Appendix for Online Publication

TUSKEGEE AND THE HEALTH OF BLACK MEN

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June 2017

I Conceptual Foundation for the Empirical Strategy

As additional motivation for our empirical setup, we provide a model of how prior beliefs, experience with the medical profession and proximity to the Tuskegee study subjects interact to determine health-seeking behavior. In this regard, our model relates both to work by **?** and **?** on how prior experience can influence beliefs and behavior and to belief formation models by **?** and **?**.[1] The model's equilibrium provides testable predictions which inform our empirical analysis.

We consider a multi-period model of belief formation where individuals engage in Bayesian updating regarding whether doctors can be trusted to treat them appropriately.[2] Agents live for three periods (childhood, young adulthood, and old adulthood). They update their beliefs over two possible states of the world: the good state $(\theta = 1)$ where fraction $q > \frac{1}{2}$ of the doctors are trustworthy, and the bad state $(\theta = 0)$ where the fraction is only $1 - q'$, $q' > \frac{1}{2}$ (**?**). To simplify the exposition, we set $q = q'$. At $t = 0$, agents are born with a prior belief over the probability that the state is good, $\pi_i^{prior} \in (0, 1)$, and belief $1 - \pi^{prior}$ for $\theta = 0$.

At $t = 1$, some young adult agents are induced to visit the doctor.[3] This inducement might come either from gynecological or obstetric care associated with being a young woman in her reproductive prime or from military enlistment for a young man. We assume such individuals, via this experience, receive one of two signals based on their experience: $S = 1$ indicating the state of the world is good or $S = 0$ indicating the state of the world is bad. In accordance with the actual underlying trustworthiness of medical providers, when the true state of the world is good (bad), agents will receive the signal $S = 1$ with probability q $(1-q)$ and signal $S = 0$ with probability $1 - q$ (q). These experienced agents then rationally update their beliefs regarding the state of the world using Bayes' rule as follows:.

$$
\begin{aligned}
P(\theta &= 1|S = 1, \pi^{prior}) = \frac{P(S = 1|\theta = 1, \pi^{prior})P(\theta = 1)}{P(S = 1)} = \frac{q(\pi^{prior})}{P(S = 1)} \\
P(\theta &= 1|S = 0, \pi^{prior}) = \frac{P(S = 1|\theta = 0, \pi^{prior})P(\theta = 0)}{P(S = 1)} = \frac{(1 - q)(1 - \pi^{prior})}{P(S = 1)}
\end{aligned}
$$

where

$$
\begin{aligned}
P(S &= 1) = P(S = 1|\theta = 1, \pi^{prior})P(\theta = 1) + P(S = 1|\theta = 0, \pi^{prior})P(\theta = 0) \\
&= q(\pi^{prior}) + (1 - q)(1 - \pi^{prior}) \\
&= 1 - q + 2q\pi^{prior} - \pi^{prior}
\end{aligned}
$$

[1] Our study also relates to theoretical work on identity (**?**); however, we chose not to assume individuals have different preferences based on their identity, but rather that individuals' beliefs are affected to a greater extent by news that concerns the group with which they most nearly identify.

[2] **?**, p. 1183 defines trust as "an optimistic expectation or belief regarding other agents' behavior". Fafchamps further discusses the origins of trust and uses this to distinguish two types: personalized trust, which forms from "repeated interpersonal interactions", and generalized trust, which has its origins in "general knowledge about the population of agents." It is the latter we seek to model. Although many different updating processes could explain the empirical results, we prefer to use a rational model based on Bayesian updating. We thank Marcel Fafchamps for the comment.

[3] Most older men in the NHIS sample do have some experience with medical care. If experience in this model is recast as being high or low, instead of some or none, the same predictions emerge: individuals with less experience with the medical system are more likely to change their behavior in the years after the Tuskegee disclosure.

Theorem 1:

The subjective probability of the good state given a good signal is greater than the uninformed prior which is, in turn, greater than the probability of the good state given a bad signal. (In other words, individuals who encounter a trustworthy provider hold a higher posterior than inexperienced agents who, in turn, hold a higher posterior than experienced agents who encounter an untrustworthy provider.)

$$P(\theta = 1|S = 1, \pi^{prior}) > \pi^{prior} > P(\theta = 1|S = 0, \pi^{prior})$$

Proof:

(1st Inequality) $P(\theta = 1|S = 1, \pi^{prior}) = \pi^{prior} * \frac{q}{(1-q)(1-\pi^{prior})+q\pi^{prior}}$ is strictly greater than π^{prior} iff:

$$\begin{aligned} q &> (1-q)(1-\pi^{prior}) + q\pi^{prior} \\ &\Leftrightarrow 1 > \pi^{prior}, \text{ which is true by assumption.} \end{aligned}$$

(2nd Inequality) π^{prior} is strictly greater than $P(\theta = 1|S = 0, \pi^{prior}) = \pi^{prior} * \frac{(1-q)}{(q)(1-\pi^{prior})+(1-q)\pi^{prior}}$ iff:

$$\begin{aligned} 1-q &< q(1-\pi^{prior}) + (1-q)\pi^{prior} \\ &\Leftrightarrow 1 > \pi^{prior} \text{ as } 1-2q < 0. \text{ This inequality is true by assumption.} \square \end{aligned}$$

Our focus is on the behavior of older men, and we continue by deriving predictions over the probability of seeking medical care in the last period, when the details of the Tuskegee experiment are revealed. In addition to heterogeneity regarding prior experience with the medical system, agents differ regarding their proximity to the victims of the Tuskegee experiment. This proximity reflects both connectedness that facilitates the transfer of detailed information regarding the experiment, as well as cultural connectedness affecting the degree to which individuals update their prior about how doctors will treat them based on the same. At $t = 2$, both experienced and inexperienced agents enter middle age, at which time Tuskegee is disclosed via a bad signal, $S = 0$, indicating the state is $\theta = 0$. Those in close proximity to Tuskegee receive the signal and update accordingly, accepting that the experience of the Tuskegee victims is relevant for their own experience. Agents more distant do not update in accordance with the signal, either because they do not receive it or because they receive it but do not believe it has relevance for their experience. Therefore, we can depict the posterior information structure as a 2x2 matrix based on proximity to Tuskegee and prior experience with the medical system:

	"Near" to Event	"Far" from Event
Experienced	$\pi_i^{post} = \Pr(\theta = 1\|S = 1 \text{or } S = 0, S = 0, \pi_i^{prior})$	$\pi_i^{post} = \Pr(\theta = 1\|S = 1 \text{ or } S = 0, \pi_i^{prior})$
Unexperienced	$\pi_i^{post} = \Pr(\theta = 1\|S = 0, \pi_i^{prior})$	$\pi_i^{post} = \pi_i^{prior}$

For agents with no previous experience, they update their posterior to $P(\theta = 1|S = 0, \pi^{prior})$ as before. If the agent has previous experience, there are two options:

$$\begin{aligned} P(\theta &= 1|S = 1, S = 0, \pi_i^{prior}) = \frac{(1-q)P(\theta = 1|S = 1)}{q(1 - P(\theta = 1|S = 1)) + (1-q)P(\theta = 1|S = 1)} \\ P(\theta &= 1|S = 0, S = 0, \pi_i^{prior}) = \frac{(1-q)P(\theta = 1|S = 0)}{q(1 - P(\theta = 1|S = 0)) + (1-q)P(\theta = 1|S = 0)} \end{aligned}$$

By a similar logic as above, and again assuming a common prior, the ordering of posterior beliefs in the matrix above is as follows:

$$\begin{aligned}\Pr(\theta &= 1|S=1,\pi^{prior}) > \Pr(\theta=1|S=1,S=0,\pi^{prior}) > \Pr(\theta=1|S=0,\pi^{prior}) \\ &> \Pr(\theta=1|S=0,S=0,\pi^{prior}).\end{aligned}$$

See Theorem 2 below for a formal proof. π^{prior} cannot be ordered without further assumptions on θ.

Older agents must now decide whether to seek out medical care. The gross utility from medical care, u_i, is a function of their choice of action, a_i, and the state of the world, while the cost, $c(a_i)$, is dependent only on their actions:

$$u_i = u(a_i,\theta) = \begin{matrix} 1 \text{ if } a_i\text{=1 \& } \theta=1 \\ 0 \text{ if } a_i\text{=1 \& } \theta=0 \end{matrix} \text{ and 0 if } a_i = 0.$$

$$c = c(a_i) = \begin{matrix} c \text{ if } a_i\text{=1 where } c<q \\ 0 \text{ if } a_i\text{=0} \end{matrix}.$$

where $a_i = 1$ ($a_i = 0$) denotes visiting (not visiting) a doctor.

A rational agent seeks out medical care in old age if and only if $EU(a_i = 1) > EU(a_i = 0) \equiv 0$ where EU denotes expected utility.

Given the parametrization above, the expected utility of visiting a doctor can be written as:

$$\pi\left[q*1+(1-q)*0\right]+(1-\pi)\left[(1-q)*1+q*0\right]-c$$

This expected utility is greater than zero when $\pi_i^{post} > \frac{c+q-1}{2q-1}$, and we refer to the cutoff value where the benefit is equal to the cost as π^*. (In a more general model, if the utility of seeing a doctor in the good state of the world is B rather than 1, the threshold rule is strictly decreasing in the value of B, i.e. $\frac{\partial\pi^*}{\partial B} < 0$.[4]) This inequality hinges on a threshold rule involving the posterior belief, and the agent seeks care if and only if:

$$\pi_i^{post} > \Omega.$$

where $\Omega \equiv \frac{q+c-1}{(2q-1)}$.

Because these posterior subjective belief probabilities over the state of the world map directly into actions, we can use the ordering of posterior beliefs to make empirical predictions about the behavior of individuals in older age. *In the aftermath of the Tuskegee disclosure*, older adults will exhibit health-seeking behavior such that:

1. Conditional on experience in young adulthood, agents closer in proximity to the Tuskegee event will exhibit lower health-seeking behavior rates on average than agents farther away. (See Theorem 2 below.)

2. If the true state of the world is $\theta = 1$, inexperienced agents closer in proximity to the Tuskegee event will exhibit lower health-seeking behavior rates than experienced agents in the same locations. (Theorem 3 below.)

