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## **Fertility Differentials Between African American and White Women in the Early Twentieth Century American South**

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This research project builds on a half-century of demographic studies about turn-of-the-twentieth-century U.S. race differences in fertility. As background, mid-twentieth century demographers began to study historical fertility differentials when a newly released U.S. 1940 Census Bureau report allowed comparisons of aggregated fertility rates by age, race, region and other characteristics for decennial census years 1910 and 1940. They were surprised to find, in

back-casting fertility rates, that at some point prior to 1910 the fertility of African American women had dropped, much more precipitously than that of white women. This was surprising because the fertility of very early nineteenth century white and black women stood at biological maximums, although white women had the highest birth rates of all women in North America and perhaps in the world. It was assumed that white women of the time, like most preindustrial women, had high rates because they had not yet elected to practice voluntary fertility control. In contrast, nineteenth century African and African American women experienced high fertility rates under a system of slavery, until the early 1860s, with vastly different constraints regarding fertility control to that point. Were white women first to control their fertility? If so, why did African American fertility rates fall far more quickly, once declines began?

In the decades that followed, researchers sought to isolate just when and where fertility control commenced in each population. And, because high—or low—rates might be present for different reasons, studies also asked whether non-comparable long-run declines had occurred. If we fast forward to recent, turn-of-the-twenty-first century demographic studies, with their much better data and methods, we find that the issue is still not resolved. Moreover, economic and social historians have joined the debate. This is because research questions about: 1.) why African American fertility dropped in the decades following the end of Reconstruction, and 2.) whether and why the decline substantively differed from that of white women over roughly the same years, have far-reaching implications. They invoke issues pertaining to family formation, uneven economic development and health disparities. These are the research questions I address in my extended study.

The first part of this report outlines complex and unique patterns of fertility decline, how we came to know about them (data availability and studies) and theoretical debates about their

meaning. This is necessary to frame the second part of this report that outlines a new perspective on fertility differentials. I focus on 1910, a year which stood at the nadir and near-midpoint of secular fertility decline. The material in the first part is based on published studies; the second section introduces new material taken from U.S. censuses and archival data, including sources held at the Rockefeller Archives.

### **Early Estimates of Fertility**

Early studies pertaining to African American fertility were “demographic” in that they primarily detailed fertility rates and trends. They only speculated (vs. theory tested) why patterns occurred. The findings of one such early study<sup>1</sup> based on the newly published 1940 Census, still hold: of few apparent racial differences in childbearing among northern or western region women. Also, urban, educated, high social status or working women, regardless of race, bore fewer children in these regions. But a critical finding, perplexing to the authors and a harbinger of the debates to follow, was that a higher level of education, generally associated with lower fertility for women elsewhere in the U.S. and the world did not strongly influence African American women’s fertility in the South. As it would turn out, scholars would not be able to fully outline long-run comparative race differences in fertility, or begin to understand them, until they accounted for U.S. regional differences. Most African Americans lived in one region, the South, until 1920: about 90 percent did in 1880 and the proportion had only declined to 85 percent in 1920.<sup>2</sup>

Lee and Lee<sup>3</sup> had not looked very far back in time but few studies prior to 1960 could do so: U.S. censuses did not enumerate the number of children born to women or provide indicators of own fertility until 1890. A national system of birth registration was not fully operational until 1933 and, even then, vital statistics collections and reporting of births and deaths was uneven,

especially across the South. However, applying new methods, demographers of the 1950s and 1960s compared nineteenth century African American age - sex distributions, across decades and/or against other known population structures, to calculate rates of natural increase (population growth). Then, based on the “best projections” of nineteenth to early twentieth century African American age-sex structures, they derived estimates of period and trend fertility and mortality.<sup>4</sup> There was consensus by the mid-1970s that African American fertility decline had commenced around 1880 and continued to at least the 1930s. By one simple metric, of the crude birth rate or the number of births per year in a population measured at midyear, African American fertility had declined from 58.6 in 1850-1860—which was a birth rate near a biological maximum—to 34.4 by 1910.<sup>5</sup>

White fertility also needed to be estimated by indirect method. In the simplest metric of the crude birth rate, white fertility in 1800 was at a biological maximum of well over 50 births per 1,000. Fertility then fell to 40 births per 1,000 in 1850 and to less than 30 per 1,000 by 1900.<sup>6</sup> Thus, African American women, with higher mid-century rates, narrowed the gap by 1910, in a steeper decline. But the issue of timing in white fertility decline is still not resolved: a more recent study suggests that white women in the South, unlike white women elsewhere in the U.S., may not have practiced fertility control until 1880.<sup>7</sup> If this is so, then southern black fertility decline may have even preceded or occurred simultaneously with southern white fertility decline, although the southern decline itself lagged relative to the nation.

