Closing the Gap or Widening the Divide: The Effects of the G.I. Bill and World War II on the Educational Outcomes of Black Americans

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The effects of the G.I. Bill on collegiate attainment may have differed for black and white Americans owing to differential returns to education and differences in opportunities at colleges and universities, with men in the South facing explicitly segregated colleges. The empirical evidence suggests that World War II and the availability of G.I. benefits had a substantial and positive impact on the educational attainment of white men and black men born outside the South. However, for those black veterans likely to be limited to the South in their educational choices, the G.I. Bill had little effect on collegiate outcomes.

Recent empirical evidence points to a substantial positive effect of the G.I. Bill and World War II service on the educational attainment of white men.[1] Left unanswered is the question of whether the G.I. Bill and World War II had a similar effect on black Americans. There are good reasons to believe that the program effects of the G.I. Bill may have differed for black Americans, who had fewer opportunities in the labor market and in higher education. In particular, black men in the South faced explicitly segregated colleges and much more limited opportunities within historically black institutions.

The related question of whether black veterans from states with *de jure* segregation demonstrated educational gains similar to black veterans in other states is significant for both the overall evaluation of the G.I. Bill and the lessons we draw from it for contemporary policy. In general, portable grant aid programs such as the G.I. Bill are expected to have large effects on collegiate investments when the supply of education is relatively elastic. Yet, limited state investment in colleges and universities open to blacks may have restricted the extent to which black veterans in the South were able to make use of G.I. benefits to attend college.

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[1] Bound and Turner, "Going to War"; and Stanley, "College Education."

More generally, comparing the effects of the G.I. Bill on the educational outcomes of black and white Americans raises classic questions of the role of education in reproducing inequality. In principle, the portable aid available to all veterans through the G.I. Bill held the promise of significantly reducing black-white gaps in educational opportunity and long-run economic outcomes. Given the absence of other national financial-aid programs in the 1940s, one might expect the G.I. Bill to have the largest behavioral effects on men for whom financial constraints were most likely to impede college enrollment. In practice, it is less clear that economically disadvantaged and minority veterans exhibited the largest changes in college participation as a result of the financial aid provided by the G.I. Bill. These groups may have lacked the academic readiness for college programs, and supply constraints in higher education may have limited their enrollment.

Our research questions are twofold. First, we explore the extent to which World War II service and the availability of G.I. benefits had similar behavioral effects on the collegiate attainment of black and white men. Then, among blacks, we look at the extent to which state of birth, and particularly location in a southern state, led to differential collegiate outcomes. The analytic strategy in this article uses variation over time in the fraction of men serving from each birth cohort to identify the effects of military service and the availability of G.I. benefits on educational attainment.

BLACK AMERICANS, WORLD WAR II MILITARY SERVICE, AND THE G.I. BILL

Race and Military Service in World War II

The politics and practice of minority participation in the military were contentious issues as World War II approached. Before the start of the war, the black press and the NAACP launched the "Double V" campaign, urging black Americans to work toward victories over Jim Crow at home and fascism abroad. In late September 1940 President Roosevelt met with a delegation of black leaders to discuss the administration's defense policy and the utilization of blacks in the military, as well as minority-group support for the administration's policies. Shortly after that meeting, on 9 October, the Roosevelt administration released a statement reaffirming its support for the inclusion of blacks in the military in proportion to their representation in the population while continuing the segregation of black and white troops in organized military activities.[2]

[2] Smith, *When Jim Crow*. Although black leaders were unsuccessful in obtaining the changes necessary to achieve official endorsement of integration in the military in World War II, they did see passage of an amendment to the Selective Service Act of 1940 stating that "there shall be no discrimination

As the war approached, the capacity of the military to employ black servicemen was quite limited. For example, in 1940 there were only six black units in the military, which accounted for only 4,450 soldiers.[3] To maintain segregation, the military branches were required to build additional housing, mess halls, and other facilities for black servicemen. Because of initial placement barriers, few black men were accepted to the military through voluntary enlistment in the early years of the war.

When manpower demand intensified as the war progressed, voluntary enlistment was largely eliminated and date of birth became a primary determinant of induction. All men were required to register with local draft boards at age 18, after which they were classified as "service eligible" or deferred from service. It is this classification by local draft boards that introduces the significant problem of selection in measuring the effects of World War II and the availability of G.I. benefits on the educational attainment of veterans. Reasons for deferment included mental and physical deficiencies, illiteracy, and employment in industries vital to the war effort. Differences by race in these classification rates suggest potential differences in the nature of the selection effects associated with military service. For instance, whites were much more likely to receive occupational deferments and blacks more likely to be deferred for reasons of illiteracy or "mental deficiency." Table 1 shows selective-service classification rates for black and white registrants by age in 1945. Among registrants ages 19–25, black men were 2.25 times more likely than white men to receive deferments under section IV-F for physical or mental unfitness. Of those deferred for service in 1944, 33.5 percent of blacks and 8.0 percent of whites were rejected for low scores on the reading and writing examination.[4]

Figure 1 shows the share of white and black veterans of World War II and all other U.S. conflicts by birth cohort for the first half of the twentieth century, measured at quarterly intervals. Among men designated service eligible, date of birth was significantly related to the probability of induction as the selective service drafted "oldest eligible" men first. For men turning 18 during the war, those born in the interval 1923–1925 faced a relatively high risk of induction relative to those born in later years. For black men, absolute levels of military participation were somewhat lower than for whites, with a peak share of 66 percent reached among men born in the third quarter of 1922. Among blacks and whites, the proportion of each cohort serving in the military slid rapidly after the 1926 birth cohort. Ultimately, more than 1 million black men served in the military during World War II.[5]

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against any person on account of race or color" in the selection of troops and the execution of the law (MacGregor, *Integration*).

[3] Flynn, *Draft*.

[4] Selective Service System, *Quotas*, table 191, p. 664.

[5] The majority of these men served in the Army and the 885,945 black men inducted to this branch accounted for 10.9 percent of the men inducted in the Army during the war. The Navy inducted

TABLE 1
DISTRIBUTION OF SELECTIVE SERVICE REGISTRANTS BY CLASSIFICATION AND RACE IN 1945

		Distribution by Classification						
	Number of Registrants (1)	I-C (2)	I-C D (3)	I-A (4)	Share Deferred (5)	IV-F (6)	II-A and II-B (7)	II-C, III-D, Other (8)
Black Men								
Age 18	114,890	0.222	0.011	0.449	0.318	0.216	0.027	0.075
Ages 19–25	911,222	0.508	0.070	0.038	0.384	0.265	0.059	0.060
Ages 26–29	496,495	0.367	0.071	0.076	0.486	0.292	0.107	0.087
Ages 30–33	475,568	0.241	0.054	0.057	0.648	0.295	0.236	0.117
Ages 34–37	440,656	0.179	0.047	0.055	0.719	0.317	0.271	0.131
White Men								
Age 18	637,272	0.404	0.022	0.243	0.331	0.185	0.067	0.079
Ages 19–25	6,848,970	0.687	0.065	0.018	0.230	0.118	0.060	0.052
Ages 26–29	4,107,552	0.539	0.073	0.038	0.350	0.127	0.154	0.069
Ages 30–33	4,084,599	0.316	0.051	0.018	0.615	0.133	0.385	0.097
Ages 34–37	3,911,548	0.212	0.043	0.015	0.730	0.147	0.473	0.110

Notes: Column 2, Classification I-C indicates currently enlisted or deceased; Column 3, Classification I-C D indicates discharged; Column 4, I-A indicates available for service; Column 6, IV-F indicates deferred for mental or physical unfitness; Column 7, II-A and II-B deferment for nonagricultural employment; and Column 8, II-C captures agricultural employment as well as other miscellaneous deferment categories.
Source: Selective Service System, (*Selective Service and Victory*) tables 89–93, 171–75.

G.I. Benefits and Educational Opportunities for World War II Veterans

The unprecedented support for the education of returning World War II veterans provided by the Serviceman's Readjustment Act (Public Law 346, 1944), known more generally as the G.I. Bill, was notably race-neutral in its statutory terms. Educational benefits extended from a minimum of one year to four years, depending on length of service and age, and men serving between September 1940 and July 1947 were eligible. In addition to providing annual tuition payments of up to $500, the bill also provided a monthly cash allowance.[6] A notable feature of the program was that benefits were

153,224 black men, which accounted for about 10 percent of the inductions in this branch, whereas the Marine Corp did not admit blacks until June of 1942 (Selective Service System, *Quotas*).

[6] The provisions of the G.I. Bill as signed into law by President Roosevelt on June 22, 1944, provided for a monthly stipend of $50 for single veterans and $75 for married veterans, as well as the payment of tuition, books, and supplies up to $500. All veterans serving 90 days with a record of honorable discharge were eligible for one year of educational benefits, with veterans receiving educational benefits matching years of service 1:1 up to a maximum of four years of benefit eligibility. In December of 1945, the G.I. Bill was amended to increase the length of the period over which a veteran could initiate and complete education, eliminate restrictions on educational benefits for older veterans, and increase the level of monthly stipend to $65 for single veterans and to $90 for veterans with

