 1963 through 1967." *American Journal of Public Health*, 87(11): 1850-1858.

Reynolds, P. Preston. 2004. "Professional and Hospital Discrimination and the US Court of Appeals Fourth Circuit 1956–1967." *American Journal of Public Health*, 94(5): 710–720.

Rice, Mitchell and Woodrow Jones, Jr. 1994. *Public Policy and the Black Hospital: From Slavery to Segregation to Integration*. Westport, Connecticut: Greenwood Press.

Sarrazin, Mary, Mary Campbell, Kelly Richardson, and Gary Rosenthal. 2009. "Racial Segregation and Disparities in Health Care Delivery: Conceptual Model and Empirical Assessment." *Health Services Research*, 44(4): 1424-1444.

Singh, Gopal and Stella Yu. 2019. "Infant Mortality in the United States, 1915-2017: Large Social Inequalities Have Persisted for Over a Century." *International Journal of Maternal and Child Health and AIDS*, 8(1): 19–31.

Smith, David Barton. 1998. "Addressing Racial Inequities in Health Care: Civil Rights Monitoring and Report Cards." *Journal of Health Politics, Policy and Law*, 23(1): 75-105.

Smith, David Barton. 2005. "The Politics of Racial Disparities: Desegregating the Hospitals in Jackson, Mississippi." *Milbank Quarterly*, 83(2): 247–269.

Smith, David Barton. 2016. *The Power to Heal: Civil Rights, Medicare, and the Struggle to Transform America's Health Care System*. Nashville, Tennessee: Vanderbilt University Press.

Smith, Imari, Keisha Bentley-Edwards, Salimah El-Amin, and William Darity, Jr. 2018. *Fighting at Birth: Eradicating the Black-White Infant Mortality Gap*. Report, Duke University, Samuel DuBois Cook Center on Social Equity and Insight Center for Community Economic Development.

South Carolina. 1960. "Rules and Regulations Governing Midwives in the State of South Carolina", pp. 194-195. *Code of Laws of South Carolina 1952, Annotated: 1960 Cumulative Supplement*, Volume 7. Columbia, South Carolina: R. L. Bryan Company.

Speights, Joedrecka Brown, Samantha Sittig Goldfarb, Brittany Wells, Leslie Beitsch, Robert Levine, and George Rust. 2017. "State-Level Progress in Reducing the Black–White Infant Mortality Gap, United States, 1999–2013." *American Journal of Public Health*, 107(5): 775-782.

Sternberg, Steve. 2015. "Desegregation: The Hidden Legacy of Medicare." *U.S. News*, July 29. Available at: https://www.usnews.com/news/articles/2015/07/30/desegregation-the-hidden-legacy-of-medicare.

Sun, Liyang and Sarah Abraham. 2021. "Estimating Dynamic Treatment Effects in Event Studies with Heterogeneous Treatment Effects." *Journal of Econometrics*, 225(2): 175-199.

Tarozzi, Alessandro, Aprajit Mahajan, Brian Blackburn, Dan Kopf, Lakshmi Krishnan, and Joanne Yoong. 2014. "Micro-loans, Insecticide-Treated Bednets, and Malaria: Evidence from a Randomized Controlled Trial in Orissa, Inida." *American Economic Review*, 104(7): 1909-1941.

Taylor, Jamila, Cristina Novoa, Katie Hamm, and Shilpa Phadke. 2019. "Eliminating Racial Disparities in Maternal and Infant Mortality: A Comprehensive Policy Blueprint." Center for American Progress. Available at: https://www.americanprogress.org/issues/women/reports/2019/05/02/469186/eliminating-racial-disparities-maternal-infant-mortality/.

Thomas, Duncan, Elizabeth Frankenberg, Jed Friedman, Jean-Pierre Habicht, Mohammed Hakimi, Nicholas Ingwersen, Jaswadi, Nathan Jones, Christopher McKelvey, Gretel Pelto, Bondan Sikoki, Teresa Seeman, James Smith, Cecep Sumantri, Wayan Suriastini, and Siswanto Wilopo. 2006. "Causal Effect of Health on Labor Market Outcomes: Experimental Evidence." CCPR-070-06. Available at: http://escholarship.org/uc/item/0g28k77w.

Thomas, Karen Kruse. 2006. "The Hill-Burton Act and Civil Rights: Expanding Hospital Care for Black Southerners, 1939-1960." *Journal of Southern History*, 72 (4): 823-870.

Thomas, Karen Kruse. 2011. *Deluxe Jim Crow: Civil Rights and American Health Policy*, *1935-1954*. Athens, Georgia. University of Georgia Press.

Thompson, Owen. 2022a. "School Desegregation and Black Teacher Employment." *Review of Economics and Statistics*, 104(5), 962-980.

Thompson, Owen. 2022b. "Selected Fertility and Racial Inequality." Forthcoming at *Journal of Human Resources*.

"Tuomey Now on Medicare." 1969. *The Item*, April 25.

U.S. Civil Rights Commission. 1966. "Title VI One Year After...A Survey of Desegregation of Health and Welfare Services in the South." Washington, D.C.: United States Commission on Civil Rights.

U.S. Department of Health, Education, and Welfare. 1963. *Vital Statistics of the United States, 1960. Volume II-Mortality, Part A*. Washington, D.C.: United States Government Printing Office.

U.S. Department of Health, Education, and Welfare. 1976. *Vital Statistics of the United States, 1972. Volume II-Mortality*. Washington, D.C.: United States Government Printing Office.

U.S. Department of Health, Education, and Welfare. 1978. *Vital Statistics of the United States, 1975. Volume I-Natality*. Washington, D.C.: United States Government Printing Office.

U.S. Department of Labor. n.d. "Title VI, Civil Rights Act of 1964." Available at: https://www.dol.gov/agencies/oasam/regulatory/statutes/title-vi-civil-rights-act-of-1964.

U.S. House of Representatives. 1973. "Title VI Enforcement in Medicare and Medicaid Programs." Hearings before the Civil Rights and Constitutional Rights Subcommittee, September 12.

Valfort, Marie-Anne. 2018. "Do Anti-Discrimination Policies Work?" *IZA World of Labor*, 450: 1-12.

Wallace, Maeve, Joia Crear-Perry, Lisa Richardson, Meshawn Tarver, and Katherine Theall. 2017. "Separate and Unequal: Structural Racism and Infant Mortality in the US." *Health and Place*, 45: 140-144.

Ward, Thomas. 2003. *Black Physicians in the Jim Crow South*. Fayetteville, Arkansas: University of Arkansas Press.

Washington, Harriet, Robert Baker, Ololade Olakanmi, Todd Savitt, Elizabeth Jacobs, Eddie Hoover, Matthew Wynia, Janice Blanchard, L. Ebony Boulware, Clarence Braddock, Giselle Corbie-Smith, LaVera Crawley, Thomas LaVeist, Randall Maxey, Charles Mills, Kathryn Moseley, and David R Williams. 2009. "Segregation, Civil Rights, and Health Disparities: The Legacy of African American Physicians and Organized Medicine, 1910-1968." *Journal of the National Medical Association*, 101(6): 513-527.

Wesley, Jr., Nathaniel. 2010. *Black Hospitals in America: History, Contributions and Demise*. Tallahassee, Florida: NRW Associates Publications.

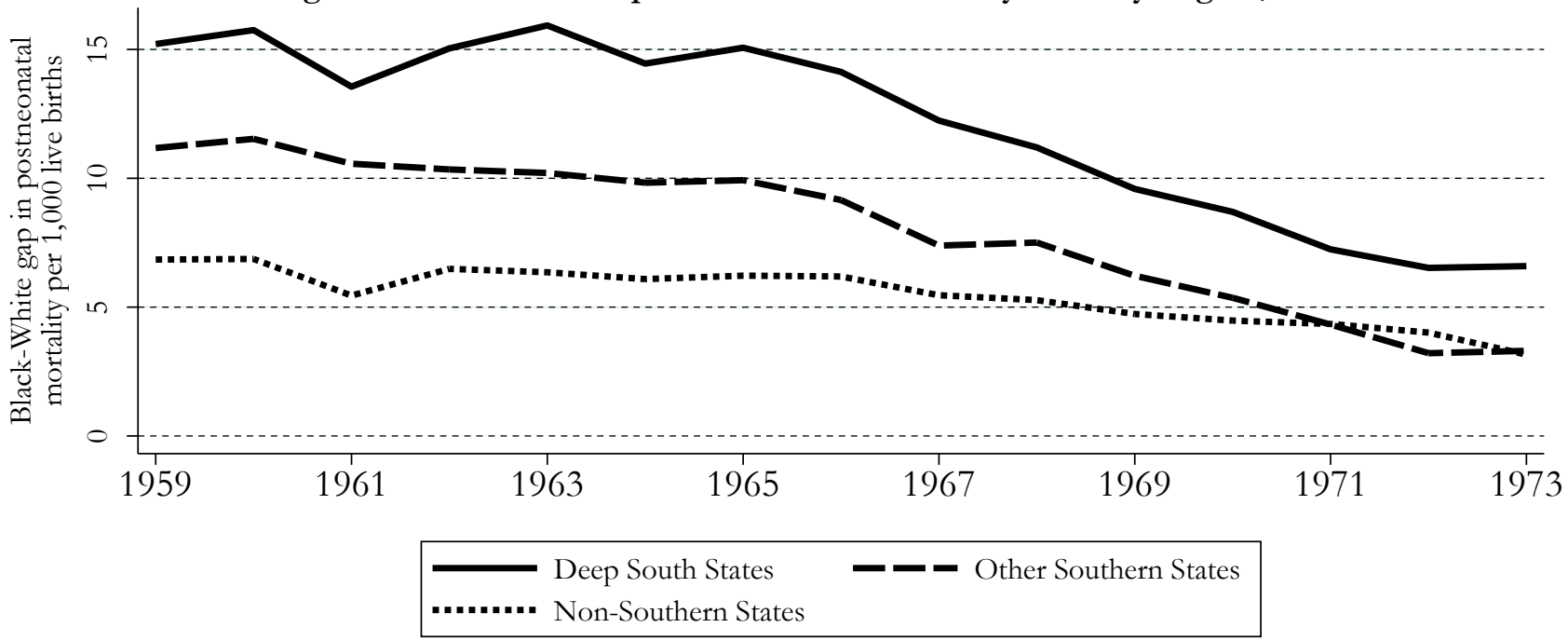
Woolley, John and Gerhard Peters. n.d. "The American Presidency Project: 1948." Available at: https://www.presidency.ucsb.edu/statistics/elections/1948.

Wright, Gavin. 1999. "The Civil Rights Revolution as Economic History." *Journal of Economic History*, 59(2): 267-289.

Wright, Gavin. 2013. *Sharing the Prize: The Economics of the Civil Rights Revolution in the American South*. Cambridge, Massachusetts and London, England: The Belknap Press of Harvard University Press.

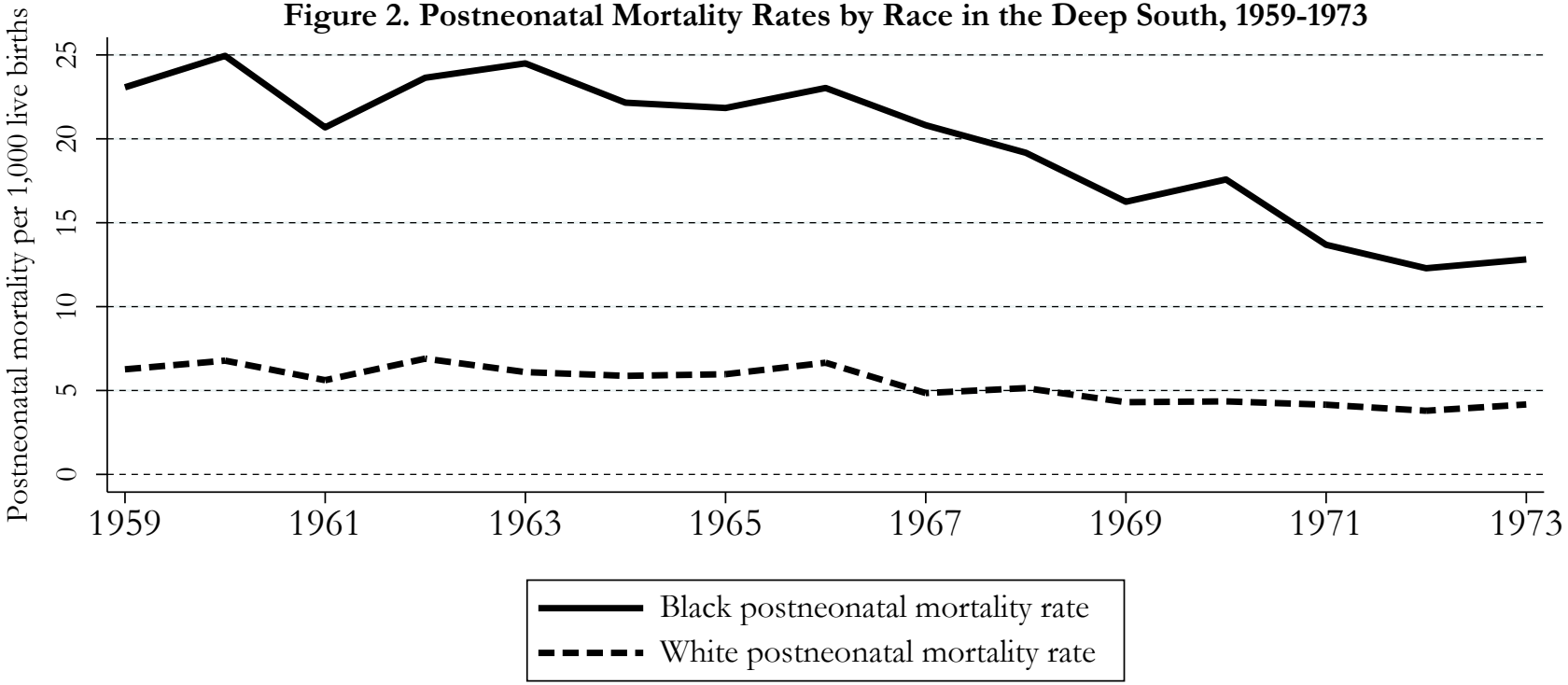
Yoder, Hannah and Lynda R. Hardy. 2018. "Midwifery and Antenatal Care for Black Women: A Narrative Review." *SAGE Open*, January-March: 1-8.

Figure 1. Black-White Gap in Postneonatal Mortality Rates by Region, 1959-1973



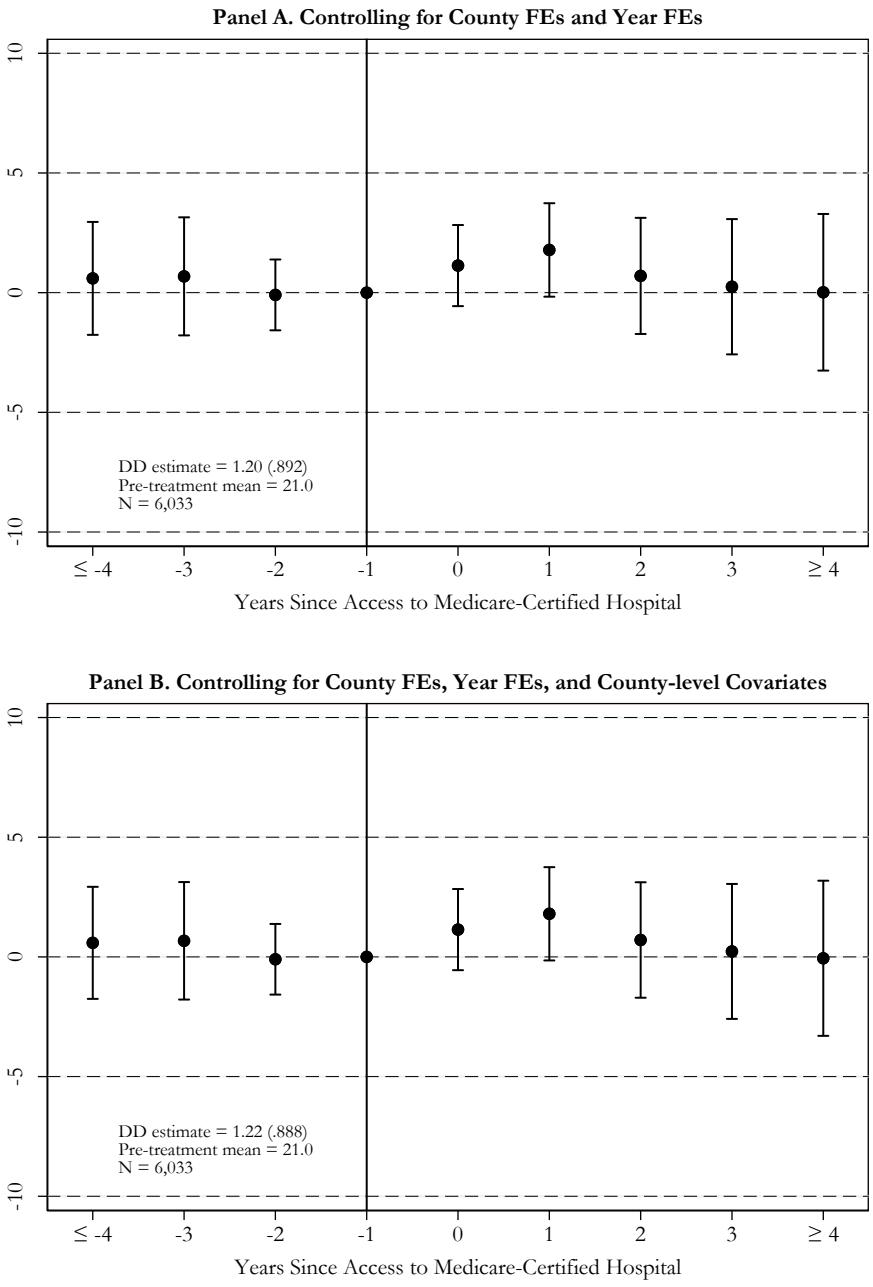
Notes: Based on annual data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System.

