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**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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ABSTRACT

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. Left unanswered is the question of whether black Americans had a similar behavioral response to the G.I. Bill and World War II. There are good reasons to believe that the program effects of the G.I. Bill may have differed for black Americans owing to differential returns to education in the labor market and differences in opportunities at educational institutions, with men in the South facing explicit segregation in educational institutions. The question of whether black veterans from segregated and unsegregated parts of the country demonstrated similar educational adjustments bears significance for both the overall evaluation of the G.I. Bill and how this policy informs contemporary policy debate on the effectiveness of federally sponsored aid to education. Moreover, 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 policy in reproducing inequality. 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 those likely to have access to colleges and universities outside the South. However, for those black veterans more likely to be limited to the South in their collegiate choices, the G.I. Bill had little effect on educational outcomes, resulting in the exacerbation of the economic and educational differences between blacks and whites.

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

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. 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 owing to differential prospects in the labor market and differences in educational opportunities, with men in the South facing explicitly segregated colleges and much more limited opportunity within the historically black institutions. What is more, the segregation of the military through 1948 undoubtedly also affected the experiences of black veterans serving in World War II with direct effects on the extent to which members of this group were prepared to enter college.

The related question of whether black veterans from segregated and unsegregated parts of the country demonstrated similar educational adjustments is significant for both the overall evaluation of the G.I. Bill and the lessons we draw from it for the contemporary policy debate on the effectiveness of federally sponsored aid to education. In general, portable grant aid programs such as the G.I. Bill are expected to have large effects 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 Americans in the South were in fact able to take advantage of the benefits supposedly available to them.

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. At issue is whether the G.I. Bill served to narrow or magnify long-run differences in

the educational outcomes of black and white Americans. In principle, the portable aid available to all veterans through the G.I. Bill held the promise of reducing markedly 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 credit 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.

The analytic strategy in this paper uses variation over time in the fraction of men serving from each cohort to identify the effects of military service and the availability of G.I. benefits on educational attainment. The small sample size available in any data set when the focus is on outcomes for black Americans rather than whites or the population at large imposes some limitations on the precision expected in estimation. The magnitude of the estimated effects of the G.I. Bill and World War II depends in many cases on the associated effects of the Korean War and, therefore, the choice of preferred estimates depends to some degree on the estimated magnitude of the Korean War effect.

Our research questions are twofold. First, we examine the extent to which World War II service and the availability of G.I. benefits widens or narrows the overall gap in educational attainment between blacks and whites. Then, among blacks, we look at the extent to which state of birth, particularly location in a southern state, leads to differential education outcomes. The first section of the paper presents institutional detail on military service and educational opportunities for blacks during the World War II era. The next section summarizes the relevant

theoretical questions and outlines the empirical strategy. The empirical section of this analysis points to substantially larger effects of World War II and the G.I. Bill on educational outcomes of black men born in the North relative to the South. In turn, we find that the overall impact of World War II and the G.I. Bill contributed to a widening of the gap in educational attainment between blacks and whites. The concluding section explores the contemporary policy implications of these results.

I. Black Americans, World War II Military Service, and the G.I. Bill

A. Race and Military Service in World War II

While more than 1 million black men served in the military during World War II, the armed forces remained essentially segregated. The majority of these men served in the Army and the 885,945 black men inducted to this branch accounted for 10.9% of the men inducted in the Army during the war. The Navy inducted 153,224 black men, which accounted for about 10% of the inductions in this branch (*Selective Service and Victory*, 1948), while the Marine Corp did not admit blacks until June of 1942. The overall share of blacks in the military was somewhat less than the share of whites. Blacks generally faced barriers to voluntary enlistment, while a large number of white men enlisted, particularly in the early war years.

Figure 1 shows the share of white men and black men who were veterans of military conflicts in World War II and in all wars from the turn of the century forward by cohort of birth, measured at quarterly intervals. World War II drew sizable numbers of white men born as early as 1900, with the proportion of inductees increasing dramatically among those born between 1914 and 1919. Among white men born between 1920 and the middle of 1926, who would have turned 18 between 1938 and 1944, the proportion serving from each quarter year of birth held

nearly steady at about 75 percent, with a peak of 81 percent in the fourth quarter of 1921. For men born after the middle of 1926, induction rates slid dramatically. For black men, the absolute levels of military participation were somewhat lower, with a peak share of 66 percent reached among men born in the third quarter of 1922. In addition, the decline in induction rates started among somewhat older birth cohorts, notably between those born in the last part of 1926 and the first part of 1927.