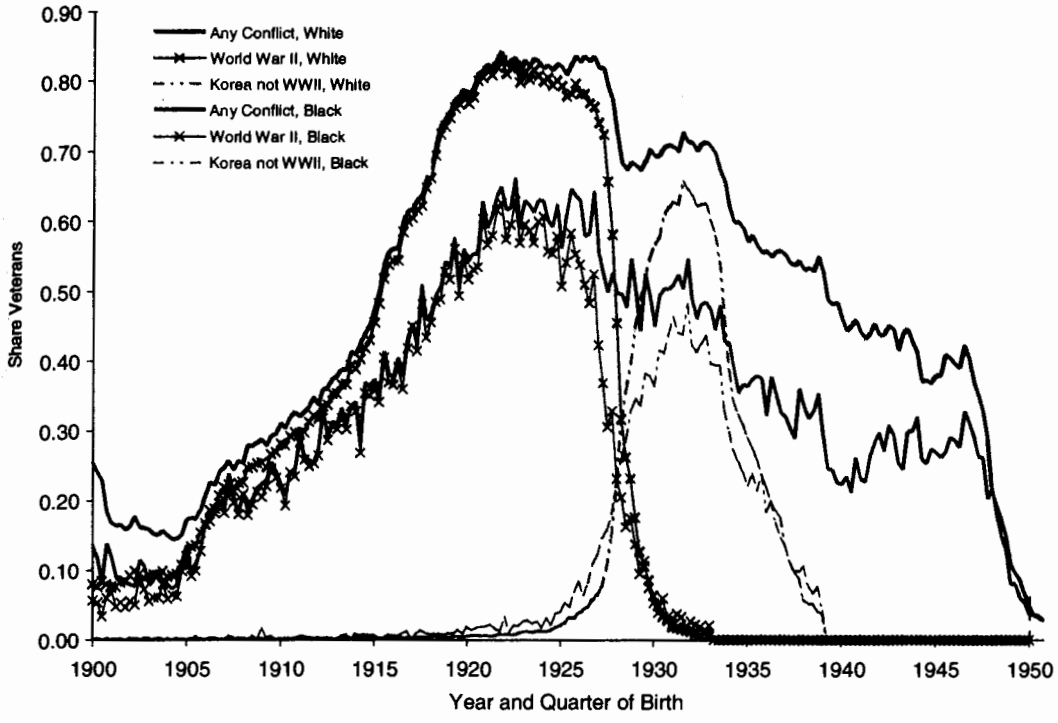

FIGURE 1
SHARE OF VETERANS AMONG MEN, 1900–1950 BIRTH COHORTS, 1970 CENSUS DATA

Source: 3-percent sample from the 1970 decennial census.

awarded to individuals rather than institutions, allowing veterans to use them for any educational or training programs to which they were accepted. G.I. benefits not only covered enrollment at colleges and universities but also provided opportunities for vocational, technical, and apprenticeship training. In fact, the majority of veterans who received training under the World War II G.I. Bill participated in noncollegiate and on-the-job programs.[7]

dependents. The nominal stipend levels were raised again in April of 1948 to $75 for single veterans, $105 for married veterans, and $120 for veterans with children.

[7] U.S. House of Representatives, *Report*. Men chose a wide array of programs beyond collegiate-level training. Overall, black men were less likely to enroll in college-level programs than whites. Data from the Survey of Veterans show more than 28 percent of whites in the 1923–1928 birth cohorts enrolled in collegiate level training, while less than 12 percent of returning black veterans chose this option. Black men were, in turn, relatively over-represented in the range of programs comprising the "other" training and schooling category as well as high school-level training.

However, there is some evidence that black men in the south had a particularly difficult time gaining access to vocational and on-the-job training programs with G.I. benefits. Southern Veterans Administration centers employed few black counselors and were generally unforthcoming in providing services to black veterans (Onkst, "First a Negro"). For example, Onkst cites evidence noting that in March of 1946 only six of the 246 on-the-job training programs in Atlanta for veterans had black participation. Another report of the period (Bolte and Harris, *Our Negro Veteran*) notes that of 102,200 veterans receiving on-the-job training in 12 southern states, only 7,700 were black, despite the fact that about one in three veterans in the area were black.

TABLE 2
EDUCATIONAL ATTAINMENT AND USE OF G.I. BENEFITS AMONG WORLD WAR II VETERANS

	White Men							Black Men						
Year of Birth	*N*	Age at Military Discharge	Years of Education at End of Service	Used G.I. Benefits (share)	Months of G.I. Benefits	Received BA with G.I. Benefits (share)	Years of College with G.I. Benefits	*N*	Age at Military Discharge	Years of Education at End of Service	Used G.I. Benefits (share)	Months of GI Benefits	Received BA with G.I. Benefits (share)	Years of College with G.I. Benefits
1920	268	26.8	11.4	0.4	6.0	0.06	0.32	14	25.2	7.5	0.5	6.1	0.00	0.29
1921	324	25.5	11.1	0.4	6.3	0.06	0.32	22	24.9	9.8	0.6	8.9	0.00	0.45
1922	315	24.6	11.4	0.5	7.6	0.10	0.55	22	23.2	8.1	0.6	11.1	0.05	0.18
1923	295	23.9	11.5	0.5	8.4	0.13	0.69	20	22.6	9.4	0.5	8.3	0.00	0.30
1924	275	23.8	11.4	0.5	8.4	0.14	0.73	29	23.9	9.6	0.5	7.4	0.10	0.34
1925	280	22.3	11.4	0.5	9.3	0.15	0.78	19	21.1	9.3	0.6	10.1	0.05	0.42
1926	261	21.7	11.2	0.6	11.1	0.12	0.86	17	20.9	10.1	0.6	7.9	0.00	0.29
1927	256	21.8	11.4	0.6	11.9	0.12	0.99	14	22.6	10.4	0.4	7.3	0.00	0.14
1928	97	22.4	11.3	0.5	9.0	0.15	0.89	5	24.4	9.8	0.8	8.2	0.00	0.80
1929	31	24.8	11.1	0.4	3.9	0.03	0.29	3	25.8	10.0	0.3	1.7	0.00	0.00

Source: The 1979 Survey of Veterans.
Notes: The data are limited to observations for men with valid educational-attainment measures.

Very little information is available providing direct evidence on the comparative utilization rate of G.I. benefits among black and white veterans. Limited data from the Survey of Veterans presented in Table 2 suggest that black veterans turning 18 during World War II were at least as likely as white men to use G.I. benefits, although the number of months of G.I. educational benefits appears to be smaller for blacks than for whites. One study conducted by the Information and Education Division of the Army in 1944, just after the announcement of the G.I. Bill, showed the remarkable power of the benefits in changing educational aspirations. Prior to the announcement of benefits, only 7 percent of enlisted men indicated that they planned further training or education after the war. After the announcement, 29 percent of white enlisted men and 43 percent of black enlisted men expressed a definite interest in education and training after the war.[8]

It is likely that educational opportunities for veterans returning from World War II varied with race and geography. Southern states maintained explicitly segregated systems of education in the 1940s and this affected the tertiary system of education, as well as the primary and secondary levels. Moreover, access to information about veterans' benefits and advising services may have differed with racial groups. A statutory provision of the G.I. Bill was the availability of employment and education counseling services through the Veterans Administration (VA), designed to help veterans obtain education and training. To meet the high postwar demand, the VA not only maintained regional counseling centers but also contracted with educational institutions to operate an additional 300 sites.[9] It is probable that the availability of counseling services differed by race, especially in the South. David Onkst notes that the lack of black counselors was particularly marked in the deep South, with only about a dozen black counselors for all of Georgia and Alabama and none in Mississippi.[10]

At the conclusion of World War II, blacks wanting to attend college in the South were restricted in their choices to about 100 public and private institutions delineated in the Office of Education publications as "Colleges for Negroes,"[11] as segregation in public higher education remained a legal mandate in many southern states. The public institutions for blacks were founded largely under the Second Morrill Act in 1890, which specifically prohibited the distribution of federal funds to states that did not provide separate accommodation for blacks if the primary state institution denied admission to blacks.[12]

[8] Brown, *Educational Opportunities*.

[9] Ibid.

[10] Onkst, "First a Negro."

[11] With the exception of Wilberforce University in Ohio and Lincoln University in Pennsylvania, these institutions were located in southern states with legalized educational segregation. The data collected by the Office of Education during the 1940s and 1950s do not record the attendance or degree completion of students by race at integrated colleges and universities.

[12] The Second Morrill Act led to the founding of 17 Negro land-grant colleges in the southern and border states, with these institutions including Alabama A&M, University of Arkansas at Pine Bluff,

Few of the postsecondary institutions for blacks offered education beyond the baccalaureate and 28 of the institutions reporting in academic year 1949/50 were classified as sub-baccalaureate teachers colleges or junior colleges.[13] Among the historically black colleges, those in only seven states offered postbaccalaureate training and no institution offered an accredited engineering or doctoral program. A survey of historically black colleges in 1945 found that 45 percent of institutions enrolled fewer than 250 students and 92 percent of the institutions had enrollment of less than 1,000 students.[14] Underfunded and small, these institutions were largely excluded from the "university revolution" that swept through much of public higher education in the first part of the century—a development described by Claudia Goldin and Lawrence Katz.[15]

The small scale of the historically black institutions relative to other colleges and universities merits emphasis. Whereas average enrollment at white or nonsegregated schools was nearly 1,500 in 1949/50, the average resident college enrollment at the black colleges was 729.[16] Beyond their much smaller size, colleges for blacks also had significantly fewer resources per student than their counterparts. Across all private and public institutions in the South, white institutions accounted for 92 percent of total expenditures in 1943/44; among public institutions alone, colleges and universities for whites accounted for more than 94 percent of expenditures.[17] In 1949/50, 56 percent of black men enrolled in black colleges were at public institutions, whereas 66 percent of all men attending college in southern states were at public institutions.[18] Because private schools were likely to be more limited than public institutions in their ability to expand capacity in response to demand shocks, the reliance of blacks in the South on private institutions for collegiate opportunities may have differentially affected their capacity to use G.I. benefits.

Excess demand for higher education was particularly high among black veterans in the South. Keith Olson found that an estimated 20,000 black

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Southern University A&M (Louisiana), and Alcorn State (Mississippi). Many of these institutions emphasized training in crafts and trades following the "industrial education" philosophy of Booker T. Washington, rather than providing general education on the model of liberal arts colleges (Pifer, *Higher Education*).

[13] U.S. Department of Health, Education and Welfare, *Biennial Survey*.

[14] Jenkins, "Enrollment."

[15] Goldin and Katz, "Shaping."

[16] U.S. Department of Health, Education and Welfare, *Biennial Survey*.

[17] Jenkins, "Enrollment," table 1.