Figure 2. Postneonatal Mortality Rates by Race in the Deep South, 1959-1973



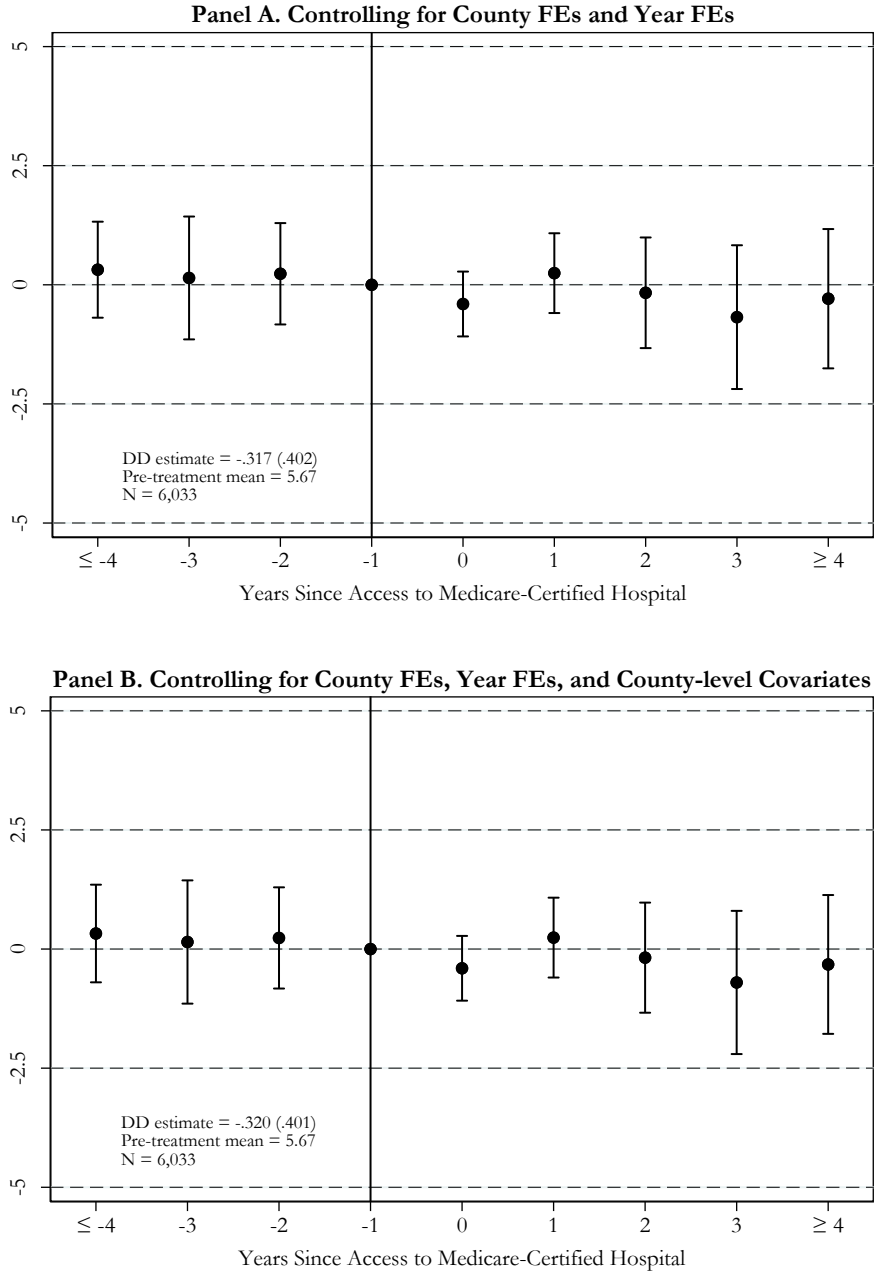
Notes: Based on annual data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System.

Figure 3. The Effect of the Hospital Desegregation Campaign on Black Postneonatal Mortality, 1959-1973



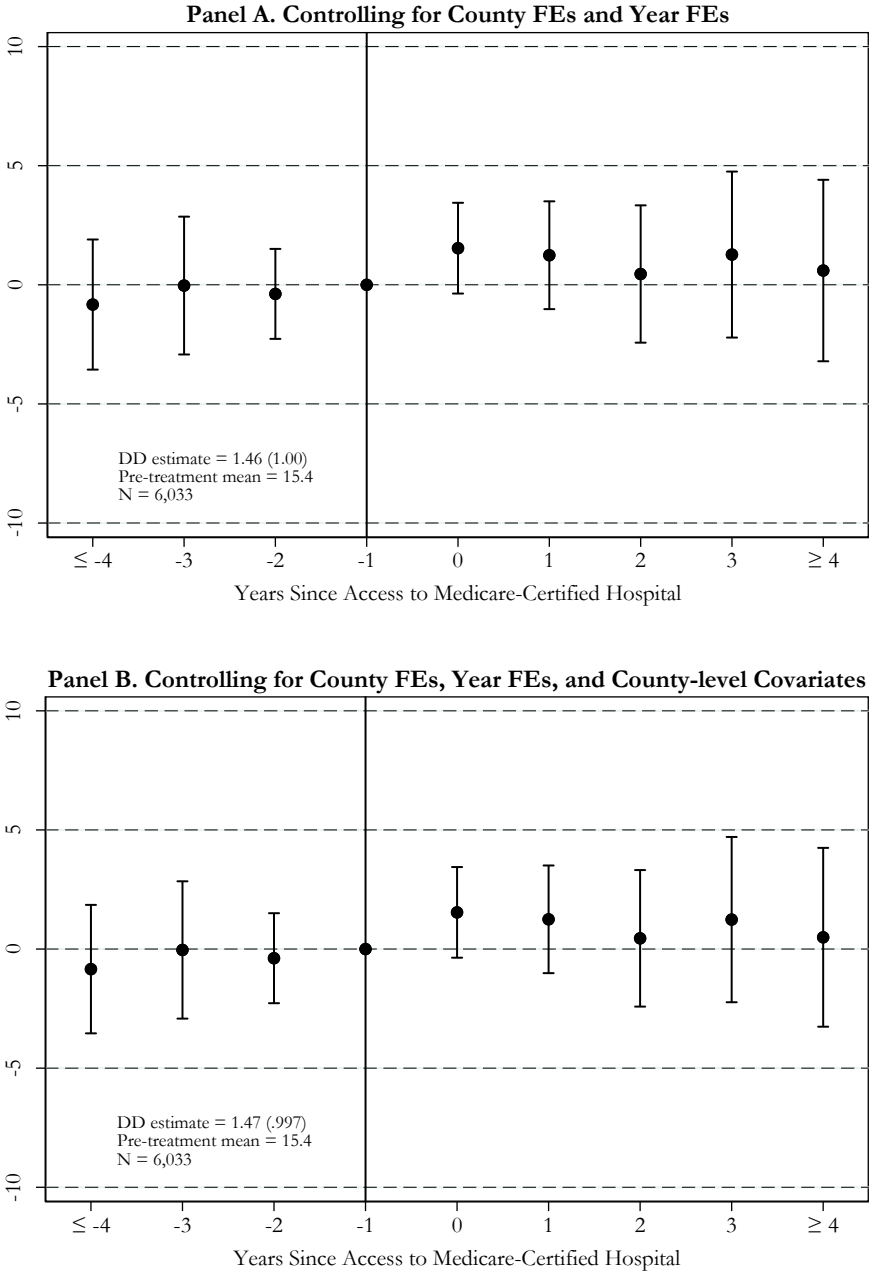
Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. OLS coefficient estimates (and their 90% confidence intervals) are reported, where the omitted category is one year before treatment. The dependent variable is equal to the number of Black postneonatal deaths per 1,000 live Black births in county *c* and year *t*. Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level. Reported DD estimates (and their standard errors) come from regressions where the event-study indicators are replaced by the variable *Medicare* (equal to one if Black mothers in county *c* and year *t* had access to a Medicare-eligible hospital, and equal to zero otherwise). Columns (1) and (2) of Appendix Table A3 present the estimates reported above.

Figure 4. The Effect of the Hospital Desegregation Campaign on White Postneonatal Mortality, 1959-1973



Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. OLS coefficient estimates (and their 90% confidence intervals) are reported, where the omitted category is one year before treatment. The dependent variable is equal to the number of White postneonatal deaths per 1,000 live White births in county *c* and year *t*. Regressions are weighted by live White births and standard errors are corrected for clustering at the county level. Reported DD estimates (and their standard errors) come from regressions where the event-study indicators are replaced by the variable *Medicare* (equal to one if White mothers in county *c* and year *t* had access to a Medicare-eligible hospital, and equal to zero otherwise). Columns (3) and (4) of Appendix Table A3 present the estimates reported above.

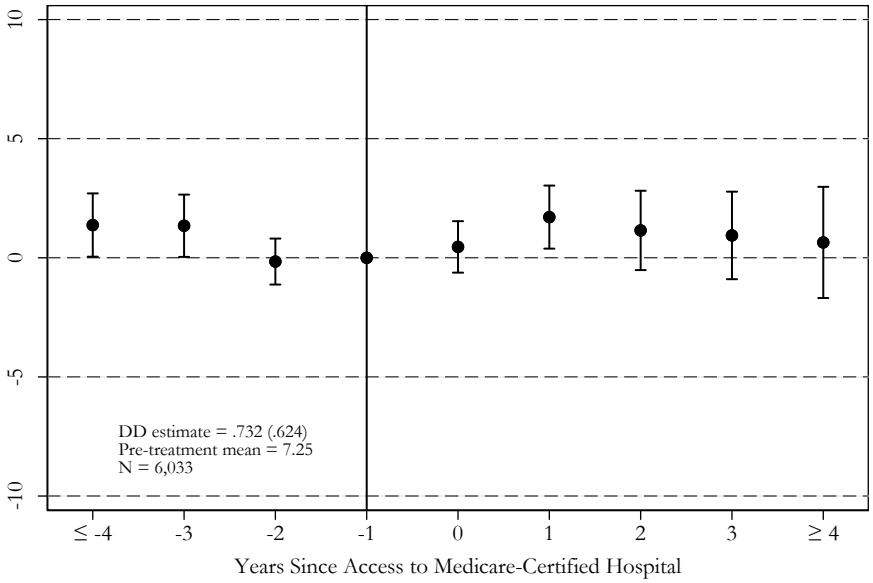
Figure 5. The Effect of the Hospital Desegregation Campaign on the Black-White Postneonatal Mortality Gap, 1959-1973



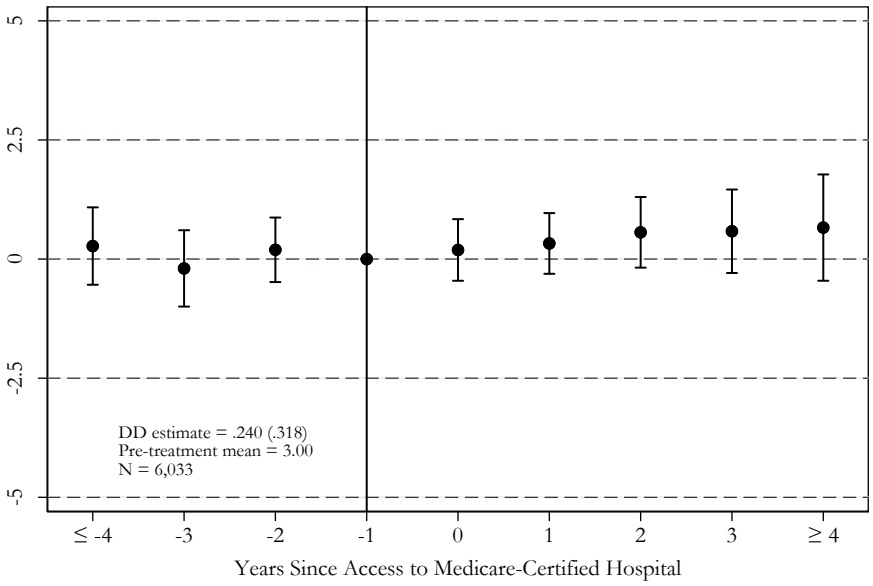
Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. OLS coefficient estimates (and their 90% confidence intervals) are reported, where the omitted category is one year before treatment. The dependent variable is equal to the difference between Black postneonatal deaths per 1,000 live Black births and White postneonatal deaths per 1,000 live White births in county *c* and year *t*. Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level. Reported DD estimates (and their standard errors) come from regressions where the event-study indicators are replaced by the variable *Medicare* (equal to one if Black mothers in county *c* and year *t* had access to a Medicare-eligible hospital, and equal to zero otherwise). Columns (5) and (6) of Appendix Table A3 present the estimates reported above.

Figure 6. The Effect of the Hospital Desegregation Campaign on Black Postneonatal Mortality by Cause, 1959-1973

Panel A. *Black Postneonatal Mortality Due to Pneumonia/Influenza*



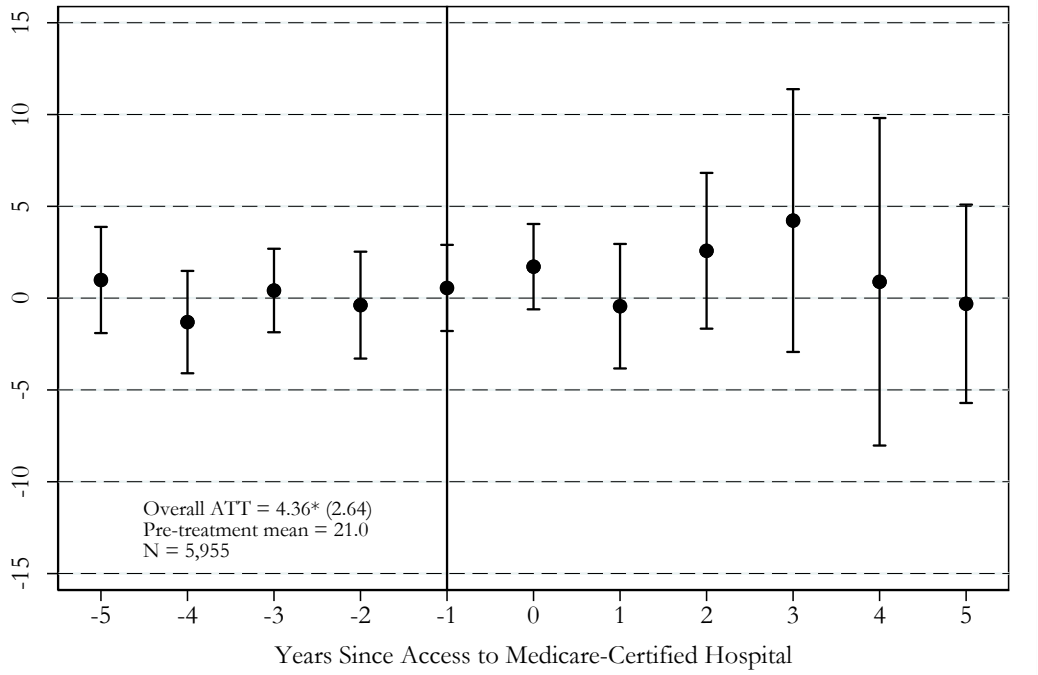
Panel B. *Black Postneonatal Mortality Due to Diarrhea*



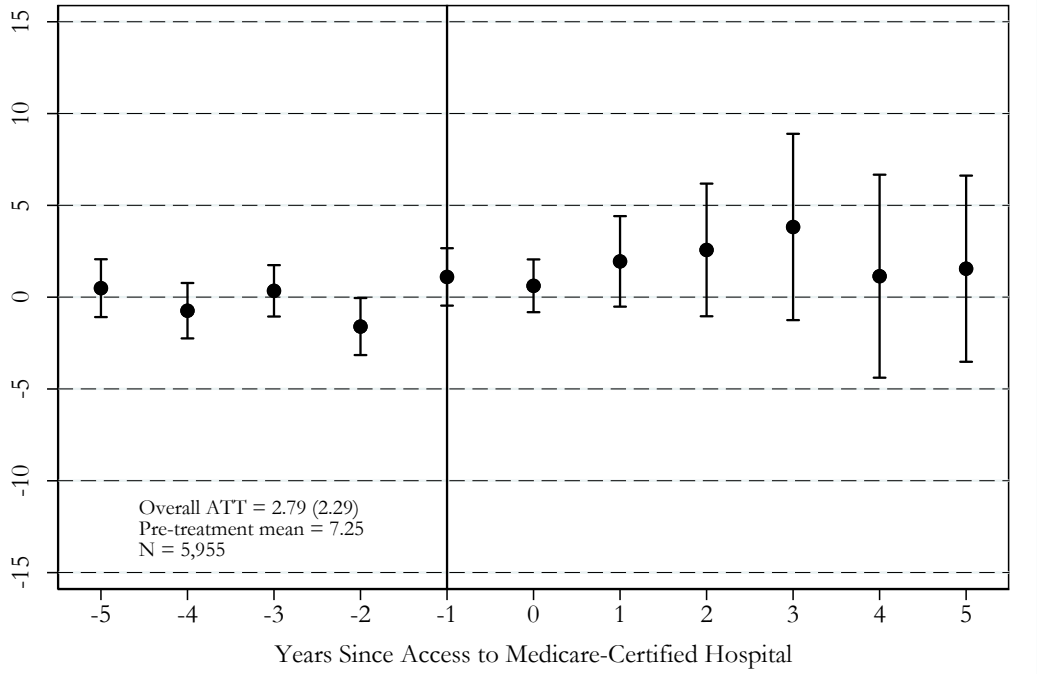
Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. OLS coefficient estimates (and their 90% confidence intervals) are reported, where the omitted category is one year before treatment. The dependent variable is equal to the number of specified Black postneonatal deaths per 1,000 live Black births in county *c* and year *t*. All models control for the county-level covariates listed in Appendix Table A2, county fixed effects, and year fixed effects. Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level. Reported DD estimates (and their standard errors) come from regressions where the event-study indicators are replaced by the variable *Medicare* (equal to one if Black mothers in county *c* and year *t* had access to a Medicare-eligible hospital, and equal to zero otherwise).