The politics and practice of minority participation in the military were contentious issues. While about 200,000 black men served in World War I, this manpower was not always well-utilized and in the interwar years the representation of blacks slid further.¹ In the late 1930s, civil rights activists began to press Roosevelt and the executive branch to address the segregation issue directly. As early as 1937, representatives of the NAACP lobbied for a quota that would ensure that Negroes would make up at least ten percent of the U.S. military (MacGregor 1981, 14). Later in 1937, the War Department issued its Personnel Plan in which it was declared that Negroes were to constitute nine to ten percent of the Army, equivalent to their approximate proportion in the U.S. population at that time. In late September of 1940, President Roosevelt met with a delegation of black leaders, including Walter White, head of the NAACP, 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 October 9, the administration released its statement of policy regarding the use of blacks in the military. In this statement, the Roosevelt administration reaffirmed its support of the proportional method established by the War Department in 1937 as well as the continuing segregation of black and white troops (Smith 1987, 21). Nevertheless, the "1 in 10 quota" was not attained until the very

end of World War II and still was not accomplished in full in all the combat units serving in the war.

Before the start of the war, the black press and the NAACP launched the “Double V” campaign, urging black Americans to work towards victories over Jim Crow at home and fascism abroad. Black leaders were successful in lobbying Congress and the executive to take steps to offer similar opportunities to blacks and whites in military industries and the armed forces. Yet, these leaders were unsuccessful in obtaining the changes necessary to achieve official endorsement of integration in the military in World War II. What did occur, however, was the passage of an amendment to the Selective Service Act of 1940 stating that in the selection of troops and the execution of the law “there shall be no discrimination against any person on account of race or color.” (MacGregor, 1981, p. 12) Since the definition of discrimination that carried the day did not address segregation but rather accepted the separate and equal doctrine implicit in *Plessy*, the impact of the language was less than a contemporary meaning would imply. The result was separate induction calls for blacks and whites, with attempts made to equalize calls in proportion to the sizes of the respective population groups.

The long-standing segregation of the military prior to World War II left the service branches ill-prepared to accommodate a large wave of blacks inducted through the Selective Service Act. In order to train, equip and deploy black soldiers, the service branches (primarily the Army) were forced to build housing, mess halls and other separate facilities to maintain segregation. [An unintended consequences was that the military presence in some parts of the country brought segregation to relatively unsegregated communities.]

¹ One author notes that prior to U.S. involvement in the war in 1940 there were only 6 black units in the military accounting for 4,450 soldiers (Flynn, 1993).

For blacks and whites, registration was the first step in the process used by the military to enumerate the pool of potential military manpower and identify men able to serve. The first wave of registration under the Selective Service Act of 1940 required all men between the ages of 21 and 26 – born between 1919 and 1924 -- to make contact with local draft boards. Over the next two years, the second, third, and fourth registrations added young men who entered the draft-eligible age range, while also adding older men to the registrant pool. The fifth and sixth registrations responded to the dwindling manpower pool by adding those in the 18 to 21 age range. The final registration prohibited voluntary enlistment, presumably to reduce competition among the services for the most able recruits, though black enlistments were never equivalent to white enlistments.

Following registration, men were classified by the local draft boards based on their ability to serve and their eligibility for deferments.² In classifying men, local draft boards were much slower in classifying black men than white men. In many cases, the lack of calls for minority men made the classification of this group a lower priority for local draft boards. Also, the reasons for deferment differed markedly for blacks and whites, with whites much more likely to receive occupational deferments and blacks more likely to be deferred for reasons of illiteracy or “educational unfitness”. Table 1 shows the deferment rates for black men and white men by age as of 1945. Among men ages 19-25, black men were 2.25 more likely than white men to receive deferments under section IV-F. Of those rejected for service in 1944, 33.5 percent of black

² Among men eligible for World War II, the primary reasons for deferment were physical or mental disability (Class IV), employment in war production or agriculture (Class II), or the presence of dependents. Those who turned 18 during the war were less likely to receive deferments for occupational, agricultural production, or dependency reasons than older service-eligible men.

rejections and 8 percent of white rejections were attributable to low scores on the achievement examination in reading and writing (Table 191, p. 664, *Selective Service and Victory*).³

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

The unprecedented support for the education of returning veterans provided by 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 up to \$500, the bill also provided a monthly cash allowance (see Bound and Turner, 2001, for additional details about the parameters of the G.I. Bill). A notable feature of the program was that benefits were awarded to individuals, rather than institutions, allowing individuals to take their benefits to any institution 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 non-collegiate and on-the-job programs (U.S. Government, 1973).⁴

³ At the start of the war, the Army employed an informal test of obeying a simple command in English to determine literacy, and the perceived result was that too many functional illiterates entered the services. In May of 1941, a fourth grade test in reading and writing was adopted. Owing to manpower shortages beginning in 1942, induction stations were authorized to accept educationally deficient registrants so long as they accounted for no more than 10 percent of inductions on any given day. Another change in procedure took place in 1943, as illiterates meeting minimum intelligence standards were inducted and provided with 13-weeks of special training to achieve minimum literacy standards (*Selective Service as the Tide of War Turns*, p. 208).