[18] Data for enrollment at all southern institutions are from U.S. Department of Health, Education and Welfare, *Biennial Survey of Education 1948–50*, and the data for enrollment at colleges for blacks are from Bowles and DeCosta, *Between Two Worlds*. Although the level of enrollment expanded markedly at both public and private colleges for blacks between 1939/40 and 1949/50, the growth at the public colleges was particularly marked. In 1939/40, enrollment of men at the private black colleges exceeded enrollment of men at the public black colleges, with enrollment levels of 6,724 and 6,528, respectively.

veterans were turned away from the Negro colleges, and a survey of 21 of the southern black colleges indicated that 55 percent of all veteran applicants were turned away for lack of space, compared to about 28 percent for all colleges and universities.[19] Part of the problem was housing.[20] For example, the lack of family housing units at the Tuskegee Institute in 1945 constituted a substantial barrier to black veteran enrollment, as about a quarter of the school's veteran population were married and few were able to find alternative lodging.[21]

The historically black colleges were more limited than white colleges in their ability to accommodate returning servicemen because institutional resources were more scarce and deficiencies in physical space were often more serious than at the white institutions.[22] Although flagship universities such as the University of Wisconsin and the University of Michigan in the North and the University of Texas and the University of Alabama in the South were able to expand rapidly to meet the needs of returning veterans under the G.I. Bill, limited facilities at the segregated institutions effectively constrained the supply of places for blacks in the South. Institutions expanding most rapidly at the end of the war were the public institutions with the economies of scale, economies of scope, and funding of research universities.[23] With very few of the historically black schools maintaining graduate or professional programs, they were ill equipped to expand to meet the needs of returning veterans. Although the portability of aid under the G.I. Bill would have theoretically allowed southern blacks to attend schools in the North, the barriers to enrollment—including limited information about collegiate alternatives, the disruption of living far from home, and the potential persistence of discrimination at northern institutions—would likely have been significant.

A particularly important question concerns the extent to which urban universities in the North and West enrolled black students. Institutional enrollment counts by race were not collected at the collegiate level in the years preceding and following World War II, and there is little direct evidence of the level of integration at these schools. The available empirical evidence provides a hint that colleges in the North may have provided substantial opportunities for minorities after World War II, if not before. The concentration of northern-born blacks in urban areas may well have made it relatively easy for World War II veterans from this group to participate in

[19] Olson, *G.I. Bill.*

[20] Bolte and Harris, *Our Negro Veteran.*

[21] Onkst, "First a Negro."

[22] Recognizing the extraordinary conditions at the colleges for blacks in the South, the Federal Works Agency awarded the black colleges a disproportionate share of the institutional aid available under the Veterans' Educational Facilities Program, passed in 1946. One source suggests that the surplus war buildings and materials increased the physical plant of these institutions by 25 percent. Yet, it is less clear that this expansion in capacity benefited the black veterans returning in the mid-1940s.

[23] Stanley, World War II G.I. Bill.

higher education given the relative concentration of colleges and universities in urban centers. In addition to changes in the racial composition of colleges in the North, southern institutions of higher education were increasingly integrated in the postwar years and, by 1952, all of the state universities in the South except those in Alabama, Florida, Georgia, Mississippi, and South Carolina allowed some black enrollment.[24] In this regard, the decade following World War II included significant changes in the range of colleges and universities attended by black Americans, as well as the level of collegiate attainment.

ESTIMATION FRAMEWORK

Our research questions focus on how World War II service, combined with the availability of G.I. benefits, changed collegiate outcomes and whether such effects differed for blacks and whites. First, even without the availability of educational benefits, veterans' postwar collegiate outcomes may have exceeded the attainment of nonveterans because veterans have had higher levels of college-preparedness in the absence of the war. Also, veterans may have acquired skills during military service that increased measured postwar educational attainment and civilian productivity. Moreover, the G.I. benefits reduced the direct cost of college through tuition payments and living stipends, thereby increasing the likelihood of college participation.

A central question of this analysis is whether the effect on collegiate attainment of military participation and the availability of educational benefits varied with race and geographic location. In fact, there is good reason to suspect that the return to education differs by race, owing to discrimination in the labor market or differences in the quality of educational opportunities available to blacks and whites. Pressing in the other direction, if blacks were more likely to face credit constraints than whites, the addition of G.I. benefits might have somewhat larger effects on the enrollment behavior of blacks.

Still, this formulation presupposes the presence of an elastic supply of enrollment places in the college market. The evidence discussed previously suggests that black men residing in the South may have faced quite limited college enrollment options. The combination of *de jure* segregation at public institutions and limited capacity at private colleges may have limited the collegiate options for the large wave of returning black veterans in southern states.

As with a wide array of efforts to measure how a public policy initiative —in this case World War II and the G.I. Bill—affect educational attainment, the key challenge is to measure a causal effect rather than to record the

[24] Johnson, "Racial Integration."

association between eligibility and educational outcomes. Because veterans of both race groups are likely to differ systematically from nonveterans owing to the screening employed by the Armed Forces, simple comparisons of the educational attainment of veterans and nonveterans are likely to overstate the effects of military service and the availability of G.I. benefits on educational attainment. This is particularly true for black men, because a principal reason for rejection in this group was illiteracy. Thus, finding exogenous determinants of veteran status is of paramount concern.

Our strategy for estimating the effects of World War II service and the availability of G.I. benefits for black Americans is parallel to the regression discontinuity approach employed by Bound and Turner.[25] Consider a measure of collegiate attainment as a function of veteran status

$$Ed_{ij} = \alpha_j + \beta_{ij} V_{ij} + \epsilon_{ij} \qquad (1)$$

where Ed_{ij} represents the educational attainment (years of college or college completion) of individual i in cohort j. V_{ij} is an indicator variable equal to one if the individual served in World War II, and ϵ_{ij} is an error term. Conceptually, α_j represents the mean educational attainment for randomly selected individuals from cohort j under the assumption that the individual did not serve in the military, and β_{ij} represents the effect of military service for individual i in cohort j. Note that the coefficient on V_{ij} is allowed to vary across individuals—there is no reason to believe that service during the war would affect all of those that served in the same way. Some individuals would have attended college regardless of service; others would not have attended regardless of service. For both of these populations $\beta_{ij} = 0$. On the other hand, some men would not have otherwise attended college except for the G.I. benefits available. For this population, the effect is positive and $\beta_{ij} > 0$. Stated in this way it should be clear that β_{ij} represents the impact on educational attainment of switching the ith individual's veteran status, while holding the veteran status of other individuals constant. To understand the (partial equilibrium) impact of the war on educational attainment, we are interested in estimating $\beta \equiv E(\beta_{ij} \mid V_{ij} = 1)$, which in the program evaluation literature has been referred to as the effect of treatment on the treated. Such a measure is, by definition, an average treatment effect and a question of this analysis is to consider the extent to which the treatment effect varies by race and place of birth.

One can imagine various strategies to estimate β. The simplest approach is to compare mean educational attainment between veterans and nonveterans for a cohort of individuals: $\beta_j^c = [\overline{Ed_{ij}} \mid V_{ij} = 1] - [\overline{Ed_{ij}} \mid V_{ij} = 0]$, where the overlines are used to represent sample means. It is clear that

[25] Bound and Turner, "Going to War."

$$E(\beta_j^c) = E(\beta_{ij} \mid V_{ij} = 1) + [E(\varepsilon_{ij} \mid V_{ij} = 1) - E(\varepsilon_{ij} \mid V_{ij} = 0)] \quad (2)$$

The term in the square brackets represents the difference in the propensity to go to college of those that did and did not serve in the military. As long as selection into the military is nonrandom, this term is unlikely to be zero. However, given the nature of the exemptions from the draft that existed during World War II, we would expect that for the cohorts that served in World War II, the term in brackets would be positive. As a result, the simple comparison between those who did serve and those who did not serve will exaggerate the causal effect of service on educational attainment $(E(\hat{\beta}_j^c) > \beta)$.

The primary strategy we use to try to estimate β is to compare educational attainment across cohorts employing the methodology known in the evaluation literature as a regression discontinuity design. Starting with a time-homogeneous environment, that is, the α's and the distribution of the β's are constant across cohorts, consider the comparison of cohorts across time. Define $d\overline{Ed}$ as $\overline{Ed}_{ij} - \overline{Ed}_{ij'}$ where the overlines represent averages across individuals within a specific cohort. Then

$$\begin{aligned} E(d\overline{Ed}) = {} & [E(\beta_{ij} \mid V_{ij} = 1)\Pr(V_{ij} = 1) - E(\beta_{ij'} \mid V_{ij'} = 1)\Pr(V_{ij'} = 1)] \\ & + [(\alpha_j - \alpha_{j'}) + E(\varepsilon_{ij} - \varepsilon_{ij'})] \end{aligned} \quad (3)$$

The assumptions imply that the term in the second set of square brackets is zero. Comparing educational attainment for birth cohorts with significant service during World War II to birth cohorts that were born too late to serve [$\Pr(V_{ij'} = 1]$ yields $\dfrac{d\overline{Ed}}{d\overline{V}}$ as a consistent estimate of $E(\beta_{ij} \mid V_{ij} = 1)$, where $\Pr(V_{ij'} = 1)$ indicates the probability that an individual is a veteran in the indicated birth cohort. More generally, suppose that $\Pr(V_{ij'} = 1) > 0$, but that anyone who served in the later period would have served during the earlier period and that no one who did not serve in the earlier period would have served during the later period. Formally we are assuming that

$$\begin{aligned} V_{ij'} = 1 &\Rightarrow V_{ij} = 1 \\ V_{ij} = 0 &\Rightarrow V_{ij'} = 0 \end{aligned} \quad (4)$$

Under this assumption, cross-cohort changes in educational attainment divided by cross-cohort changes in the fraction of the cohort serving identify the average effect of service for the population that would have served in

one regime but not in the other—what Guido Imbens and Joshua Angrist have referred to as the *local average treatment effect* (LATE).[26]

Prior to the start of the war, collegiate attainment followed an upward trajectory for blacks and whites. In this regard, it seems natural to assume that the α_j's increased over time. The inclusion of a linear time trend, which is allowed to vary by race, accounts for such secular change. Therefore, it is deviations from a trend that identify the effects of veteran status for both blacks and whites, with the model allowing different trends by race. It is also plausible that the distribution of β's might change over time. For example, individuals from cohorts that had, for the most part, started careers before being inducted would probably be less motivated to attend college on the G.I. Bill than would individuals drawn from cohorts that were inducted immediately out of high school. We address this issue by focusing, when possible, on comparisons between closely adjacent cohorts. In particular, we focus on cohorts that likely entered military service shortly after turning 18 (or shortly before, if they volunteered).