Figure 7. The Effect of the Hospital Desegregation Campaign on Black Postneonatal Mortality and Black Postneonatal Mortality by Cause, 1959-1973: Callaway and Sant'Anna (2021) Estimator

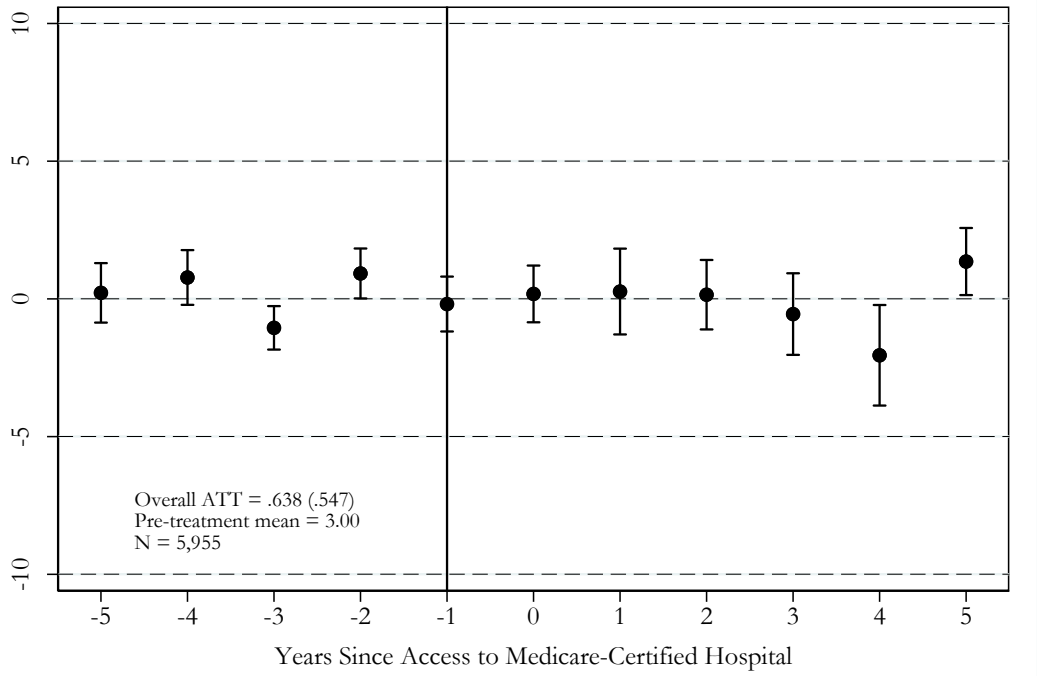
Panel A. *Black Postneonatal Mortality*



Panel B. *Black Postneonatal Mortality Due to Pneumonia/Influenza*



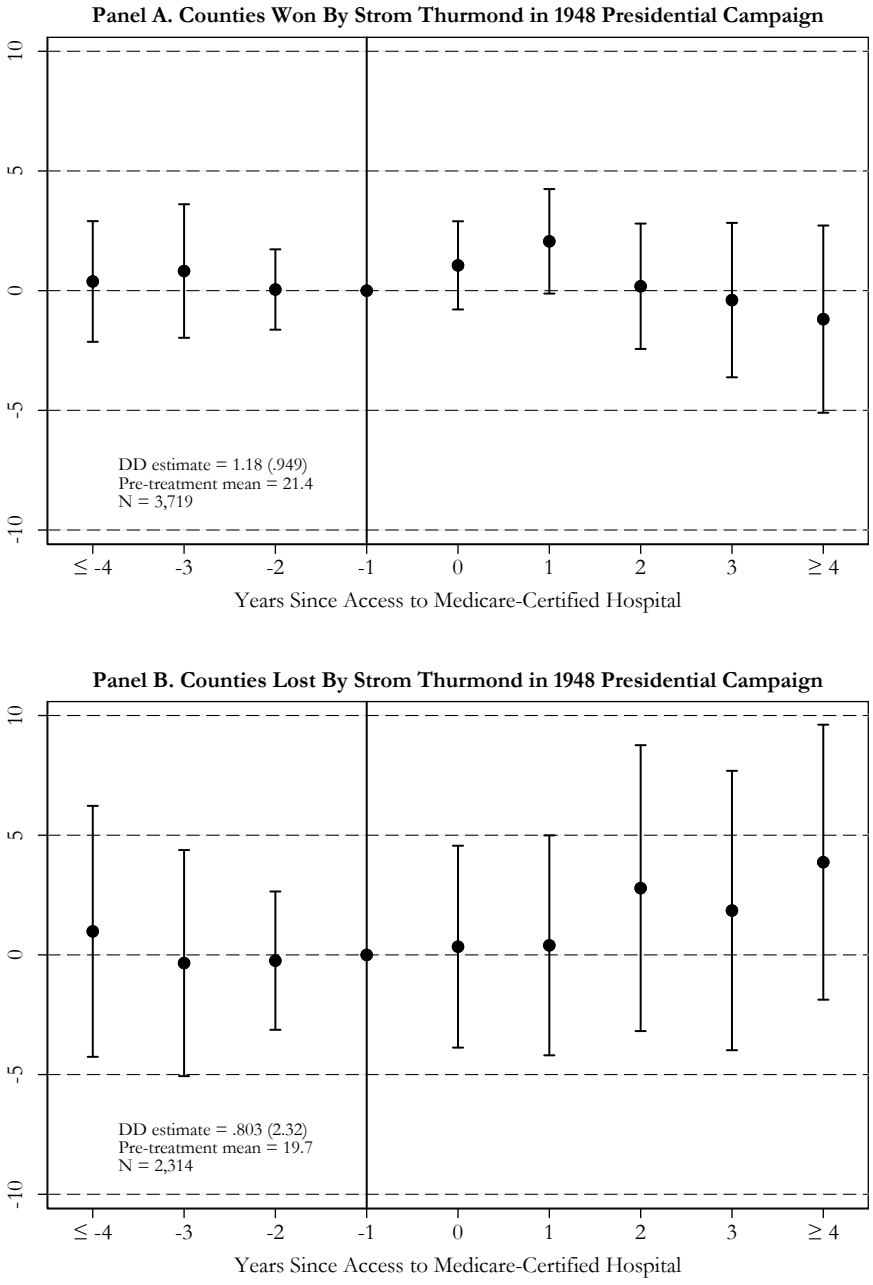
Panel C. *Black Postneonatal Mortality Due to Diarrhea*



*Statistically significant at 10% level.

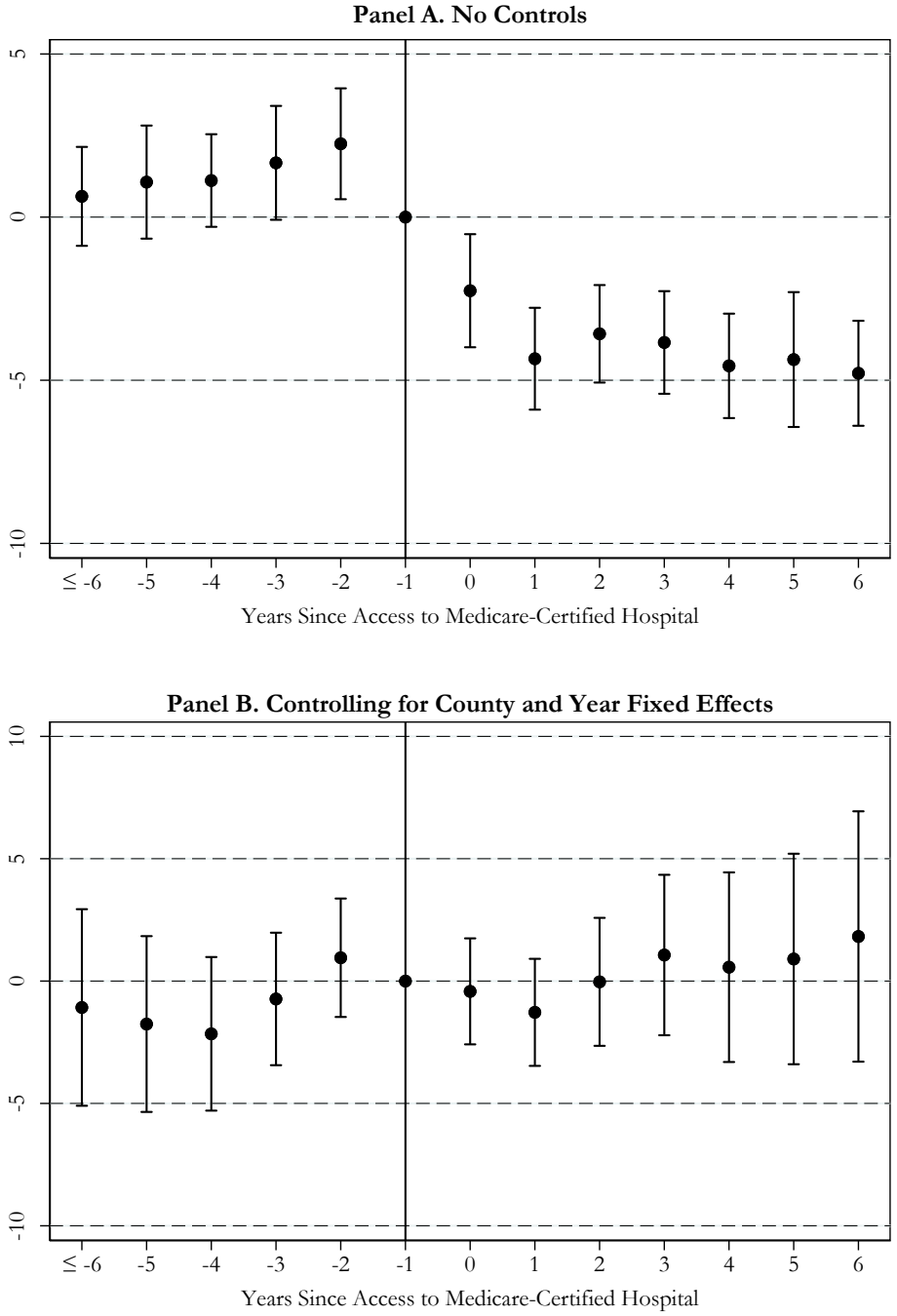
Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. Estimates of group-time average treatment effects on the treated (ATTs) and their 90% confidence intervals are reported. ATT estimates are from equation (3.4) in Callaway and Sant'Anna (2021). The dependent variable is equal to the number of specified Black postneonatal deaths per 1,000 live Black births in county *c* and year *t*. Estimated ATTs are weighted by live Black births and standard errors are corrected for clustering at the county level. The overall ATTs are the average of the estimated ATTs in the post-treatment period and are from equation (3.12) in Callaway and Sant'Anna (2021).

Figure 8. The Effect of the Hospital Desegregation Campaign on Black Postneonatal Mortality, 1959-1973: Strom Thurmond Heterogeneity Analysis



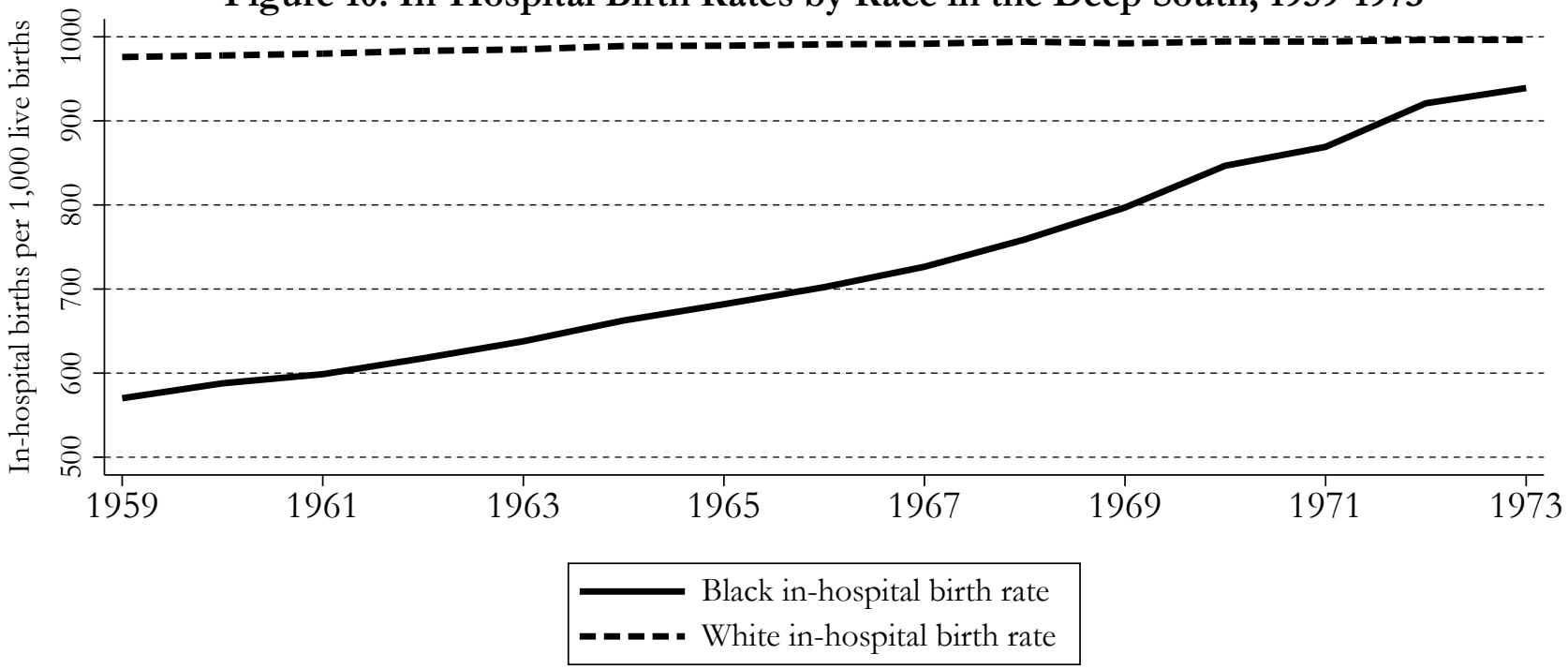
Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. OLS coefficient estimates (and their 90% confidence intervals) are reported, where the omitted category is one year before treatment. The dependent variable is equal to the number of Black postneonatal deaths per 1,000 live Black births in county *c* and year *t*. All models control for the county-level covariates listed in Appendix Table A2, county fixed effects, and year fixed effects. Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level. Reported DD estimates (and their standard errors) come from regressions where the event-study indicators are replaced by the variable *Medicare* (equal to one if Black mothers in county *c* and year *t* had access to a Medicare-eligible hospital, and equal to zero otherwise).

