TUSKEGEE AT FORTY-FIVE AND U.S. MEDICINE'S 107 YEARS OF ARTIFICIAL SCARCITY AND ECONOMIC EXCLUSION

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ABSTRACT

November 16, 2017 will mark the forty-fifth anniversary of the end of the Tuskegee syphilis experiment. In 1932, the U.S. Public Health Service (PHS) began what eventually became one of the most controversial studies in the history of medicine. The *Tuskegee Study of Untreated Syphilis in the Negro Male* (hereafter, "Tuskegee," for short) lasted for forty years (1932-1972) and involved inviting 600 indigent African-American sharecropper men (about two-thirds of whom had contracted syphilis) from Macon County, Alabama to participate in a study in return for receiving promised medical treatment for "bad blood" (symptoms associated with conditions/diseases ranging from lethargy and anemia to syphilis), free food, and burial. According to the conventional historical narrative, the 600 men were deliberately not treated for syphilis. A renewed counter-narrative, since at least 1999, disputes many of the putative facts of the popular narrative. This paper will first explore artificial scarcity and economic exclusion in the industrial organization of American medicine leading up to and after Tuskegee. It will then examine the twin narratives. Third, it will review studies documenting demographic health disparities and their changes during and after Tuskegee. Finally, utilizing a sample of recent data, it will discuss an empirical test by the authors suggesting that alarming demographic health disparities still exist in the American population, and very tragically echo the pattern that led to the development and implementation of Tuskegee.

Keywords: health economics, economic history, industrial organization, regulation, market structure

INTRODUCTION

Many Americans, and increasingly most young ones, have heard, have been taught, or have read something about the notorious Tuskegee syphilis study. Today, two versions of the event exist side by side. The first is a story of flagrant and deliberate medical malpractice, the second a story of well-intentioned and paternalistic care that has been misunderstood and unfairly maligned. Whichever version eventually wins out as the dominant narrative of the event, time will tell. This year marks the forty-fifth anniversary of the end of the Tuskegee study. To provide insight into the etiology of Tuskegee, this paper will first review the literature analyzing the industrial organization of American medicine leading up to and after the study. Second, the dominant narrative and counter-narrative of Tuskegee will be juxtaposed. Third, demographic health disparities will be reviewed and a relevant empirical study conducted. Last of all, conclusions about all of the aforementioned will be offered.

LITERATURE REVIEW

The Economics of Exclusion: Rise of the U.S. Medical Cartel (1830-1982)

Free-Market Period (1830-1910). Contrary to popular presumption, free-market medicine did not begin in the United States in 1776 with the American Revolution but much later in the early Nineteenth Century. From approximately 1830 to 1850, licensing laws and regulations enacted during the colonial period were generally ignored or repealed. This correlated with an increased acceptance of eclecticism (1813) and homeopathy (1825) against the mainstream medicine (allopathy) of the day that included bloodletting and high-dose injections of metal and metalloid compounds containing mercury or antimony (Hamowy, 1979, pp. 73-74).

Eclectics emphasized treatments consisting of plant remedies, bed rest, and hot baths while homeopaths emphasized a different set of medicines in small doses (letting the body heal itself as much as possible), improved diet and hygiene, and stress reduction. The usual worst results of these types of treatments were allergic reactions to no improvement. Hence, it is not surprising that the American public began to prefer them to the ghastly bleeding and metal injections of allopathy, which could be deadly (Rockwell, 1994, p. 17).

In terms of the physician labor market, by 1860 there were approximately 55,000 physicians practicing in the United States, one of the highest *per capita* numbers of doctors in the world; about 175 per 100,000 (Hamowy, 1979, p. 73). By 1870, approximately 62,000 physicians were in practice in the United States, roughly about 5,300 of which were homeopaths and about 2,700 of which were eclectics; thus about 13 percent of the labor market represented alternative physicians (Chaillé, 1874, pp. 818-819). Schooling was plentiful, inexpensive, and entry to the most prestigious schools was not very difficult. Most schools were privately owned. Licenses to practice were not required or enforced, and just about anyone could establish a medical practice (Hamowy, 1979, p. 73).

Even though they were only about 13 percent of physicians in practice, the free entry of eclectics and homeopaths into the U.S.-physician labor market had a negative impact on the incomes of allopaths. Midwives and pharmacists were also seen as a problem because midwives took business away from obstetricians and pharmacists (at the time) could diagnose diseases and write drug prescriptions and refills (Rockwell, 1994, p. 17).

Allopaths thus began organizing at the state level to lobby governments to not only severely restrict their eclectic, homeopathic, midwife, and pharmacist competitors and the schools that trained them, but also severely restrict the number of allopaths in practice to dramatically increase allopathic (mainstream) physician incomes and prestige (Rockwell, 1994, p. 18).

The American Medical Association (AMA) spearheaded the effort to make organized allopathy the gatekeeper of American medicine. AMA had been formed in 1847 by Nathan Smith Davis. Davis had been working at the Medical Society of New York with issues of licensing and education. Around the time of AMA's formation, restricting entry into the profession was usually advocated with the explicit goal of maintaining or raising physician incomes (Rockwell, 1994, p. 17). After AMA's formation, however, the self-serving rationale of income maintenance was

strategically changed to that of "patient safety." However, economic exclusion was the brutal reality: in 1870, Davis worked successfully to prohibit female and black physicians from becoming members of the AMA (Link, 1992, p. 81).

After excluding females and blacks from membership, AMA formed its Council on Medical Education (CME) in 1904 as a tool through which it hoped to greatly restrict access to medical education, and thus the practice of medicine. The big problem, though, was that AMA's conflict of interest was too obvious. This is where Abraham Flexner and the Carnegie Foundation entered the picture. Carnegie had direct and indirect ties to allopathic big-business interests such as drug and medical-device companies, so it saw AMA's agenda as symbiotic with its own. AMA, in turn, obtained an objective-appearing front in Carnegie (Rockwell, 1994, p. 19).