### **Explanations of Fertility Decline**

How can we explain fertility decline? A theory of fertility decline was being tested, implicitly at least, in the early studies. Demographic transition theory, purported to explain late nineteenth and early twentieth century demographic change and assumed to apply universally,

was widely used in the 1950s and 1960s to examine both U.S. and international population structure changes. The theory held that turn-of-the-twentieth century forces associated with economic development and urbanization had, in the U.S. and Western (then-developed) nations, first reduced mortality and then fertility. Economic development triggered health improvements (e.g., sanitation, refrigeration of food) which first reduced infant mortality because infants are more responsive than adults to initial mortality declines. Sustained declines in infant mortality then assured parents that children born would survive and led parents to control (limit) reproduction. Economic development and urbanization also shifted the work skills required for labor productivity, away from those used in agriculture and toward those used in rising service and manufacturing occupations. Because formal schooling constituted the main pathway to the new skills, parents also limited childbearing to invest more intensively (time, resources) in the human capital or potential productivity of fewer children. Early demographic studies implicitly tested the theory by focusing on urban, industrial and occupational differentials in African American and white historical fertility rates.

Studies did find that both African American and white women reduced childbearing [in national rates] in response to these forces. But, African American fertility decline had commenced when only 27 percent of blacks were urban, compared to 46 percent of whites. In addition, white life expectancy rose commensurate with mortality decline by 1880, but black life expectancy at birth was low in 1850 and remained just as low in 1910, estimated to range from 30 to 33.7 years for both sexes.<sup>8</sup> In many ways, the African American fertility decline actually occurred *in a way opposite* to what demographic transition theory would predict. As Engerman noted:<sup>9</sup>

The sharp decline in fertility among U.S. blacks was apparently not preceded by a large-scale decline in mortality as was the case with other populations..... it occurred while the

black population was still primarily rural and agricultural and was located in a region of the country not undergoing significant industrialization or large-scale urbanization...

These findings had troubling implications for demographic transition theory, as they hinted that the demographic transition, as then depicted, was *not* universal: U.S. African American and white populations were not similarly subject to demographic transition processes. The findings also suggested that transition theory would not be able to, alone, isolate or explain the potential pathways of African American or white fertility decline, especially in the South.

Many scholars then suggested that the reason for anomalous findings was due to unadjusted or aggregated census data and weak testing of the theory. A new wave of studies appeared from the mid-1970s to the mid-1990s that used state- and county-level data and new theoretic approaches to explain what was increasingly understood to be an “atypical” African American fertility pattern in light of demographic transition theory. This new wave brought forward enhanced depictions of transition-related social and economic processes. Guest<sup>10</sup> for example, extended the theory by counterbalancing its urban-industrial slant: he proposed that agricultural development did not necessarily stand in opposition to industrial development but could complement it. He found that U.S. white women in 1900 not only reduced childbearing as local manufacturing activity increased, but as farms mechanized. This reduced the need for child farm labor and led to higher formal school enrollments, hence discouraged fertility.

Tolnay<sup>11</sup> used this agricultural development model in a path-breaking paper, the first to focus exclusively on southern farm women in 1900, and uncovered a new twist to the study of fertility differences: there were few race differences if one focused on the South. Southern farm women of both races exhibited “natural fertility” or minimal fertility control in 1900.

Demographic transition forces had not yet taken root in the rural South. But, given the weak fertility response to development effects, he still found differences in responses: white women

limited or reduced childbearing in the context of land development but black women did not. This study fostered new ones, focusing on the South. There was special interest in the unique land tenancy system that had spread throughout much of the South by 1910 and its effects on fertility; I discuss this in the next section.

This brings us to a second approach used to explain the “atypical” African American fertility decline in light of demographic transition theory, one that stresses health factors. This approach, much like demographic transition theory, was implicit and not overtly tested in early studies. Scholars speculated that race differences in health might explain the relatively greater drop in black vs. white fertility. For example Farley,<sup>12</sup> in tracking the 1940s rise in black fertility that co-occurred with urbanization and Northern industrial employment—a pattern that also contradicts transition theory—suggested that it might be explained by fecundity “regained.” For, turn-of-the-twentieth century declines in mortality had variable timing in the onset and pace of health improvement, across U.S. regions<sup>13</sup> and by race / ethnicity: white mortality decline began around 1880 while African American mortality decline did not begin until after 1900.<sup>14</sup> Perhaps, Farley mused, post-Reconstruction African American fertility decline reflected infecundity in this era. Then, as twentieth century black mortality decline commenced, fertility might have risen, in a reflection of better health.

Cutright and Shorter<sup>15</sup> did not test “health effects” directly but studied the fertility of U.S. women born between 1867 and 1935 using parity progression ratios that predict the probability of having an additional child at a given parity. White women’s pattern showed evidence of voluntary control: they had more first and second births but lower odds of childbearing for each subsequent birth. In contrast, nonwhite women seemed to face a fecundity threshold of involuntary control, due to health: they were less likely than white women to have first or second

births, but if able to have a second birth, were more likely to progress to much higher parities. By 1990 and beyond, studies focused on the South to directly test, along with demographic transition effects, whether health led to race differences in fertility. In one study, Tolnay and Glynn<sup>16</sup> modeled local health risks as county infant mortality rates and venereal disease rates with the latter estimated from men's World War 2 draft data. Consistent with what they termed a multiple causes framework, infant mortality and VD rates partly accounted for African American fertility decline, but with local health risk controlled, development effects also had negative impacts on fertility (lowering it). This study, however, brought a new surprise: the fertility of southern black and white women was negatively impacted by prevailing sickness conditions, as reflected in infant mortality and reproductive disease. Here is where my research starts, in addressing agricultural and industrial development and southern health in this time period.