Figure 9. Replicating and Extending Event-study Estimates from Almond et al. (2006) on the Black-White Postneonatal Mortality Gap Due to Pneumonia, Influenza, and Diarrhea in Mississippi



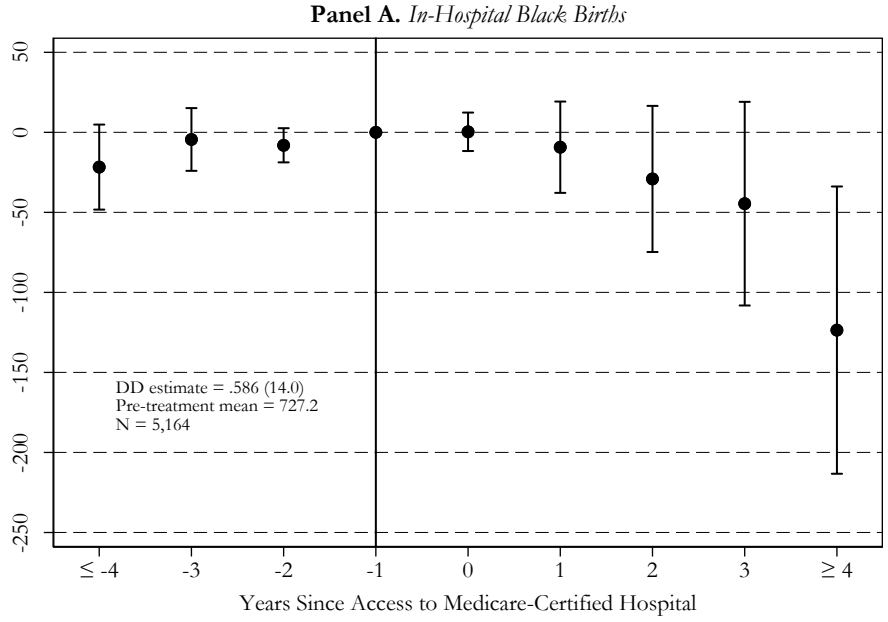
Notes: OLS coefficient estimates (and their 90% confidence intervals) are reported, where the omitted category is one year before treatment. The dependent variable is equal to the difference between Black postneonatal deaths due to pneumonia, influenza, and diarrhea per 1,000 live Black births and White postneonatal deaths due to pneumonia, influenza, and diarrhea per 1,000 live White births in county *c* and year *t*. Regressions are weighted by live Black births. Standard errors are corrected for clustering at the county level.

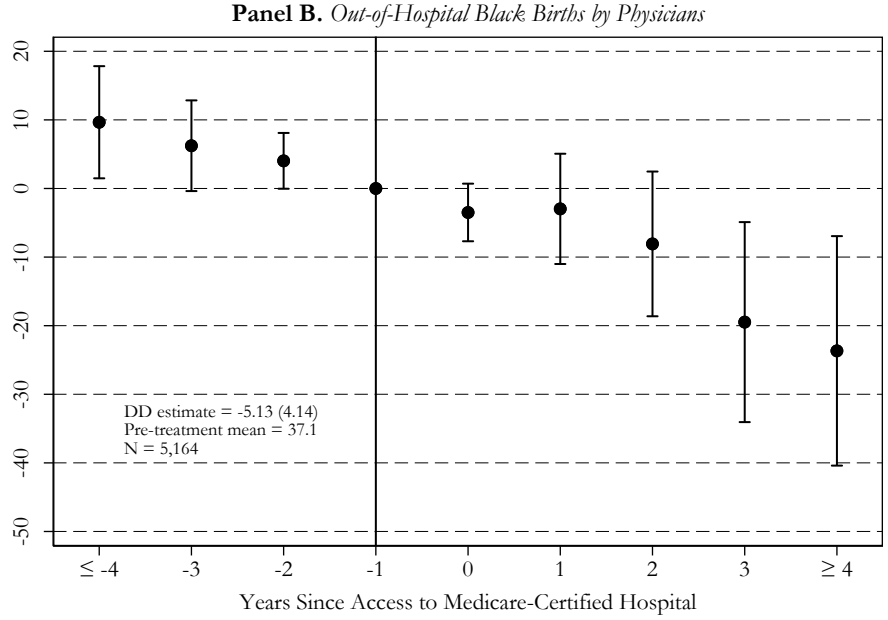
Figure 10. In-Hospital Birth Rates by Race in the Deep South, 1959-1973



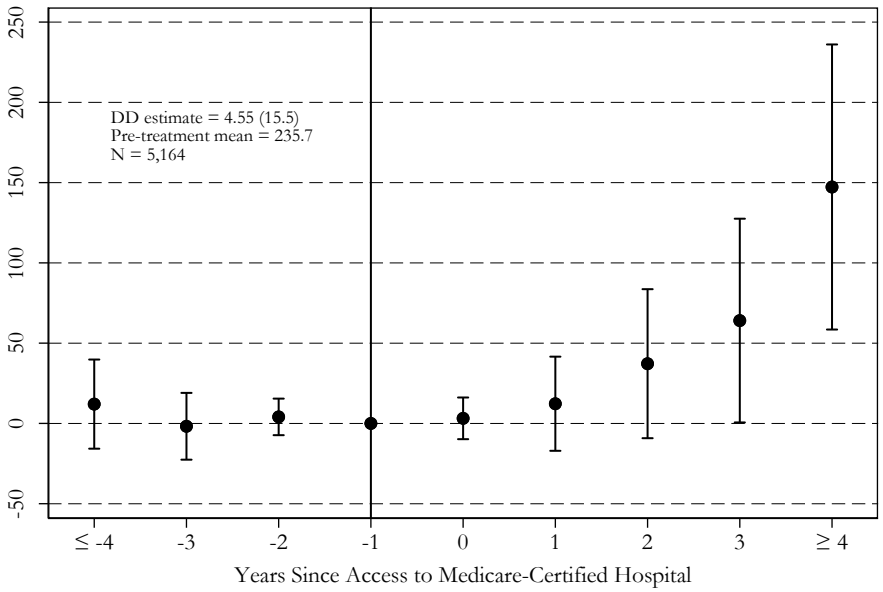
Notes: Based on annual data from the Natality Files, published by the National Vital Statistics System.

Figure 11. The Effects of the Hospital Desegregation Campaign on Black Births by Location/Attendant and Maternal Mortality, 1959-1973

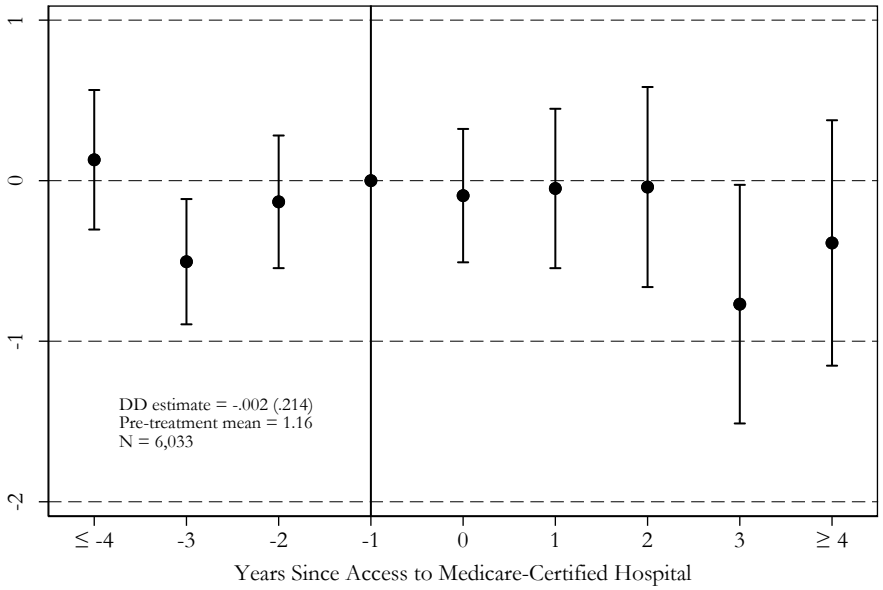




Panel C. *Out-of-Hospital Black Births by Midwives*



Panel D. *Black Maternal Mortality*



Notes: The results in panels A-C are based on annual county-level data from individual state vital statistics reports and the Natality Files, published by the National Vital Statistics System. The results in panel D are based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. OLS coefficient estimates (and their 90% confidence intervals) are reported, where the omitted category is one year before treatment. In panels A-C, the dependent variable is equal to the number of live Black births by location and attendant per 1,000 live Black births in county *c* and year *t*. In panel D, the dependent variable is equal to the number of Black maternal deaths per 1,000 live Black births in county *c* and year *t*. All models control for the county-level covariates listed in Appendix Table A2, county fixed effects and year fixed effects. Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level. Reported DD estimates (and their standard errors) come from regressions where the event-study indicators are replaced by the variable *Medicare* (equal to one if Black mothers in county *c* and year *t* had access to a Medicare-eligible hospital, and equal to zero otherwise).

Table 1. The Effect of the Hospital Desegregation Campaign on Black Postneonatal Mortality, 1959-1973: Alternative Treatment Thresholds

	(1)	(2)	(3)
Medicare – 25% of Beds	1.42*	…	…
	(.785)		
Medicare – 50% of Beds	…	1.02	…
		(.705)	
Medicare – 75% of Beds	…	…	2.64**
			(1.07)
Pre-treatment mean	21.0	21.0	21.0
N	6,033	6,033	6,033
R^2	.208	.208	.211

*Statistically significant at 10% level; ** at 5% level.

Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. Each column represents results from a separate OLS regression. The dependent variable is equal to the number of Black postneonatal deaths per 1,000 live Black births in county *c* and year *t*. All models control for the county-level covariates listed in Appendix Table A2, county fixed effects, and year fixed effects. Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level.

Table 2. The Effect of the Hospital Desegregation Campaign on Black Postneonatal Mortality, 1959-1973: Robustness Checks

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Controlling for county-specific linear time trends	Controlling for state-by-year FEs	Goodman-Bacon (2021) Detrend	Drop no-hospital counties	No-hospital counties coded as never certified	Medicare-certified counties on border	Unweighted
Medicare	1.18	1.25	.030	.931	.219	1.30	3.27***
	(1.01)	(.886)	(.873)	(.899)	(.830)	(.874)	(1.20)
Number of Medicare-Certified Counties on Border	…	…	…	…	…	-.257	…
						(.342)	
Pre-treatment mean	21.0	21.0	22.5	20.7	21.0	21.0	22.8
N	6,033	6,033	6,033	4,913	6,033	6,033	6,033
R^2	.327	.247	.119	.235	.208	.209	.049

***Statistically significant at 1% level.

Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. Each column represents results from a separate OLS regression. The dependent variable is equal to the number of Black postneonatal deaths per 1,000 live Black births in county *c* and year *t*. All models control for the county-level covariates listed in Appendix Table A2, county fixed effects, and year fixed effects. Unless specified otherwise, regressions are weighted by live Black births. Standard errors, corrected for clustering at the county level, are in parentheses.

Table 3. The Effect of the Hospital Desegregation Campaign on Black Postneonatal Mortality, 1959-1973: Extensions

	(1)	(2)	(3)
	Early vs. late adopters	Interaction between $Medicare_{ct}$ and *Black Hospital*$_c$	Interaction between $Medicare_{ct}$ and $Medicaid_{st}$
Medicare – 1967	1.44	…	…
	(.991)		
Medicare – 1968 or later	.846	…	…
	(.973)		
Medicare	…	1.23	.610
		(.901)	(1.02)
*Medicare*Black Hospital*	…	-.038	…
		(1.43)	
*Medicare*Medicaid*	…	…	1.53
			(1.42)
Pre-treatment mean	21.0	21.0	21.0
N	6,033	6,033	6,033
R^2	.208	.208	.208

Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. Each column represents results from a separate OLS regression. The dependent variable is equal to the number of Black postneonatal deaths per 1,000 live Black births in county *c* and year *t*. All models control for the county-level covariates listed in Appendix Table A2, county fixed effects, and year fixed effects. In column (3), the model also controls for $Medicaid_{st}$. Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level.

Table 4. Replicating and Extending Estimates from Almond et al. (2006) on the Effect of the Hospital Desegregation Campaign on Postneonatal Mortality in Mississippi by Race

	(1)	(2)	(3)	(4)	(5)	(6)
	Estimates reported in Almond et al. (2006)		Replicating and extending estimates reported in Almond et al. (2006)			
Panel A. Black postneonatal mortality						
1 Year After Medicare	-5.74***	-5.84***	-6.46***	-5.34***	-1.64	-2.64
	(1.36)	(1.46)	(1.20)	(1.16)	(1.46)	(2.08)
2 Years After Medicare	-8.00***	-8.09***	-8.15***	-6.64***	-1.62	-3.35
	(1.37)	(1.50)	(1.01)	(1.15)	(1.65)	(2.79)
3 Years After Medicare	-9.79***	-9.81***	-8.39***	-6.59***	-.751	-3.30
	(1.54)	(1.83)	(.899)	(1.32)	(1.84)	(3.79)
4 Years After Medicare	-10.2***	-10.3***	-10.6***	-9.05***	-1.84	-5.54
	(1.82)	(2.17)	(1.16)	(1.39)	(2.34)	(4.72)
5 Years After Medicare	-11.5***	-11.9***	-10.4***	-9.19***	-.258	-5.17
	(2.06)	(2.46)	(1.48)	(1.82)	(3.14)	(6.38)
6 Years After Medicare	-12.6***	-12.9***	-9.10***	-7.63***	1.67	-4.20
	(2.19)	(2.78)	(1.25)	(1.74)	(3.51)	(7.65)
N	1,022	1,022	1,200	1,200	1,200	1,200
R^2	.20	.42	.19	.41	.38	.43
Panel B. White postneonatal mortality						
1 Year After Medicare	.377	.600	-1.08**	-.472	1.01	-.093
	(.589)	(.660)	(.456)	(.631)	(.749)	(1.01)
2 Years After Medicare	-.660	-.302	-1.52***	-.762	1.41	-.393
	(.607)	(.691)	(.504)	(.681)	(.792)	(1.44)
3 Years After Medicare	-1.03	-.556	-2.27***	-1.42*	-.177	-2.90
	(.667)	(.749)	(.431)	(.755)	(.849)	(1.86)
4 Years After Medicare	-1.76**	-1.36	-2.23***	-1.49**	.588	-3.04
	(.716)	(.840)	(.449)	(.737)	(.947)	(2.36)
5 Years After Medicare	-1.52**	-1.21	-1.83***	-1.03	1.18	-3.66
	(.729)	(.840)	(.628)	(.902)	(1.28)	(2.86)
6 Years After Medicare	-1.35	-1.08	-1.16**	-.366	1.77	-4.71
	(.878)	(1.02)	(.561)	(.914)	(1.44)	(3.73)
N	1,022	1,022	1,200	1,200	1,200	1,200
R^2	.04	.24	.04	.23	.17	.24
County fixed effects	No	Yes	No	Yes	Yes	Yes
County-level covariates	No	Yes	No	Yes	Yes	Yes
County-specific linear trend	No	Yes	No	Yes	No	Yes
Year fixed effects	No	No	No	No	Yes	Yes

*Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column within each panel represents results from a separate OLS regression. The dependent variable is equal to the number of postneonatal deaths per 1,000 race-specific live births in county *c* and year *t*. Medicare certification dates come from Almond et al. (2006). The models in columns (1) and (3) also include a pre-Medicare certification linear trend. In column (2), the county-level covariates used by Almond et al. (2006) include measures of maternal characteristics, per capita income and government transfer payments. The county-level covariates used in columns (4)-(6) are listed in Appendix Table A2. Almond et al. (2006) restricted their sample to no more than 7 years before and 6 years after Medicare certification. In columns (3)-(6), the sample is based on all county-year combinations for the period 1959-1973. Standard errors, corrected for clustering at the county level, are in parentheses.

Table 5. Using and Extending Almond et al.'s (2006) Specification to Estimate the Effect of the Hospital Desegregation Campaign on Black Postneonatal Mortality in the Five Deep South States

	(1)	(2)	(3)	(4)
Panel A. Black postneonatal mortality				
1 Year After Medicare	-4.83***	-2.12***	1.02	1.10
	(.543)	(.548)	(.991)	(1.16)
2 Years After Medicare	-6.90***	-3.71***	.068	.237
	(.551)	(.546)	(1.33)	(1.66)
3 Years After Medicare	-8.07***	-4.33***	-.148	.266
	(.579)	(.679)	(1.59)	(2.17)
4 Years After Medicare	-9.73***	-5.59***	-.944	-.322
	(.613)	(.778)	(1.81)	(2.44)
5 Years After Medicare	-10.2***	-5.59***	.551	1.29
	(.619)	(.920)	(2.26)	(3.17)
6 Years After Medicare	-9.86***	-4.57***	2.77	3.94
	(.637)	(1.00)	(2.76)	(3.97)
N	6,033	6,033	6,033	6,033
R^2	.14	.50	.43	.51
Panel B. Black postneonatal mortality due to pneumonia, influenza, and diarrhea				
1 Year After Medicare	-2.19***	-.584	1.68**	2.23***
	(.399)	(.483)	(.727)	(.807)
2 Years After Medicare	-3.42***	-1.51***	1.54	2.50**
	(.442)	(.536)	(.995)	(1.14)
3 Years After Medicare	-4.52***	-2.27***	1.56	3.14**
	(.426)	(.562)	(1.13)	(1.50)
4 Years After Medicare	-5.52***	-3.04***	1.31	3.51*
	(.501)	(.667)	(1.43)	(1.97)
5 Years After Medicare	-5.78***	-3.08***	2.25	5.21**
	(.471)	(.689)	(1.79)	(2.46)
6 Years After Medicare	-6.47**	-3.30***	3.08	7.30**
	(.475)	(.727)	(2.04)	(2.95)
N	6,033	6,033	6,033	6,033
R^2	.09	.48	.40	.48
County fixed effects	No	Yes	Yes	Yes
County-level covariates	No	Yes	Yes	Yes
County-specific linear trend	No	Yes	No	Yes
Year fixed effects	No	No	Yes	Yes