Not only was Abraham Flexner not even an allopathic physician, he was not a recognized authority on education, never mind medical education, as he had never seen the inside of a medical school before joining Carnegie. Flexner's "report" of 1910 was found to be nothing more than a repackaging of AMA's unpublished 1906 report on U.S. medical schools. Finally, Flexner spent time at AMA's Chicago headquarters preparing what small portion of the final report was his actual work (Goodman & Musgrave, 1992, pp. 143-144).

Regardless of the aforementioned flagrant conflict of interest, state medical boards and legislatures used the Flexner Report as a basis for closing a majority of U.S. medical schools. Before Flexner, there was a high of 166 medical schools (Rockwell, 1994, p. 19). By the 1940s, there were only 77, a 54-percent reduction (Goodman & Musgrave, 1992, p. 145). Most rural schools were closed and only two African-American schools were allowed to remain open (Beck, 2004, p. 2140). This left poor rural and urban areas dramatically underserved by physicians.

By 1963, despite advances in technology and a large growth in demand for medical services, one effect of the Report was to keep the number of doctors per 100,000 people in the United States, 146, around the same level it was at in 1910 at the time of its writing (Goodman & Musgrave, 1992, p. 145). In terms of the economics of exclusion, of the approximately 375,000 physicians in practice in 1977, only about 6,300 or 1.7% were African-American (Goodman & Musgrave 1992, p. 147). The number of black physicians in practice would almost certainly have been much higher had a free market in physician labor been allowed to continue.

Not just blacks and women were affected, but by World War II, midwives had been completely banned from operating in several states, pharmacists almost everywhere were prevented from writing prescriptions and refills, and charity care had been tightly restricted (Rockwell, 1994, pp. 17, 19, 20).

With labor-market restriction and the attempt to construct the aura of a secular scientific priesthood, physician incomes and prestige dramatically increased. Wolinsky and Brune (1994) report that physicians were firmly in the lower middle class at the time of AMA's founding and made about a nominal $600 per year (p. 45). This rose to about a nominal $1,000 around 1900 (p. 45). After Flexner, incomes began to skyrocket such that a 1928 study by the AMA reported that average annual incomes had reached a whopping (for the time) $6,354 (roughly $90,500 in 2016

dollars)(p. 45). Even during the Great Depression, physicians earned four times the income that average workers did (Wolinsky & Brune, 1994, pp. 45-46).

In terms of recent numbers, a 2016 survey put pediatric physicians (on the low end of the physician-income range) at $204,000 and orthopedists (at the high end) at $443,000 (Peckham, 2016, para. 1). A 2016 Merritt Hawkins Report (p. 8) found that the average salaries of the top recruited physician specialties were family medicine ($225,000), internal medicine ($237,000), hospitalists ($249,000), and psychiatry ($250,000). These figures are mind boggling to most Americans, even in good economic times. In addition, the cyclical unemployment (Mankiw, 2015, p. 301) that displaces workers from employment in almost all other industries with the arrival of recessions or depressions, became nonexistent among physicians after Flexner.

Hospitals. Of course it would not make sense to restrict the supply of physician services without restricting the supply of hospitals as well. For-profit hospitals were the first to be restricted and in counties where they were not outright prohibited, they faced a number of regulatory burdens that nonprofits escaped, such as income and property taxes. Nonprofit institutions received generous government subsidies, tax-deductible contributions, and local planning agencies working in their favor to keep for-profit competitors from expanding (Goodman & Musgrave, 1992, pp. 156-157). At the time of Flexner, almost 60 percent of all U.S. hospitals were for-profit institutions. By 1968, only 11 percent of U.S. hospitals were for-profit institutions with about an 8-percent market share of hospital admissions (Goodman & Musgrave, 1992, p. 156).

Eliminating most for-profit medical schools and hospitals made sense for AMA since for-profit institutions are controlled by owners or stockholders who seek to control costs to maximize profits. Nonprofits are free to pursue political goals, and this was much more compatible with organized mainstream medicine's agenda, especially AMA's goal of a more lengthy and costly education than necessary to serve as a barrier to entry to the profession (Goodman & Musgrave, 1992, pp. 157-158). Nobel Prize-winning economist Kenneth Arrow (1963, p. 952) marveled at how costly medical education is compared to every other discipline.

The Rise of Health "Insurance." In the early 1900s, prepaid health policies were created for timber, mining, and rail workers in Oregon and Washington to help offset the inherent risks of employment in those industries. Within the private, free-market, for-profit insurance market of the time, claims were closely monitored by adjusters. Fees, procedures, and atypically long hospital stays were monitored and subject to challenge. A group of physicians in Oregon which resented this type of scrutiny invented a plan where procedures were reimbursed and fees paid with few questions asked. Plans with similar structures began dominating the market in other locations because of government-provided advantages gained through lobbying by organized medical interests (Goodman & Musgrave, 1992, p. 159).

By 1939, these new loose-cost containment plans began to be marketed under the Blue Shield name. That same year, Blue Cross, begun in 1929 as a hospital plan for school teachers, was endorsed by the American Hospital Association. After this, organized mainstream medicine waged an intense war on non-Blue plans. The Blues lobbied for and gained advantages not available to non-Blues plans: in many states they paid no or low premium taxes and sometimes no real-estate

taxes. They also were not always required to maintain minimum benefit-to-premium ratios and could have no or low required reserves (Goodman & Musgrave, 1992, p. 160).

With these advantages, the Blues steadily came to dominate the industry. By 1950, Blue Cross held 49 percent of the hospital insurance market, while Blue Shield held 52 percent of the market for standard medical insurance (Goodman & Musgrave, 1992, p. 160). Blue Cross and Blue Shield merged in 1982 and today cover one of every three Americans (BlueCross BlueShield 2017).