Estimates based on the population of white men may be very different than those for the population of black men for several reasons, including different opportunity costs, returns to education in the labor market, and effects of military service.[27] Distinguishing the data by place of birth allows for the examination of the hypothesis that segregated educational institutions attenuated the impact of access to G.I. benefits for blacks from the South.[28] Yet, because there was a large migration of blacks from South to North in young adulthood during this period, a better test would be to identify outcomes of men born and residing in the South after demobilization in relation to men born and residing in the North after demobilization. Although we do not observe this classification, we do observe state of residence in 1970 as

[26] In this regard, condition 4 is exactly analogous to the monotonicity condition discussed by Imbens and Angrist ("Identification"). This empirical strategy closely follows much recent discussion of the estimation of causal effects. It has long been understood that, under suitable assumptions, comparisons over time could be used to eliminate selection bias (Heckman and Robb, "Alternative Methods"). In effect, we are using cohort dummies to form an instrument for veterans' status. The connection between instrumental variables and time aggregation has been noted by various authors (see, for example, Angrist, "Grouped Data Estimation"; and Moffitt, "Selection Bias Adjustments").

[27] Collins ("Race"), as well as Margo ("Explaining Black-White Wage Convergence"), demonstrates that black economic progress during the war years was striking and blacks made particular employment gains in the manufacturing sector, leading to a substantial narrowing in the black-white wage gap in the decade between 1940 and 1950 (Maloney, "Wage Compression").

[28] The 1970 Census data indicate state of birth and state of current residence, either of which may obviously differ from state of residence at the time of induction or demobilization. Using data from the 1940, 1950, and 1960 Census surveys, we estimate that nearly 40 percent of men born in the South from the 1923-28 birth cohorts had migrated to the North by 1960. Yet, comparisons of state of residence in 1940 (when most southern born men were still in the South) to state of residence in 1950, 1960, and 1970 makes it clear that much of the South-to-North migration for this cohort occurred in young adulthood, with roughly half occurring in the 1940s and most of the remaining migration occurring during the 1950s.

well as state of birth. Comparing outcomes among men born and residing in the South in 1970 in relation to men born and residing in the North after 1970 produces similar outcomes to those reported in the subsequent section. However, the further stratification of the data for southern-born men, combined with the reduction in the census sample size by one-third when place of birth and place of residence are considered, leads to large increases in estimated standard errors.

EMPIRICAL RESULTS

As a starting point, it is useful to examine within-cohort differences in the educational attainment of veterans and non-veterans by race and birthplace. Tables 3 and 4 compare the educational attainment of World War II veterans to nonveterans. Using data from the 1970 Census representing 3 percent of the population, we present estimates of the relationship between service in World War II and educational attainment (see the Appendix for additional detail). These measures of educational attainment by birth year indicate substantial differences between World War II veterans and men who did not serve in the military, particularly at the collegiate level. The tables also show large educational attainment differences by veteran status between blacks and whites (Table 3). For example, among white men who turned 18 during the war (those born between 1923 and 1928), veterans received about 0.45 years more college education than nonveterans. For blacks, the differences in educational attainment between veterans and nonveterans are somewhat lower (0.29 more years of college and 4 percentage points in college completion), while the percentage differences are appreciably larger owing to the low baseline levels of educational attainment among blacks born in the 1920s. It is likely that these simple differences in education exaggerate the causal effects of World War II service and the availability of G.I. benefits on collegiate attainment. To the extent that blacks were more likely than whites to be rejected from the military for illiteracy and other attributes associated with college readiness, it is likely that this exaggeration is larger for blacks than for whites

Table 4 presents the mean level of educational attainment by World War II veteran status for blacks born in the South (here defined as Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, and Virginia) and blacks born outside this area.[29] Although the level of educational attain-

[29] A broader classification of the southern states is considered in the Appendix, with regression results included as Appendix Tables 1–3. Classifying more states as part of the South does not change the qualitative results of our analysis. In the text, we use the comparisons South/non-South and South/North interchangeably.

TABLE 3
EDUCATIONAL ATTAINMENT OF WORLD WAR II VETERANS AND NONVETERANS, BLACK-WHITE COMPARISON

Year of Birth	World War II Veterans			Nonveterans			Absolute Difference		
	Share High School Graduates	Mean Years of College	Share College Graduates	Share High School Graduates	Mean Years of College	Share College Graduates	Share High School Graduates	Mean Years of College	Share College Graduates
				White					
1923	0.64	0.93	0.18	0.45	0.48	0.09	0.19	0.45	0.09
1924	0.64	0.99	0.19	0.43	0.46	0.09	0.22	0.54	0.11
1925	0.63	1.01	0.20	0.43	0.49	0.09	0.20	0.52	0.10
1926	0.63	1.04	0.20	0.44	0.59	0.12	0.19	0.46	0.08
1927	0.65	1.07	0.21	0.47	0.61	0.12	0.18	0.45	0.09
1928	0.63	0.96	0.18	0.55	0.73	0.14	0.08	0.22	0.04
1923–1928	0.64	1.00	0.19	0.46	0.55	0.10	0.18	0.45	0.09
				Black					
1923	0.35	0.35	0.05	0.15	0.13	0.02	0.20	0.22	0.03
1924	0.38	0.42	0.07	0.17	0.13	0.02	0.21	0.29	0.05
1925	0.38	0.44	0.07	0.18	0.13	0.02	0.21	0.30	0.05
1926	0.41	0.47	0.07	0.16	0.11	0.02	0.25	0.37	0.06
1927	0.42	0.47	0.07	0.17	0.12	0.02	0.25	0.35	0.06
1928	0.46	0.37	0.03	0.22	0.20	0.03	0.24	0.17	0.00
1923–1928	0.40	0.42	0.06	0.17	0.14	0.02	0.23	0.29	0.04

Notes: This tabulation includes observations for white and black men born between 1923 and 1928 who served in World War II and who did not serve in the military (any conflict). Annual levels represent fixed-weight averages across quarter-of-birth cohorts.
Source: 3 percent sample of the 1970 decennial census.

TABLE 4

EDUCATIONAL ATTAINMENT OF WORLD WAR II VETERANS AND NON-VETERANS, BY REGION OF BIRTH, BLACKS ONLY

Year of Birth	World War II Veterans			Nonveterans			Absolute Difference		
	Share High School Graduates	Mean Years of College	Share College Graduates	Share High School Graduates	Mean Years of College	Share College Graduates	Share High School Graduates	Mean Years of College	Share College Graduates
				Black, Non-South					
1923	0.39	0.35	0.05	0.21	0.21	0.04	0.18	0.15	0.01
1924	0.42	0.49	0.07	0.25	0.21	0.04	0.18	0.28	0.04
1925	0.45	0.50	0.08	0.22	0.16	0.02	0.23	0.34	0.06
1926	0.47	0.57	0.09	0.21	0.13	0.02	0.26	0.44	0.07
1927	0.46	0.49	0.07	0.25	0.16	0.02	0.21	0.33	0.06
1928	0.51	0.43	0.04	0.30	0.28	0.05	0.21	0.14	-0.01
1923–1928	0.45	0.47	0.07	0.24	0.19	0.03	0.21	0.28	0.04
				Black, South					
1923	0.31	0.35	0.05	0.10	0.07	0.01	0.22	0.28	0.04
1924	0.32	0.33	0.06	0.11	0.07	0.01	0.21	0.26	0.05
1925	0.29	0.35	0.06	0.14	0.11	0.02	0.15	0.24	0.04
1926	0.33	0.35	0.06	0.11	0.08	0.01	0.22	0.27	0.04
1927	0.37	0.46	0.08	0.12	0.10	0.02	0.25	0.36	0.06
1928	0.37	0.30	0.03	0.15	0.13	0.02	0.22	0.17	0.00
1923–1928	0.33	0.36	0.06	0.12	0.09	0.02	0.21	0.27	0.04

Notes: This tabulation includes observations for black men born between 1923 and 1928 who served in World War II and who did not serve in the military (any conflict). "Non-veteran" includes men who did not serve in any military conflict. Annual levels represent fixed-weight averages across quarter of birth cohorts. "South" is defined to include the states: AL, FL, GA, MS, NC, SC, and VA.

Source: 3 percent sample of the 1970 decennial census.

ment for men born outside the South is uniformly greater than for men born in the South, the difference between veterans and nonveterans is slightly larger among black men born in the South. It is also noteworthy that blacks born in the South have much lower levels of secondary achievement than those born in other states. Among nonveterans born in the 1923–1928 interval, nonsouthern black men were about twice as likely to have graduated from high school as those born in the South. It is well established that the public education systems in the South lagged those in other states and, combined with literacy requirements for military service, it is plausible that southern- and northern-born blacks faced different likelihoods of service by educational attainment. In this regard, although the observed differences in educational attainment between veteran and nonveteran blacks born in different geographical areas are nearly identical (0.27 to 0.28 more years of college and 4 percentage points in college completion), it need not follow that the causal effects of military service and the availability of G.I. benefits were identical for blacks from the different regions.

To reduce the potential upward bias attributable to the greater selectivity of veterans relative to nonveterans, we employ a between-cohort estimation strategy that relies on the markedly different probabilities of induction faced by men from adjacent birth cohorts. Limiting the comparisons to those turning 18 during the war (born 1923–1928) mitigates the effect of potential differences in the educational response to the G.I. Bill among veterans reaching college age before and after the start of the war. Among this group of men, those with earlier birth dates stood much higher probabilities of induction in World War II. It is the variation in service participation that identifies the effect of military service and benefits for World War II participants. Essentially, we compare the educational attainment of men born during the first half of the 1920s, who would have typically been inducted into the military after finishing high school in the early 1940s, to men born in the later half of the 1920s, who would have finished high school at the conclusion of the war.