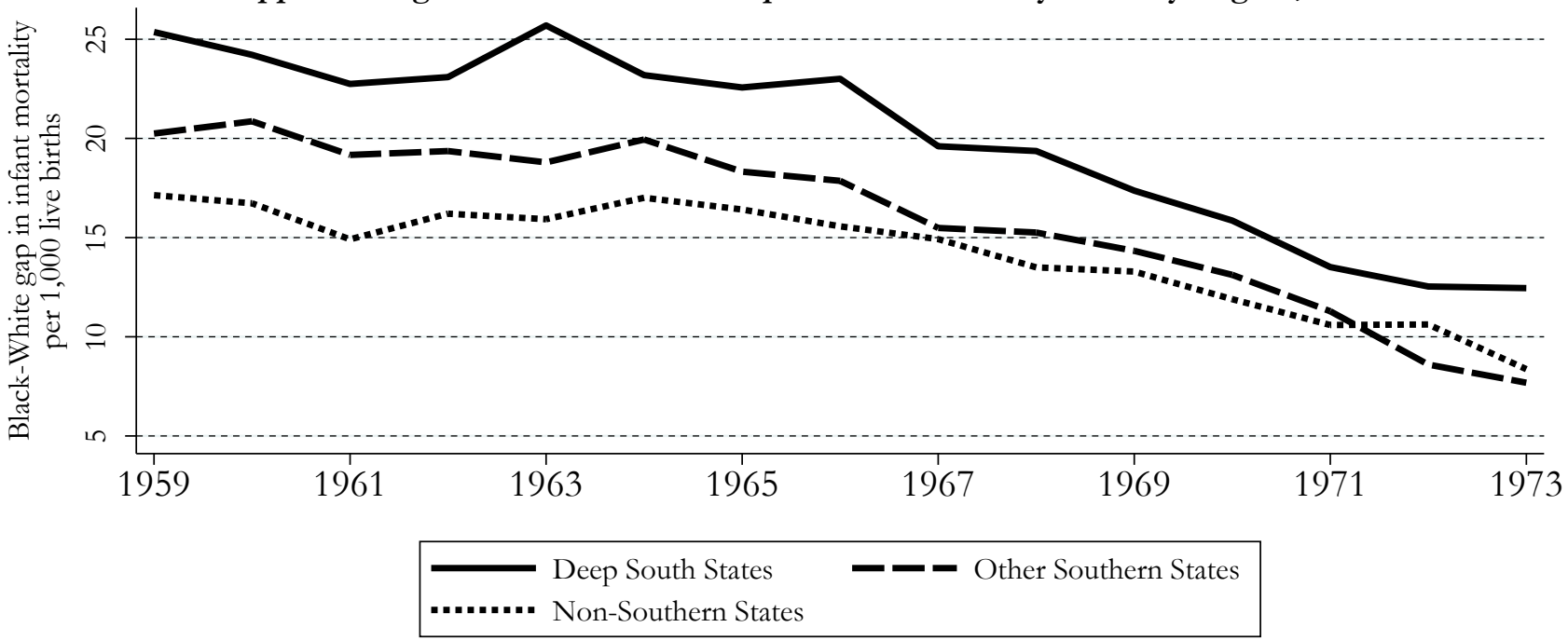
*Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column within each panel represents results from a separate OLS regression. The dependent variable is equal to the number of postneonatal deaths per 1,000 race-specific live births in county *c* and year *t*. The model in column (1) also includes a pre-Medicare certification linear trend. The county-level covariates used in columns (2)-(4) are listed in Appendix Table A2. Standard errors, corrected for clustering at the county level, are in parentheses.

Appendix A

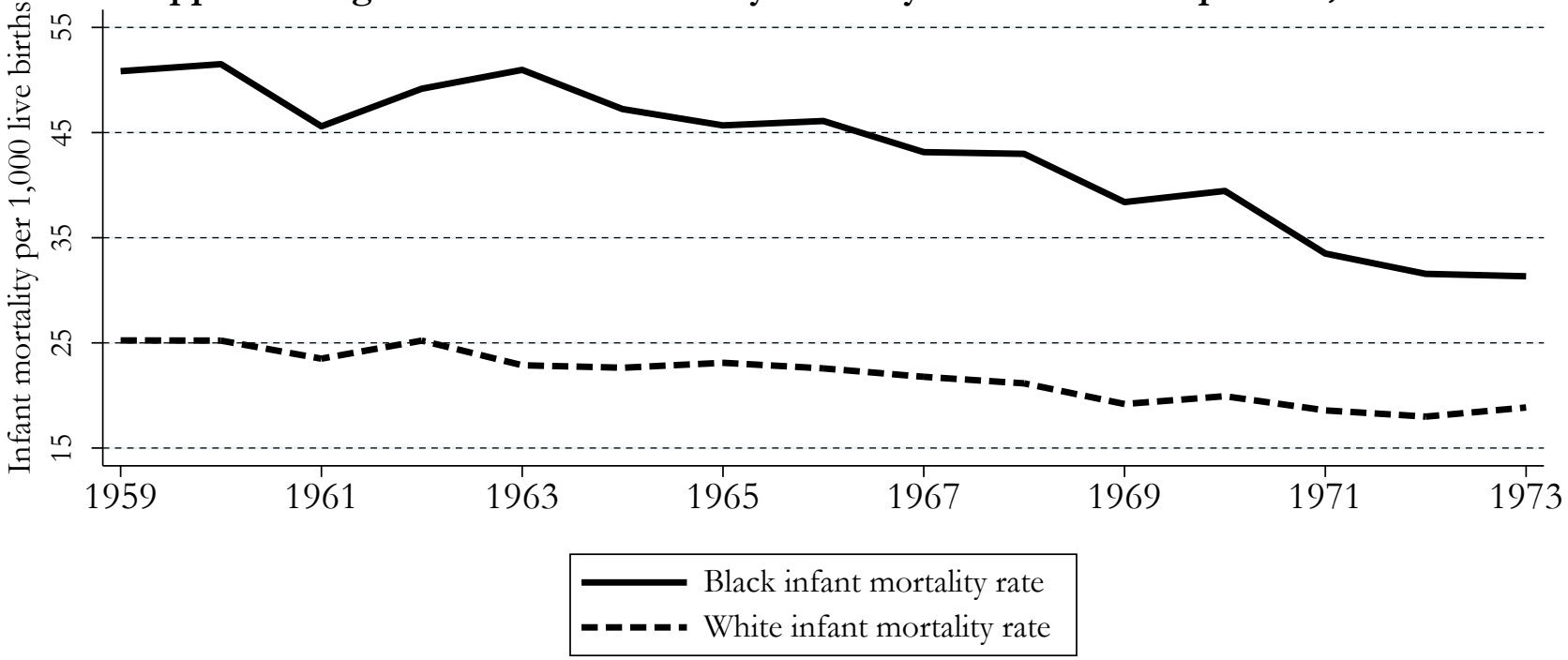
For Online Publication

Appendix Figure A1. Black-White Gap in Infant Mortality Rates by Region, 1959-1973



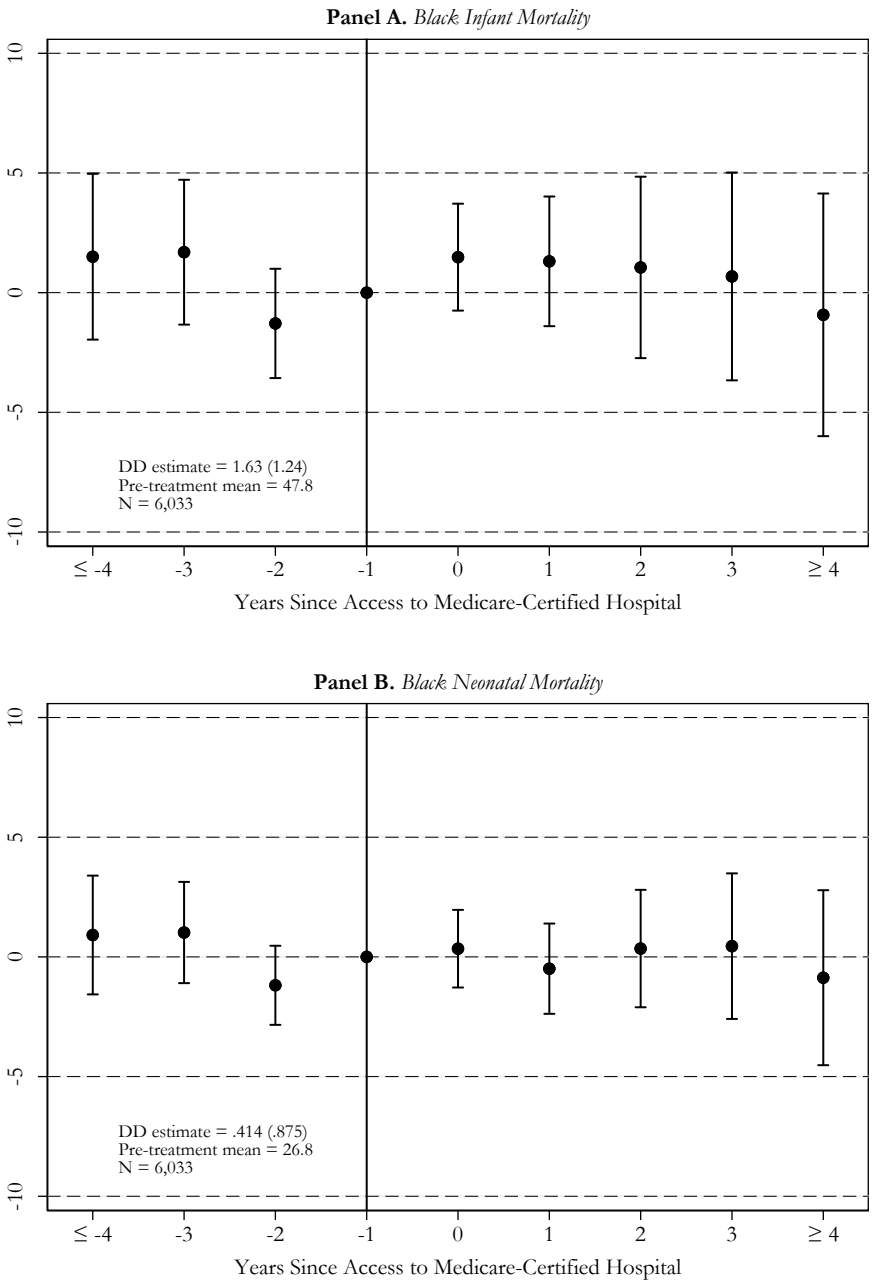
Notes: Based on annual data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System.

Appendix Figure A2. Infant Mortality Rates by Race in the Deep South, 1959-1973



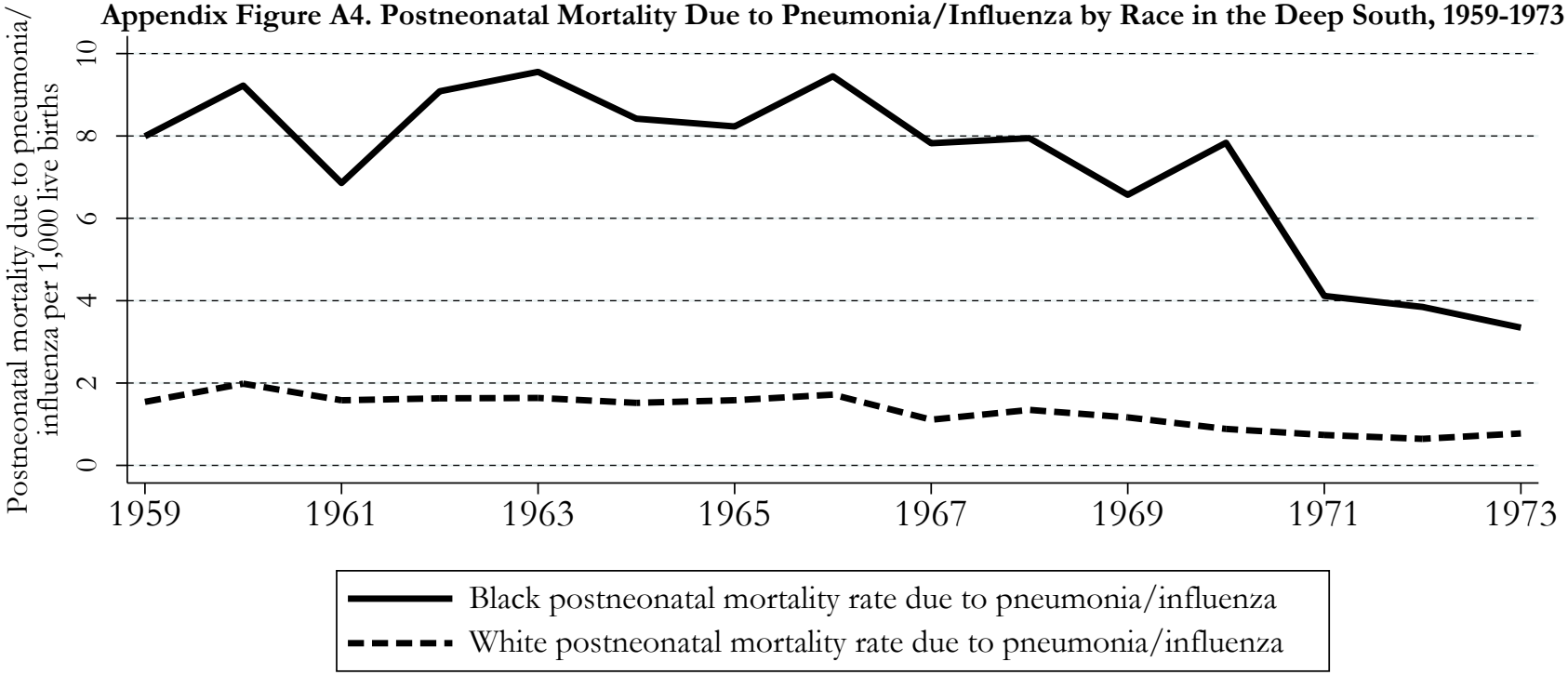
Notes: Based on annual data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System.

Appendix Figure A3. The Effect of the Hospital Desegregation Campaign on Black Infant and Neonatal Mortality, 1959-1973



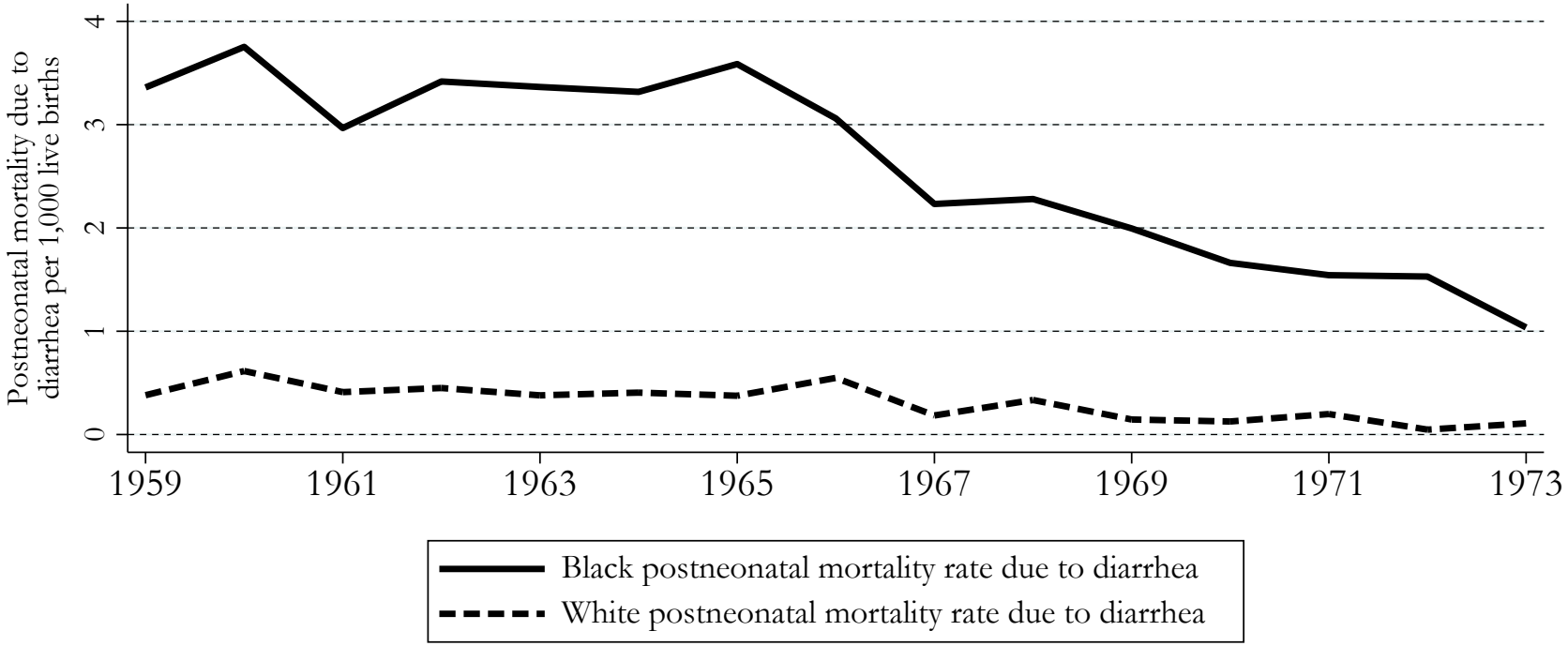
Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. OLS coefficient estimates (and their 90% confidence intervals) are reported, where the omitted category is one year before treatment. The dependent variable is equal to the number of specified Black deaths per 1,000 live Black births in county *c* and year *t*. Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level. Reported DD estimates (and their standard errors) come from regressions where the event-study indicators are replaced by the variable *Medicare* (equal to one if Black mothers in county *c* and year *t* had access to a Medicare-eligible hospital, and equal to zero otherwise).