If we assume black agents are in closer proximity to Tuskegee than their white peers and that black men are in closer proximity than black women, the first implication above implies a testable prediction that black men should have been more affected by the disclosure than both white men and black women.

[4]Generalizing the utility of visiting a good doctor from $u_i = 1$ to $u_i = B$: $\frac{\partial\pi^*}{\partial B} = \frac{-c}{2q-1}\frac{1}{B^2} < 0$ and $\frac{\partial\pi^*}{\partial c} = \frac{1}{B(2q-1)} > 0$ for $q > \frac{1}{2}$.

Theorem 2:

The average posterior over the good state for experienced individuals far from the Tuskegee event (who do not update in the aftermath of the disclosure) is strictly greater than the average posterior for experienced individuals near to the Tuskegee event (who do receive the news of Tuskegee and do update).

Proof:

The population average (expected) subjective probability of $\theta = 1$ for experienced individuals near to the Tuskegee event is a convex combination of $P(\theta = 1|S = 1, S = 0, \pi^{prior})$ and $P(\theta = 1|S = 0, S = 0, \pi^{prior})$ as the population is made up of individuals receiving either $S = 1$ or $S = 0$ in young adulthood. The population average (expected) subjective probability of $\theta = 1$ for experienced individuals far from the Tuskegee event is a convex combination of $P(\theta = 1|S = 1, \pi^{prior})$ and $P(\theta = 1|S = 0, \pi^{prior})$. Provided the state of the world is the same for individuals near to and far from the Tuskegee event, the convex combination is taken over the same values in both cases.

A direct application of Theorem 1 implies that both

$$\begin{aligned} P(\theta &= 1|S = 1, \pi^{prior}) > P(\theta = 1|S = 1, S = 0, \pi^{prior}) \\ \text{and } P(\theta &= 1|S = 0, \pi^{prior}) > P(\theta = 1|S = 0, S = 0, \pi^{prior}) \end{aligned}$$

Thus, the convex combination for those near to the Tuskegee event is strictly less than the convex combination for those far from the same. □

Theorem 3:

When the true underlying state of the world is $\theta = 1$, the expected value of the subjective probability of $\theta = 1$ for experienced individuals close to the Tuskegee event is a convex combination of $P(\theta = 1|S = 1, S = 0, \pi^{prior})$ and $P(\theta = 1|S = 0, S = 0, \pi^{prior})$ with weights q and $q - 1$, respectively. This convex combination is strictly greater than the subjective probability for inexperienced individuals close to the Tuskegee event, $P(\theta = 1|S = 0, \pi^{prior})$.

Proof:

First, note that $P(\theta = 1|S = 1, S = 0, \pi^{prior}) \equiv P(\theta = 1|S = 0, S = 1, \pi^{prior})$
$\equiv \frac{P(S=1|\theta=1,S=0,\pi^{prior})P(\theta=1|S=0,\pi^{prior})}{P(S=1|S=0,\pi^{prior})} = \frac{qP(\theta=1|S=0,\pi^{prior})}{qP(\theta=1|S=0)+(1-q)(1-P(\theta=1|S=0))}$.

Now define two values:

$$\begin{aligned} A &= P(\theta = 1|S = 1, S = 0, \pi^{prior}) - P(\theta = 1|S = 0, \pi^{prior}) \\ B &= P(\theta = 1|S = 0, \pi^{prior}) - P(\theta = 1|S = 0, S = 0, \pi^{prior}) \end{aligned}$$

and let π° represent $P(\theta = 1|S = 0, \pi^{prior})$.

Then value A simplifies to $\frac{(2q\pi^\circ - \pi^\circ)(1-\pi^\circ)}{q\pi^\circ + (1-q)(1-\pi^\circ)}$ while B simplifies to $\frac{(2q\pi^\circ - \pi^\circ)(1-\pi^\circ)}{q(1-\pi^\circ) + (1-q)\pi^\circ}$.

Theorem 3 implies that

$$\begin{aligned} q * P(\theta &= 1|S = 1, S = 0, \pi^{prior}) + (1 - q) * P(\theta = 1|S = 0, S = 0, \pi^{prior}) > \pi^\circ \\ &\Leftrightarrow q * P(\theta = 1|S = 1, S = 0, \pi^{prior}) + (1 - q) * P(\theta = 1|S = 0, S = 0, \pi^{prior}) > q\pi^\circ + (1 - q)\pi^\circ \\ &\Leftrightarrow q > \frac{1}{2} \text{ as } (\pi^\circ - 1) < 0 \text{ by assumption.} \end{aligned}$$

Thus, the statement is true provided the state of world is $\theta = 1$.□

II Data Appendix

I Data Sources

- **Mortality and Population data:** Mortality data are available from the Centers for Disease Control and Prevention (CDC) and National Center for Health Statistics (NCHS) from 1968-1988 at the county level. The mortality data (for all years except 1972) are based on records for all deaths in the United States. For 1972, the data are based on a 50% sample and weighted by a factor of 2. Deaths to foreign residents are excluded. Deaths to US residents who died abroad are also excluded. The key analysis variables that are retained for public use include state and county of residence, year of death, race, sex and age group at death as well as 4-digit ICD- code for cause of death and cause of death recode. The numbers of deaths represent a complete count of events and are not subject to sampling error, though they are subject to "errors in the registration process." The population data (used as the denominator) are based on the resident population of the United States. For census years, the estimates are based on the April 1 resident population. Intercensal estimates are based on the July 1 resident population. The 1990 definition of resident is a person that usually resides in the area. This excludes the US Armed Forces stationed overseas as well as civilians that live abroad. **?** data are publicly available.
  - `http://www.cdc.gov/nchs/data_access/cmf.htm`
  - For the extended event study in Appendix Figure A.4, the numerator (number of deaths by age group, black-white race and gender) prior to 1968 was obtained from the NCHS multiple cause of death file located at: `http://www.nber.org/data/vital-statistics-mortality-data-multiple-cause-of-death.html` with the NCHS-FIPS crosswalk courtesy of Julian Reif. The denominator (population counts, by age group, black-white race and gender) were created using the 1960 census. The 1960 census abstracts do not report the black population disaggregated by age across counties. Instead, they report the white and non-white population as well as the total black population. Therefore, we included counties where at least 60% of the non-white population was black in our analysis. We then interpolated black (non-white), gender and age-group specific between the 1960 census and the 1968 CDC population file.
- **Health Utilization data:** Data on health utilization are from the National Health Interview Survey (NHIS). A harmonized version of these data (the Integrated Health Interview Series or IHIS) are publicly available through the University of Minnesota, Minnesota Population Center website: `https://www.ihis.us/ihis/index.shtml`. For access to restricted features of the data (including geographic identifiers) the data were accessed with the assistance of an NCHS administrator and analyzed in the Stanford and Atlanta Federal Statistical Research Data Centers (FSRDC). Information on restricted data access for the NHIS can be found on the CDC website:
  - `http://www.cdc.gov/rdc/b1datatype/dt1225.htm`
- **Health Belief data:** Data on health beliefs are from the General Social Survey (GSS) 7212_R6 available from the National Opinion Research Center (NORC) at the University of Chicago. These data were merged with restricted geographic identifiers (**?**).
- **Distances SEA level:** Distance from the centroid of each SEA to Macon County, Alabama was calculated using the point distance tool in ArcGIS and reported in thousands of kilometers. Shapefiles are available at:

– https://usa.ipums.org/usa/volii/seacodes.shtml

- **Distances State level:** At the state level, black population centroids were used based on **?**. The distance from each state-level black population centroid to Macon County was calculated using geospatial software and reported in thousands of kilometers.
- **Medical and Social Security Expenditures:** Expenditures data are from the Regional Economic Accounts from the **?**, Regional Economic Accounts. CA35: Personal Current Transfer Receipts available at:

  – http://www.bea.gov/regional

- **Black Doctors:** Data are from the 1970 U.S. Census of Population and Housing: Vol 1. Characteristics of the Population, Chapter C, Table 54. In Table 54 the 4th line includes "Physicians, Dentists and Related Practitioners" (**?**).
- **Black Migrants from Alabama**: This variable was calculated using the 100% count 1940 U.S. Census of Population available from IPUMS at the University of Minnesota using the questions on migration within the last 5 years (**?**).
- **Hospital Beds and Hospitals**: Data are from the American Hospital Association data courtesy of Andrew Goodman-Bacon and Martha J. Bailey ((**?**)).
- **Vote Shares by County**: Vote Shares data are from the Electoral Data for Counties in the United States: Presidential and Congressional Races, 1840-1972, distributed by ICPSR (**?**).
- **Other Demographic and Socioeconomic Controls:** See variable definitions discussion below.

II County Codes

- We follow **?**, Appendix Tables A4 (Non-Virginia County Codes) and A5 (Virginia County Codes), to harmonize county code changes over the analysis period for the mortality data. In addition, for county code changes not part of their sample, we use the same source (**?**) to harmonize county codes over time.

III Variable Definitions

III.1 Mortality Regressions

- **Age-specific mortality rates (ASMR):** Let d_i represent the number of deaths in the i^{th} age interval and p_i represent the population size in the i^{th} interval. Let $m_i = \frac{d_i}{p_i}$. Then m_i is the ASMR expressed on a unit basis (i.e. per person) however, this can also be expressed as a rate per $1,000$, such as $m_i * 1000$
- **Age-adjusted mortality rate of older adults (AMROA):** Includes individuals ages 45-74. The death rate in age group i (m_i) is multiplied by the number of individuals in the age group from a standard reference population (p_{si}). We use the 1940 standard.[5] The weighted sum over relevant age groups is divided by the corresponding standard population $(p_s = \sum_i p_{si})$. Therefore, $AMROA = (\sum p_{si} m_i / p_s) \cdot 1000$. We use the same approach to create age-adjusted mortality rates for other causes (see below for definition of chronic disease).