Between-cohort estimates of the effect of military service and the availability of educational benefits on collegiate outcomes are shown in Table 5. Estimates in columns 1 and 3 present the effect on years of college and college completion, respectively, for blacks and whites overall for the 1923–1928 birth cohorts.[30] Separate estimates by region of birth for blacks and whites follow in columns 2 and 4, with *p*-values corresponding to the test of the null hypothesis that the effects for those from different regions of birth effects are equal are also reported in the table. Estimates in Table 5

[30] Specification tests did not reveal evidence of serial correlation. For this reason, our standard errors are calculated under the assumption of independence of errors over time. Standard errors are also corrected for heteroskedasticity in accordance with an estimate of the variance matrix suggested by Huber-White.

TABLE 5
BETWEEN-COHORT ESTIMATES OF THE EFFECT OF WORLD WAR II SERVICE ON COLLEGIATE ATTAINMENT, BLACKS AND WHITES, 1923–1928

	Years of College		College Completion	
	(1)	(2)	(3)	(4)
White				
Both regions	0.135		0.035	
	(0.036)		(0.009)	
Non-South		0.135		0.032
		(0.035)		(0.009)
South		0.172		0.065
		(0.097)		(0.025)
Test Non-South = South (p value)		0.72		0.21
Black				
Both regions	0.093		0.027	
	(0.102)		(0.026)	
Non-South		0.300		0.058
		(0.147)		(0.026)
South		–0.058		0.004
		(0.158)		(0.033)
Test Non-South = South (p value)		0.10		0.21
Test White = black (p value)	0.70		0.76	

Notes: Estimates are based on aggregates for men at the quarter-of-birth level for the indicated years. Regressions also include a constant and a linear time trend defined by year and quarter of birth, with the constant and time trend defined separately by region where applicable. p-values correspond to the test of the null hypothesis that the indicated coefficients are equal. "South" is defined to include the states Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, and Virginia.
Source: 3 percent sample from the 1970 decennial census; see the Appendix for information on other sample restrictions.

reflect aggregate regressions (with each observation reflecting a quarter of birth average), although the exact instrumental variables analog is a micro-level regression using quarter-of-birth dummy variables to instrument for the endogeneity of veteran status. The overall estimates are strikingly smaller than the within-birth cohort estimates for both blacks and whites. For whites, the point estimates suggest an effect of World War II and the availability of G.I. benefits of about 0.14 years of college and about 3.5 percentage points in college completions. For blacks, the estimated average effects are similar in magnitude, though the confidence intervals are quite sizable.

Within race groups, northern-born men have greater educational attainment at both the secondary and college levels than those born in the southern states, as shown in Figures 2–4 which shows educational attainment and military participation by race and region. At issue is whether deviations from the trend in collegiate attainment linked to military participation are different by region of birth for blacks and whites; for blacks, sampling variation makes inspection of the graph particularly challenging. Turning to the