Blues-structured "insurance" is anything but true insurance. Goodman (1993, pp. 684-685) notes four principal deviations from economically sound and viable insurance structures. First, hospitals are paid on a cost-plus system. Insurers reimburse hospitals not a sum of prices charged to patients for services but artificial "costs" that bear no necessary relationship to the prices of services performed. For example, tablets of Tylenol known to sell for 19 cents each at a local drugstore have been billed to insurance at $100.00 each.

The second perverse trait is insurance of routine services. An example is flu shots, an elective good which could easily be paid for out of pocket by anyone, thereby driving its price down, yet many insurance plans cover them anyway, which drives their price up for everyone. Low-risk patients get the shot not because they face serious risks from the flu or because the shot is effective (in some seasons it is only about 30% effective) but because the shot is covered and policyholders want to get their money's worth from their expensive insurance policy. The upshot is that insurance of routine services converted insurance to prepaid consumption that encourages over-purchase of services and many unnecessary procedures and testing.

Third, insurance premiums became based on "community rating." "Community" means that every person in a geographic area regardless of age, habits, occupation, race, or sex is charged the same premium. For example, the average 60-year-old incurs four times the medical expense of the average 25-year-old, but under community rating both pay the same premium, i.e., young people are overcharged and the elderly undercharged (Goodman, 1993, p. 684).

Fourth, the Blues follow a "pay-as-you-go" reimbursement system. Unlike the genuine catastrophic hospital insurance it replaced which placed premiums in growing reserves to pay claims now and in the future, the new Blues "insurance" collected premiums that only covered expected costs for the current year. If a large group of policyholders becomes ill over several years, premiums for all policyholders have to be continually raised over those years to cover the increase in costs.

Background to Tuskegee

The preceding history provides the economic context of Tuskegee. Various and sundry demographic and vocational groups of people were pushed out of or marginalized to the edges of mainstream American medicine: women, eclectics, homeopaths, midwives, and pharmacists were the main groups. Economically disadvantaged Africans Americans not only saw their physicians marginalized and most of their medical schools closed, but faced unaffordable health-insurance and health-care costs. Thus in the poor and rural South, it should hardly have been a surprise that

a health study promising free medical treatment, free meals, and free burial would be attractive to its intended target audience of poor black men.

THE TUSKEGEE STUDY

The Tuskegee study was a joint venture between the U.S. Public Health Service (PHS) and Tuskegee Institute (today named Tuskegee University), an historically African-American institution of higher learning in the town of Tuskegee in Macon County, Alabama which first opened on 4 July 1881 as the Tuskegee Normal School for Colored Teachers.

Beginning in 1932, PHS and the Institute enrolled 600 indigent black-male sharecroppers in the study who were residents of Macon County. Of the 600 subjects, 399 were found to be infected with syphilis while 201 were not. The subjects enrolled because they were told that they would not only receive free treatment for "bad blood" (an umbrella term that included the symptoms of anemia and lethargy as well as syphilis), but free treatment for other minor illnesses, free transportation to treatment facilities, free hot meals on treatment days, and free burial if they agreed to an autopsy after their deaths.

The controversy surrounds the arrival of penicillin in 1947 as a proven cure for syphilis. However, the Tuskegee researchers, who could have modified the study to treat all of the infected with penicillin and end the study or form a subgroup among the infected subjects to test penicillin, did neither. The researchers not only ignored penicillin, they allegedly kept their subjects in the dark about it and prevented them from being treated with it in other public-health programs in Macon County.

The first known objection to Tuskegee came from Irwin Schatz, M.D. In 1965, Schatz read about the study in a medical journal and immediately wrote one of its authors to criticize the ethics of the study. Schatz received no response (Kaplan, 2015, para. 6). The following year, Peter Buxtun, a PHS employee in San Francisco, sent a letter to the U.S. Communicable Disease Center (CDC), a predecessor of today's U.S. Centers for Disease Control and Prevention (CDC), objecting to the continuation of Tuskegee (Isenberg, 1990, para. 7).

In 1972, Buxtun decided to approach the media. On 25 July 1972, the story broke in the *Washington Star* and the next day appeared in the *New York Times*. Congressional hearings followed. CDC agreed to appoint a panel to investigate the study. The panel advised termination of the study and the study ended on 16 November 1972.

By the study's end, of the 399 original infected subjects, about 28 died of the disease and about 100 died of its complications. About 40 wives had been infected and about 19 children were born with the disease.

Two years after the termination of Tuskegee, the U.S. Congress passed the National Research Act of 1974 and created a committee to research and propose regulations for studies that utilized human subjects. The federal department of Health and Human Services (HHS) now includes an Office for Human Research Protections (OHRP) to monitor studies which today must obtain informed consent from subjects, report diagnoses to them, and report the results of any tests performed. Also

created were institutional review boards (IRBs) at all research facilities that receive federal funding, contracts, or grants. IRBs monitor studies in hospitals and other research settings to protect the interests of human research subjects.

The extent to which Tuskegee undermined trust between the U.S. black community and U.S. public-health authorities is much debated. One side firmly believes that news of the study made many poor/older African Americans afraid to seek health care in the U.S. Medicaid and Medicare systems. Lending credence to this view are Alsan and Wanamaker whose 2016 National Bureau of Economic Research (NBER) working paper found evidence that news of the Tuskegee study created such mistrust between the U.S. black and medical communities that "life expectancy at age 45 for black men fell by up to 1.4 years in response to the disclosure, accounting for approximately 35% of the 1980 life expectancy gap between black and white men" (p. 2).

On the other hand, the Tuskegee Legacy Project Questionnaire found that although there was four times the awareness in the black community (versus the white community) of the Tuskegee study, blacks remain up to three times more likely to agree to take part in medical studies (Katz et al., 2008, p. 1137).