Appendix Figure A4. Postneonatal Mortality Due to Pneumonia/Influenza by Race in the Deep South, 1959-1973



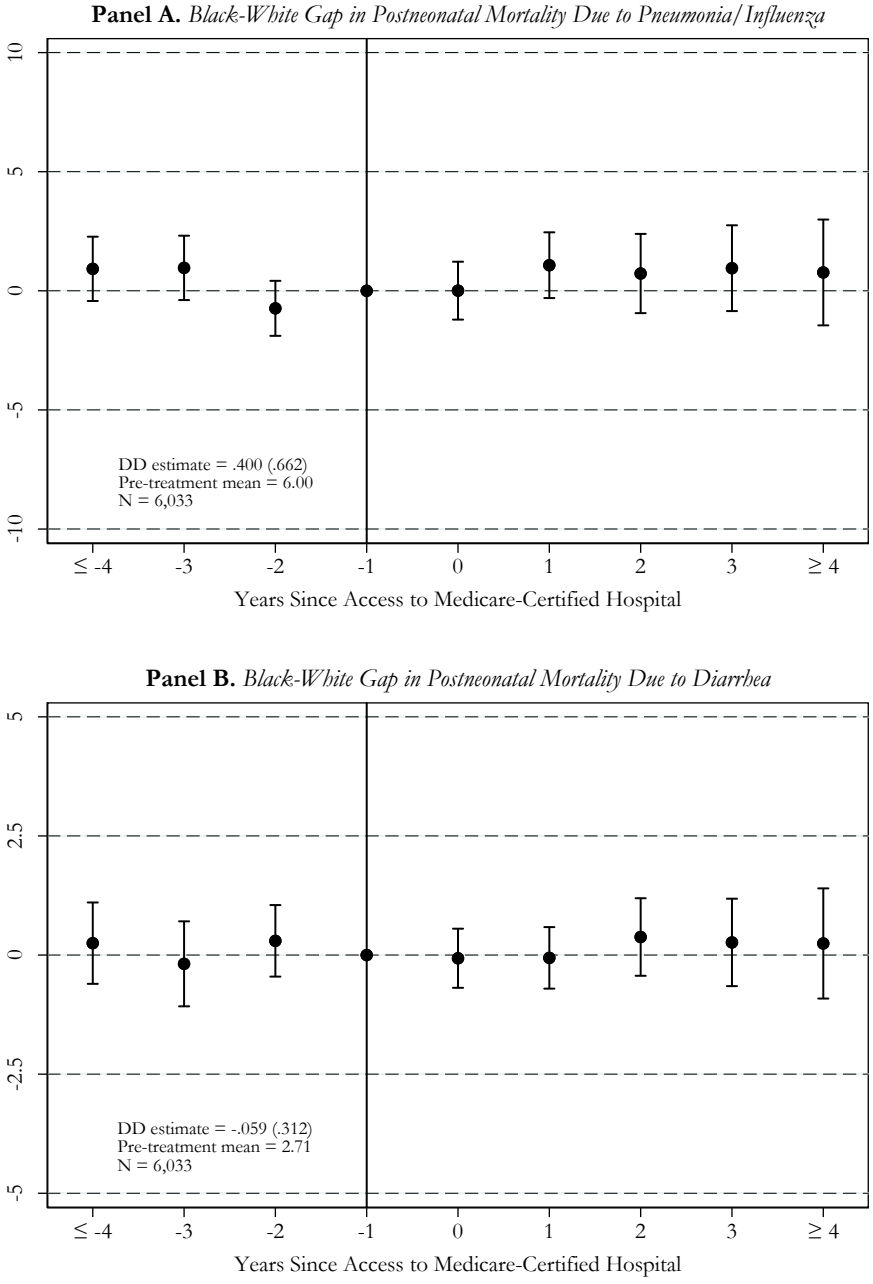
Notes: Based on annual data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System.

Appendix Figure A5. Postneonatal Mortality Due to Diarrhea by Race in the Deep South, 1959-1973



Notes: Based on annual data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System.

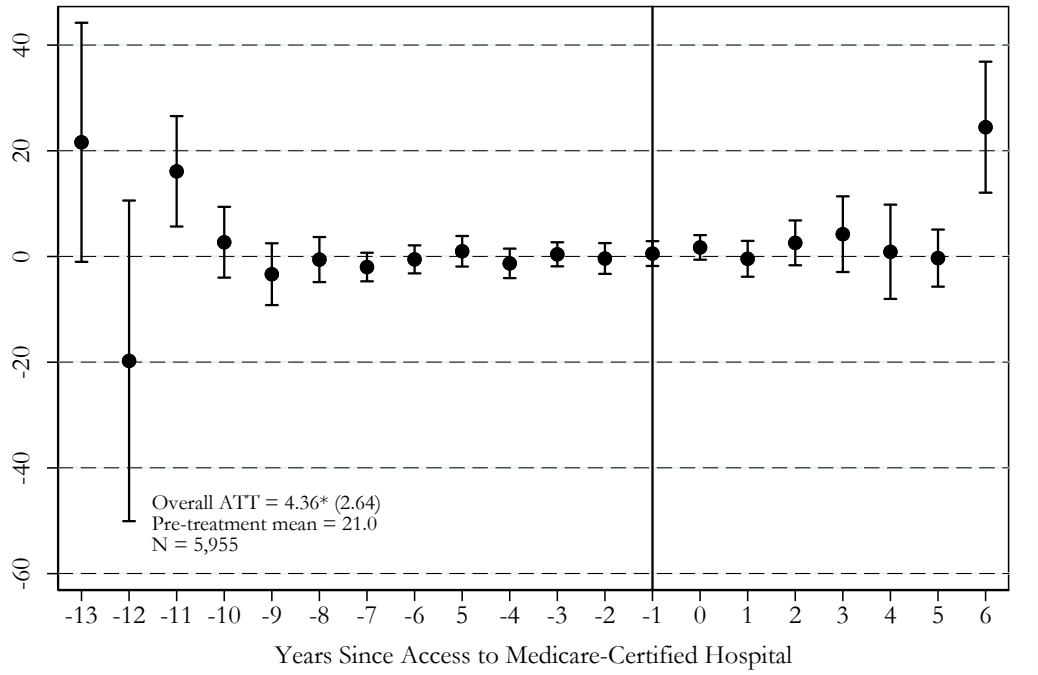
Appendix Figure A6. The Effect of the Hospital Desegregation Campaign on the Black-White Postneonatal Mortality Gap by Cause, 1959-1973



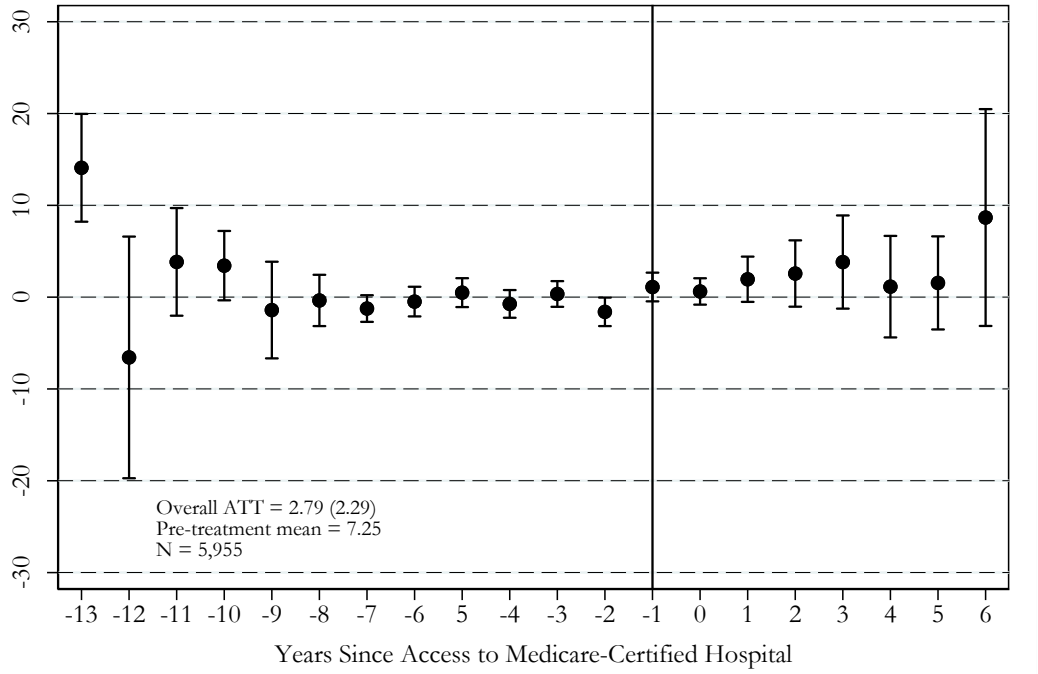
Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. OLS coefficient estimates (and their 90% confidence intervals) are reported, where the omitted category is one year before treatment. The dependent variable is equal to the difference between the specified Black postneonatal deaths per 1,000 live Black births and the specified White postneonatal deaths per 1,000 live White births in county *c* and year *t*. All models control for the county-level covariates listed in Appendix Table A2, county fixed effects, and year fixed effects. Regressions are weighted by live Black births and standard errors are corrected for clustering at the county level. Reported DD estimates (and their standard errors) come from regressions where the event-study indicators are replaced by the variable *Medicare* (equal to one if Black mothers in county *c* and year *t* had access to a Medicare-eligible hospital, and equal to zero otherwise).

Appendix Figure A7. The Effect of the Hospital Desegregation Campaign on Black Postneonatal Mortality and Black Postneonatal Mortality by Cause, 1959-1973: Callaway and Sant'Anna (2021), Showing All Leads and Lags

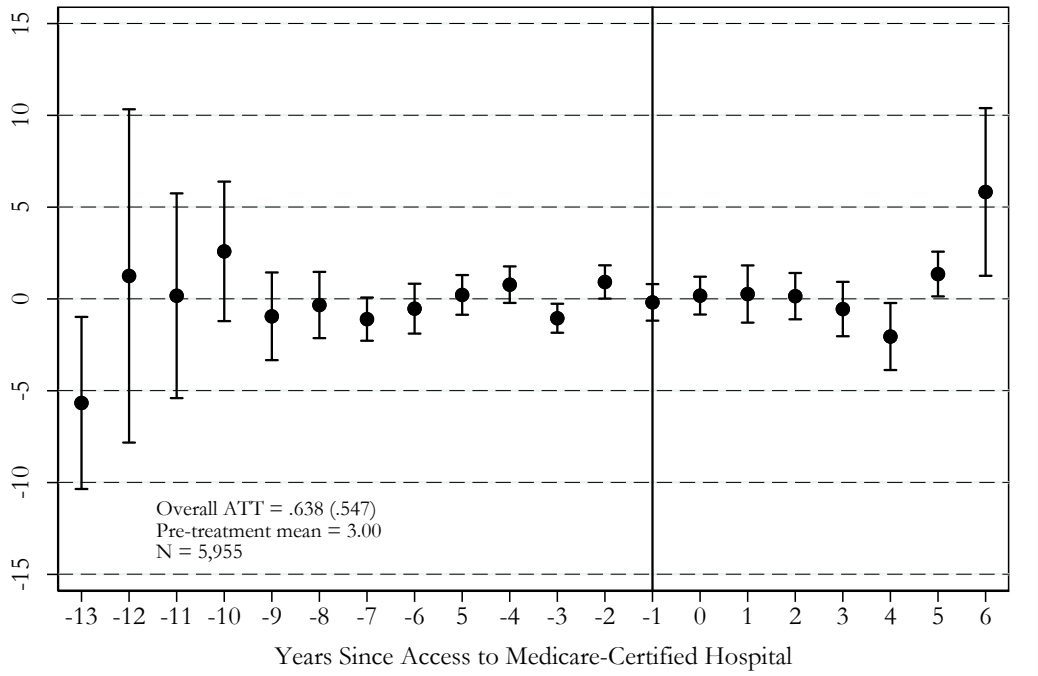
Panel A. *Black Postneonatal Mortality*



Panel B. *Black Postneonatal Mortality Due to Pneumonia/Influenza*



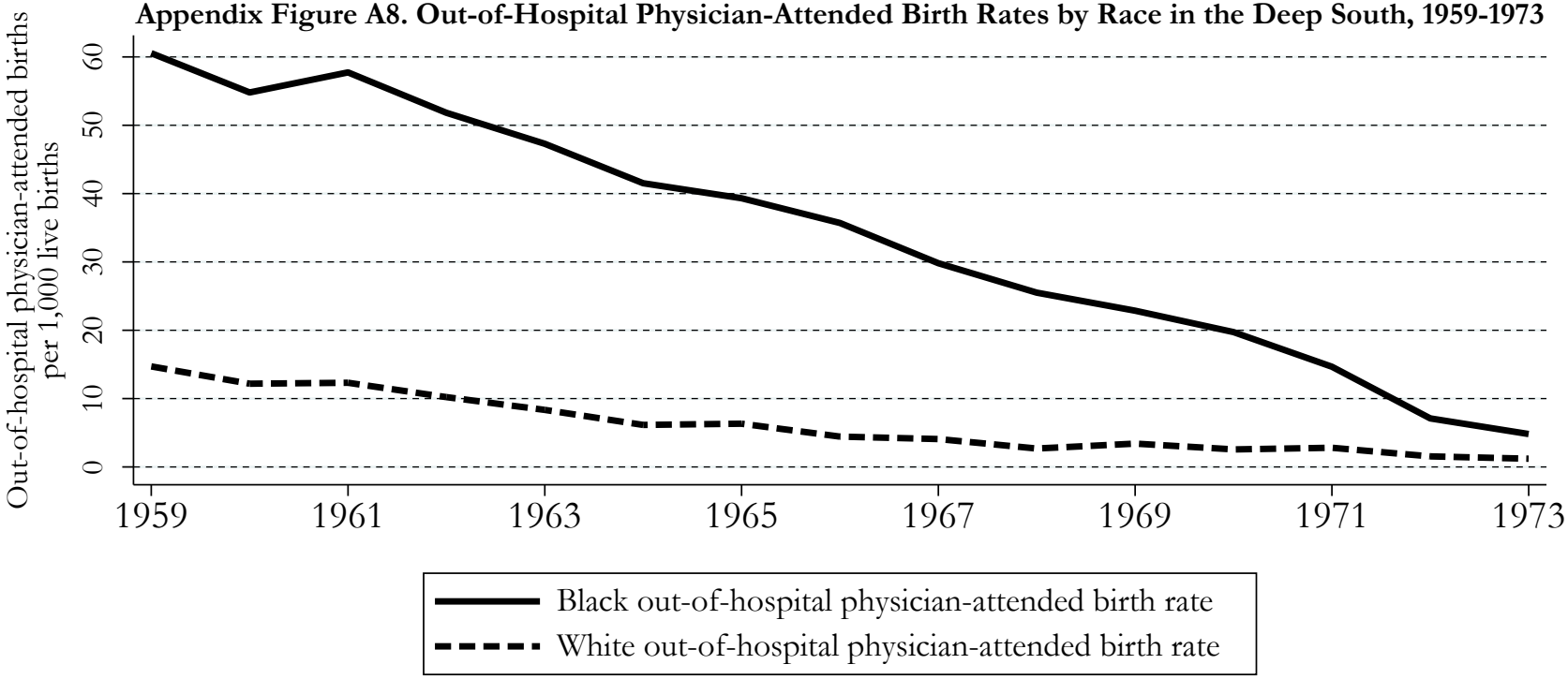
Panel C. *Black Postneonatal Mortality Due to Diarrhea*



*Statistically significant at 10% level.

