Disparity in the Golden Age of Medicine: The Hill-Burton Act and Fetal/Infant Health in the US South

Summary:

The Hill-Burton Act of 1946 was a turning point in US health policy. It was the first legislation that involved the federal government in the infrastructure of healthcare systems by subsidizing the construction and renovation of hospitals. Earlier federal legislation related to healthcare, most notably the Sheppard-Towner Act, had been limited to public health measures, like health education or large-scale environmental health projects, and left direct clinical care to lower levels of governance or private actors. The Hill-Burton Act was fundamental to the growth of a capital-intensive, hospital-based healthcare system that typified the 'Golden Age of Medicine'.

The act is notable for being the only federal legislation that codified a 'separate-but-equal' clause. The clause was central to the act's funding formula. The formula took the squared differences between state per capita income and the national average and required funds to be spent in proportion to the racial population percentages of a county. This part of the act applied mostly to hospital projects in the US South, allowing southern states to access federal funds and keep Jim Crow segregation. My paper focuses on the act's interaction with southern health systems. The paper will examine two questions: What was the effect of the Hill-Burton Act on infant and fetal health? And how does the effect Chunge by racial group?

Chung et al. (2016) analysed the contribution from the act's funding to the nationwide hospital bed capacity and conclude that around 17 percent of America's hospital growth between 1948 and 1975 was connected to the Hill-Burton Act. The US South and West saw the largest benefit from the act. The literature on infant and fetal health for the post-WWII period largely ignores the Hill-Burton Act, though Thomas in *Deluxe Jim Crow* brings a strong historical lens to the legacy of the bill present in the development and administration of southern healthcare systems before the landmark Civil Rights Act in 1964. More common are research studies that look at the effect of antibiotics on mortality during the post-war period (Jayachandran et al. 2010, Alsan et al. 2021). Notably, Jayachandran et al.'s study of the

introduction of sulfa drugs on maternal and pneumonia mortality rates in the US found a smaller effect for Black Americans than for the white population. It is suggested by the authors that this result was due to the relatively inferior quality of healthcare facilities attended by Black Americans. The period examined by this paper fills in a gap in 20th century early-life health history. The Sheppard-Towner Act and New Deal programs marked the early-20th century (Fishback et al. 2001 & Moehling and Thomasson 2012), while the Civil Rights Act and 'Great Society' programs generate debate over policies influence on early-life health the latter half of the century (Anderson et al. 2023 & Almond et al. 2006). The Hill-Burton Act is the key to understanding developments in early-life health in the mid-20th century.

Method and Results:

The paper uses county-level data from 1940 to 1960 for the states of Alabama, Mississippi, Georgia, North Carolina, South Carolina, and Florida. These states are geographically and culturally a part of the 'Deep South'. Black Americans made up most the states' non-white population and each state practiced *de jure* segregation. Within these states, there were 362 general hospitals built with Hill-Burton funds.

The outcome variables are infant mortality rates and stillbirth rates at the county-level for the total population as well as for the two census-designated racial groups, white and non-White. The initial results, reported below, use a dummy variable to test the effect of Hill-Burton funds in a county. The dummy variable dummy variable that takes the value 0 when no general hospital in the county was built using Hill-Burton funds and 1 when at least 1 general hospital was built using Hill-Burton funds. At least 1 hospital is the designation for the Hill-Burton dummy variable since counties could decide to build one biracial hospital (typically segregated by wards) or two separate hospitals. The results below are for two simple regression designs:

(1) Outcome variable = Hill-Burton Dummy + Time effects+ County effects + error
(2) Outcome variable = H-B Dummy (3 year lag) + Time effects+ County effects + error

Overall IMR for Southern States with county & time FE

	imrate	
	(1)	(2)
hb_project1	-7.331***	
	(1.032)	
lag(hb_project, k = 3)1		-12.068***
		(1.189)
N	10,917	9,357
R^2	0.005	0.012
Adjusted R^2	-0.047	-0.049
F Statistic	50.481*** (df = 1; 10375)	103.060*** (df = 1; 8818)