THE COUNTER-NARRATIVE

While there has been a counter-narrative to the dominant one on Tuskegee since its end in 1972 (Paul, 2015, p.3), a renewed counter-narrative has emerged since at least 1999 with the publication of Benedek and Erlen's "The Scientific Environment of the Tuskegee Study of Syphilis, 1920-1960" in *Perspectives in Biology and Medicine*.

To re-iterate the conventional narrative: Tuskegee was a study in which 400 to 600 willfully deceived African-American men went untreated for syphilis for 40 years so that researchers could document the long-term effects of the disease. Supporting this is the original press account of Tuskegee by reporter Jean Heller in the *New York Times* on 26 July 1972 titled: "Syphilis Victims in U.S. Study Went Untreated for 40 Years."

Treatment

The first challenge to the dominant narrative is on the issue of treatment. Tuskegee, as the study's official title stated (*Tuskegee Study of Untreated Syphilis in the Negro Male*), was intended as an examination of men with late-stage dormant syphilis who were not contagious and who had the infection for five or more years. A 1950 report from the study itself documents that of 410 infected subjects selected from 1931-32 and 1932-33, 178 were in fact given the standard treatment of the time, neoarsphenamine (Shweder, 2004, para. 11). Another study report confirmed that all subjects had latent syphilis with early cases (characterized by open sores and the greatest risk of contagion) diverted for treatment (Rivers & Schuman & Simpson & Olansky, 1953, p. 391).

Regarding the standard treatment of the time: arsenical compounds were toxic with many unpleasant side effects, they required detailed and delicate care in preparation and administration, they required a regimen consuming more than a year's time in a hospital setting, and they were of little reliable effect in terms of a cure. Thus, with such high costs and few if any benefits, it was

hardly a surprise that the eventual patient non-compliance rate was in the vicinity of 80-90 percent (Shweder, 2004, para. 13).

Last but not least on the issue of treatment: most patients infected with syphilis who make it past the early stages of the disease without treatment experience no further symptoms or self-cure. In other words, from a very reasonable and ethical medical standpoint in 1932, it was anything but clear that subjecting a patient to a year-long regimen of arsenic poisoning was an obvious superior alternative to no treatment at all.

Penicillin: The Game Changer?

The second major issue is penicillin. Penicillin was not standardized, widely available, and known to cure syphilis until about 1955 to 1960--not 1947, as many if not most versions of the dominant narrative claim (Shweder, 2004, para. 41). The difference in the narratives on this point is relevant. While PHS did not inform the study subjects about penicillin and did not end the study and advocate penicillin, study subjects by 1955 had been infected for two decades or longer. Some had died from the infection, some had died from its cardiovascular effects. For the remainder of the study subjects, by 1955 their bacterial infections would have died off or been neutralized. For those who had latent syphilis for another 17 years until the termination of Tuskegee, penicillin would have done little if anything for their health, comfort, or life expectancy. Heart-valve damage from the bacteria, if present, would have occurred long before the arrival of penicillin and penicillin would not have repaired the damage. Only the presence of inflammation caused by the bacteria could have been cured, but even so, the study subjects still had comparable life expectancies to male residents of Macon County who were never infected (Shweder, 2004, para. 23).

Of 90 subjects from the original sample examined in 1963, 96% had received arsenic or penicillin treatment from outside sources. This implies that they were not complete puppets of the PHS, naively believing they were getting adequate care from government doctors who saw them very infrequently and on a schedule that did not correspond in any way to changes in their health status (Shweder, 2004, para. 39).

Informed Consent and Medical Ethics

Finally, nothing like the informed-consent doctrine of today existed in the doctor-patient relationship in the time of Tuskegee. Physicians adhered to a "tradition of paternalistic secrecy in the doctor/patient relationship" (Benedek & Erlen quoted in Shweder, 2004, para. 32).

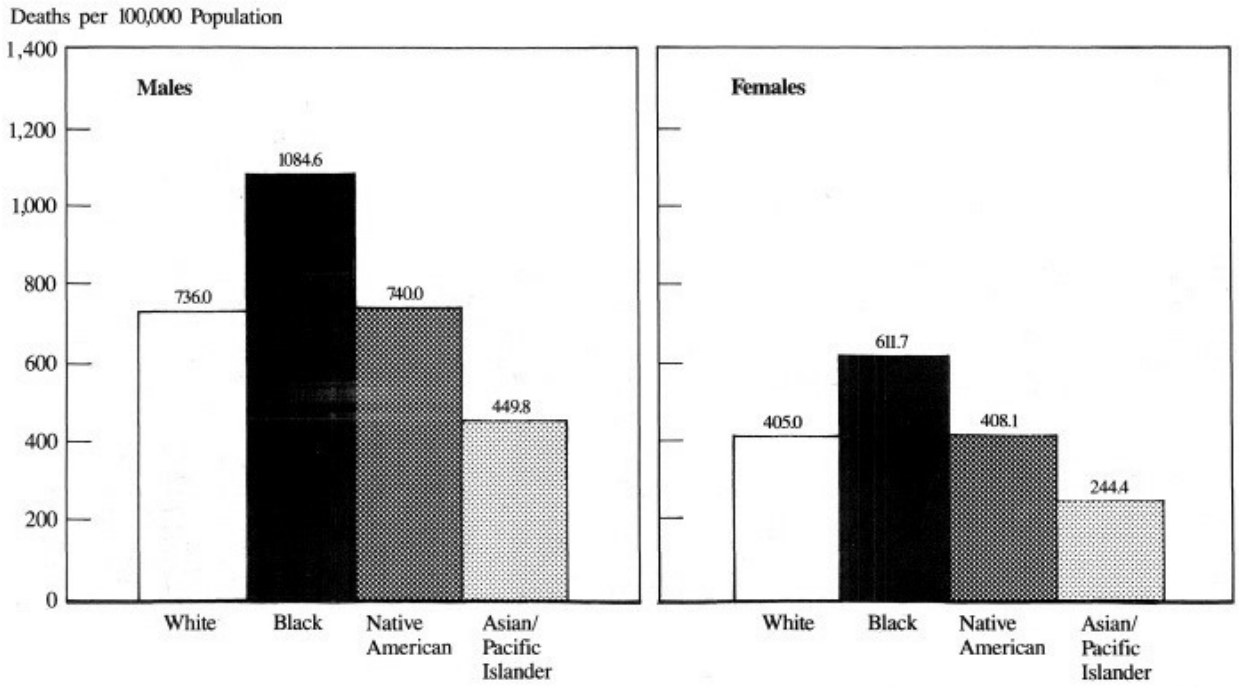
> Physicians in the 1930s often did not disclose information to their patients and frequently deceived them, not necessarily because of evil motives or because they were engaged in acts of betrayal, but (as maddening as it may seem by current American standards) because they kept their paternalistic eyes fixed on some imagined greater good. (Shweder, 2004, para. 32)