### *The Present Study*

This study, in process, expands theory and measurement pertaining to southern demographic change by refocusing on mechanisms of development: as agricultural scale (plantations) and mill industrialism. I propose that these aspects of southern development shaped fertility differentials directly and/or indirectly due to racial health disparities. But the theoretical concept of the “demographic transition” is not without controversy. Szreter<sup>17</sup> notes the theory's pitfalls: it took hold in the 1940s to guide international development and population policy. By the 1960s, it became yoked to modernization “stage” theories and methods-driven tools based on axiomatic predictions (vs. explanation). Perhaps, because of this, the use of demographic transition concepts and even historical demographic investigations about fertility transitions has stalled, particularly with regard to the American South. Szreter<sup>18</sup> recommends a new approach:



[what had occurred was an] ...unintended consequence of perpetuating a [model and] methodology that over several decades ... exhibited severe limitations in yielding an understanding of historical fertility change.... There is need for an accumulation of patient, carefully contextualized, investigative projects on fertility change...

With this caution in mind, I carefully use the transition concept because it directs our attention to forces of rural and industrial development. Also, early versions of transition theory assumed that top-down changes, whether economic or culturally diffused, mostly determined behavior. I explore personal and family characteristics of southern women more fully than these studies, as well as the social, economic and political circumstances that women faced. I link census microdata from the 1910 Integrated Public Use Microdata Sample (IPUMS),<sup>19</sup> a 1:70 household sample, to county-level data circa 1910-1920 from many sources including from Rockefeller Archive holdings. I also use qualitative, historical evidence from the Rockefeller Archive holdings to better-specify and reconstruct the historical circumstances that shaped women's lives, leading to differences in fertility.

### **Readdressing Agricultural Development in the South**

One part of my model builds on later studies which highlighted an important division of agricultural labor, of farm tenancy and land ownership. The division actually represented a wide assortment of farm labor arrangements, from owning land free, to cash tenancy, to share tenancy and to wage labor.<sup>20</sup> Turn-of-the-twentieth-century rural labor relations, in the context of these distinctions, constituted a ladder of mobility based on physical and /or human capital.<sup>21</sup> African American and white farm families aspired to land ownership<sup>22</sup> yet the general direction of status mobility after the Civil War, for most black and white southern farm families, was downward and not upward.<sup>23</sup> About 80 percent of southern farms were owned (owners mostly white) prior to the Civil War, but ownership (again mostly white) declined by 1930 to about 37 percent of

farms.<sup>24</sup> The African American farm ownership rate after the Civil War was low and although rates grew exponentially until just after the turn of the twentieth century<sup>25</sup> they never exceeded the rates of white ownership and collapsed around World War I. Slightly less than 20 percent of African American farmers (versus about 52% of white farmers) owned farms in 1910, around the peak of ownership.<sup>26</sup> Most African American farmers were cash and share tenants: about 75 percent (versus 40 percent of white southern farmers) rented land.<sup>27</sup> But their odds of staying on these rungs also shifted over time: cash tenancy declined after 1880, as sharecropping rose<sup>28</sup> and then, between 1900 and 1940 sharecropping was supplanted by wage labor, especially for African American farmers. Over the long run, southern farm families' hold on land, as owners and/or as tenants, was tenuous.<sup>29</sup> This is important because women's childbearing patterns reflected their lifetime of such experience.

A farmer's status also changed over the short run, given several interrelated and dynamic constraints. One was that cash and share tenants needed to settle crop production-related debts with owners when the fall harvest came in; small land owners, cash and share croppers also needed to repay credit extended by merchants for the year preceding the harvest.<sup>30</sup> A second constraint was that farmers, even large-scale owners, were subject to market pressures or contracts that required them to concentrate on cash crops for export; they then grew a narrow range of crops such as cotton, sugar, tobacco, indigo and rice, and focused proportionately less on subsistence farming for food.<sup>31</sup> This limited food production for home use and potentially reduced household nutrition, especially for women and children. Third, farmers were as dependent on weather and volatile market prices as on productivity. If the weather was favorable and prices rose, farmers could move up the ladder or expand land holdings. But if prices fell or crops were lost, farmers might lose their land, not repay debts or need to start over in wage labor

contracts. Moreover, these constraints more strongly affected African American farm families because they owned or worked smaller farms with poorer quality soil; this reduced the quantity and quality of produce for markets and left them more vulnerable to market price swings.<sup>32</sup> They might compensate by voluntarily planting more acreage in cash versus subsistence crops or may have been required to do so by crop liens signed in exchange for land, food or supplies.