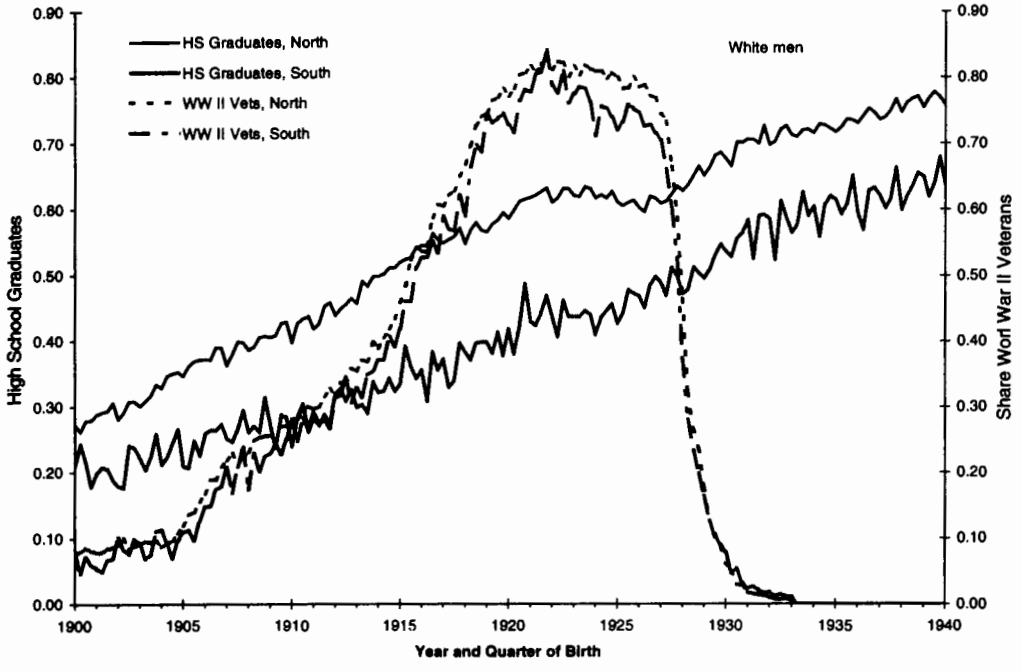

FIGURE 2A
REGIONAL DIFFERENCES IN EDUCATIONAL ATTAINMENT AND VETERAN STATUS BY RACE: HIGH SCHOOL GRADUATION, WHITE

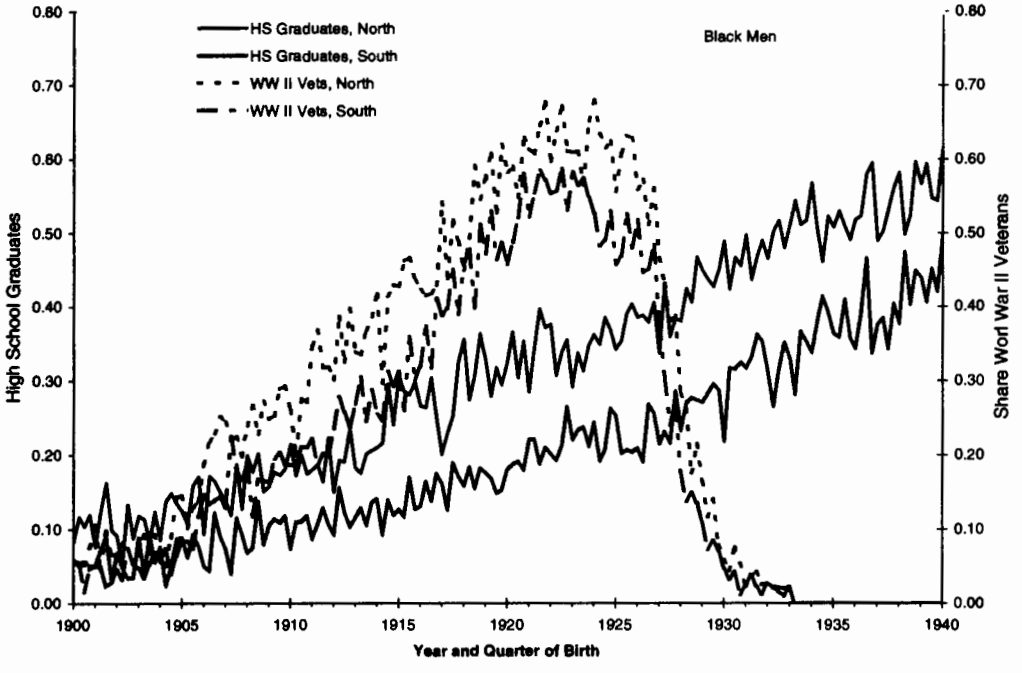

FIGURE 2B
REGIONAL DIFFERENCES IN EDUCATIONAL ATTAINMENT AND VETERAN STATUS BY RACE: HIGH SCHOOL GRADUATION, BLACK

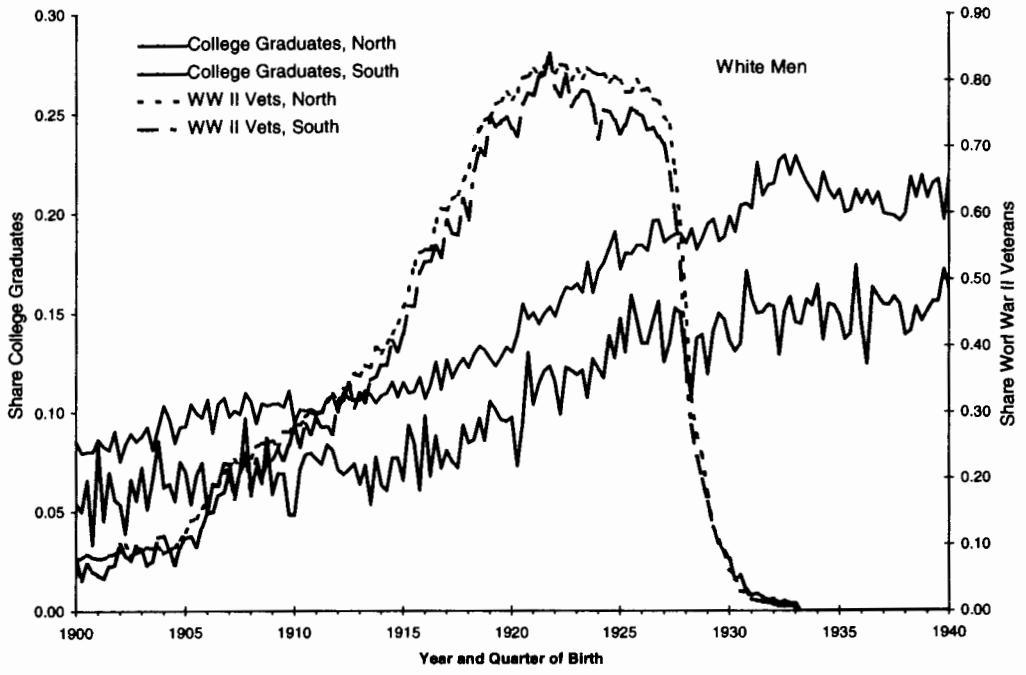

FIGURE 3A
REGIONAL DIFFERENCES IN EDUCATIONAL ATTAINMENT AND VETERAN STATUS BY RACE: COLLEGE GRADUATION, WHITE

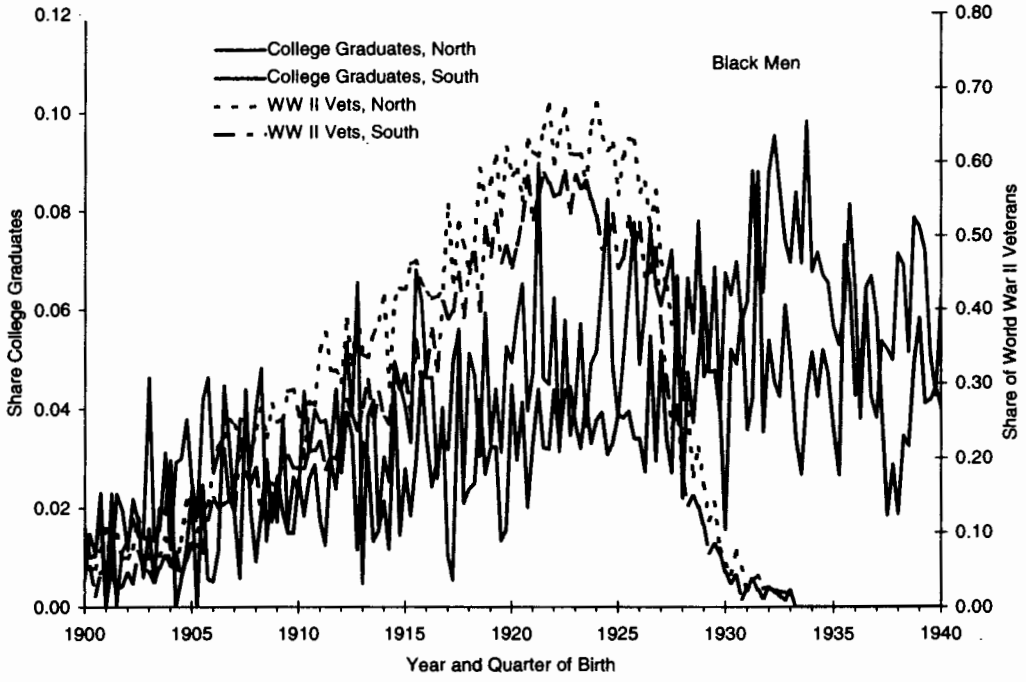

FIGURE 3B
REGIONAL DIFFERENCES IN EDUCATIONAL ATTAINMENT AND VETERAN STATUS BY RACE: COLLEGE GRADUATION, BLACK

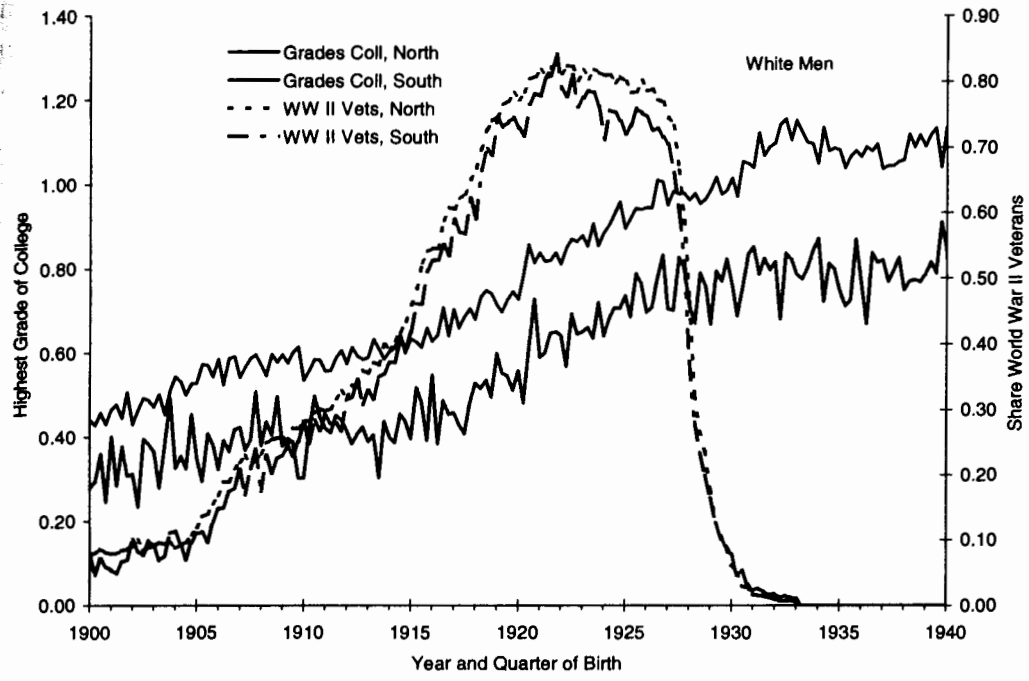

FIGURE 4A
REGIONAL DIFFERENCES IN EDUCATIONAL ATTAINMENT AND VETERAN STATUS BY RACE: HIGHEST GRADE OF COLLEGE, WHITE

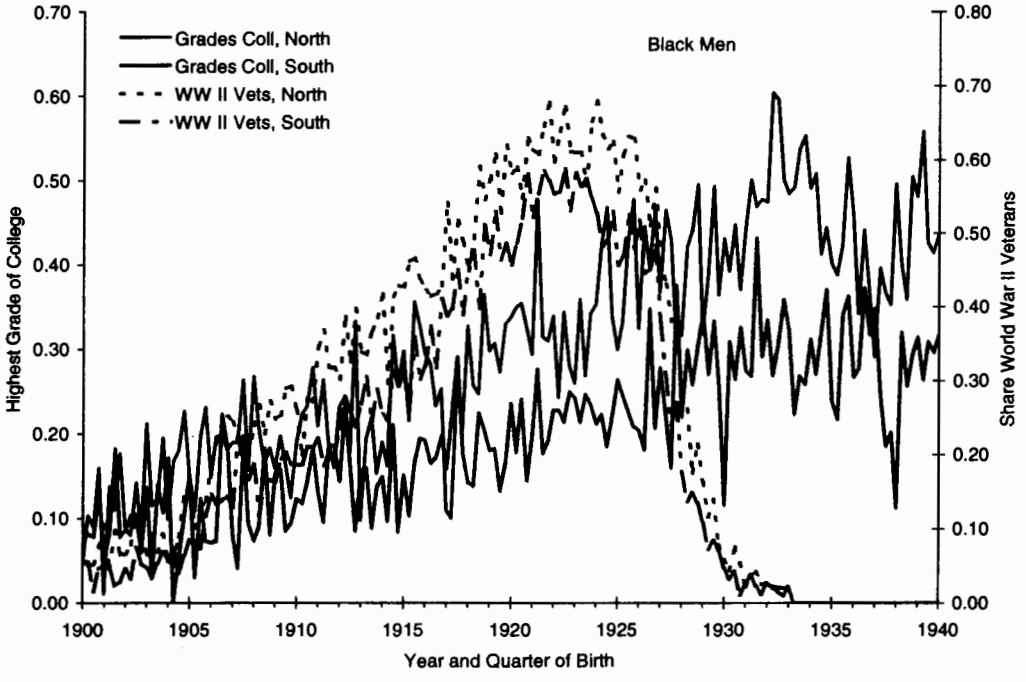

FIGURE 4B
REGIONAL DIFFERENCES IN EDUCATIONAL ATTAINMENT AND VETERAN STATUS BY RACE: HIGHEST GRADE OF COLLEGE, BLACK

regression estimates presented in columns 2 and 4 of Table 5, it is evident that, among white veterans, those from the South gained at least as much in collegiate attainment as those from outside the South; the point estimates for white men born in the South are modestly larger though not in a statistically significant sense. For black veterans, however, those born outside the South experienced sizable gains at the collegiate level, whereas those from the South made no significant gains in educational attainment.

Expanding the range of birth cohorts used in the estimates helps to sharpen the analysis. As shown in Table 6, the point estimates of the effect of World War II participation and the availability of G.I. benefits on years of collegiate attainment do not change much with the addition of more years of observation. For nonsouthern blacks, these estimates range from 0.30 to 0.41 years of college and 6 to 8 percentage points for college completion. Moreover, the educational gains associated with World War II service and the availability of G.I. benefits are consistently indistinguishable from zero for southern-born black veterans. We are limited by the structure of the education question in the census data to using years of completed educational attainment as our outcome variable, with this measure explicitly excluding nondegree credit enrollment. To the extent that much of the G.I. Bill training took alternative forms, it is conceivable that there are other interesting and important changes in skills brought about by the G.I. Bill not captured in this analysis.

To answer the question of whether the combination of World War II service and G.I. benefits increased educational attainment, we need to compare the veterans to a "no service–no benefits" control group. Because men who did not serve in World War II were at risk for service in the Korean War and those who served in this later conflict were also eligible for educational benefits, the simple comparison of World War II veterans to non–World War II veterans will not accomplish this objective. The interval between the conclusion of World War II and the start of the Korean conflict is short and men from birth cohorts in the 1920s who did not serve in World War II were at increased risk of induction for service in Korea. For both black and white men, the manpower demands of the Korean conflict intersect the right tail of World War II service, as the youngest cohorts serving in World War II also participated in the Korean conflict (see Figure 1).[31]

To help control for the confounding effects of service in Korea on our estimates of the effect of World War II service on educational attainment,

[31] The service participation in the Korean War peaked at the last quarter of the 1931 birth cohort, as about 48 percent of black men and 65 percent of white men were veterans of this conflict. It is also the case that among men service-eligible for both conflicts, blacks were somewhat more likely to serve in Korea than whites. For example, only 8 percent of white men born in early 1927 served in the Korean conflict but not World War II, whereas about 15 percent of black men in this cohort participated in the Korean conflict but not World War II.