[5] See http://www.statistics.health.pa.gov/StatisticalResources/UnderstandingHealthStats/ToolsoftheTrade/Documents/Age_Adjusted_Rates.pdf

- **Incarceration:** Number of Negro inmates of institutions in each SEA as reported in the 1970 U.S. Census of Population (**?**).
- **Employment**: Percent of civilian labor force that is unemployed in each SEA as reported in the 1970 U.S. Census of Population (**?**).
- **Education:** Percent of individuals age 25+ in each SEA with various categories of schooling in 1972 County Data Book (**?**).
- **Medical Expenditures (including Medicaid, Medicare and Military Medical Insurance) and Social Security Expenditures:** Annual values of expenditures by county from **?**. The natural log of these values are used as controls in the regressions.
- **Community Health Centers:** Binary indicator for the presence of a community health center, by county, obtained from **?**. For SEAs, the binary indicator is 1 if any county in the SEA has a CHC.
- **Hospitals and Hospital Beds**: Annual data on the number of hospitals and hospital beds by county from the American Hospital Association, compiled by **?**. These values were normalized by total population in 1970.
- **Medical Doctors**: Annual data on the total number of non-federal, active MDs by county obtained from the Bureau of Health Professionals, Area Resource File, and distributed by ICPSR (**?**). This value was normalized by total population in 1970.
- **Categories of Death**: Chronic diseases include cardiovascular disease including hypertension and stroke, gastrointestinal conditions such as cirrhosis and ulcers, respiratory disease related to tobacco use like emphysema, cancer, diabetes and ill-defined conditions such as chronic fatigue. External causes include injuries, suicides, homicides, motor vehicle and other types of accidents. These two categories do not encompass all deaths in the data.
- **Democratic Vote Share:** Percentage of all presidential votes in 1970 cast for the democratic candidate (Humphrey) as contained in **?**.

III.2 Health Behaviors Regressions

- **Number Outpatient Visits (in last 12 months):** Variable *dv12*, the number of times the person saw or talked to a medical doctor in the past 12 months, excluding time when an inpatient in a hospital. As suggested by IHIS documentation, we topcoded the variable at 365.
- **Any Outpatient Visit (in last 12 months):** In addition to reporting the number of times an individual saw or talked to a medical doctor, individuals also report the interval since their last interaction with a physician in variable *dvint*. If an individual reported that they had visited a doctor in the last 12 months, we coded the respondent as 1. Otherwise, the respondent was coded as a 0.
- **Any Hospital Admission (in last 12 months):** Variable *hospnghtd*, which reports whether an individual was a patient in a hospital overnight during the past 12 months. Respondent's were instructed not to include overnight stays in an emergency room.
- **Number Nights in Hospital in last 12 months:** Variable *hospnited*, which reports the number of nights persons spent in the hospital.
- **Number of Dental Visits in the last 12 months:** Constructed identically to outpatient visits in last 12 months; see above.

- **Smoking:** Cigarettes per day, asked of current smokers. The sample changes slightly across years, from persons 17 and older to 20 and older, and is asked only of those who smoked at least 100 cigarettes in their life or were a current smoker. Those who were not asked the question were recoded as zero. The question was asked in 1970, 1974, 1976 and 1977.
- **Gout:** Variable *goutyrc*, had gout this past year, asked of all persons in 1969, 1976.
- **Income:** Total grouped family income in nominal dollars.
- **Education:** Highest grade of schooling attained by year of interview.
- **Marital Status:** Includes coding for married, divorced, widowed, single.
- **Telephone:** Indicator variable for whether the individual has telephone.
- **Rural-Urban:** Binary variable derived from variable *metro*. Individuals in an MSA were coded as urban, all others as rural.
- **Democratic Vote Share:** Percentage of all presidential votes in 1970 cast for the democratic candidate (Humphrey) as contained in **?**.

III.3 Medical Mistrust Regressions

- **General Mistrust:** Source is **?**. Data are available for multiple years, though only 1998 is used due to limitation in the outcome variable *doc13* (described below). The exact question asked is: "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" The variable ranges from can trust, cannot trust, depends. We coded mistrust as 1 if the respondent answered cannot trust or depends and 0 if respondent stated they "can trust".
- **Mistrust in Doctor:** Source is **?**. The variable is *doc16* and the question text is: "Please think about the medical care you are now receiving. If you have not received any medical care recently, circle the answer based on what you would expect if you had to see care today. Even if you are not entirely certain about your answers, we want to remind you that your best guess is important for each statement. I trust my doctor's judgments about my medical care." The variable responses are on a Likert scale: strongly agree, agree, neither agree or disagree, disagree or strongly disagree–with higher values indicating stronger disagreement. We convert this variable into a binary variable for mistrust if the response is neither agree or disagree, disagree, or strongly disagree and use a linear probability model in the estimation. The question was asked in 1998 and 2006. We focus on 1998 to reduce differential survival bias by those most affected by the treatment. The 2002 survey asked a similar question but with a different scale.
- **Doctors Deny Treatment**: Source is **?**. The variable is *doc13* and is only available in the 1998 GSS. The question text is: "As you read each of the following statements, please think about the medical care you are now receiving. If you have not received any medical care recently, circle the answer based on what you would expect if you had to seek care today. Even if you are not entirely certain about your answers, we want to remind you that your best guess is important for each statement. I worry that I will be denied the treatment or services I need." Again, the responses are a Likert scale with higher values registering disagreement with the statement. Again, we convert this variable into a binary variable for mistrust if the response is neither agree or disagree, disagree or strongly disagree and use a linear probability model in the estimation.

III Media Coverage of Tuskegee

One possible mechanism for the paper's main results (that black men in closer geographic proximity to Macon County, Alabama exhibited lower rates of healthcare utilization and higher mortality rates after 1972) is formal information transmission through media coverage of the Tuskegee study. We find this information mechanism unlikely given that utilization effects are greater for black men of lower income and educational attainment. Nevertheless, as a robustness check (not shown here), we add geography-specific measures of media exposure to the baseline mortality regressions. These data include the number of black newspapers in an SEA in 1971 and come from **?**. We find that the coefficients of interest are little changed under this alternative specification.[6]

We searched NewspaperArchive.com as well as other sources for published articles as an alternative measure of the intensive margin. Of the 876 articles about Tuskegee in 1972, 94.5% came from the Associated Press (AP). Thus, access to information about Tuskegee was related to the presence of black publications, but not related to independent reporting as essentially none of the coverage was from independent sources. Black publications can therefore be viewed as a proxy for news coverage.

Using the Vanderbilt Television News Archive, a searchable database of the content of evening news reports for ABC, CBS, and NBC, we find no evidence that any of the three networks devoted airtime to the Tuskegee Study until October 1972, and even then only one network (ABC) covered the story (**?**). In March 1973, CBS devoted airtime to the federal response to the study's disclosure. There is no other evidence in this archive that the Tuskegee study made national television news between 1972 and the end of our study period. Of course, it is possible that local, rather than national, news broadcasts were a more prevalent source of TSUS news. Unfortunately, local television news archives are unavailable for search.

The other possible avenue for formal news of TSUS is radio broadcasts, and NBC radio broadcasts are archived and searchable for the study period.[7] We again find delayed and sparse reporting; one broadcast is dedicated to the topic of human beings in medical research, with reference to TSUS, in May 1973.[8] We have been unable to find other comprehensive archives of radio broadcasts and, again, we cannot say anything about the prevalence of reporting regarding the Tuskegee incident in local programming.

IV Medical and Public Health Advancements in the 1960s-1970s

There were several advances in medicine and public health that occurred in the late 1960s and early to mid-1970s that could have influenced and potentially improved the health of older men. First, the Surgeon General's Report on Smoking and Health was released in 1964. The report concluded that cigarette smoking was a cause of lung cancer and laryngeal cancer in men (and a probable cause of lung cancer in women) as well as an important cause of chronic bronchitis. The Public Health Service coordinated with non-profit organizations to launch an antismoking campaign (**?**).

In addition, innovations in cancer treatments began to alter longevity. According to **?**, p. 8647, "In the 1960s, medical oncology did not exist as a clinical specialty...the main issue of the day was whether cancer drugs caused more harm than good". However, things changed dramatically over the decade with the addition of new agents and the concept of combination therapy so that [p. 8650] "by 1972, the Albert and Mary Lasker Prize in Medical Research was awarded to a group of investigators responsible for showing proof of

[6] Quantifying media exposure to news of TSUS is complicated by the variety of potential media coverage. But our search of available archives indicates that newspaper coverage would have been the primary formal channel of information dissemination, greater than both television and radio coverage. Jean Heller of the Associated Press (AP) broke the story on July 26, 1972 in a lengthy (printed) exposé, and the AP quickly followed with multiple other news stories, including publications on July 27th and 28th and then multiple times each month in August, September and October of 1972.

[7] http://www.nbcuniversalarchives.com/nbcuni/home/nbcradio.do, Accessed January 13, 2016

[8] http://www.nbcuniversalarchives.com/nbcuni/clip/5112790787_s01.do, Accessed January 13, 2016

principle for the cure of cancer with drugs." And, in 1973, medical oncology was officially established as a specialty.

Another important breakthrough in this era came in the form of antihypertensives. Thiazide diuretics, discovered by Beyer and Sprague in the 1950s, became widely adopted and are credited with saving millions of lives as they were the first widely effective and well-tolerated blood pressure medication. Beta-adrenergic blocking agents were demonstrated to be effective by Prichard and Gillam (in 1964); Ondetti and colleagues discovered angiotensin converting enzyme (ACE) inhibitors a few years thereafter (**?**).

V Discussion of Additional Results in the Appendix

I Figures

Figure I of the main text contains annual racial mortality gaps for infants, children (1-4), and older adults (55-64 and 65-74). This figure is repeated below in **Appendix Figure A.1,** but is limited to the South. Again, the patterns indicate a continued racial convergence in male and female mortality for infants and for children, but a divergence among older adult males. **Appendix Figure A.2** contains similar plots for other age groups. The youngest age groups show sharp, steady convergence while young adult males exhibit sharp convergence followed by divergence event in the latter half of the 1980s that merits further investigation. (One possible explanation of the divergence in the late 1980s for younger black males is the growth of the HIV/AIDS epidemic. Deaths from AIDS peaked in the early 1990s, and black men were three times as likely to be infected as their white peers. By 1993, AIDS was the leading cause of death among 25 to 44 year old black men.) Other age groups show steady but slow convergence.