⁴ 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 1923-28 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 overrepresented in the range of programs comprising the “other” training and schooling category as well as high school level training.

Very little information is available providing direct evidence on the comparative take-up rate or utilization 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 take-up the G.I. benefits. The data suggest that the number of months of G.I. educational benefits may have been somewhat 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 (Brown, 1946).

While the military led the way in desegregation between World War II and the Korean conflict, educational opportunities for veterans returning from World War II were plainly dependent on the combination of race and geography. Southern states maintained explicitly segregated systems of education in the 1940s. This segregation affected the tertiary system of education, as well as the primary and secondary levels.

The process of collecting benefits may have affected the access to educational programs of different racial groups. A statutory provision of the G.I. Bill was the availability of education and employment counseling services through the Veterans Administration, with these services designed to aid in the choice of education and training. To meet the needs of the large pool of veterans, the VA not only maintained regional counseling centers but also contracted with educational institutions to operate an additional 300 sites (Brown, 1946). For veterans applying under Public Law 346 (the traditional G.I. Bill rather than the explicitly rehabilitative Public Law

16), the counseling centers were a voluntary component of benefits. Yet, counseling services may have differed in availability according to the race of veterans. Onkst (1998) notes that white VA counselors often discriminated against black veterans and that the absence of black counselors was particularly marked in the deep South, with about a dozen black counselors for Georgia and Alabama and none in Mississippi.

Contemporary historiography evaluating the impact of the G.I. Bill on educational attainment of black men in the South suggests that outright racial discrimination combined with poor program administration hindered the effective utilization of the G.I. Bill among black veterans, particularly in the South (Wynn, 1976; Stearns, 1998). Some institutional reports have suggested that experiences within the military, including the training in skilled positions such as draftsmen, auto mechanics, and radio operators, may have provided black men with important skills to facilitate upward economic mobility. Nonetheless, for those black men seeking G.I. Bill support for apprenticeship programs or “on the job training,” the process of finding placement and collecting benefits was particularly arduous. Southern Veterans Administration centers employed few black counselors and were generally unforthcoming in providing services to black veterans (Stearns, 1998). For example, Stearns cites evidence noting that in March of 1946 only 6 of the 246 on the job training programs in Atlanta for veterans had black participation. For those black men who did participate, the experiences were often very disappointing, often with less training than direct exploitation. Another report of the period (Bolte and Harris, 1947), notes that of 102,200 veterans receiving on-the-job training in twelve southern states, only 7,700 were black, despite the fact that about 1 in 3 veterans in the area were black.

In the 1940s, there were slightly more than 100 institutions of higher education for blacks. Delineated in Office of Education publications as “Colleges for Negroes”, these schools included

public and private institutions, with the public institutions founded largely under the second Morrill Act of 1890. Few of these institutions offered education beyond the baccalaureate, and most were small institutions training “teachers and preachers” rather than providing baccalaureate and above level training in engineering and the sciences. Olson notes that one half of these institutions had fewer than 250 students and none of the colleges for Negroes had an accredited engineering program or doctorate program. Jenkins (1947) provides a detailed accounting of the collegiate opportunities open to minorities in the South in the postwar period and examines the changes in relative opportunities and capacity for blacks and whites between the late 1920s and the early 1940s.

Underfunded from the start, these institutions were very small and largely excluded from the “university revolution” that swept through much of higher education in the first part of the century; this development is described in detail by Goldin and Katz (1998). By 1943-44, all twelve of the seventeen southern states offered PhD programs and all seventeen had graduate offerings in the arts and sciences at the white universities. In contrast, among the historically black colleges, institutions in only seven states offered post-baccalaureate training and no institution offered graduate curricula in engineering or a program leading to a PhD.

In 1943-44, enrollment at the institutions for whites in the 17 southern states totaled 314,148, while the enrollment at the historically black colleges totaled 34,179 (Jenkins, 1947). Jenkins goes on to calculate the enrollment-to-population ratios, noting that blacks were more than one-third of the southern population at this time, and concludes that whites were about 2.5 times more likely to attend college than blacks in the southern states. Beyond differences in enrollment rates, Jenkins presents expenditure data indicating that the disparity in resources per student was also marked. Across all private and public institutions in 1943-44, white institutions

accounted for 92 percent of total expenditures; among public institutions alone, colleges and universities for whites accounted for more than 94 percent of expenditures (Jenkins, 1947, Table I).