TABLE 6
BETWEEN-COHORT ESTIMATES OF THE EFFECT OF WORLD WAR II SERVICE ON COLLEGIATE ATTAINMENT BY REGION OF BIRTH, BLACKS ONLY

	1923–1928 (1)	1923–1929 (2)	1923–1930 (3)	1923–1931 (4)	1923–1932 (5)
Years of College					
Non-South	0.300	0.348	0.343	0.354	0.410
	(0.147)	(0.120)	(0.114)	(0.108)	(0.104)
South	–0.058	–0.088	–0.062	–0.002	0.013
	(0.158)	(0.150)	(0.152)	(0.162)	(0.138)
Test Non-South = South (p value)	0.10	0.03	0.04	0.07	0.02
College Completion					
Non-South	0.058	0.077	0.070	0.070	0.081
	(0.026)	(0.022)	(0.021)	(0.021)	(0.021)
South	0.004	–0.008	–0.001	0.006	0.004
	(0.033)	(0.031)	(0.031)	(0.037)	(0.029)
Test Non-South = South (p value)	0.21	0.03	0.06	0.13	0.03

Notes: Estimates are based on aggregates for black men at the quarter of birth level for the indicated years. Regressions also include a constant and a linear time trend defined by year and quarter of birth for each region. p-values correspond to the test of the null hypothesis that the indicated coefficients are equal. "South" is defined to include the states: AL, FL, GA, MS, NC, SC, and VA.
Source: 3 percent sample from the 1970 decennial census; see the Appendix for information on other sample restrictions.

we first attempted to estimate the effects of Korean War service directly, but we found that the limitations in sample size preclude the estimation of our model with two endogenous variables. Instead, we considered a range of alternatives generated as the assumed magnitude of the Korean War effect changes. Table 7 presents results from estimates in which we have varied the Korean War service effect up to 0.5 in the case of years of college completed to 0.1 in the case of college completion. We also consider panels of alternative length, ranging from the 1923–1928 interval of birth cohorts to the 1923–1932 interval of birth cohorts. Plainly, the longer series yields more precise estimates, though the tradeoff is that the additional cohorts may have faced other appreciably different circumstances when making their educational investments.

Assuming positive effects of the Korean War on educational attainment pushes up the estimated effect of World War II service on educational attainment in a necessarily mechanical way. Yet, even at the high end of the range of predictions, the effects of World War II and the G.I. Bill on educational attainment remain more than twice as large for those born outside the South. Alternative estimates of the effect of the Korean War and the associated benefit program provide some guidance.

In suggesting a preferred estimate among the ranges presented in Table 7, one strategy is to look to alternative sources to pin down the magnitude of the Korean War effect for blacks. Although the Survey of Veterans records

TABLE 7

BETWEEN-COHORT ESTIMATES OF THE EFFECT OF WORLD WAR II AND KOREAN SERVICE ON COLLEGIATE ATTAINMENT, 1923–1932, RESTRICTED ESTIMATES

	Years of College				College Completion			
	Korean War	World War II			Korean War	World War II		
		1923–1932	1923–1930	1923–1928		1923–1932	1923–1930	1923–1928
Non-South								
	0.10	0.47	0.40	0.35	0.02	0.09	0.08	0.07
		(0.10)	(0.11)	(0.14)		(0.02)	(0.02)	(0.03)
	0.20	0.53	0.46	0.40	0.04	0.10	0.09	0.08
		(0.10)	(0.11)	(0.14)		(0.02)	(0.02)	(0.03)
	0.30	0.59	0.51	0.46	0.06	0.12	0.10	0.09
		(0.10)	(0.11)	(0.13)		(0.02)	(0.02)	(0.03)
	0.40	0.65	0.57	0.51	0.08	0.13	0.12	0.10
		(0.10)	(0.11)	(0.13)		(0.02)	(0.02)	(0.02)
	0.50	0.71	0.63	0.56	0.10	0.14	0.13	0.11
		(0.10)	(0.11)	(0.13)		(0.02)	(0.02)	(0.02)
South								
	0.10	0.06	–0.02	–0.02	0.02	0.01	0.01	0.01
		(0.14)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)
	0.20	0.11	0.03	0.03	0.04	0.02	0.02	0.02
		(0.13)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)
	0.30	0.16	0.08	0.07	0.06	0.03	0.03	0.03
		(0.13)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)
	0.40	0.21	0.13	0.11	0.08	0.04	0.04	0.04
		(0.13)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)
	0.50	0.26	0.17	0.16	0.10	0.05	0.05	0.05
		(0.13)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)

Notes: Estimates are based on aggregates for black men at the quarter of birth level for the years in the column headings with the Korean War effect restricted to the indicated magnitude. Regressions also include a constant and a linear time trend defined by year and quarter of birth for each region. Standard errors are in parentheses.

Source: 3 percent sample from the 1970 decennial census; see the Appendix for information on other sample restrictions.

only a small number of black veterans from the Korean War, it nevertheless provides one of the few gauges of the Korean War effect. This source points to an effect of the Korean War on educational attainment of about 0.23 years of college (see Appendix Table 4), which would correspond to point estimates of 0.42 (0.14) and 0.04 (0.16) for black men born in the North and South, respectively, using data from the 1923–1928 interval. A disadvantage of the Survey of Veterans is that it is not possible to disaggregate by location. There is no reason to assume that the effects of the Korean War and associated G.I. benefits were identical for men born in and outside the South. On the one hand, the evidence from World War II points to more limited higher education opportunities for blacks from the South relative to outside the South; on the other, the wave of litigation emphasizing equal opportunities for blacks, combined with the addition to facilities at the historically black colleges after World War II, may have markedly widened opportunities for southern-born blacks in the 1950s. Within cohort estimates of the educational attainment of Korean War veterans relative to nonveterans provide an alternative set of Korean War estimates with distinction by region. These estimates, which place the Korean War effect at 0.47 years of college in the South and 0.35 years of college outside the South, effectively define an upper limit. Still, when the effect of the Korean War on educational attainment is restricted to these values, the estimated gain in collegiate attainment attributable to World War II service and the G.I. Bill is more than 0.3 years larger for black men from nonsouthern states relative to those born in the South.[32]

It is important to emphasize that the nature of our estimation strategy of using variation over time in military participation to identify deviations from a trend in collegiate attainment makes it difficult to distinguish the importance of competing interpretations. First, it is well documented that resources per student at the elementary and secondary levels were particularly low in segregated schools in southern states. As such, the low quality of schooling received by black veterans at the primary and secondary levels may have impeded opportunities to benefit from collegiate training through the G.I. Bill.[33]

[32] An additional strategy for identifying the effect G.I. benefits available to Korean veterans had on the education of blacks and whites and by region follows the approach identified by Stanley ("College Education"), which compares men commencing service before 31 January 1955 who are benefit-eligible to those who begin service thereafter and are not benefit-eligible. Data from the 1980 census identifies veterans by birth cohort, race, place of birth, and the conflict in which they participated, though these data do not have the date of service commencement or rich covariates which are available in the OCG data employed by Stanley. Nevertheless, estimates using the sharp break in benefit eligibility in 1955 to identify the effect of the Korean War G.I. Bill on educational attainment of those men turning 18 near the start of service participation (the 1934–1939 birth cohorts) suggests that this program had a somewhat larger effect on the collegiate attainment of black men from the South than those born outside the South. However, these results are not estimated precisely enough to introduce in the text.

[33] Card and Krueger ("School Quality") provide substantial evidence on the narrowing in resource differences (in measures such as the pupil-teacher ratio) between schools for blacks and whites in the

Moreover, supply-side constraints in higher education are likely to have restricted collegiate choices among blacks in the South, also decreasing the effect of G.I. benefits. Within the South, institutions open to blacks were too few and too small to accommodate the population of black veterans with G.I. benefits.[34] If college education opportunities for southern-born blacks were limited by their preparedness to attend college or by a limited market supply, it might be expected that blacks would have pursued vocational training or other skill development with G.I. benefits. Still, regardless of the level or type of training, we find little evidence that military service and the availability of education benefits changed skill acquisition of black veterans from the South. Ideally, we would be able to do more to distinguish the hypothesis that low elementary and secondary school quality reduced the expected benefits of a college education for black veterans from the South from the hypothesis that limitations in collegiate supply restricted attainment of black veterans from the South. We have stratified the southern sample along the lines of school quality and included an interaction term for veteran status and state-level school quality measures in our estimation. There is no evidence that states with poor elementary-secondary schools have smaller educational gains associated with the G.I. Bill, but the standard errors are large enough that we are unable to put much weight on these results. Although it is hard to pin down whether the low quality of the segregated southern schools directly reduced educational gains made available by the G.I. Bill, there is ample evidence from the historical record that the limited supply response of colleges and universities in the segregated states reduced the educational gains of black veterans from the South.

DISCUSSION

How the G.I. Bill affected the level of education among men from different races and backgrounds is an important question in both educational history and public policy analysis. Models of educational investment suggest

segregated states, which started early in the twentieth century and continued through the years when the World War II cohorts were enrolled in school. Differences between black and white students from the South in the change in school resources are captured in the race-specific time trends. Card and Krueger (ibid.) also present evidence on the differential return to education for blacks and whites, with blacks from states with particularly large differences in educational resources by race also experiencing lower returns to education. Differences in elementary- and secondary-school quality combined with discrimination in the labor market may well have lowered the expected return to college for black veterans from the South.

[34] In addition to the limitations in physical capacity, the inability to expand the faculty may have severely affected the supply response of colleges for blacks in the South. Thompson ("Critical Situation") highlights this problem, noting that not only did the war itself limit the supply of prospective young faculty, but able men were often taking advantage of the G.I. Bill to obtain advanced degrees, and salaries at the black colleges were quite low, making it difficult for these institutions to compete in the faculty labor market with colleges and universities in the North and West.

that the benefit provisions associated with the G.I. Bill might well be expected to have a larger effect on the average educational outcomes of blacks than whites, owing to lower opportunity costs and the potentially larger relative reduction in credit constraints.[35] For white men, the combination of World War II service and the availability of G.I. benefits had substantial positive effects on collegiate attainment, and these effects were similar in magnitude for men born in different geographic regions. For black men, we find that the effect of military service and the availability of the G.I. Bill differs markedly between men born in the southern states and those born elsewhere, with the former experiencing appreciably little gain in educational attainment in comparison to the latter. Beyond collegiate attainment, noncollegiate vocational and technical training was a major component of the World War II G.I. Bill, with more veterans receiving training in these institutions than in colleges. Yet, available evidence does not suggest that this avenue was a substitute for collegiate participation among black men born in the South. Rather, black men in the South also had a particularly difficult time gaining access to vocational and on-the-job training programs with G.I. benefits.[36]

The absence of behavioral effects of World War II and the G.I. Bill on black veterans from the South parallels results obtained by William Collins in association with the Fair Employment Practice Commission during World War II.[37] Collins finds that efforts to enforce complaints associated with Executive Order 8802, which barred discrimination in war-related industries, led to wage gains for black workers in the North, while political opposition to the goals of the program contributed to its ineffectiveness in the South.