Most ironic of all, had there been an institutional review board (IRB) system in place in 1932, given the medical mores of the day, it would almost certainly have had very little to object to in the Tuskegee study and almost certainly would have approved it (Shweder, 2004, para. 45).

DEMOGRAPHIC HEALTH DISPARITIES

One of the earliest and most groundbreaking reports on demographic health disparities was released in 1985 and is known as the Heckler Report, after former U.S. Health and Human Services secretary Margaret Mary Heckler (U.S. Centers for Medicare & Medicaid Services, 2015, para. 1). In three particular areas the Heckler report provided insight, the first being annual death rates from all causes.

Average Annual Age-Adjusted Death Rates for All Causes, 1979-1981

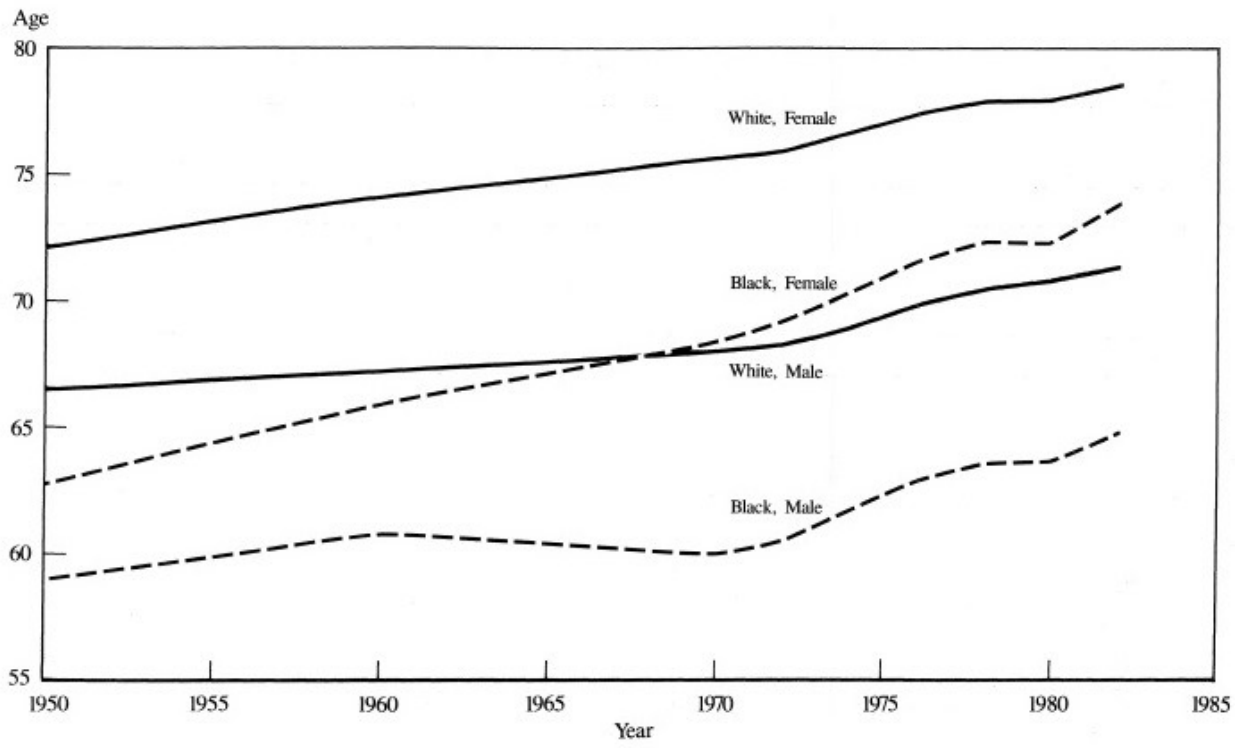


As can be seen in the left-hand bar chart above (U.S. Department of Health and Human Services, 1985, p. 65), between 1979-1981, average annual age-adjusted male deaths per 100,000 were 1,085 for African Americans, 740 for Native Americans, 736 for whites, and 450 for Asian/Pacific Islanders. In other words, while the rates for black males were unquestionably the highest, Native Americans and whites were in a statistical second-place tie while Asian/Pacific Islanders had the best outcomes of all four demographic groups. (Data on death rates for Hispanics/Latinos of either sex were not collected.)

As can be seen in the right-hand bar chart above, for females, the same pattern held except that the corresponding demographic rates were all lower. Average annual age-adjusted female deaths per 100,000 for the same time period were 612 for African Americans, 408 for Native Americans, 405 for whites, and 244 for Asian/Pacific Islanders. Again, while the rates for black females were unquestionably the highest, Native Americans and whites were in a statistical second-place tie while Asian/Pacific Islanders had the best outcomes of all four ethnic groups.