Rockefeller Archive holdings shed light on these constraints. Studying a fairly representative sample of African American farmers in North Carolina, Eutsler<sup>33</sup> reported that owners planted 60.3 percent of their acreage in cotton, peanuts and tobacco, about 32.9 percent in corn and the remainder in other produce. Cash and share tenants in his sample were more likely than owners to depend on cash crops: tenant farmers planted 70 percent of crop acreage in cotton, peanuts and tobacco and another 28.5 percent in corn, leaving less than 1 percent for other use.<sup>34</sup> High levels of debt also checked their upward mobility and current resource availability: fifty one percent of owners had mortgages and 34 percent of owners relied on merchant credit, as well. Tenant farmers took on considerable debt by borrowing “short time” cash and were almost twice as likely as owners (67 percent versus 34 percent) to borrow from merchants.<sup>35</sup> The tenants (and owners) who borrowed short term or through merchants did so at greater than 35 percent interest for 8 months, with crop liens placed on harvests.<sup>36</sup>

The tenancy arrangements just described have been introduced into the study of fertility decline.<sup>37</sup> However, they were not the only, or even the main, distinction with regard to farm labor in the South over this period. More important—but not yet explored in fertility research—is an agricultural institutional form, the plantation, in terms of scale / type of enterprise and geographic setting. As Alston and Higgs noted<sup>38</sup> “...the same form of [farm labor] contract implied a different arrangement depending on whether it occurred on or off a large plantation.”

There is a debate about whether the plantation's institutional form had survived or had not survived the Civil War;<sup>39</sup> I side-step this debate due to space concerns. It is enough to note that plantations were major sites of southern agricultural development after the Civil War to the 1940s, when farm mechanization finally supplanted the need for manual labor.<sup>40</sup> Plantations, as centrally administered farms, profited from external trade,<sup>41</sup> and used large agricultural labor forces that were kept under close supervision for farm production.<sup>42</sup> I define a plantation as an agricultural unit of at least five tenant farms, administered as a single farm.<sup>43</sup>

Brannen<sup>44</sup> mapped southern counties according to local plantation dominance of production and land improvement among other characteristics, based on the 1916 U.S. Plantation Census. I replicate his Table 3 in Figure 1 below. The southern plantation counties (n=325) held 22,157 plantations; the majority (14,861) had 5 to 9 tenant households although types of labor contracts varied. In IPUMS data I find that about *49 percent of southern African American women ages 15-49* (childbearing age) lived in plantation counties in 1910 compared to *23.8 percent of southern white women in this age group*.

-Figure 1 about here-

Demographic studies explore agricultural development effects on fertility via mechanisms of farm mechanization, land value and child (family) labor among others but they have assumed independence of farm households. They have not addressed that plantations linked tenant households in ways altered labor practices and productivity, hence may have re-shaped fertility patterns of share and/or waged and/or family laborers involved. Woodson notes<sup>45</sup> that on plantations, tenant, share and waged labor, most often African American families, were essentially treated as one labor pool with minimal incremental remuneration for tools or animal ownership; in essence there may not have been a clear "ladder of mobility." It is important to

recognize, however, that plantation work arrangements, of direction and control of labor, were understood by owners and observers of the time to constitute modern and efficient farming methods. The implementation of strong mechanisms labor control, along with farming methods of soil enrichment, was understood to be a way to (re)capture efficiencies in market production.

My analysis of IPUMS data finds that plantation county residence differentially shaped the fertility of African American and white women living in tenant farm households. IPUMs data show that *about 77 percent of southern tenant (share or cash) African American women ages 15-49* lived in plantation counties in 1910; *about 41 percent of southern tenant white women in the age group* did. Black women farm tenants (cash or share) in plantation counties had relatively low fertility, about 4 births per woman, and were more likely to be childless (13.7 percent). If they had borne children, less had survived, relative to black tenant women in non-plantation counties or white tenant women, regardless of county type. Almost 10 percent of fecund (at least one birth) black tenant women living in plantation counties had no children surviving. In comparison, about 8 percent of black tenant women in non-plantation counties and less than 5 percent of white tenant women, regardless of county type, had no children surviving. Southern white women in 1910 were largely rural, too, but were more evenly distributed on the rungs of the agricultural mobility ladder and were not as concentrated in plantation counties. Yet white tenant farm women living in plantation counties had slightly higher fertility (of 4.1 versus 4.0 children ever born) but somewhat worse child survival and a higher rate of childlessness than white peers in non-plantation counties. Of course, this type of analysis does not control for many factors, such as age, parity, county level of industrial growth or disease rates; multivariate models do so in the extended paper. However, this snapshot suggests that childbearing, in the context of plantation development, was marked by lower fertility and higher infant and child

mortality, for African American women and also possibly white women. This runs counter to demographic transition theory: a *lower* rate of child survival, indicative of lower infant mortality and associated with economic development, should promote *higher* fertility. Poorer maternal health also may have been a mediating factor between agricultural development and fertility in Figure 1 plantation counties.

### **Readdressing Industrial Development in the South**

Much turn-of-the-twentieth-century southern industrial growth was centered in the textile industry. Small cotton mills, powered by local streams and situated near gristmills were widespread prior to the Civil War, especially across the Piedmont region that extended from Virginia to Mississippi.<sup>46</sup> Pre-Civil War mill output was not exported as much as locally absorbed by self-sufficient farm families who made their own clothing.<sup>47</sup> In addition, flows of investment capital from outside the South boosted mill growth<sup>48</sup> and planters and merchants inside the region invested as well. High cotton prices after the Civil War had promoted Piedmont cotton production, including large scale plantations, as shown in Figure 1. But cotton prices plummeted from 12 cents per pound in the 1870s to 5 cents per pound by the early 1890s, which was less than half of its breakeven price, leading to greater within-region investment in mills.<sup>49</sup> Figure 2 maps mills in 1912,<sup>50</sup> showing their concentration in the Piedmont region of the South.