White-only Overall IMR for Southern States with county & time FE

	white_imrate	
	(1)	(2)
hb_project1	-19.271***	
	(2.467)	
lag(hb_project, k = 3)1		-26.167***
		(2.901)
N	9,564	8,137
R^2	0.007	0.011
Adjusted R^2	-0.053	-0.052
F Statistic	61.033*** (df = 1; 9022)	81.362*** (df = 1; 7653)

Non-white IMR for Southern States with county & time FE

	nonwhite_imrate	
	(1)	(2)
hb_project1	-3.529***	
	(1.061)	
lag(hb_project, k = 3)1		-5.889***
		(1.133)
N	9,670	8,249
R^2	0.001	0.003
Adjusted R^2	-0.058	-0.063
F Statistic	11.055*** (df = 1; 9128)	27.003*** (df = 1; 7735)

For the overall population, Hill-Burton projects were associated with a decline in infant mortality. This effect grows with the three-year lag. The racial group analysis reveals that the effect was much stronger for white populations than for non-white populations. Specifically, the presence of a Hill-Burton hospital in a county was associated with 19.27 less infant deaths per 1,000 births in the white population, while for the non-white population this effect is reduced to 3.5 less infant deaths. With the three-year lag, the disparity in the coefficient for the Hill-Burton dummy increases.

Overall Stillbirths for Southern States with county & time FE

	stillbrth_rt	
	(1)	(2)
hb_project1	-5.162***	
	(0.850)	
lag(hb_project, k = 3)1		-7.983***
		(0.990)
N	10,920	9,360
R^2	0.004	0.007
Adjusted R^2	-0.048	-0.053
F Statistic	36.852*** (df = 1; 10378)	65.012*** (df = 1; 8821)

White Stillbirths for Southern States with county & time FE

	white_stillbrth_rt	
	(1)	(2)
hb_project1	-17.02308***	
	(2.16002)	
lag(hb_project, k = 3)1		-18.71851***
		(2.56422)
N	9,590	8,164
R^2	0.00682	0.00690
Adjusted R^2	-0.05257	-0.05666
F Statistic	62.11020*** (df = 1; 9048)	53.28835*** (df = 1; 7672)

Non-white Stillbirths for Southern States with county & time FE

	nonwhite_stillbrth_rt	
	(1)	(2)
hb_project1	-2.617**	
	(1.019)	
lag(hb_project, k = 3)1		-3.683***
		(1.106)
N	9,633	8,212
R^2	0.001	0.001
Adjusted R^2	-0.058	-0.062
F Statistic	6.592** (df = 1; 9094)	11.085*** (df = 1; 7720)

Again, for the overall population, Hill-Burton projects were associated with a decline in stillbirth rates. This effect grows with the three-year lag. The racial group analysis reveals that the effect was much stronger for white populations than for non-white populations. Specifically, the presence of a Hill-Burton hospital in a county was associated with 17.02 less stillbirths per 1,000 births in the white population, while for the non-white population this effect is reduced to 2.62 less stillbirths per 1,000 births.

These results encourage the investigation into the Hill-Burton Act and its effect on racial early-life health disparities. The next step in my analysis will be to introduce an IV strategy to begin to make causal claims. Following the work of Chung et al. (2017), I will use the county priority rankings as an instrument for Hill-Burton treatment. Their instrument exploits the fact that the priority ranking did not perfectly determine funding outcome, implying some level of exploitable noise between the priority ranking and funding decision.

After this analysis, I will explore the question of why the act had a different magnitude of effect on the white population versus the non-white population. Using qualitative sources (institutional records from racially segregated hospitals), I will explore how segregation led to an unequal sharing of resources despite the explicit language of the Hill-Burton Act to split funding equitably.