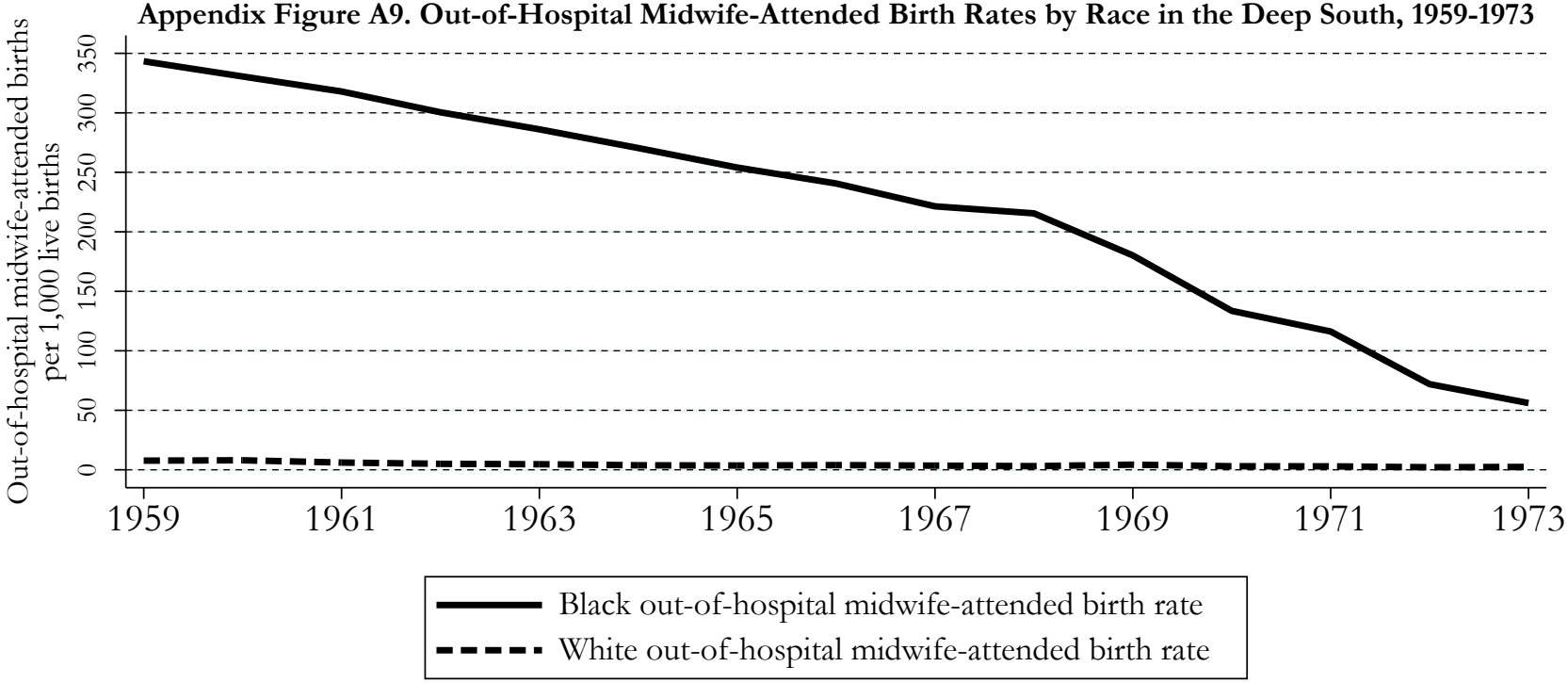
Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. Estimates of group-time average treatment effects on the treated (ATTs) and their 90% confidence intervals are reported. ATT estimates are from equation (3.4) in Callaway and Sant'Anna (2021). The dependent variable is equal to the number of specified Black postneonatal deaths per 1,000 live Black births in county *c* and year *t*. Estimated ATTs are weighted by live Black births and standard errors are corrected for clustering at the county level. The overall ATTs are the average of the estimated ATTs in the post-treatment period and are from equation (3.12) in Callaway and Sant'Anna (2021).

Appendix Figure A8. Out-of-Hospital Physician-Attended Birth Rates by Race in the Deep South, 1959-1973



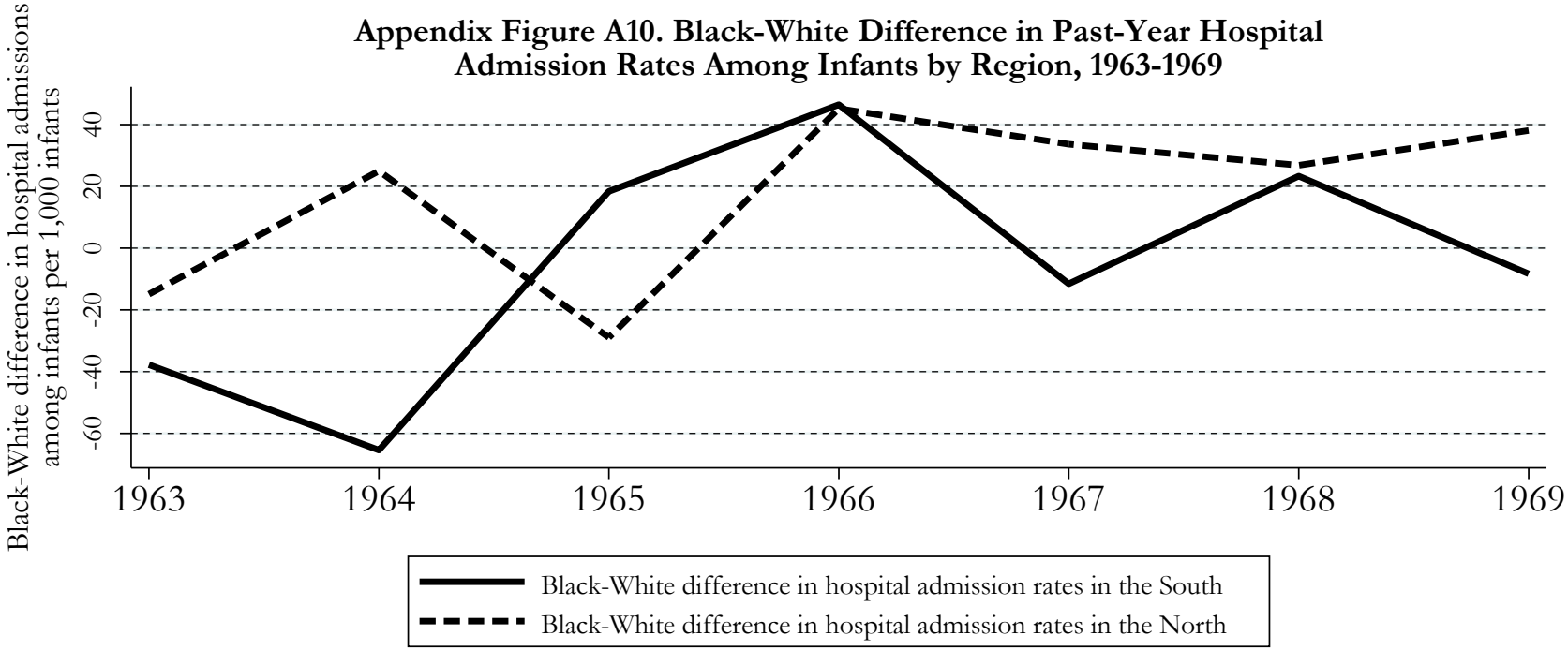
Notes: Based on annual data from the Natality Files, published by the National Vital Statistics System.

Appendix Figure A9. Out-of-Hospital Midwife-Attended Birth Rates by Race in the Deep South, 1959-1973



Notes: Based on annual data from the Natality Files, published by the National Vital Statistics System.

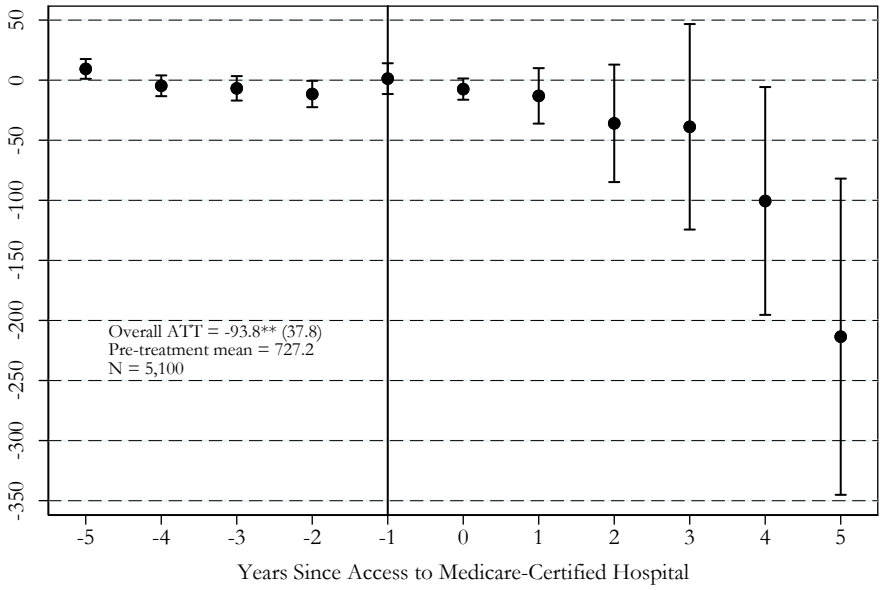
Appendix Figure A10. Black-White Difference in Past-Year Hospital Admission Rates Among Infants by Region, 1963-1969



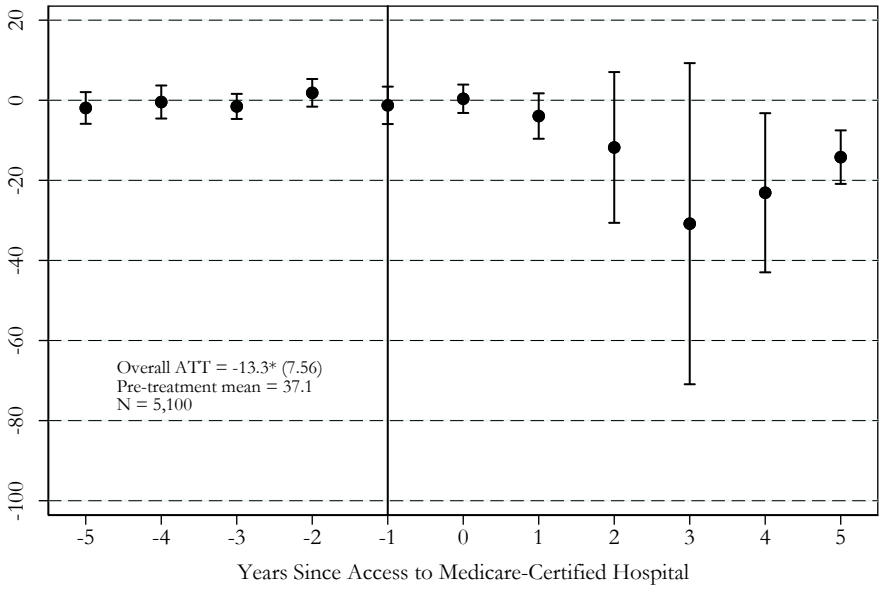
Notes: Based on annual data from the National Health Interview Survey. Southern states include those in the West South Central, East South Central, and South Atlantic census divisions. Northern states include those in the West North Central, East North Central, and Middle Atlantic census divisions.

Appendix Figure A11. The Effects of the Hospital Desegregation Campaign on Black Births by Location/Attendant and Maternal Mortality, 1959-1973: Callaway and Sant'Anna (2021) Estimator

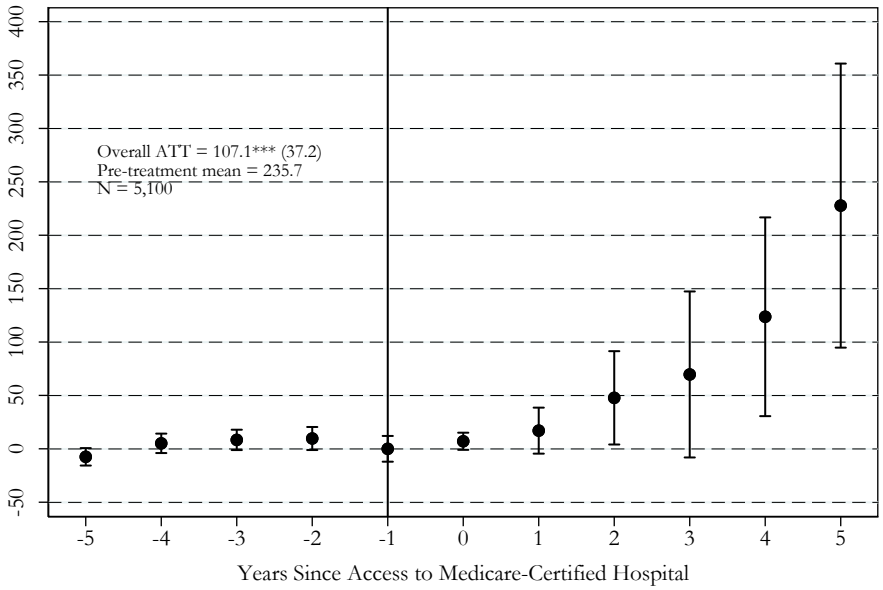
Panel A. *In-Hospital Black Births*



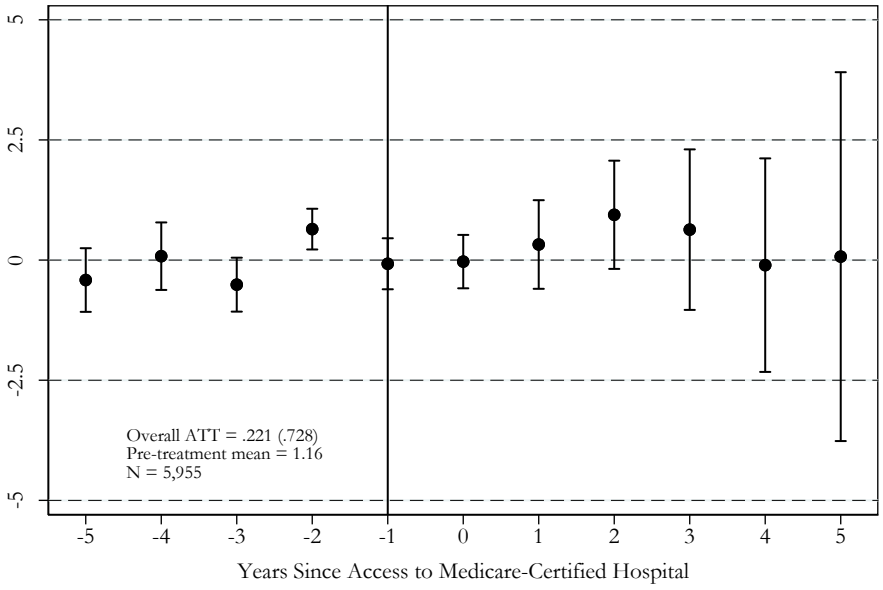
Panel B. *Out-of-Hospital Black Births by Physicians*



Panel C. *Out-of-Hospital Black Births by Midwives*



Panel D. *Black Maternal Mortality*



*Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: The results in panels A-C are based on annual county-level data from individual state vital statistics reports and the Natality Files, published by the National Vital Statistics System. The results in panel D are based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. Estimates of group-time average treatment effects on the treated (ATTs) and their 90% confidence intervals are reported. ATT estimates are from equation (3.4) in Callaway and Sant'Anna (2021). In panels A-C, the dependent variable is equal to the number of live Black births by location and attendant per 1,000 live Black births in county c and year t. In panel D, the dependent variable is equal to the number of Black maternal deaths per 1,000 live Black births in county c and year t. Estimated ATTs are weighted by live Black births and standard errors are corrected for clustering at the county level. The overall ATTs are the average of the estimated ATTs in the post-treatment period and are from equation (3.12) in Callaway and Sant'Anna (2021).

Appendix Table A1. Number of Counties with Access to a Medicare Certified Hospital by State and Year

State	1967	1968	1969	1970 or later
Alabama	51	56	56	58
Total counties = 58[a]	[.931]	[.990]	[.990]	[1.00]
Georgia	133	146	149	153
Total counties = 153[b]	[.911]	[.968]	[.986]	[1.00]
Louisiana	54	58	58	64
Total counties = 64	[.912]	[.956]	[.956]	[1.00]
Mississippi	57	74	77	82
Total counties = 82	[.635]	[.884]	[.953]	[1.00]
South Carolina	40	44	45	46
Total counties = 46	[.846]	[.952]	[.992]	[1.00]

[a] Nine Alabama counties are excluded from the analysis due to missing live black birth data.

[b] Six Georgia counties are excluded from the analysis because no live black births were recorded during the sample period.

Notes: Numbers in brackets represent the fraction of live black births that occurred in counties with access to a Medicare certified hospital.

Appendix Table A2. Descriptive Statistics

	Mean (SD)	Description	Source
Black Postneonatal Mortality	17.4 (11.1)	Number of Black postneonatal deaths per 1,000 live black births in county *c* and year *t*	Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. Available at: https://data.nber.org/data/vital-statistics-mortality-data-multiple-cause-of-death.html.
White Postneonatal Mortality	4.96 (3.85)	Number of White postneonatal deaths per 1,000 live white births in county *c* and year *t*	
Black-White Postneonatal Mortality Gap	12.5 (11.4)	Difference between *Black Postneontal Mortality* and *White Postneonatal Mortality* in county *c* and year *t*	
High School Degree	35.5 (10.7)	Percent of county population that was 25 years of age or older with a high school diploma	County and City Data Book Consolidated File: County Data, 1947-1977 (ICPSR 7736). Available at: https://www.icpsr.umich.edu/web/ICPSR/studies/7736. Missing values were calculated via linear interpolation.
Health Spending	16.2 (17.0)	County direct health and hospital expenditures per capita (1960 dollars)	Data Base on Historical Finances of Local Governments: Fiscal Years 1957-2002. Available at: https://www.census.gov/programs-surveys/gov-finances/data/historical-data.html. Missing values were calculated via linear interpolation and extrapolation.
Employment to Population	.030 (.007)	County employment to population ratio	Data Base on Historical Employment of Local Governments: 1957-2007. Available at: https://www.census.gov/programs-surveys/gov-finances/data/historical-data.html. Missing values were calculated via linear interpolation and extrapolation.

Notes: Means are weighted by live births and standard deviations are in parentheses. N = 6,033.