-Figure 2 about here-

Also fueling the capital investment in textile mills across the Piedmont South was a growing labor supply.<sup>51</sup> For, the decades-long collapse in the price of cotton that drove planters and merchants to diversify in mills also moved farmers, especially the small, self-sufficient farmers of the Piedmont, into millwork.<sup>52</sup> Textile mill industrialization differentiates

manufacturing, often measured as investment per capita or number of establishments, in fertility research. This is because textile mills hired workers based on gender and race, perhaps leading to different fertility outcomes. School age and adolescent girls constituted a considerable proportion of millworkers and southern textile mills also relied on older, married women workers.<sup>53</sup> They also were unusual among southern industry in that they did not employ African American women or men, despite high needs for labor and African American skill in mill-type work and weaving prior to the Civil War.<sup>54</sup> While African American workers were incorporated into lumber, steel, construction and mining industries, although in lowest ranked jobs, they were excluded from textile mill jobs. But African American workers were drawn to mill towns, too, and found work as domestic workers or in ancillary or service jobs.<sup>55</sup>

Mill workers, much as farm workers, experienced status changes over the short run. There might be promotion in rank within a mill for skills learned, but also much turnover. Many became ill.<sup>56</sup> Some workers simply moved from mill to mill.<sup>57</sup> Also, many farm families—and they might have been land owners or cash or share tenants—entered mill work temporarily to reduce farm debt, buy back a farm foreclosed or supplement family coffers prior to the start of the next planting-harvest cycle.<sup>58</sup> Such work mobility meant that workers, as described in the next section, carried poor nutritional status and/or diseases into the mills and became subject to the more disease-ridden urban environment as well. Wannamaker<sup>59</sup> found that migrants who entered South Carolina mill towns around 1900 and had lengthy stays, accounted for virtually all of the industrialization-induced fertility decline in that setting. However, migrant women's children were also less likely to survive. This parallels my finding that tenant farm women living in plantation counties also were subject to lower fertility and higher infant mortality. Was poor health a causal or mediating factor in these very different contexts? It is also possible that

different diseases differentially impacted the fertility of African American and European American women. We know that poor health played a role in the southern fertility decline, for black and white women alike.<sup>60</sup> But the role that it played is understudied.

### **Readdressing Southern Health**

Daniel Scott Smith noted the difficulty of conducting historical research on health and mortality: people of the past “did not literally die”<sup>61</sup> of personal characteristics such as ethnicity or sex, or the characteristics of their fathers or mothers, or their communities. But, because little high quality historical data on disease and death is available, historians and demographers have been forced to use embodied or contextualized rates, taken from censuses or historical reports, as best they can. It is even more difficult to estimate past health and mortality when the diseases of interest were endemic and chronic, as opposed to epidemic, and especially if the diseases were as yet unrecognized and undiagnosed by physicians. This was certainly the case in the south. However, access to “new” data held in the Rockefeller Archives on key clusters of southern diseases in 1910, as well as newly combined data on climate and other indicators of specific geographic pockets of disease risk, allows me to expand the “health hypothesis” to further examine fertility decline. An expanded health hypothesis aligns with a multiple cause framework<sup>62</sup> as economic development possibly led to divergent paths, due to race, in agriculture (e.g., different rates of land ownership and locations in plantation counties) and industry (women’s different types of waged labor, as manufacturing or domestic). These factors, along with exposure via heritability and family environment, put women at risk of poor health which may have directly or indirectly influenced fertility.

The extended paper analyzes county-level rates of three diseases that were understood, by 1910, to either be hyper-endemic in the South (hookworm and malaria) or already implicated in



fertility decline (venereal disease). It also examines, more generally (without county-level rates) the effects of TB and nutritional diseases on fertility. However, before I briefly describe specific diseases and potential impacts on fertility, it is important to convey a general sense of the regional disease environment. By the late 19<sup>th</sup> century, the South was viewed to be the “unhealthiest” U.S. region and a place to avoid; indeed, national perceptions of poor southern health likely contributed to regional economic underinvestment and a lack of immigration with regional isolation.<sup>63</sup> Southern disease levels were high—and were becoming more visible nationally—because an epidemiologic transition marked by lower infectious disease mortality was well underway in the other regions of the U.S.<sup>64</sup>

Four key “southern” diseases of great concern in 1910 were malaria, yellow fever, hookworm and pellagra.<sup>65</sup> Added to this mix were epidemics of smallpox, typhoid fever, diphtheria and endemic infectious diseases such as tuberculosis and syphilis. If the South was an incubator of a rather noxious mix of diseases in 1910, the rates of some, such as pellagra, only increased in the decades ahead, due to the chronically low (or non-existent) level of public health investment, and the types of southern economic development that had emerged. Southern development, as described in the previous sections, provided mill work and farm wage, cash or share tenancies, enlisting working families, not individual workers. Mill and plantation owners, chronically short of labor, targeted any available and mobile family: campaigns recruited mostly black families to large scale farms and labor agents recruited white families to the mills. Women as members of families, if not also the primary workers, then crowded into small farm houses, mill houses or worse, without sanitary privies, screens or clean sources of water.