The historically black colleges found the accommodation of returning servicemen to be more difficult than many of the white institutions as institutional resources were scarce and deferred maintenance and other deficiencies in physical plant were often more serious than at the white institutions. 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, as veterans enrolled at the historically black schools often represented a smaller percentage of all students than was the case for veterans enrolled at colleges for whites in the South. The primary beneficiaries of these facilities programs may well have been students from the Korean War era and those enrolling in the 1960s.

Olson (1974, p. 74) states that excess demand for places in institutions of higher education remained a problem for veterans in the South as an estimated 20,000 veterans were turned away from the Negro colleges. Data collected by the Office of Education point to somewhat smaller shares of veterans enrolled at the black colleges than in all educational institutions. One possible explanation is that the G.I. Bill provided black veterans with the financial means to attend college outside the South. Perhaps more likely, blacks were simply unable to attend the southern institutions. Onkst (1998) emphasizes that finding housing for married veterans was a substantial hurdle for veterans. For example, the absence of family

housing units at the Tuskegee Institute in 1945 constituted a substantial barrier as married veterans accounted for about 1/4 of the school's veteran population and few were able to find adequate lodging. In a similar vein, Bolte and Harris (1947) note that a survey of 21 of the southern black colleges indicated that 55 percent of all veteran applicants were turned away for lack of space.

In this regard, the southern higher education institutions for blacks were operating at excess capacity at the start of the war and there were few resources to fund capital expansion at the end of the war. One hypothesis is that while flagship universities like 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. Institutions expanding most rapidly at the end of the war were the institutions with the economies of scale and scope of research universities, developed in the early decades of the 20th Century. With very few historically black schools maintaining graduate or professional programs, these institutions were uniformly ill-equipped to adapt to the needs of the returning veterans. Nevertheless, judicial action set in motion changes in the status quo before the war. In *Missouri ex. rel. Gaines v. Canada* (1938), the Supreme Court ruled that equal education must be provided for within the state and that providing public funds for blacks to attend colleges and universities in other states alone did not meet the separate but equal standard.

C. Korean War Comparisons and Complications

As noted in prior analyses, the short interval between the conclusion of World War II and the start of the Korean conflict potentially complicates the analysis because 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. As such, veterans of the Korean conflict may contaminate the presumed control group as these men would have received educational benefits as well. Thus, to measure the effects of World War II and the associated G.I. Bill for blacks and whites it is necessary to assess the impact of the Korean War and the G.I. benefits available to these veterans.

In assessing the direct impact of the Korean War on the educational attainment of black Americans and the indirect effect on the estimates of outcomes associated with World War II, several points are particularly important. First, the manpower demands of the Korean conflict, for both black and white men, intersect with 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).⁵ The service participation in the Korean War peaked at the last quarter of the 1931 birth cohort, as about 48% of black men and 65% of white men were veterans of this conflict. A second point to keep in focus is that military service for black men during the Korean War differed fundamentally from military service during World War II in that the military was no longer segregated. The desegregation of the military through Executive Order 9981 during July of 1948 under the administration of President Truman also fundamentally changed the experience of military service for men serving in the Korean War. As such, it seems unlikely that the treatment effect of wartime service and the availability of veterans benefits would be the same for men serving in the Korean conflict as for those serving in World War II. Finally, black men who served in World War II were also appreciably more likely than their white peers to re-enlist. Presumably, the military provided better employment opportunities than were available to many black men in the civilian economy.

⁵ 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

II. Estimation Framework

In the context of this research, the fundamental question is how would we expect wartime service, combined with the availability of G.I. benefits, to change the educational investment decision⁶ and whether such changes differed for blacks and whites. First, because veterans have necessarily given up working years in the military, the number of years in the lifetime over which college benefits could be expected to accrue is necessarily shorter. *Ceteris paribus*, this effect would reduce college attendance relative to the counterfactual of no-war and no G.I. Bill. Second, college and college wages need not be identical to pre-service levels as veterans may well have acquired skills in the military affecting civilian productivity. Third, and non-trivially, the availability of G.I. benefits affected the direct cost of college through the payment of tuition and the provision of a cost of living subsidy, with the expected impact of this effect increasing college participation.⁷

Beyond the question of how this cost benefit relationship differs in the comparison between veterans and nonveterans, a central question for this analysis is whether the parameters of this relationship differ by race and geographic location. In fact, there is good reason to suspect

conflict but not World War II.