In **Appendix Figure A.3**, we present two additional event studies. Panel A plots β_1 coefficients after estimating an equation similar to (4) over an extended time horizon: 1962 to 1987. Disaggregated population by age at a fine geographic level is only available for non-white populations in the 1960 census, and there is no alternative source for population data prior to 1968. The "non-white" category in the 1960 census includes Blacks, Asians, Hispanics, and Native American groups. Given these constraints, our analysis is restricted to counties where at least 60% of the non-white population in 1960 was black. Despite these caveats, the extended sample demonstrates that differences in the log of age-adjusted (all cause) mortality between black and white males and females before 1972 was relatively flat on a gradient from Tuskegee, despite some evidence of convergence at the very beginning of the time period (i.e. the coefficient on the 1962/1963 period). These results are contained in Panel (A). After 1972 there is evidence of divergence as the coefficients become positive. The patterns are even more evident when we account for the inherent error from using the non-white population as the denominator. Panel (B) modifies the findings in Panel (A), weighting by the 1960 black population to emphasize observations where estimates are more refelctive of black mortality. Finally, for comparison, Panel (C) plots β_1 coefficients from the main analytical sample for the same outcome as in Panel (A).

Appendix Figure A.4 presents estimates which assume the disclosure was in 1971 (for utilization) or 1970/1971 (for mortality) instead of 1972 or 1972/1973. The event studies suggest abnormal dips in mortality or increases in utilization in 1972 are not responsible for the statistical significance of the baseline results.

Appendix Figure A.5 presents a map of the coefficients on placebo "locations" of the Tuskegee experiment, replacing the distance to the SEA housing Tuskegee, Alabama variables in the paper's baseline mortality equation with distance to each of the other SEAs in the country and then re-estimating equation 3 in the main text for log chronic age-adjusted mortality outcome. The resulting coefficients on β_1 are plotted in a heat map style in Panel (A) and indicate that the strongest geographic gradient in mortality is very close to the SEA that houses Tuskegee, Alabama. (The interquartile range (25th and 75th percentiles) of the estimates are provided as subheadings.) The handful of SEAs that have slightly larger coefficients than the SEA housing Tuskegee are all proximate (most of them contiguous) to the SEA housing Tuskegee and, therefore, highly correlated with the treatment (see Panel (B)). In each case, the magnitude of the estimated value of β_1 is only slightly larger than the estimate provided in Table I column (7). In Panels (C) and (D) we plot the heat map for the coefficients on β_2 and β_3, respectively to test whether the patterns are similar to those for β_1. The results are reassuring – the β_2 coefficient, although sometimes positive and significant for mortality in Table 2, shows divergence that is not localized to the South. (Figure IV event studies also did not demonstrate a change in the evolution of mortality for white men vs. women on a gradient from Macon County following the disclosure.) β_3 coefficients are generally not statistically significant in the tables and demonstrate a pattern of convergence, as seen in Figure I and discussed in the historical narrative.

Appendix Figure A.6 plots the distribution of coefficients on the interaction of proximity to Macon County, Alabama, an indicator for black, an indicator for male, and an indicator for post-1972. Each observation represents a coefficient estimated omitting one locale (state or SEA) at a time. Panel (A) plots the distribution of β_1 coefficients for the number of outpatient visits in the last 12 months. Panel (B) plots the distribution of β_1 coefficients for logged age-adjusted chronic mortality. The histograms demonstrate that the majority of coefficients bunch around the baseline estimates presented in Table I.

Appendix Figure A.7 displays scatterplots of the relationship between proximity to Tuskegee and the log of black migrants from Alabama (Panel (A)) or the log of black individuals born in Alabama (Panel (B)). Data for both figures are from the 100% 1940 Census. The figures demonstrate that there are many more 1935-1940 migrants from and individuals born in Alabama in San Francisco and Los Angeles than would be predicted based on their proximity to Tuskegee, Alabama.

Appendix Figure A.8 plots event study coefficients from regressions on supply side healthcare variables corresponding to Appendix Table A.7. (See discussion below.)

Appendix Figure A.9 plots event study coefficients from regressions on the number of outpatient physician visits in the last 12 months, for an all male sample, with a non-veteran indicator variable replacing the male indicator variable in equation (4).

II Tables

Appendix Table A.1 contains summary statistics for CDC (mortality), NHIS (utilization), and GSS (mistrust) samples.

In **Appendix Table A.2**, we examine other utilization outcomes not examined in the main text. First, we perform a placebo test by measuring the effect of the Tuskegee disclosure on the utilization of dental services. We see a weak and insignificant geographic gradient in dental utilization, but, in contrast to the paper's conclusions regarding medical care utilization, the gradient that does exist favors individuals in closer proximity to Tuskegee. (See the positive, but small and statistically insignificant, coefficients in column (1).)

One possible avenue by which reduced healthcare utilization after the Tuskegee disclosure might have adversely affected the health of black men is through smoking behavior. The early 1970s was a period of intense public health discussion regarding the negative health effects of tobacco, and the reduced utilization of healthcare services induced by the Tuskegee disclosure may have resulted in higher rates of tobacco use among black men. Column (2) of Appendix Table A.2 demonstrates that there was an increase in smoking after 1972 for black men in closer proximity to Macon County, Alabama. The coefficient on $proximate * post * male$ is negative and significant, suggesting that white men were reducing their smoking at the same time when compared to white women. We lack detailed information on drinking, and instead use a proxy for drinking — whether the respondent reports gout in the past year. We do not find effects of the disclosure on gout.

Appendix Table A.3 presents a variety of robustness checks for both utilization (Panel (A)) and mortality (Panel (B)). Columns (1) and (5) drop all individual or place-specific controls, respectively. Columns

(2) and (6) examine how the migration proximity measure performs outside the South. The estimates of β_1 are slightly larger relative to the baseline (-10.18 vs. -10.75 and 0.220 vs. 0.400), but have higher standard errors. Columns (3) and (7) include region*post*black*male fixed effects. The estimates of β_1 are not statistically distinguishable from those in Table I. Columns (4) and (8) include the share of vote for the Democratic vote share interacted with race and gender and a linear time trend and display no remarkable changes relative to the baseline estimates.

In **Appendix Table A.4** we revert to a more parametric specification including proximity interacted with male, black and black*male. The estimates of β_1 are very similar to those provided in Tables I and II. Pre-disclosure interaction coefficients suggest that racial disparities for women and gender disparities for whites were generally more muted farther from Tuskegee. The one exception is pre-1972 gradients in utilization (column (1)) for white men vs. white women, which might reflect greater rates of illness requiring more utilization or greater access. The pre-1972 geographic gradients in the racial gap across genders suggests that these differences were, if anything, *smaller* closer to Tuskegee. Graphs representing the pre-1972 differences over time are shown in **Appendix Figure A.7** and demonstrate parallel trends in these differences prior to the disclosure event. In addition, columns (3), (4), (7), and (8) of Appendix Table A.4 estimate the parametric version on an all-male or all-black sample, and demonstrate these pre-disclosure interaction coefficients are generally not statistically significant.

Appendix Table A.5 reports OLS estimates of equation (3) for various different specifications. In column (1) we use the proximity measure of black migration from Alabama on the full sample of state economic areas in the continental U.S. including San Francisco and Los Angeles. In columns (2) and (4) we report results where observations are weighted by the population aged 45-74 in 1970 for that race, gender, and SEA. Column (5) is estimated using a county-level sample. Columns (3) and (6) revert to the parametric version presented in Appendix Table A.4 in order to include trends in incarceration and unemployment rates. The results are fairly consistent across all these specifications.

In **Appendix Table A.6**, we report results on different categories of death. In particular, we contrast the paper's baseline results for chronic-cause age-adjusted mortality with more acute outcomes that are considered to be "external to the body" including suicides, homicides, injuries and accidents. We report results in both logs and in levels. In contrast to the effects on chronic-case mortality, we see smaller effects on extrinsic causes, and the results are not statistically significant. We have also further disaggregated each category into its component causes. Caution is warranted in interpreting these results especially for infrequent, acute diseases, but for the chronic category, the largest positive coefficients are on cardiac and respiratory conditions as well as diabetes (β_1 ranges from 0.09 to 0.11).

In addition to the robustness testing elsewhere in the main paper and appendix, we take additional steps to ensure that changes in the environment for medical care, including hospital availability and the social safety net, are not correlated across geographic distance and time in a way that would confound our main results. To do so, we use placebo outcomes for hospital beds per capita, Social Security benefits, and Medicare and Medicaid expenditures as outcomes in a difference-in-difference framework:

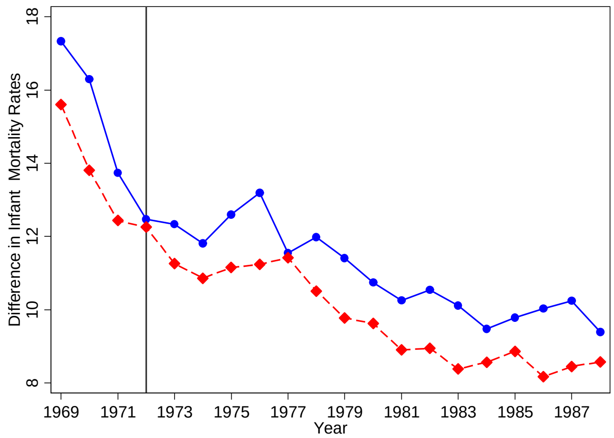
$$Y_{at} = \alpha + \ \beta(P_a * post_t) + \gamma_a + \theta_t + \epsilon_{at}$$

where Y_{at} is an outcome in SEA a in year t, γ_a and θ_t are SEA- and year fixed effects, respectively. The coefficient β in this case captures the post-1972 effect of each 1000 kilometers of geographic proximity to Tuskegee, relative to any pre-1972 effect, which is absorbed in the location fixed effect. See the Data Appendix for data sources. The results for each of the four outcomes are located in **Appendix Table A.7**. We find that the number of hospital beds per capita increased after 1972 (column (1)), and more so in locations in closer proximity to Tuskegee Alabama. But an event-study analysis (**Appendix Figure A.8**, Panel B**)**, plotting the coefficient on P_a in each year, indicates that the spread of hospital beds was linear across the pre- and post-1972 time period, with no sharp change in 1972. We find statistically and economically insignificant effects for Social Security (column (2)). In the last two columns, we find higher expenditures on Medicare and Medicaid, implying that the average SEA in our sample saw an increase in health expenditures of 4.3 and 6.2 log points, respectively. The results are only statistically significant for Medicare, and the gradient of expenditures *favored* locations closer to Tuskegee, Alabama, in line with other work on mortality convergence in the South in this period. For both hospitals and Medicaid expenditures, unless these elements served to increase the mortality rate of black males (or differentially reduce the mortality rates of black women, white men, and white women), this finding indicates that our mortality estimates are biased towards finding no effect of TSUS. And, again, an event-study figure for the Medicare outcome (**Appendix Figure A.8**, Panel A) shows no discernible jump in 1972.