Some examples, in different parts of the South, illustrate the large number of diseases that women were exposed to and the poor living conditions that amplified their risk of illness. Public

health agent T.B. Yancey described flows of migrants into a new industrial town in Kingsport County, Tennessee in 1916:<sup>66</sup>

With a population at that time of 2870 and only 286 dwelling houses most of which were of from four to six rooms...tents and shacks of the flimsiest constructions soon sprang up in great numbers...[built with] little regard for sanitation or public safety....drinking water was as scarce...[and] unprotected from surface contamination or sub-surface contamination...open sewers emptied...into low places in the very heart of the settlement... within two or three days 375 persons were taken more or less violently sick with dysentery and four cases of typhoid fever...

A Laura Spellman Rockefeller Memorial funded report described Fayette County, Texas in 1923. The county population (1920) was 29,965 and had four towns; 22.5 percent of county residents were African American:<sup>67</sup>

...in the rural districts there are the owners of the land and the tenants (negroes and Mexicans) who live in the one or two room shacks and receive  $\frac{3}{4}$  or  $\frac{1}{2}$  of the profit from the crop...the most prevalent diseases in Fayette County are malaria, typhoid, dengue, hookworm and tuberculosis...

On perinatal care:<sup>68</sup>

[of] the twenty physicians interviewed, two... give no prenatal care; three do urinalysis if the patient is abnormal; three take pelvic measurements in primaparae; seven take blood pressure (not routine) ; twelve do urinalysis every month. Four make no post-partum visits; five make no post-partum visits unless an abnormal case; ten return from one to four times on either normal or abnormal cases. Fees average from fifteen to thirty dollars plus mileage.

Carl Grote wrote of Walker County, Alabama, population 40,000 with seven towns, with 15 percent African American:<sup>69</sup>

On February 1<sup>st</sup>, I arrived at Jasper and began my work as Full Time Health officer.... I have not been able to get a great many cases of Tuberculosis reported, and in several instances epidemics of measles, mumps, and whooping cough have not been fully reported, as most of the cases were not seen by the doctors. However, I believe that practically every case of Typhoid Fever, Diphtheria, Scarlet Fever, Small-pox and Pellagra have been reported to my office...During last Spring there were about 40 cases of Small-pox reported...Typhoid fever has been the hardest problem ... there having been several epidemics and about 100 cases during the last ten months. ... Too much diphtheria has occurred in the County, and, due to the late diagnoses three deaths have resulted....A great deal of time was given during the Summer months visiting Pellagra,

there having been more than 1000 cases in the County, and in one locality it assumed alarming proportions...

Health improvements had occurred elsewhere in the U.S. and improvements had reflected many factors: better nutrition and sanitation, rising quality of water and food supplies, rising educational attainment levels which promoted health awareness, and access to effective medical care. But perhaps the most important boon to health in the other regions was that economic development had spurred concerted public health efforts: many groups and interests worked in concert to record rates and causes of disease and mortality and remove broad mixes of health risks that affected large numbers of people. In contrast, there was a lack of public health interest or infrastructure across much of the South. Disease levels were high, in good part, because state and local systems of disease control were weak.<sup>70</sup> This weakness motivated much philanthropic activity, directed toward southern public health, after 1900.

Turning to specific diseases, many took root due to exogenous factors related to southern climate and soils, making eradication or reduction of disease more difficult than elsewhere in the nation. The South played host to warm weather diseases such as yellow fever (although epidemics had largely declined by 1910), malaria and Geohelminths such as hookworm.<sup>71</sup> Illustrative here is hookworm. Its regional prevalence across 11 southern states, at 40 percent, was estimated by the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease (hereafter RSC), which was active from 1909-1914. However, the prevalence rate was as high as 90 percent in some counties. Although RSC sampling methodology may not have been as rigorous as sampling done today,<sup>72</sup> estimates were based on microscopic evidence taken from stool samples of children selected at random, and so are probably more reliable, as estimates, than the sickness rates used in all historical fertility studies to date. Hookworm prevalence most reflected high average temperatures (warm climates) and moist, sandy or loamy soils, which

allowed the larvae to burrow under the soil and away from the sun, until they could enter a human host. But hookworm prevalence was also facilitated by the lack of sanitation in tenant or mill housing, by medical practitioner and public lack of knowledge about the disease and by poverty, which limited choice in housing and the purchase of shoes and clothing.

The climate and topography of the South also supported pockets of malaria, as an endemic infectious disease by 1910. Transformation of the southern ecology into a “malarial frontier” began in the early seventeenth century as malaria was not present in the US before settlement by Europeans, who carried milder *Plasmodium vivax* to the New World, and Africans, who brought the more virulent *Plasmodium falciparum* from Africa.<sup>73</sup> By the late eighteenth century an ecological line, separating *P. vivax* in the north and *P. falciparum* in the south had faded; mosquitos carried mixed strains of malaria westward, especially to the Arkansas-Mississippi Delta area, where plantation farming was most concentrated.<sup>74</sup> By the mid-nineteenth century the mixed strains of *P. vivax*, *P. malariae* and *P. falciparum* had become endemic in the warm southern climate; mosquitos could survive year-round, perhaps hibernating for a month or two, needing only stagnant pond water and enough human hosts nearby to maintain their breeding cycle.<sup>75</sup> Human population density near water was important because the flight path of the mosquito was limited.<sup>76</sup> Dense populations and ponds could be found where unscreened homes stood close to one another.<sup>77</sup>