The results of this analysis illustrate some of the potential pitfalls associated with decentralized federal initiatives. Contemporary advocates for choice-based reform in education have often trumpeted the success of the G.I. Bill, using its favorable effects as a motivation for vouchers.[38] Yet, this analysis indicates that state-level policies and conditions may undermine the equal distribution of such programs. The structure of the G.I. Bill ceded the responsibility for overseeing and administering many of the educational benefits to the states.[39] Congress did not create a set of uniform standards for implementation, nor was there a regulatory mechanism to ensure equal access to program benefits. As a result, the intersection of federal programs

[35] Measures of the median income for white and black men in 1948 provide an indicator of relative opportunity costs, with the median income for black men $1,363 and the median income for white men $2,510 (U.S. Census Bureau, "Table P-7").

[36] Onkst, "First a Negro."

[37] Collins, "Race."

[38] Hauptman, "Vouchers."

[39] Onkst, "First a Negro."

such as the G.I. Bill with significantly different state policies yielded substantial interstate differences in outcomes.

The availability of benefits to black veterans had a substantial and positive impact on the educational attainment of those likely to have access to colleges and universities outside the South. Unfortunately, for those more likely to be limited to the South in their collegiate choices, the G.I. Bill exacerbated rather than narrowed the economic and educational differences between blacks and whites.

Appendix

The 1970 decennial census is the primary source for the empirical work in this analysis. Micro data files for the 1970 Census use the long-form questionnaire distributed to 15 percent of the population, with data available in three 1/100 samples.[40] (The 1/100 samples identify either state, county group, or neighborhood characteristics.) Individuals included in this analysis are those born in the continental United States. Observations for which responses were allocated for sex, age, race, veteran status, place of birth, or educational attainment are not included in the analysis. The classification of educational attainment uses information and highest grade attended as follows: "college graduate" is equal to one for all individuals completing at least 16 years of education and is zero for all other cases; "years of college completed" is equal to the maximum of zero and years of college completed (up to four).

In classifying states geographically into "non-South" and "South" in this analysis, our aim is to distinguish those states with legislatively enforced segregation. Although 17 states maintained some form of segregation in higher education at the start of World War II, such a broad classification misses substantial variation within these states in the degree to which race limited higher educational opportunities across states. In terms of empirical analysis, the capacity to make finely grained distinctions about the outcomes of blacks at the state level or several groups of states is constrained by the relatively small number of blacks observed and their geographical concentration in the southern states.

Following important judicial decisions, including *Missouri ex re. Gaines v Canada* (1938) and *McLaurin v Oklahoma State Regents* (1950)[41], many southern universities quietly opened their universities to blacks. By 1952 only five states—Alabama, South Carolina, Georgia, Florida, and Mississippi—still barred blacks from their publicly supported universities. For this reason, the primary definition of "southern" states employed in this analysis focuses on these five states plus Virginia and North Carolina, representing the states in which segregation had long historical roots and was generally supported though the local judicial process. Appendix Tables 1–3 present regression results with a broader classification of southern states that includes Alabama, Arkansas, Florida, Georgia,

[40] A somewhat different set of questions is available on the 5 percent and the 15 percent questionnaires, with the 15 percent questionnaire including the items on veteran status.

The use of data from the 1970 census in this analysis rather than data from the 1980 census is motivated by the observation that for cohorts born during the 1920s and 1930s the 1980 census shows substantially higher levels of educational attainment than does the 1970 census. These differences presumably have more to do with differential mortality, education inflation, and adult participation in college than the lingering effects of war service.

[41] *Missouri ex rel. Gaines v. Canada*, 305 U.S. 337 (1938) and *McLaurin v. Oklahoma State Regents*, 339 U.S. 637 (1950).

APPENDIX TABLE 1
EDUCATIONAL ATTAINMENT OF WORLD WAR II VETERANS AND NONVETERANS, BY REGION OF BIRTH, BLACKS ONLY

Year of Birth	World War II Veterans			Nonveterans			Absolute Difference		
	Share High School Graduates	Mean Years of College	Share College Graduates	Share High School Graduates	Mean Years of College	Share College Graduates	Share High School Graduates	Mean Years of College	Share College Graduates
				Black, Non-South					
1923	0.45	0.36	0.04	0.30	0.27	0.04	0.14	0.09	0.00
1924	0.49	0.56	0.09	0.30	0.27	0.04	0.19	0.29	0.05
1925	0.51	0.56	0.09	0.33	0.28	0.04	0.18	0.27	0.05
1926	0.52	0.61	0.09	0.31	0.19	0.03	0.21	0.42	0.06
1927	0.48	0.48	0.08	0.34	0.25	0.03	0.14	0.24	0.04
1928	0.53	0.46	0.03	0.41	0.35	0.06	0.13	0.12	–0.03
1923–1928	0.50	0.51	0.07	0.33	0.26	0.04	0.17	0.25	0.03
				Black, All South					
1923	0.32	0.35	0.05	0.11	0.10	0.02	0.21	0.25	0.03
1924	0.33	0.36	0.06	0.14	0.10	0.02	0.19	0.26	0.04
1925	0.32	0.38	0.06	0.14	0.10	0.01	0.18	0.28	0.04
1926	0.36	0.41	0.07	0.11	0.08	0.01	0.25	0.33	0.05
1927	0.39	0.47	0.07	0.14	0.10	0.02	0.25	0.38	0.06
1928	0.40	0.31	0.04	0.17	0.16	0.03	0.24	0.15	0.01
1923–1928	0.35	0.38	0.06	0.13	0.10	0.02	0.22	0.28	0.04

Notes: "All South" includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia.
Source: 3 percent sample from the 1970 decennial census.

APPENDIX TABLE 2
BETWEEN COHORT ESTIMATES OF THE EFFECT OF WORLD WAR II SERVICE ON COLLEGIATE ATTAINMENT, 1923–1928

	Years of College		College Completion	
	(1)	(2)	(3)	(4)
White				
Both regions	0.135		0.035	
	(0.036)		(0.009)	
North		0.159		0.037
		(0.046)		(0.012)
All South		0.117		0.039
		(0.108)		(0.027)
Test North = all South (p value)		0.72		0.96
Black				
Both regions	0.093		0.027	
	(0.102)		(0.026)	
North		0.464		0.079
		(0.271)		(0.054)
All South		–0.039		0.007
		(0.119)		(0.028)
Test North = all South (p value)		0.10		0.24
Test White = black (p value)	0.70		0.76	

Notes: "All South" includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia.
Source: 3 percent sample from the 1970 decennial census.

APPENDIX TABLE 3
BETWEEN-COHORT ESTIMATES OF THE EFFECT OF WORLD WAR II SERVICE ON COLLEGIATE ATTAINMENT BY REGION OF BIRTH, BLACKS ONLY

	1923–1928	1923–1929	1923–1930	1923–1931	1923–1932
Years of college					
Non-South	0.46	0.40	0.39	0.37	0.43
	(0.27)	(0.23)	(0.22)	(0.21)	(0.18)
All South	–0.04	–0.01	0.01	0.09	0.12
	(0.12)	(0.11)	(0.11)	(0.12)	(0.10)
College completion					
Non-South	0.079	0.086	0.076	0.075	0.086
	(0.054)	(0.046)	(0.046)	(0.043)	(0.037)
All South	0.007	0.008	0.013	0.021	0.024
	(0.028)	(0.024)	(0.024)	(0.026)	(0.021)

Notes: Each regression includes a linear time trend and constant for each region. "All South" includes Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia.
Source: 3 percent sample from the 1970 decennial census.

APPENDIX TABLE 4
EDUCATIONAL ATTAINMENT AND USE OF G.I. BENEFITS AMONG KOREAN WAR VETERANS (NOT INCLUDING WORLD WAR II VETERANS), BLACKS ONLY

Year of Birth	*N*	Age at Military Discharge	Years of Education at End of Service	Used G.I. Benefits (share)	Months of G.I. Benefits	Received BA with G.I. Benefits (share)	Years of College with G.I. Benefits
1927	4	29.6	10.5	0.50	9.25	0.00	0.00
1928	11	26.6	10.0	0.45	6.18	0.00	0.45
1929	9	25.6	11.3	0.44	6.00	0.00	0.22
1930	14	23.6	9.3	0.43	8.36	0.00	0.00
1931	16	25.4	11.4	0.44	6.75	0.00	0.00
1932	17	24.9	12.2	0.61	11.22	0.00	0.50
1933	13	24.3	12.0	0.57	12.21	0.14	0.79
1934	5	22.8	11.4	0.80	18.40	0.20	1.20
1935	6	26.8	10.5	0.83	13.00	0.00	0.33
1936	6	23.8	11.8	0.50	2.00	0.00	0.17
1937	4	20.5	10.5	0.50	1.50	0.25	1.75

Notes: The measure "Years of College with G.I Benefits" is an average and takes on nonzero values for men who attended college after service and received G.I. benefits.
Source: The 1979 Survey of Veterans.
Universe: The data are limited to observations for black men born between 1927 and 1937 with valid educational-attainment measures.

Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia. Using this classification the number of blacks in the southern states increases from 7,051 to 10,357 and the number elsewhere decreases from 6,883 to 3,577.

While the large samples of the Decennial Census provide a particular advantage in the cross-cohort estimation strategy, the 1979 Survey of Veterans provides supplemental information on the utilization of veterans benefits and the duration of military service, and more specific data on veterans serving in conflicts from World War II through the Vietnam conflict. The Survey of Veterans draws its pool of veterans from the March 1978 CPS question on military service. The primary questions of interest for this study cover information on the use of educational benefits and educational attainment before and after military service.

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