The second area that revealed some counter-intuitive and overall promising results was life expectancy (U.S. Department of Health and Human Services, 1985, p. 66).

Life Expectancy at Birth, According to Race and Sex: United States, 1950-1983



Beginning in 1950, male-female, white-black life expectancies (from highest to lowest) were: white females (72.5 years), white males (66 years), black females (63 years), and black males (59 years). By 1983, the order from highest to lowest had changed to: white females (79 years), black females (74 years), white males (72 years), and black males (65 years).

The good news for all demographic categories in this comparison is that life expectancy rose across this 33-year period, and after the early 1970s (coincidentally, around the time Tuskegee ended) it rose faster for male and female African Americans than their white counterparts.

For white females, life expectancy rose from about 72.5 years to about 79 years, an improvement of about 6.5 years. For black females it rose from about 63 years to about 74 years, an improvement of approximately 11 years. For white males it rose from about 66 years to about 72 years, an improvement of about 6 years. Finally, for black males it rose from about 59 years to about 65 years, an improvement of approximately 6 years.

From the aforementioned figures and time-series graph above, one can spot a surprising trend: the life expectancy of black females rose above that of white males around the year 1969.
The third statistic reported on was age-adjusted deaths per 100,000 by cause (U.S. Department of Health and Human Services, 1985, p. 67).

Age-Adjusted Death Rates by Selected Cause, Race, and Sex
United States, 1980
(Rate per 100,000 Population)

	Black Male	White Male	Relative Risk	Black Female	White Female	Relative Risk
Total Deaths (All Causes)	1,112.8	745.3	1.5	631.1	411.1	1.5
Heart Disease	327.3	277.5	1.2	201.1	134.6	1.5
Stroke	77.5	41.9	1.9	61.7	35.2	1.8
Cancer	229.9	160.5	1.4	129.7	107.7	1.2
Infant Mortality	2,586.7	1,230.3	2.1	2,123.7	962.5	2.2
Homicide	71.9	10.9	6.6	13.7	3.2	4.3
Accidents	82.0	62.3	1.3	25.1	21.4	1.2
Cirrhosis	30.6	15.7	2.0	14.4	7.0	2.1
Diabetes	17.7	9.5	1.9	22.1	8.7	2.5

The synopsis of this table is that overall, the change-in-life-expectancy pattern displayed in the previous table was replicated with respect to age-adjusted death rates by cause. White and black females had better health outcomes than their male counterparts in total deaths, heart disease, cancer, accidents, and cirrhosis.

The only four mortality factors for which this pattern was broken (where all black rates exceeded all white rates) were stroke, infant mortality, homicide, and diabetes. Black males had a high rate of stroke (77.5) compared to black females (61.7) and white males (41.9). For infant mortality, the respective rates for black males and females (2,587; 2,124) were more than double that of the corresponding white rates (1,230; 963). As for diabetes, while the black female and male rates were relatively close to each other (female = 22.1, male = 17.7), they were definitely high compared to white rates (male = 9.5, female = 8.7).

The most stark and alarming outcome was the very high death rate from homicide for African-American males. It was 71.9 compared to the rates for black females (13.7), white males (10.9), and white females (3.2). Even so, death rates by cause remained consistent with improved life-expectancy patterns since the early 1980s. While for heart disease, cancer, accidents, and cirrhosis, black males had the highest death rates followed by white males, black females, and white females, for all four categories, life expectancy was higher and intra-sex (if not intersex) disparities smaller. Focusing on mortality rates, McCord and Freeman (1990) found that despite positive trends for both whites and minorities, mortality rates remained high in predominantly black and Latino inner-city areas. The focus of their study was Harlem in New York City where they found that the age-

adjusted mortality rate (considering all causes) was not only the highest in the city but more than 100 percent higher than the rate for whites across the U.S. and 50 percent higher than the rate for blacks across the U.S. Cardiovascular disease, cirrhosis of the liver, homicide, and cancer were the main causal factors (1990, p. 173). McCord and Freeman concluded that black males in Harlem had less of a chance of living to the age of 65 than males in the Third-World country of Bangladesh. Their recommendation was that Harlem and other areas with high proportions of black-male residents be treated as health-disaster areas (p. 173).

Some of the findings of ethnic demographic disparities in health outcomes have been counterintuitive and run against the grain of what popular media and press accounts imply. An example is a 2004 compilation of statistics published by the National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). The following table illustrates some of these counterintuitive results (collated into one summary table) in a comparison between males and females.

Table 1.		
Deaths per 100,000; age adjusted to year-2000 total U.S. population		
	Males	Females
Heart disease	303.6	203.2
Stroke	58.6	56.2
All cancers	242.8	164.5
Lung cancer	74.9	41
Colorectal cancer	24.1	17.1
Breast cancer (women only)		26.0
Diabetes	28.0	23.0
Source: National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), 2004, pp. 8, 12, 16, 20, 24, 27, 30.		

For deaths per 100,000 adjusted to the year-2000 total population, women overall had much lower mortality rates than men. The only areas that were an exception were diabetes [women (23) vs. men (28)], stroke [women (56.2) vs. men (58.6), which was almost a statistical tie], and of course breast cancer since male breast cancer is so rare that statistics on it were not collected.
In terms of ethnic demographic disparities, NCCDPHP reported the following statistics which were collated into one summary table:

Table 2.					
Deaths per 100,000 age adjusted to year-2000 total U.S. population					
	Black	White	Hispanic	Native Am/Alaskan	Asian/Pacific Islander
Heart disease	321.3	245.6	188.4	178.9	137.4
Stroke	80.0	55.9	44.0	46.1	51.2
All cancers	247.4	197.6	131.0	147.8	119.6
Lung cancer	63.6	57.7	23.6	39.0	28.3

Colorectal cancer	28.0	19.9	13.9	13.6	13.2
Breast cancer (women only)	35.2	26.0	16.2	13.5	12.9
Diabetes	49.9	22.1	36.3	45.3	16.9
Source: National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP), 2004, pp. 9, 13, 17, 21, 25, 27, 31.					