No studies of fertility have considered the influence of endemic multi-disease prevalence on women’s health. Tolnay<sup>78</sup> tested the health hypothesis, using men’s venereal disease rates to estimate effects on fertility, and established that VD had significantly reduced black and white fertility in the American South. *P. falciparum* malarial strains have a high mortality rate for those without acquired immunity, as high as 20 to 40 percent if not treated.<sup>79</sup> But the symptoms

of this disease and hookworm, although distinct, overlapped a bit if they became chronic: general weakness, listlessness, pallor, jaundice, stunted growth in children (being of short height), severe anemia, amenorrhea, and if births occur, low birth weight infants. Hookworm was not a killer but it placed a silent burden on those with the disease. Frederick Gates noted:<sup>80</sup>

...Dr. Eliot...seems to overlook the indirect mortality from this disease. I mean in my reply to give him information on this, if I can, and I wish you would cause to be sent to me the literature which you have tending to show, first, that the mortality of other diseases in the south is very much greater than the diseases in the north; second, that this increased mortality while perhaps due to some other cause, is also certainly due in large measure to decreased power of resistance, caused by the ravages of the hookworm disease.

Finally, there is other important evidence on racial health disparities that are contained in the Laura Spellman Rockefeller Memorial archives.<sup>81</sup> For example, tuberculosis should be considered when considering race differences in maternal health and infant mortality. Louis I. Dublin, Statistician of the Metropolitan Life Insurance Company, based on data from 2 million African American policy-holders in 1920 (20 percent of the black population), reported:<sup>82</sup>

Tuberculosis of the lungs is the most important cause of death among colored people... The disease is a veritable scourge among young Negroes...Colored girls at the [ages between 10 and 14 years] show a tuberculosis death rate eight times greater than that of white girls...In fact the great excess of tuberculosis mortality among Negroes is almost entirely limited to the early years of life. After age 35, there is not much difference in the effect of the disease among the two races. The disease runs a more rapid course among Negroes, perhaps, because the power of resistance to the disease is much lower... more than five years could be added to the life span of colored people if tuberculosis were brought under control.

TB impacted infant as much as maternal health. To sum up, the larger study of which this paper is a part examines labor reorganization and control through large scale plantation farming and textile mill industrialization, whose tenant farms and villages, respectively, housed families. The model sheds light on different faces of southern development, as experienced by African American and white farm families, including disease environments, to assess relative impacts on fertility due to involuntary fertility control (poor health).

## Endnotes

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- <sup>4</sup> Jack Ericson Eblen, "New Estimates of the Vital Rates of the United States Black Population during the Nineteenth Century," *Demography* 11 (1974): 301-319; Reynolds Farley, "The Demographic Rates and Social Institutions of the Nineteenth-Century Negro Population: A Stable Population Analysis," *Demography* 2 (1965): 386-398.
- <sup>5</sup> Reynolds Farley, "Recent Changes in Negro Fertility," *Demography* 3 (1966): 188-203; Farley, "The Demographic Rates and Social Institutions."
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- <sup>16</sup> Stewart E. Tolnay, and Patricia J. Glynn, "The Persistence of High Fertility in the American South on the Eve of the Baby Boom," *Demography* 31(1994): 615-631.
- <sup>17</sup> Simon Szreter, "The Idea of Demographic Transition and the Study of Fertility Change: A Critical Intellectual History," *Population and Development Review* 19 (1993): 659-701.
- <sup>18</sup> *Ibid*, 692.
- <sup>19</sup> The IPUMS is a 1-in-70 sample of households taken from microfilm records of the 1910 United States Census of Population. Micro-data suffers some of the same problems with selection bias that exists with aggregated census data: it misses women who have died and may disproportionately miss the poor and the poorly housed due to undercounting by enumerators. Such "missing" women were disproportionately African American.
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- <sup>22</sup> Loren Schweninger, *Black Property Owners in the South 1790-1915*. Chicago: University of Illinois Press (1990).
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- <sup>33</sup> Ronald B. Eutsler, "Negro Agricultural Credit Conditions in North Carolina," Institute for Research in Social Sciences, University of North Carolina, Chapel Hill, N.C. (1927), Rockefeller Archive Center, LSRM, Series 3, Subseries 3.08, Box 103, Folder 1042, Table 3.
- <sup>34</sup> *Ibid*.
- <sup>35</sup> *Ibid*, Table 17.
- <sup>36</sup> *Ibid*, Table 16.
- <sup>37</sup> For overview, see Tolnay, "The Bottom Rung."
- <sup>38</sup> Alston and Higgs, "Contractual Mix in Southern Agriculture," 331.
- <sup>39</sup> J.R. Mandle, *The Roots of Black Poverty: The Southern Plantation Economy After the Civil War*. Durham, N.C.: Duke University Press (1978); Martin Ruef, "The Demise of an Organizational Form: Emancipation and Plantation Agriculture in the American South, 1860-1880," *American Journal of Sociology* 109 (2004): 1365-1410; Nancy Virts, "Estimating the Importance of the Plantation System to Southern Agriculture in 1880," *Journal of Economic History* 47(1987): 984-988; Nancy Virts, "Change in the Plantation System, 1910-1945," *Explorations in Economic History* 43 (2003): 153-176.
- <sup>40</sup> C.O. Brannen, *Relation of Land Tenure to Plantation Organization*, Washington, D.C.:U.S. Department of Agriculture Bulletin No. 1269 (1924); Virts, "Change in the Plantation System."
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- <sup>44</sup> Brannen, *Relation of Land Tenure*.
- <sup>45</sup> Woodman, *New South, New Law*, 106.
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- <sup>52</sup> Carlson, "Labor Supply, the Acquisition of Skills"; Tullos, *Habits of Industry*.
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- <sup>68</sup> Ibid, 13.
- <sup>69</sup> Letter, from Carl Grote to Dr. J. Ferrell, November 2, 1914. Rockefeller Archive Center, RSC, Series 2, Box 4, Folder 79.
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<sup>81</sup> Negro Problems Report on Migration and Health, Rockefeller Archive Center, LSRM, Series 3, Subseries 3.08, Box 101, Folder 1022.