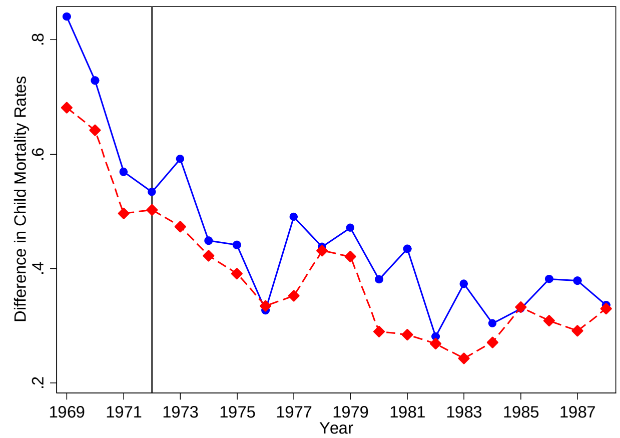
VI Figures

Appendix Figure A.1: Black-White Mortality Differences (South Only)

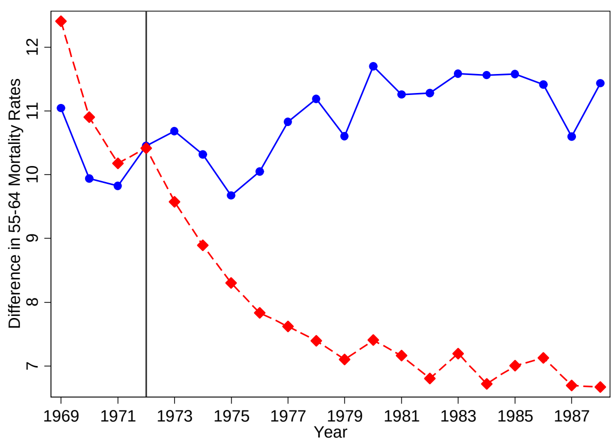
Panel A. Infant Mortality Rate



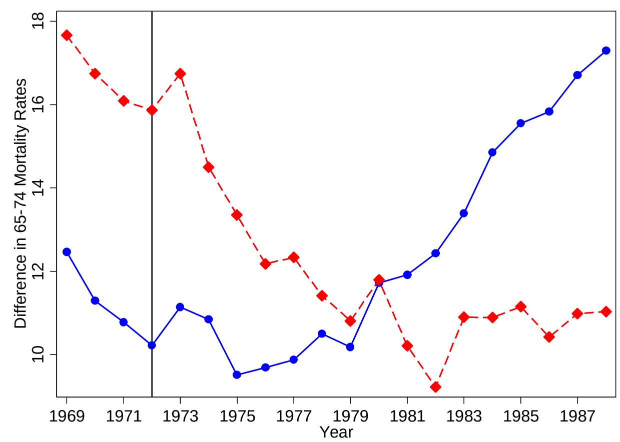
Panel B. Child (1-4) Mortality Rate



Panel C. 55-64 Mortality Rate



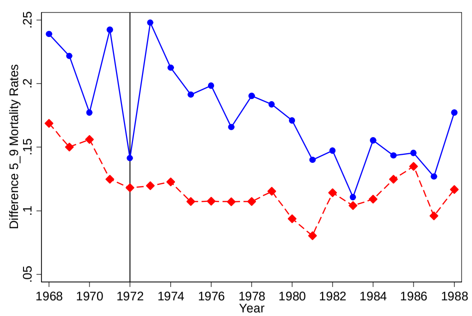
Panel D. 65-74 Mortality Rate



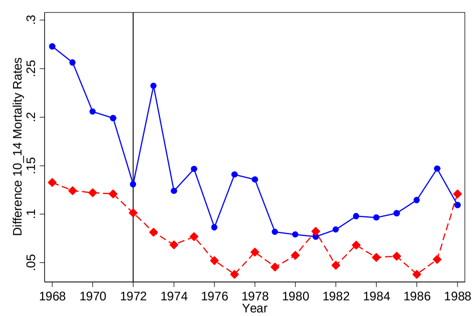
Notes: South only versions of Figure 1 in the main text. The data are from the CDC compressed mortality files and represent the black-white difference in age-specific mortality rates. Each mortality rate is calculated by dividing the number of deaths in the relevant population by the at-risk population (in thousands). The solid (blue) line represents the difference for males, and the dotted (red) line represents the difference for females. The vertical line represents the year "The Tuskegee Study of Untreated Syphilis in the Negro Male" was disclosed.

Appendix Figure A.2: Black-White Mortality Differences (Other Ages)

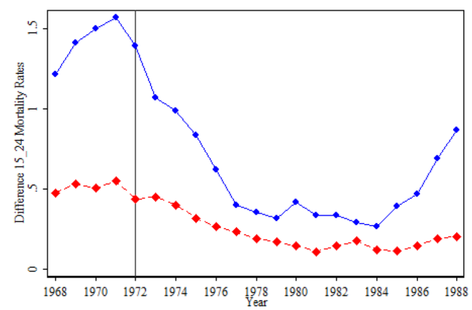
Panel A. 5-9 Mortality Rate



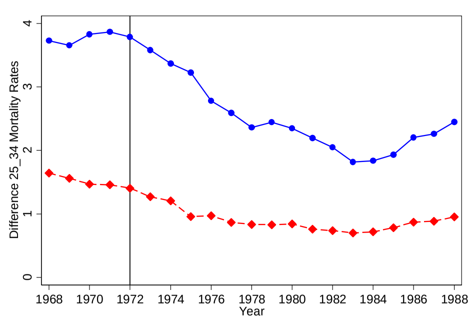
Panel B. 10-14 Mortality Rate



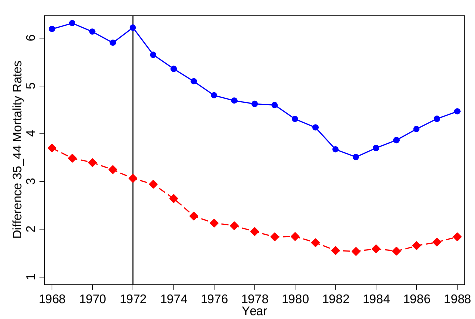
Panel C. 15-24 Mortality Rate



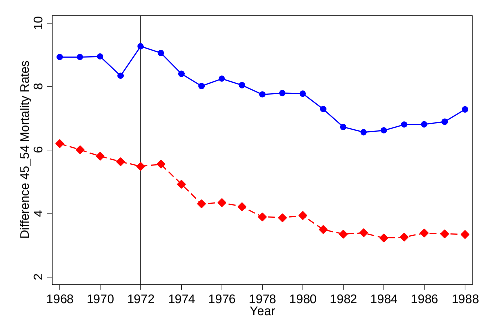
Panel D. 25-34 Mortality Rate



Panel E. 35-44 Mortality Rate



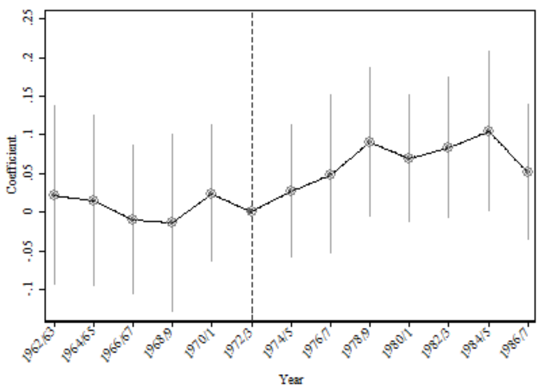
Panel F. 45-54 Mortality Rate



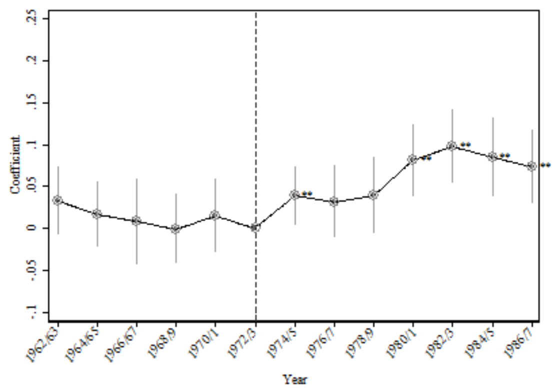
Notes: Replications of Figure 1 for other age groups. The data are from the CDC compressed mortality files and represent the black-white difference in age-specific mortality rates. Each mortality rate is calculated by dividing the number of deaths in the relevant population by the at-risk population (in thousands). The solid (blue) line represents the difference for males, and the dotted (red) line represents the difference for females. The vertical line represents the year "The Tuskegee Study of Untreated Syphilis in the Negro Male" was disclosed.