The synopsis for these statistics is: for heart disease, stroke, all cancers, lung cancer, colorectal cancer, and breast cancer, blacks and whites had the first and second-highest respective age-adjusted death rates per 100,000. Interestingly, Hispanic, Native American/Alaskan, and Asian/Pacific Islander minorities all had lower mortality rates than either blacks or whites. The only exception to this mortality ranking again, was with respect to diabetes. The diabetes ranking (from the highest rates to lowest) was black, Native American/Alaskan, Hispanic, white, and Asian/Pacific Islanders.

The surprise was the rates of Native American/Alaskans and Hispanics being between those of blacks and whites. The superior ranking of Asian/Pacific islanders was not a surprise since they had performed well in past rankings. The other interesting finding, because it goes against the grain of what is insinuated so often in popular culture, is that the white majority did not achieve the best results in any category.

Perhaps even more counter-intuitive were findings by David Williams and Pamela Jackson in 2005. Examining National Center for Health Statistics (NCHS) data for the half century 1950-2000, Williams and Jackson found that while the disparities between rates for heart disease between blacks and whites in 1950 were very low, fifty years later in 2000 African-American rates were about 30-percent higher than those of whites (p. 326). A similar pattern was found with respect to cancer: in 1950, cancer rates were actually lower for blacks than whites. Yet again, fifty years later in 2000, the rate for blacks rose to a level that was 30-percent higher than that for whites (p. 326).

These are ironic trends given the dramatic social gains for blacks that occurred from 1950-2000 such as *Brown vs. Board* (1954), the Civil Rights Act (1964), and the Selma marches (1965). Thus low incomes, poverty, and racism as all-encompassing factors are thought by some researchers to have their explanatory limits. Even after adjusting for socio-economic status, for African Americans, excess deaths reach almost 40,000 per year. Among whites, American blacks with African ancestry, and American blacks with Caribbean ancestry, American blacks with African ancestry reported the worst health outcomes, including high blood pressure, stroke, and diabetes (Mays, Cochran, & Barnes, 2006, p. 225).

AN EMPIRICAL TEST

In the wake of Tuskegee, there have been a number of high-profile efforts to develop good faith and goodwill between the U.S. mainstream medical community and minorities in the U.S. as well as facilitate access to health care through public-health programs. One way to gauge the progress

of those efforts is to observe if there has been an improvement in minority health outcomes, specifically those in the African-American community, and especially with respect to outcomes that are relevant to what the Tuskegee study was ostensibly designed to address: sexually transmitted diseases (STDs).

DATA

Data on STDs were collected by the U.S. Centers for Disease Control and Prevention in 2013 for 100 U.S. cities and towns ranging from Montgomery, Alabama to Fort Polk South, Louisiana (Rent Application, 2015). They reflect reported cases of gonorrhea, syphilis, and chlamydia and are measured per 100,000 people. (Data on the herpes simplex virus [HSV] are not recorded by the Centers for Disease Control and Prevention [CDC].) Only cities with a population of 50,000 or greater were included in the data set. Washington, D.C., was included as a city and the boroughs of New York City were each treated as separate cities (Rent Application, 2015, para. 2, 3).

Ethnic demographic components (black, white, Hispanic, and Asian), *per-capita* income, unemployment rates, and religious-intensity data for each city and town came from City Data (2016) for the year 2013.

The empirical model is:

$$STD/CAP = \beta_1 + \beta_2 BLACK + \beta_3 WHITE + \beta_4 HISPAN + \beta_5 ASIAN + \beta_6 PCINC + \beta_7 UNEMP + \beta_8 NONREL + \varepsilon_1$$

where:

STD/CAP = total reported cases of sexually transmitted diseases (gonorrhea, syphilis, and chlamydia) per 100,000 population for a city or town.

BLACK = percentage of a city or town's population that is African-American.

WHITE = percentage of a city or town's population that is white/Caucasian.

HISPAN = percentage of a city or town's population that is Hispanic/Latino.

ASIAN = percentage of a city or town's population that is Asian.

PCINC = *per-capita* income of a city or town.

UNEMP = unemployment rate of a city or town.
NONREL = percentage of individuals identified as non-religious in a city or town.

ε_1 = stochastic error term.

THEORY AND PREDICTIONS

Based on the results of the NCCDPHP report of 2004 (discussed earlier) that analyzed disparities in ethnic health outcomes, the present authors predict adverse health outcomes to be endemic in the white majority (WHITE) and black minority (BLACK). Therefore, the coefficients of those variables are expected to be both positive and statistically significant.

Per-capita income (PCINC) is expected to be negatively related to the dependent variable. Income is positively correlated to education, superior health status, and superior health outcomes. Therefore, the higher an individual's income, the fewer the adverse health outcomes he or she will experience, including STDs. The coefficient of *per-capita* income (PCINC) is therefore expected to be negative and statistically significant.

City unemployment rates are expected to be positively related to the dependent variable. Unemployment is positively correlated with adverse health outcomes. Therefore, the higher the unemployment rate, the greater the number of adverse health outcomes, including STDs. The coefficient of unemployment (UNEMP) is therefore expected to be positive and statistically significant.

Religious belief is expected to be negatively related to the dependent variable. Religious belief is assumed to be positively correlated with sexual restraint. Therefore, the greater the religious belief found in a city or town, the fewer the number of reported cases of STDs. The coefficient of the percentage of people in a city or town identifying as non-religious (NONREL) is therefore expected to be positive and statistically significant.

TABLE 3 below displays the results of an ordinary least squares (OLS) regression on the equation above.