<sup>82</sup> *Ibid*, 50.

Figure 1

**Southern plantation development as categorized by Brannen (1924)**

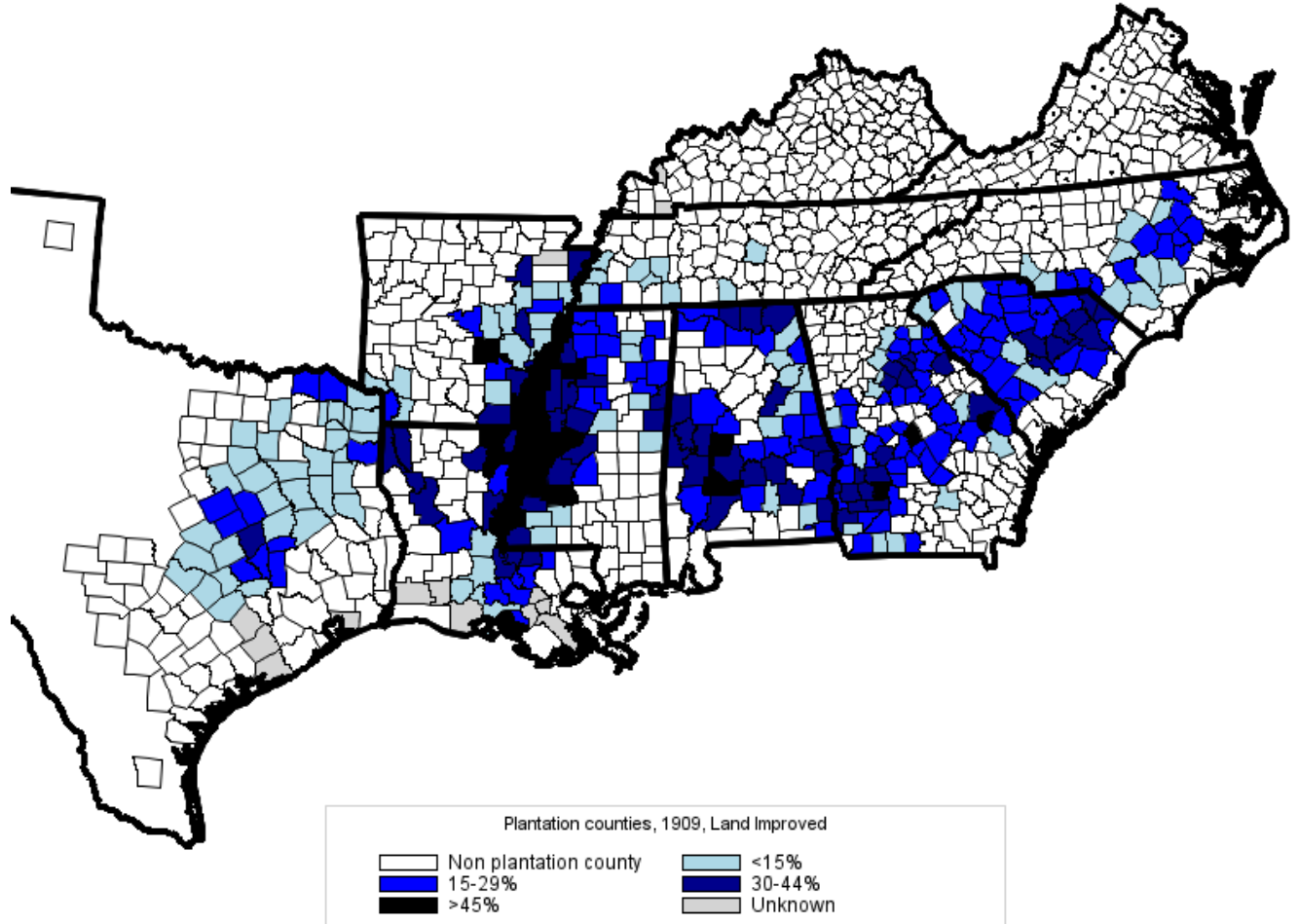


Figure 2

**Textile Mill Prevalence in Southern Counties, U.S. 1913**