Appendix Figure A.3: Additional Event Studies - Log Age-Adjusted All-Cause Mortality

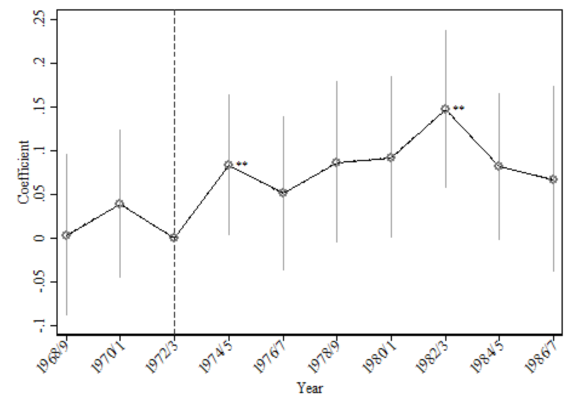
Panel A. Extended Period (1962-1987)
(β_1 Coefficient: limited sample)



Panel B. Extended Period (1962-1987)
(β_1 Coefficient: limited & weighted)



Panel C. Main Sample (1968-1987)
(β_1Coefficient)



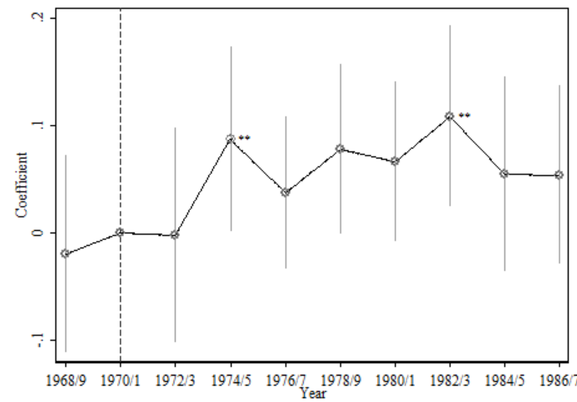
Notes: Event study coefficients on the interaction of proximity to Macon County, Alabama, an indicator for black, and an indicator for male for each two-year period. The β_1 coefficients from a version of equation (4) are plotted as well as their 95% confidence intervals. The dependent variable is the log of age-adjusted mortality for individuals 45-74 years of age. Panel (A) extends the sample in time by combining the Compressed Mortality files from the CDC with the Multiple Cause of Death files from the NCHS. Since the 1960 disaggregated population counts by age are only available for the white/non-white categorizations, we limit the sample to places where 60% of more of the non-white population was black in 1960 and interpolate such counts between 1960 and 1968. Thus the series extends from 1962 to 1987. Panel (B) re-capitulates Panel (A) but weights by total black population in 1960 thereby emphasizing observations where black mortality estimates are potentially measured more accurately. Panel (C) plots β_1 coefficients using our main analytical sample for the outcome of log age-adjusted mortality for individuals 45-74 years of age from 1968 to 1987.

** $p<0.05$.

Appendix Figure A.4: Event Studies Assuming Disclosure in 1971

Panel A. Utilization – β_1 Coefficient

Panel B. Mortality– β_1 Coefficient

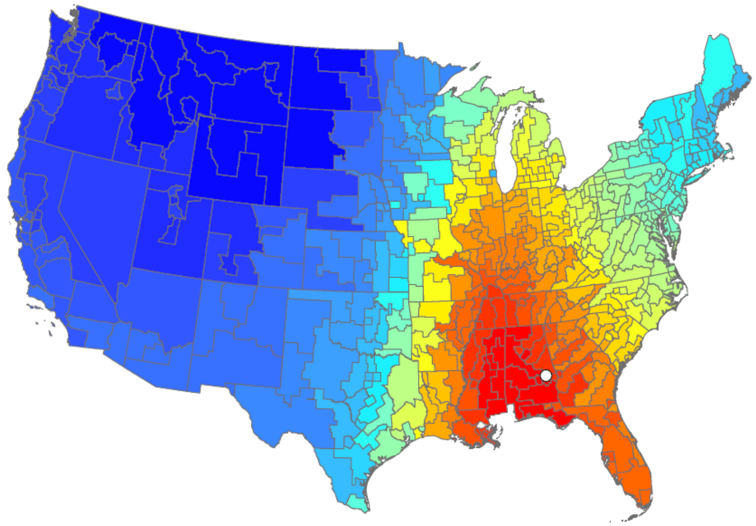


Notes: Event studies coefficients on the interaction of proximity to Macon County, Alabama, an indicator for black, and an indicator for male for each year or two-year period. The $ß_1$ coefficients from a version of equation (4) are plotted as well as their 95% confidence intervals. In this specification, it is assumed that the disclosure occurred in 1971 or 1970/1971. The dependent variable in Panel (A) is the number of outpatient visits within the last 12 months and the outcome in Panel (B) is the log of age-adjusted chronic mortality for individuals age 45-74. Utilization data are from the harmonized version of the National Health Interview Survey (NHIS) available from IPUMS and merged with restricted identifiers for use in the RDC. The sample includes non-veteran black and white men and women ages 45-74 and cover the period 1969-1977. Mortality data are from the compressed mortality files from the CDC and cover the period 1968 to 1987. The unit of observation is a demographic group within a state economic area (SEA), and the sample includes black and white men and women ages 45-74 who died in the United States. NHIS regressions are weighted by the sample weights. Standard errors are clustered at the state and SEA level, respectively.

** $p<0.05$.

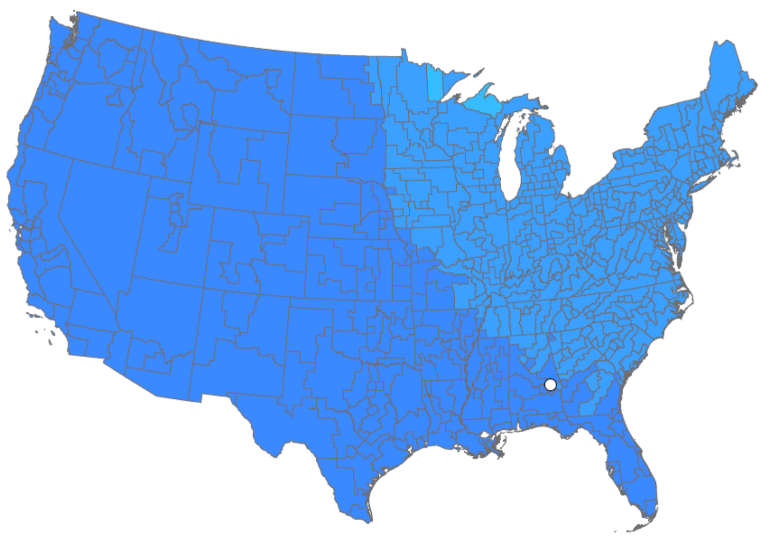
Appendix Figure A.5: Heat Maps

Panel A. β_1 Coefficient
[25^{th} pctile $= 0.033$; 75^{th} pctile $= 0.072$]

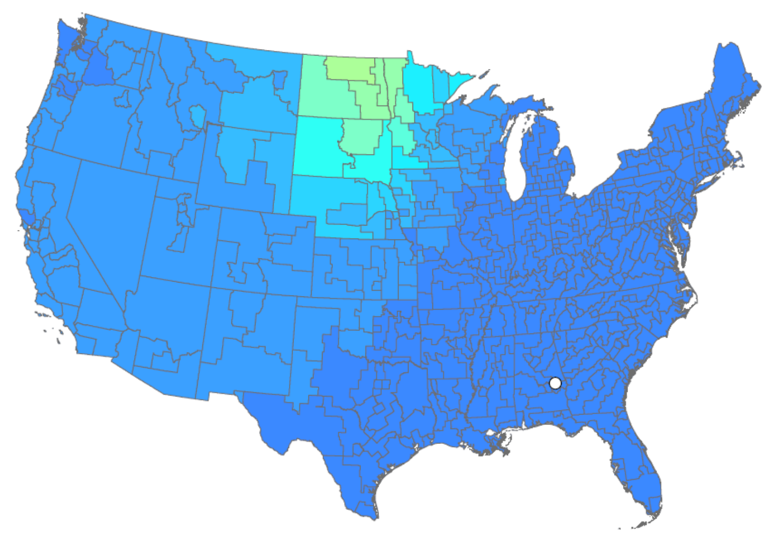


Panel B: $1(\beta_1^j$Coefficient $> \beta_1^{Macon}$ Coefficient)

Panel C. β_2 Coefficient
[25^{th} pctile $= -0.001$; 75^{th} pctile $= 0.019$]



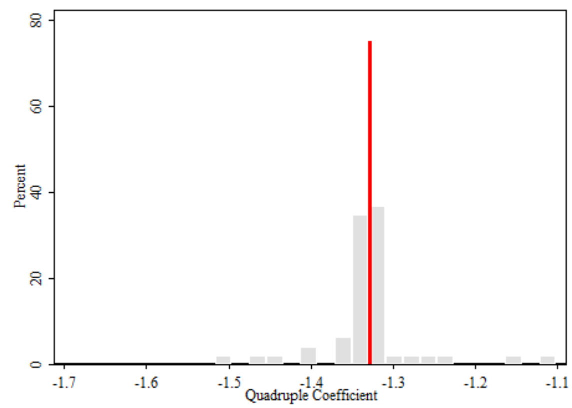
Panel D: β_3 Coefficient
[25^{th} pctile $= -0.011$; 75^{th} pctile $= 0.010$]



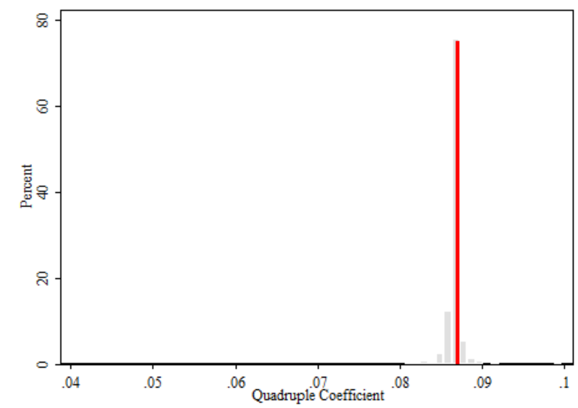
Notes: Heat maps of the $\beta_{1,}$ (coefficient on black*male*proximity*post) β_2 (coefficient on male*proximity*post) and β_3 (coefficient on black*proximity*post) estimates are provided in Panels (A) (C) and (D) respectively. The coefficients are generated using distance from every other SEA in the sample and estimating equation (3). The outcome is the log of age-adjusted chronic mortality for individuals age 45-74 over the time period 1968-1987. In Panel (B) cross-hatched SEAs are those with a coefficient greater than the estimated coefficient using Macon County or its SEA as the location of the Tuskegee syphilis study. As colors move from cool to warm tones (blue to red) the coefficients increase in value. Thirty quantile categories of β_1 are used to define each color, and β_2 and β_3 maps are generated relative to those cutoffs. The interquartile range (25^{th} and 75^{th} percentiles) of the estimates are provided as subheadings. The white circle or black triangle represents Macon County, Alabama.