Table 3. Ordinary Least Squares Regression (OLS)

Dependent Variable = STD/CAP

Explanatory Variable	**Coefficient**	***t* statistic**	**Significance**
Constant	2113.515	3.174	0.002
BLACK	-4.929	-0.856	0.394
WHITE	-11.634	-1.819	0.072
HISPAN	-10.682	-1.648	0.103
ASIAN	-7.262	-0.763	0.447
PCINC	-2.197	-0.614	0.541
UNEMP	-28.046	-1.476	0.143
NONREL	1.351	0.647	0.519

Regression F value [7, 92] = 2.411	0.026
$R^2 = 0.155$	
Adjusted $R^2 = 0.091$	
N = 100	

All ethnic components ended up with coefficients that were negative in sign, which was unexpected. The coefficients of the demographic WHITE and BLACK regressors were not significant, as predicted. *Per-capita* income (PCINC) was one of two regressors with promising results. It had the expected sign (negative) but was not statistically significant at a level of five percent or lower. City unemployment rate (UNEMP) was neither positive nor statistically significant as expected. The percentage of individuals in a city or town identifying as non-religious (NONREL) was the second regressor with promising results. While it was not statistically significant, it was positive in sign as expected. Another promising result was that the regressor set as a whole was significant, with a regression *F* value of 2.411 and a level of significance of 2.6 percent. The R^2 of the equation is 0.155.

Since these initial results seemed to be masking which of the predictor variables in the statistically significant specification was (were) the most statistically significant, a stepwise regression was run on the full specification to zero-in on the most significant, if any, of the predictor variables. TABLE 4 below displays the results of this stepwise regression.

Table 4. Stepwise regression

Dependent variable = std/cap

Explanatory Variable	**Coefficient**	***t* statistic**	**Significance**
Constant	954.515	19.491	0.000
BLACK	4.018	3.440	0.001
Regression F value [1, 98] = 11.833			0.001
$R^2 = 0.108$			
Adjusted $R^2 = 0.099$			
N = 100			

Among the original seven dependent variables specified (BLACK, WHITE, HISPAN, ASIAN, PCINC, UNEMP, and NONREL), the stepwise algorithm sequentially dropped all but the BLACK demographic component. The coefficient of this predictor turned out to be positive and significant at 0.1 percent, which satisfied at least part of the authors' expectations about the demographic components of the full specification. The regression as a whole was significant, with a regression

F value of 11.833, which was significant at a level of 0.1 percent. The R^2 of the stepwise equation is lower than the full specification (which is expected), but the adjusted R^2 is an improved 0.099, which suggests a better "goodness of fit" and more reliable specification (Frost, 2013, para. 7).

While the OLS results of the full specification left a lot to be desired, the stepwise results were impressive and encouraging for future research. The stepwise results also confirmed at least part of the expectations of the authors with respect to the demography of STDs based on reasonable projections that could be made from the findings of the NCCDPHP report of 2004.

CONCLUSION

Tuskegee was designed and implemented in the early Twentieth Century by progressive public-health advocates who were concerned about the high rate of incidence of STDs in the black-American community. Demographic health studies have shown that black males and females have experienced steady increases in life expectancy since the 1950s, particularly black females. However, forty-five years after the end of Tuskegee, which was designed to reduce the incidence of STDs (viz., syphilis) in black males, the latest empirical evidence suggests that there is still work to be done.

However, the usual threadbare conclusions from today's academic and political establishment would undoubtedly entail new public-health programs and spending along the lines of which have already occurred and met with little progress for the past 45 years. The pre-Tuskegee history of the industrial organization of U.S. medicine suggests another direction: one addressing the economics of exclusion that has been part of the rise of the U.S. medical cartel since 1910.

A repeal of the restrictions inspired by the Flexner Report, elimination of payment of routine services in health insurance, and elimination of the AMA monopoly on medical-school accreditation would be good first steps on the path to dismantling the cartel, alleviating the stifling shortage of physicians in the U.S. (allopathic and other), and making medical care much more affordable to Americans of all ages and ethnicities.

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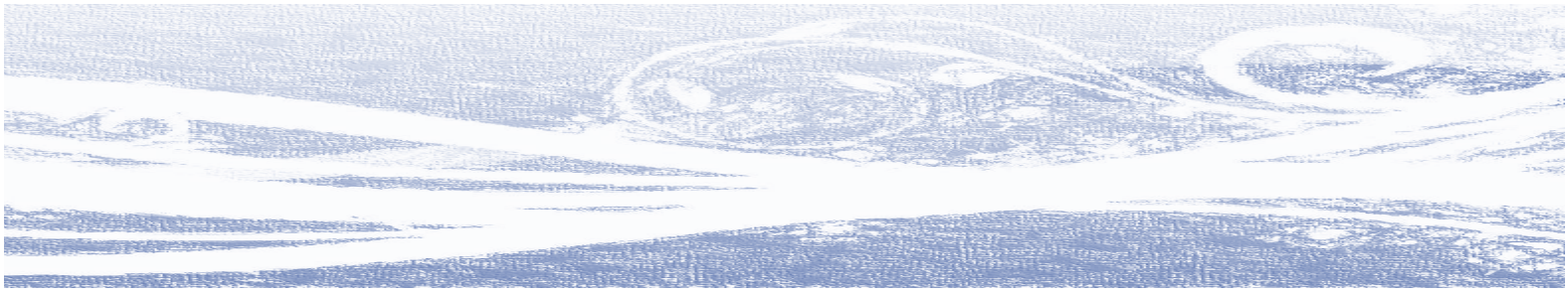
QUARTERLY REVIEW OF BUSINESS DISCIPLINES

May 2017

Volume 4
Number 1



A JOURNAL OF INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES
SPONSORED BY UNIVERSITY OF NORTH FLORIDA
ISSN 2334-0169 (print)
ISSN 2329-5163 (online)