Appendix Table A3. The Effect of the Hospital Desegregation Campaign on Postneonatal Mortality by Race, 1959-1973: Event-study Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
	Black Postneonatal Mortality	*Black Postneonatal Mortality*	*White Postneonatal Mortality*	*White Postneonatal Mortality*	*Black-White Postneonatal Mortality Gap*	*Black-White Postneonatal Mortality Gap*
4+ Years Before Medicare	.596	.587	.317	.326	-.829	-.842
	(1.43)	(1.42)	(.611)	(.622)	(1.66)	(1.64)
	{.701}	{.686}	{.617}	{.605}	{.623}	{.608}
3 Years Before Medicare	.680	.672	.144	.148	-.032	-.038
	(1.50)	(1.49)	(.782)	(.785)	(1.75)	(1.75)
	{.654}	{.643}	{.859}	{.844}	{.985}	{.991}
2 Years Before Medicare	-.094	-.099	.232	.233	-.381	-.385
	(.897)	(.895)	(.645)	(.644)	(1.15)	(1.15)
	{.914}	{.920}	{.725}	{.686}	{.751}	{.731}
1 Year Before Medicare	…	…	…	…	…	…
Year of Medicare Certification	1.13	1.14	-.403	-.404	1.54	1.54
	(1.03)	(1.03)	(.413)	(.412)	(1.16)	(1.15)
	{.267}	{.297}	{.324}	{.333}	{.204}	{.204}
1 Year After Medicare	1.78	1.80	.245	.240	1.24	1.25
	(1.18)	(1.18)	(.508)	(.508)	(1.37)	(1.37)
	{.162}	{.159}	{.622}	{.633}	{.389}	{.369}
2 Years After Medicare	.700	.706	-.168	-.181	.453	.450
	(1.47)	(1.46)	(.704)	(.701)	(1.75)	(1.74)
	{.643}	{.625}	{.808}	{.784}	{.811}	{.796}
3 Years After Medicare	.247	.229	-.679	-.701	1.27	1.24
	(1.71)	(1.71)	(.915)	(.911)	(2.11)	(2.10)
	{.895}	{.887}	{.471}	{.470}	{.560}	{.567}
4+ Years After Medicare	.015	-.058	-.292	-.323	.598	.493
	(1.98)	(1.97)	(.887)	(.884)	(2.31)	(2.28)
	{.994}	{.974}	{.756}	{.715}	{.804}	{.821}
Pre-treatment mean	21.0	21.0	5.67	5.67	15.4	15.4
N	6,033	6,033	6,033	6,033	6,033	6,033
R^2	.208	.209	.053	.053	.125	.126
County-level covariates	No	Yes	No	Yes	No	Yes

*Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Based on annual county-level data from the Multiple Cause-of-Death Mortality Files, published by the National Vital Statistics System. Each column represents results from a separate OLS regression, where the omitted category is 1 year before treatment. In columns (1)-(4), the dependent variable is equal to the number of postneonatal deaths per 1,000 race-specific live births in county *c* and year *t*. In columns (5)-(6), the dependent variable is equal to the difference between Black postneonatal deaths per 1,000 live Black births and White postneonatal deaths per 1,000 live White births in county *c* and year *t*. All models control for county fixed effects and year fixed effects. The county-level covariates used in columns (2), (4) and (6) are listed in Appendix Table A2. Regressions are weighted by race-specific live births. Standard errors, corrected for clustering at the county level, are in parentheses. P-values from the wild bootstrap procedure suggested by Cameron et al. (2008) and Cameron and Miller (2015) are in curly brackets and are based on 1,000 replications.

Appendix Table A4. Proportion of Counties Treated Based on Alternative Thresholds

State	Proportion of counties treated by year (any-hospital threshold)				Proportion of counties treated by year (bed threshold = 25%)				Proportion of counties treated by year (bed threshold = 50%)				Proportion of counties treated by year (bed threshold = 75%)			
	1967	1968	1969	1970	1967	1968	1969	1970	1967	1968	1969	1970	1967	1968	1969	1970
Alabama	.879	.966	.966	.983	.862	.948	.966	.983	.845	.931	.948	.983	.810	.897	.914	.966
Georgia	.869	.954	.974	.980	.863	.954	.974	.980	.850	.948	.967	.974	.850	.948	.967	.974
Louisiana	.844	.906	.906	.938	.828	.906	.906	.938	.734	.875	.891	.906	.656	.813	.859	.875
Mississippi	.695	.902	.939	.976	.683	.890	.939	.976	.622	.841	.927	.963	.598	.756	.817	.890
South Carolina	.870	.957	.978	.978	.848	.935	.978	.978	.848	.935	.978	.978	.783	.891	.935	.935

Notes: Treatment thresholds based on percent of beds in Medicare-certified hospitals.

Appendix Table A5. Replicating and Extending Estimates from Almond et al. (2006) on the Effect of the Hospital Desegregation Campaign on Postneonatal Mortality Due to Pneumonia, Influenza, and Diarrhea in Mississippi by Race

	(1)	(2)	(3)	(4)	(5)	(6)
	Estimates reported in Almond et al. (2006)		Replicating and extending estimates reported in Almond et al. (2006)			
Panel A. Black postneonatal mortality due to pneumonia, influenza, and diarrhea						
1 Year After Medicare	-2.91***	-2.60***	-4.41***	-3.98***	-.992	-1.76
	(.984)	(.962)	(.618)	(.620)	(.789)	(1.00)
2 Years After Medicare	-4.75***	-4.40***	-4.06***	-3.45***	-.011	-1.28
	(1.00)	(1.05)	(.661)	(.906)	(1.00)	(1.37)
3 Years After Medicare	-4.21***	-3.91***	-4.79***	-4.07***	.261	-1.57
	(1.17)	(1.31)	(.571)	(.912)	(1.06)	(2.05)
4 Years After Medicare	-4.99***	-4.64***	-5.70***	-5.37***	-.480	-3.16
	(1.44)	(1.58)	(.786)	(1.02)	(1.48)	(2.89)
5 Years After Medicare	-5.36***	-4.96***	-5.47***	-5.15***	.285	-2.89
	(1.59)	(1.61)	(.936)	(1.26)	(2.05)	(3.84)
6 Years After Medicare	-5.78***	-5.20***	-5.57***	-5.10***	.898	-3.04
	(1.83)	(1.96)	(.745)	(1.33)	(2.24)	(4.62)
N	1,022	1,022	1,200	1,200	1,200	1,200
R^2	.16	.43	.14	.41	.38	.44
Panel B. White postneonatal mortality due to pneumonia, influenza, and diarrhea						
1 Year After Medicare	.341	.331	-.312	.185	.415	-.086
	(.242)	(.262)	(.250)	(.292)	(.361)	(.420)
2 Years After Medicare	.409	.395	-.475**	.076	.168	-.653
	(.287)	(.333)	(.194)	(.242)	(.531)	(.556)
3 Years After Medicare	.222	.225	-.749***	-.145	-.225	-1.46**
	(.259)	(.300)	(.201)	(.314)	(.618)	(.726)
4 Years After Medicare	.170	.131	-.936***	-.389	.091	-1.62*
	(.327)	(.370)	(.176)	(.292)	(.612)	(.861)
5 Years After Medicare	.074	.001	-.988***	-.402	.371	-1.81
	(.293)	(.331)	(.218)	(.316)	(.692)	(1.10)
6 Years After Medicare	.067	-.033	-.555*	.074	.321	-2.60*
	(.355)	(.411)	(.285)	(.476)	(.799)	(1.56)
N	1,022	1,022	1,200	1,200	1,200	1,200
R^2	.03	.25	.02	.20	.15	.21
County fixed effects	No	Yes	No	Yes	Yes	Yes
County-level covariates	No	Yes	No	Yes	Yes	Yes
County-specific linear trend	No	Yes	No	Yes	No	Yes
Year fixed effects	No	No	No	No	Yes	Yes

*Statistically significant at 10% level; ** at 5% level; *** at 1% level.

Notes: Each column within each panel represents results from a separate OLS regression. The dependent variable is equal to the number of postneonatal deaths due to pneumonia, influenza, and diarrhea per 1,000 race-specific live births in county *c* and year *t*. Medicare certification dates come from Almond et al. (2006). The models in columns (1) and (3) also include a pre-Medicare certification linear trend. In column (2), the county-level covariates used by Almond et al. (2006) include measures of maternal characteristics, per capita income and government transfer payments. The county-level covariates used in columns (4)-(6) are listed in Appendix Table A2. Almond et al. (2006) restricted their sample to no more than 7 years before and 6 years after Medicare certification. In columns (3)-(6), the sample is based on all county-year combinations for the period 1959-1973. Standard errors, corrected for clustering at the county level, are in parentheses.

Appendix B

For Online Publication

Appendix Table B1. Data Sources for County-Level Live Births by Race and Attendant

State	Sources	Notes
Alabama	1959-1967: Yearly volumes of *Vital Statistics of the United States*, made available through the NBER with support from NIA grant P30-AG012810. Available at: https://data.nber.org/births/1940-1968/. 1968-1973: Compiled by the authors using the National Center for Health Statistics' birth certificate data, made available through the NBER at: https://data.nber.org/data/vital-statistics-natality-data.html.	Information on county-level births by race is not available from Alabama vital statistics, which only report state-level aggregates. Information on county-level births by race is unavailable from the *Vital Statistics of the United States* for the years 1959-1967 for 9 counties. These counties are excluded from all analyses. Information on county-level births by out-of-hospital attendant (i.e., physician versus midwife) is unavailable from the *Vital Statistics of the United States* for the years 1960-1967 for all counties. Consequently, Alabama is excluded from the birth location/attendant analysis in Section 4.
Georgia	1959-1961: Yearly volumes of *Vital Statistics, Georgia*, made available through inter-library loan with Cornell University. 1962-1963: Yearly volumes of *Georgia Vital and Morbidity Statistics*, made available through inter-library loan with Georgia College and State University. 1964: *Georgia Vital and Morbidity Statistics*, made available through inter-library loan with Cornell University. 1965-1970: Yearly volumes of *Georgia Vital and Morbidity Statistics*, made available through inter-library loan with Georgia College and State University. 1971: *Georgia Vital and Morbidity Statistics*, made available through inter-library loan with Georgia Southern University. 1972-1973: Compiled by the authors using the National Center for Health Statistics' birth certificate data. Available at: https://data.nber.org/data/vital-statistics-natality-data.html.	Information on county-level births by out-of-hospital attendant (i.e., physician versus midwife) is unavailable from the Georgia vital statistics for the years 1972-1973. We used the natality data made available through the NBER to compute county-level births by out-of-hospital attendant for these years. For the period 1959-1973, there are 101 county-year observations in Georgia where there were no Black births. These observations are excluded from all analyses.

Louisiana	1959-1966: Yearly volumes of *Statistical Report of the Division of Public Health Statistics*, made available through correspondence with the Vital Records Central Office, Louisiana Department of Health. 1967-1972: Yearly volumes of *Statistical Report of the Bureau of Vital Statistics*, made available through correspondence with the Vital Records Central Office, Louisiana Department of Health. 1973: *Vital Statistics of Louisiana*, made available through correspondence with the Vital Records Central Office, Louisiana Department of Health.
Mississippi	1959-1961: Yearly volumes of *Public Health Statistics State of Mississippi*, made available through correspondence with the Office of Public Health Statistics, Mississippi State Department of Health. 1962-1973: Yearly volumes of *Vital Statistics Mississippi*, made available through correspondence with the Office of Public Health Statistics, Mississippi State Department of Health.
South Carolina	1959-1973: Yearly volumes of *Annual Report of the State Board of Health of South Carolina*, made available through inter-library loan with South Carolina State University.

Appendix Table B2. International Classification of Disease (ICD) Codes Used to Generate Postneonatal Mortality Rates by Cause of Death

Cause of death	ICD codes, 7th revision, 1959-1967	ICD codes, 8th revision, 1968-1973
Pneumonia	Lobar pneumonia (490) Bronchopneumonia (491) Primary atypical pneumonia (492) Pneumonia, other and unspecified (493)	Viral pneumonia (480) Pneumococcal pneumonia (481) Other bacterial pneumonia (482) Pneumonia due to other specified organism (483) Acute interstitial pneumonia (484) Bronchopneumonia, unspecified (485) Pneumonia, unspecified (486)
Influenza	Influenza with pneumonia (480) Influenza with other respiratory manifestations, and influenza unqualified (481) Influenza with digestive manifestations, but without respiratory symptoms (482) Influenza with nervous manifestations, but without digestive or respiratory symptoms (483)	Influenza unqualified (470) Influenza with pneumonia (471) Influenza with other respiratory manifestations (472) Influenza with digestive manifestations (473) Influenza with nervous manifestations (474)
Diarrhea (including dysentery)	Bacillary dysentery (045) Amoebiasis (046) Other protozoal dysentery (047) Unspecified form of dysentery (048) Gastritis and duodenitis (543) Gastro-enteritis and colitis, except ulcerative, age 4 weeks and older (571) Chronic enteritis and ulcerative colitis (572)	Bacillary dysentery (004) Amoebiasis (006) Enteritis due to other specified organism (008) Diarrhoeal disease (009) Gastritis and duodenitis (535) Gastro-enteritis and colitis, except ulcerative, of noninfectious origin (561) Chronic enteritis and ulcerative colitis (563)

Notes: Three-digit ICD codes are in parentheses.

Appendix C

For Online Publication

Appendix Figure C1. Image of 1967 *Journal of the American Hospital Association* (*JAHA*) Guide Issue

Registered Hospitals, U.S.: MISSISSIPPI

Hospital, Address, Telephone, Administrator, Approval and Facility Codes *indicates membership in the American Hospital Association. Telephone area codes, when available, have been shown following the city and county. For definitions and explanation of other codes see page 10.	Classification Codes			Inpatient Data				Newborn Data		Expense (Thousands of Dollars)		Personnel
	Control	Service	Stay	Beds	Admissions	Census	Occupancy (Per Cent)	Bassinets	Births	Total	Payroll	
BELZONI—Humphreys County												
*HUMPHREYS COUNTY MEMORIAL HOSPITAL-103 1st St Box 510-Zip 39038-Tel 1166 -M L Barksdale, Adm A-9 F-6-8-11-13	13	10	S	50	875	16	32.0	10	72	184	102	38
BILOXI—Harrison County —601—												
*HOWARD MEMORIAL HOSPITAL-1550 Lafayette St Drawer H-Zip 39533-Tel 436-3721 -John McDermott, Adm A-1-9-10 F-1-3-5-6-7-8-11-14-15-16	23	10	S	156	4725	88	57.9	14	835	1400	858	258
*U S AIR FORCE HOSPITAL-Keesler AFB-Zip 39534-Tel 432-1521 Ext 513-Col Nicholas H Nauert Jr MC, Adm A-1-2-3-4 F-1-2-3-4-5-6-7-8-9-10-11-12-13-14-16	41	10	S	350	8908	286	81.7	31	1061	-	-	341
*VETERANS ADMINISTRATION CENTER, BILOXI AND GULFPORT DIVISIONS-Zip 39531-Tel 432-1541-E A Hiller, Dir A-1-3 F-1-2-3-4-5-7-8-9-10-11-12-13	45	10	S	1113	3157	-	-	-	-	7704	6317	1089
BOONEVILLE—Prentiss County —601—												
*NORTHEAST MISSISSIPPI HOSPITAL-Washington & 2nd Sts-Zip 38829-Tel 728-5331-B G Horton, Adm A-1-9-10 F-1-6-7-8-11	15	10	S	80	3459	69	86.3	8	315	715	416	168
BRANDON—Rankin County —601—												
*RANKIN COUNTY HOSPITAL-Government & College Sts-Zip 39042-Tel 825-5022 -Richard E Schuster MD, Adm (Non Reporting) A-9	33	10	S	30	-	-	-	-	-	-	-	-
BROOKHAVEN—Lincoln County —601—												
*KING'S DAUGHTERS HOSPITAL-Hwy 51 N Box 327-Zip 39601-Tel 833-6011-T W Crowley, Adm A-1-9-10 F-1-2-3-6-8-11-13-15-16	23	10	S	137	5178	69	50.4	20	348	1002	531	219
BYHALIA—Marshall County —601—												
LEONARD WRIGHT SANATORIUM-Rte 2 Box 248-Zip 38611-Tel 838-2162-Leonard D Wright Sr MD, Owner F-7-9	31	82	S	22	618	9	40.9	-	-	-	-	23
CANTON—Madison County —601—												
*MADISON GENERAL HOSPITAL (Formerly King's Daughters Hospital)-Country Club Rd Box 94-Zip 39046-Tel 859-1331-Sidney L Whittington, Adm (Data For 153 Days) A-10 F-2-5-6-8-11	13	10	S	67	939	32	47.8	10	94	184	98	87
KING'S DAUGHTERS HOSPITAL-See Madison General Hospital												
CARTHAGE—Leake County —601—												
*LEAKE COUNTY MEMORIAL HOSPITAL-300 Ellis St-Zip 39051-Tel 2551-R B Denson, Adm A-9-10 F-1-2-6-7-8	13	10	S	50	1398	22	44.0	9	112	298	174	56
CENTREVILLE—Wilkinson County —601—												
*FIELD MEMORIAL COMMUNITY HOSPITAL-Main St-Tel 645-2421-Marvin B Mallette, Adm A-1-9 F-1-2-3-6-8-11	13	10	S	52	2062	29	55.8	12	161	375	182	62
CHARLESTON—Tallahatchie County —601—												
*TALLAHATCHIE GENERAL HOSPITAL-Zip 38921-Tel 647-5535-Thomas O Logue Jr, Adm A-1-9-10 F-6-8-11	13	10	S	35	1812	26	70.3	8	144	321	155	60