Appendix Figure A.6: Leave One Out Estimates

Panel A. Utilization



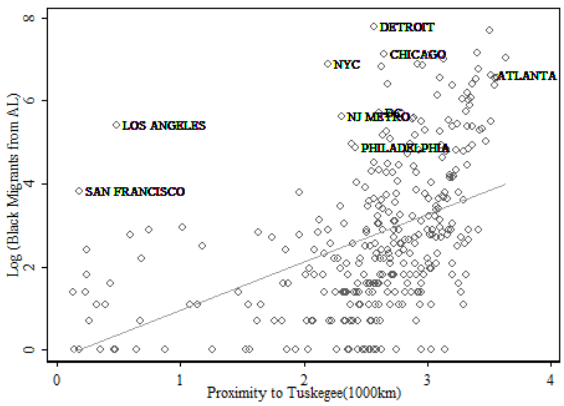
Panel B: Mortality



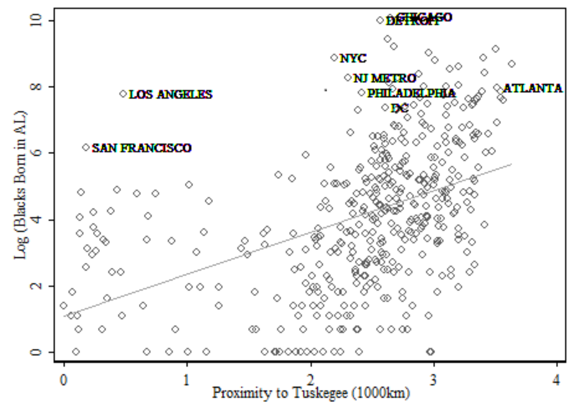
Notes: Distribution of coefficients on the interaction of proximity to Macon County, Alabama, an indicator for black, an indicator for male, and an indicator for post-1972. Each observation represents a coefficient estimated omitting one locale (state or SEA) at a time. Panel (A) plots the distribution of β_1 coefficients for the outcome number of outpatient visits in the last 12 months. Panel (B) plots the distribution of β_1 coefficients for the outcome the log of the age-adjusted chronic mortality rate. Data for Panel (A) are from the harmonized version of the National Health Interview Survey (NHIS) available from IPUMS and merged with restricted identifiers for use in the RDC. The sample includes non-veteran males ages 45-74 and black women ages 45-74 and the analysis period includes 1969-1977. Data from Panel (B) are from the CDC compressed mortality files and the analysis period includes 1968-1987. NHIS regressions are weighted by the sample weights. The thick red vertical lines denote the β_1 coefficients reported in Table I.

Appendix Figure A.7: Distance and Migration from Alabama

Panel A. Log (Black Migrants from Alabama)



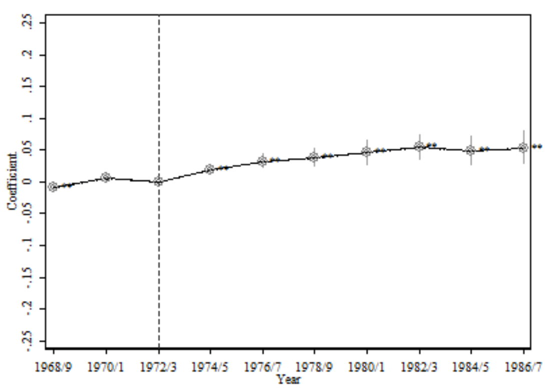
Panel B. Log (Blacks Born in Alabama)



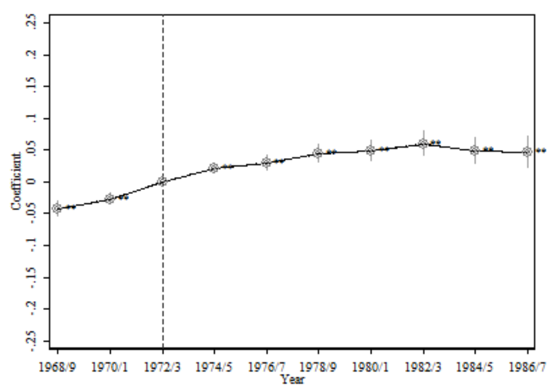
Notes: Scatterplot of the relationship between proximity to Tuskegee and the log of black migrants from Alabama (Panel (A)) and the log of black individuals born in Alabama (Panel (B)). Data for both figures are from the 100% 1940 Census.

Appendix Figure A.8: Additional Event Studies -
Log Medicare and Hospital Beds Per Capita Outcomes

Panel A. Log Medicare



Panel B. Log Hospital Beds Per Capita



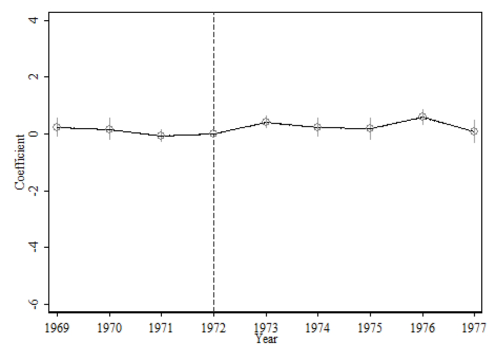
Notes: Event studies coefficients on the interaction of proximity to Macon County, Alabama and an indicator for each two-year period for two outcomes with significant post-1972 relationships to proximity. (See Appendix Table 7.) Medicare expenditure data are from Regional Economic Accounts provided by the Department of Commerce (1969). Hospital beds are from the American Hospital Association, courtesy of Andrew Goodman-Bacon. Standard errors are clustered at the SEA level, and all equations include SEA and year fixed effects.

Appendix Figure A.9: Event studies

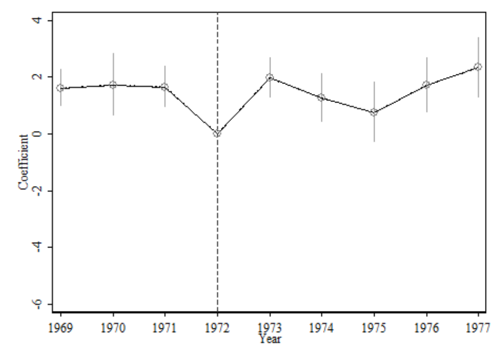
Dependent Variable: Utilization (Physician Interactions in Past 12 months)

Panel A. β_1 Coefficient

Panel B. β_2 Coefficient



Panel C. β_3 Coefficient



Notes: Event study coefficients from versions of equation (4). Panel (A) plots the β_1 coefficients on the interaction of proximity, an indicator for black, an indicator for non-veteran, and a year indicator. Panel (B) plots β_2 coefficients, the interaction of proximity, an indicator for non-veteran, and a year indicator. Panel (C) plots β_3 coefficients, the interaction of proximity, an indicator for black, and a year indicator. The dependent variable for Panels (A) through (C) is the number of outpatient visits within the last 12 months. The sample includes non-veteran black and white men and women ages 45-74 and covers the period 1969-1977. Data are from the harmonized version of the National Health Interview Survey (NHIS) available from IPUMS and merged with restricted identifiers for use in the RDC. See Table I notes, text and Data Appendix for further details.

VII Appendix Tables

Appendix Table A.1: Select Summary Statistics for Black Males

	mean	standard deviation
IHIS Utilization Data		
Any Outpatient Physician Visit	0.67	0.47
Number of Physician Interactions	4.46	11.48
Any Hospital Admission	0.12	0.32
Number of Nights in a Hospital	2.22	10.82
Proximity Tuskegee (1000km)	2.61	0.68
Migrant Instrument	0.08	0.09
Age	59.06	8.21
CDC Mortality Data		
Log Age-Adjusted All-Cause Mortality Rate	3.31	0.14
Log Age-Adjusted Chronic Mortality Rate	3.14	0.14
Proximity Tuskegee (1000km)	2.75	0.52
Migrant Instrument	0.08	0.12
GSS Survey Data		
Medical Mistrust	0.16	0.37
Deny Treatment	0.24	0.43
General Mistrust	0.74	0.45
Proximity Tuskegee (1000km)	2.53	0.77
Age	52.47	14.12

Notes: Average for all black men in estimation samples prior to 1972. For utilization data, summary statistics are for black male individual observations. For mortality data, summary statistics are for SEA-biennial observations for black male demographic groups. For GSS Survey data, all statistics are measured in 1998 for black male individual observations.

Appendix Table A.2: Other Outcomes

	(1)	(2)	(3)
Outcome	*Dental Visits*	*Smoking*	*Gout*
P_j*$post_t$*$black_r$*$male_g$	0.103	1.032*	-0.005
	(0.094)	(0.527)	(0.007)
P_j*$post_t$*$male_g$	-0.062**	-0.548***	0.001
	(0.024)	(0.184)	(0.003)
P_j*$post_t$*$black_r$	0.014	0.350	-0.003
	(0.081)	(0.352)	(0.004)
Fixed Effects	State-Year, Race-Gender-Year, Race-Gender-State		
Observations	176,130	91,587	49,856
No. Clusters	49	49	49
R-squared	0.055	0.077	0.011

Notes: OLS estimates of equation (2) for other outcomes. Utilization data are from the harmonized version of the National Health Interview Survey (NHIS) available from IPUMS and merged with restricted identifiers for use in the Restricted Data Center (RDC) and cover the period 1969-1977. The unit of observation is the individual, and the sample includes non-veteran black and white men and women ages 45-74. In addition to the listed fixed effects, individual-level controls in every specification for utilization include indicator variables for educational status, income, age, marital status, telephone ownership, and rural/urban status. Standard errors are clustered at the state level. ***p<0.01 ,** p<0.05 and *p<0.10, respectively.

Appendix Table A.3: Robustness Checks - Utilization & Mortality

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No Controls	Migrants -- Drop South	Region*Post* Race*Gender FE	Include Vote Share Control	No Controls	Migrants -- Drop South	Region*Post* Race*Gender FE	Include Vote Share Control
	PANEL A---Utilization				**PANEL B---Mortality**			
P_j*$post_t$ *$black_r$*$male_g$	-1.398***		-1.199	-1.349***	0.076***		0.069	0.072***
	(0.360)		(1.027)	(0.359)	(0.021)		(0.043)	(0.023)
P_j*$post_t$*$male_g$	-0.019		0.041	-0.021	0.012***		0.006	0.006*
	(0.084)		(0.243)	(0.083)	(0.003)		(0.007)	(0.003)
P_j*$post_t$*$black_r$	0.012		0.202	-0.048	-0.024		-0.051	-0.014
	(0.109)		(0.486)	(0.108)	(0.019)		(0.036)	(0.023)
$Migrant_j$*$post_t$*$black_r$*$male_g$		-10.75				0.400		
		(10.87)				(0.295)		
$Migrant_j$*$post_t$*$male_g$		2.391				0.049		
		(1.624)				(0.030)		
$Migrant_j$*$post_t$*$black_r$		4.543				0.019		
		(2.773)				(0.321)		
Fixed Effects				State-Year, Race-Gender-Year	SEA-Year, Race-Gender-Year, Race-Gender-SEA			SEA-Year, Race-Gender-Year
Observations	220,954	151,489	220,954	220,160	17,611	10,130	17,611	17,585
No. Clusters	49	32	49	48	465	276	465	464
Adj R-squared	0.009	0.018	0.017	0.017	0.803	0.726	0.803	0.722

Notes: OLS Regressions of equations (2) and (3). The outcome in Panel (A) is number of physician interactions in the last 12 months. Utilization data are from the harmonized version of the National Health Interview Survey (NHIS) available from IPUMS and merged with restricted identifiers for use in the Restricted Data Center (RDC) and cover the period 1969-1977. The unit of observation is the individual, and the sample includes non-veteran black and white men and women ages 45-74. The specification varies by column heading: column (1) estimates equation (2) without demographic controls contained in X; column (2) uses the migrant instrument but drops the Southern census region (i.e. region 3); column (3) includes region interacted with an indicator for post-1972, an indicator for black, and an indicator for male; column (4) reverts to a parametric specification (dropping race-gender year fixed effects) allowing for the inclusion of democratic vote share interacted race and gender fixed effects and a linear trend in time. Panel (B) repeats the same specifications but using the log of age-adjusted chronic mortality from the CDC compressed mortality data files covering the period 1968 to 1987. The unit of observation is a demographic group within a state economic area (SEA) and the sample includes black and white men and women ages 45-74 who died in the United States. Utilization regressions are weighted using provided survey weights. Standard errors are clustered at the relevant geographic unit, (state or SEA level).

***$p<0.01$, ** $p<0.05$ and *$p<0.10$, respectively.

Appendix Table A.4: Parametric Specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent Variable:		Number Outpatient Visits		Dependent Variable:		Log Age Adjusted Chronic Mortality	
	Number Outpatient Visits	*Any Outpatient Visit*	*Within Male*	*Within Black*	*Log Age Adjusted All-Cause Mortality*	*Log Age-Adjusted Chronic Mortality*	*Within Male*	*Within Black*
	PANEL A---Utilization				**PANEL B---Mortality**			
P_j*$post_t$ *$black_r$*$male_g$	-1.386***	-0.040***	-1.616***	-1.305***	0.069***	0.076***	0.049***	0.097***
	(0.402)	(0.006)	(0.364)	(0.398)	(0.023)	(0.022)	(0.018)	(0.022)
P_j*$post_t$*$male_g$	-0.035	0.003			0.005*	0.009***		
	(0.084)	(0.005)			(0.003)	(0.003)		
P_j*$post_t$*$black_r$	-0.049	0.011*			-0.014	-0.021		
	(0.117)	(0.006)			(0.020)	(0.023)		
P_j*$black_r$*$male_g$	0.709**	0.007	-0.275	0.885***	-0.052**	-0.055**	-0.030	-0.014
	(0.331)	(0.010)	(0.325)	(0.317)	(0.021)	(0.023)	(0.018)	(0.023)
P_j*$male_g$	0.209***	0.002			0.054***	0.052***		
	(0.075)	(0.004)			(0.005)	(0.005)		
P_j*$black_r$	-0.964***	-0.042**			0.021	0.014		
	(0.131)	(0.010)			(0.020)	(0.024)		
Fixed Effects	State-Year, Race-Gender-Year		State-Year, Black-Year or Male-Year		SEA-Year, Race-Gender-Year		SEA-Year, Black-Year or Male-Year	
Observations	220,954	220,954	64,356	20,901	17,749	17,625	8,456	7,988
No. Clusters	49	49	49	44	465	465	459	435
Adj R-squared	0.016	0.024	0.022	0.046	0.737	0.722	0.525	0.384

Notes: OLS Regressions of a modified version of equation (2) in columns (1) and (2) and equation (3) in columns (5) and (6). The table presents a more parametric specification with gender*state*race fixed effects replaced with proximity*black*male, proximity*male and proximity*black interactions. Columns (3) and (4) and columns (7) and (8) repeat the parametric specification within male and black subsamples, respectively. Utilization data are from the harmonized version of the National Health Interview Survey (NHIS) available from IPUMS and merged with restricted identifiers for use in the Restricted Data Center (RDC) and cover the period 1969-1977. The unit of observation is the individual, and the sample includes non-veteran black and white men and women ages 45-74. Mortality data are from the compressed mortality files from the CDC and cover the period 1968 to 1987. The unit of observation is a demographic group within a state economic area (SEA) and the sample includes black and white men and women ages 45-74 who died in the United States. Regressions include the individual and SEA-level covariates described in the notes to Table I in the main text. Utilization regressions are weighted using provided survey weights. Standard errors are clustered at the relevant geographic unit, (state or SEA level).

***p<0.01 ,** p<0.05 and *p<0.10, respectively.

Appendix Table A.5: Additional Robustness Checks - Mortality

	(1)	(2)	(3)	(4)	(5)	(6)
	Include SF and LA	Weighting	Parametric- Incarcerated & Unemployed	Weighting	County-Level	Parametric- Incarcerated & Unemployed
$Migrant_j$*$post_t$*$black_r$*$male_g$	0.233***	0.200***	0.165**			
	(0.071)	(0.071)	(0.075)			
$Migrant_j$*$post_t$*$male_g$	0.016	0.013	0.003			
	(0.017)	(0.019)	(0.021)			
$Migrant_j$*$post_t$*$black_r$	-0.133**	0.016	-0.094			
	(0.067)	(0.017)	(0.072)			
P_j*$post_t$ *$black_r$*$male_g$				0.082***	0.048***	0.062***
				(0.016)	(0.019)	(0.022)
P_j*$post_t$*$male_g$				0.007**	0.013**	0.008**
				(0.003)	(0.005)	(0.003)
P_j*$post_t$*$black_r$				-0.033**	-0.024	-0.028
				(0.014)	(0.015)	(0.023)
Fixed Effects	SEA-Year, Race-Gender-Year, Race-Gender-SEA (unless parametric)					
Observations	17,261	17,103	17,071	17,611	94,344	17,580
No. Clusters	453	451	449	465	3,070	463
Adj R-squared	0.796	0.866	0.719	0.868	0.715	0.725

Notes: Estimates from equation (3). Mortality data are from the compressed mortality files from the CDC and cover the period 1968 to 1987. The unit of observation is a demographic group within a state economic area (SEA) and the sample includes black and white men and women ages 45-74 who died in the United States. The outcome variable is log of age-adjusted chronic mortality. Regressions include the SEA-level covariates described in the notes to Table I in the main text. The specification varies by column heading: column (1) uses black migration from Alabama instead of distance from Macon County, Alabama and includes the SEAs containing San Francisco and Los Angeles. Column (2) is weighted with the older population in 1970. Column (3) reverts to a parametric version so as to include trends in incarceration rates and unemployment rates. Column (4) is weighted as well but uses the proximity measure for intensity of exposure. Column (5) estimates equation (3) on a county–level sample. Column (6) is similar to column (3) but includes proximity instead of migration. Standard errors are clustered at the relevant geographic unit, (county or SEA level).

***p<0.01 ,** p<0.05 and *p<0.10, respectively.

Appendix Table A.6: Mortality Categories

	(1)	(2)	(3)	(4)
Outcome	*Log*	*Level*	*Log*	*Level*
	PANEL A - Chronic Mortality		**PANEL B - External Cause Mortality**	
P_j*$post_t$ *$black_r$*$male_g$	0.087***	1.566**	0.055	0.259
	(0.022)	(0.770)	(0.042)	(0.253)
P_j*$post_t$*$male_g$	0.008***	-0.031	-0.035***	-0.018*
	(0.003)	(0.040)	(0.011)	(0.010)
P_j*$post_t$*$black_r$	-0.018	-0.682	-0.017	-0.062
	(0.020)	(0.663)	(0.037)	(0.074)
Fixed Effects	SEA-Year, Race-Gender-Year, Race-Gender-SEA			
Observations	17,611	18,600	15,415	18,600
No. Clusters	465	465	465	465
Adj R-squared	0.804	0.226	0.840	0.033

Notes: OLS Regressions of equation (3). Mortality data are from the compressed mortality files from the CDC and cover the period 1968 to 1987. The unit of observation is a demographic group within a state economic area (SEA) and the sample includes black and white men and women ages 45-74 who died in the United States. In Panel (A), the outcome is the log or level of age-adjusted mortality from chronic disease among the 45-74 population. In Panel (B), the outcome is the log or level of age-adjusted mortality from external causes, including accidents, suicides, homicides and other miscellaneous external causes. In addition to the listed fixed effects, controls in the mortality regressions include time-varying, location specific controls described in Table I of the main text. Standard errors are clustered at the SEA level.

***p<0.01 ,** p<0.05 and *p<0.10, respectively.

Appendix Table A.7: Expenditures

	(1)	(2)	(3)	(4)
Outcome	*Hospital Beds per Capita*	*Social Security*	*Medicare*	*Medicaid*
P_a*$post_t$	0.067***	-0.001	0.043***	0.062
	(0.010)	(0.006)	(0.010)	(0.054)
Fixed Effects	SEA, Year	SEA, Year	SEA, Year	SEA, Year
Observations	4,670	4,670	4,670	4,670
No. Clusters	467	467	467	467
R-squared	0.883	0.997	0.993	0.929

Notes: OLS Regressions of a double-differences in post and proximity to Tuskegee. Column 1 outcome is the number of hospitals per capita at the SEA level in each year, calculated in each year from data provided by the American Health Association. See Bailey and Goodman-Bacon (2015). Columns 2-4 contain benefit and transfer payment data for Social Security benefits, Medicare and Medicaid, respectively, from the Bureau of Economic Analysis. These variables are measured across two-year increments. Standard errors are clustered at SEA level.

***p<0.01 ,** p<0.05 and *p<0.10, respectively.