⁶ Traditionally, the college investment decision is described by comparing the discounted value of the stream of earnings without a college degree to the stream expected with a college degree. Individuals for whom the expected value if the discounted stream of benefits from college attendance less direct costs and opportunity costs was positive would be expected to attend college.

⁷ In effect, credit constraints do not allow an individual to borrow for college to move to a higher intertemporal budget constraint. In the setup without the G.I. benefits, a credit constrained individual would face a positive investment value associated with higher education but would be unable to borrow to finance direct costs of college. The G.I. Bill largely eliminated the possibility of credit constraints associated with college attendance by providing a monthly stipend and tuition waiver. In this regard, the observed behavioral change attributable to the net effects of the G.I. Bill reflects a response to the elimination of credit constraints, as well as the change in the implicit investment value of higher education associated with the G.I. benefits.

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. Similarly, if blacks are more likely to face credit constraints than whites, the implicit assumption of a capacity to borrow or lend to finance investments in education may well be violated and, in turn, the addition of a scholarship program might have somewhat larger effects on the enrollment behavior of blacks.

What is more, this type of specification presupposes the presence of elastic supply of enrollment places in the college market. Anecdotal evidence suggests that black men residing in the South may have faced considerable limitations in their enrollment options. At this time, higher education in many southern states was explicitly segregated, with a small number of private and public land grant institutions available for potential students. What matter in the consideration of supply constraints, then, is the expansion of collegiate opportunities relative to the number of veterans not the expansion relative to prior norms.

A. Empirical strategy

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 association between eligibility and educational outcomes. Because veterans of both race groups are likely to differ systematically from non-veterans owing to the screening employed by the Armed Forces, simple comparisons of the educational attainment of veterans and non-veterans 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 since a principal reason for rejection was lack of educational attainment. Thus, finding exogenous determinants of veteran status is of paramount concern.

The preferred 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 (2001). Under this approach,

$$(1) \quad Ed_{ij} = \mathbf{a}_j + \mathbf{b}_{ij}V_{ij} + \mathbf{e}_{ij}$$

where Ed_{ij} represents the educational attainment of individual i in cohort j . V_{ij} is an indicator variable equal to 1 if the individual served in World War II, and \mathbf{e}_{ij} is an error term. Conceptually, \mathbf{a}_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, while \mathbf{b}_{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 received a college education regardless of service; others would not have attended regardless of service. For both of these populations $\mathbf{b}_{ij}=0$. 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 $\mathbf{b}_{ij}>0$. Stated in this way it should be clear that \mathbf{b}_{ij} represents the impact on post-secondary educational attainment of switching the i th 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 $\mathbf{b} \equiv E(\mathbf{b}_{ij} | V_{ij} = 1)$, 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.

The primary strategy we use to try to estimate \mathbf{b} 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 \mathbf{a} 's and the distribution of the \mathbf{b} '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:

$$(2) \quad E(d \overline{Ed}) = [E(\mathbf{b}_{ij}/V_{ij}=1)Pr(V_{ij}=1) - E(\mathbf{b}_{ij'}/V_{ij'}=1)Pr(V_{ij'}=1)] + [(\mathbf{a}_j - \mathbf{a}_{j'}) + E(\mathbf{e}_{ij} - \mathbf{e}_{ij'})].$$

The assumptions imply that the term in the second set of square brackets is 0. Comparing educational attainment for birth cohorts with significant service during World War II to birth

cohorts that were born too late to serve [$Pr(V_{ij'}=1)=0$] yields $\frac{d \overline{Ed}}{d V_{ij}}$ as a consistent estimate of

$E(\mathbf{b}_{ij}/V_{ij}=1)$, 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:

$$(3) \quad \begin{aligned} V_{ij'} = 1 &\Rightarrow V_{ij} = 1 \\ V_{ij} = 0 &\Rightarrow V_{ij'} = 0 \end{aligned}$$

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 Imbens and Angrist (1994) have referred to as the *local average treatment effect* (LATE).⁸

Plainly, estimates based on the population of white men may be very different than those for the population of men. For this reason, we examine these effects separately. Moreover, distinguishing the data by place of birth allows for the examination of whether limited collegiate opportunities available to blacks from the South attenuated effect of G.I. benefits on the educational investments of blacks.

Still, there are practical limits to the power of specifications and tests of heterogeneity in models focusing on outcomes for blacks. Because any representative data source will have about one-tenth as many black men as white men for cohorts born in the 1920s, it follows that the sampling variability of the former group is appreciably greater than for the latter group. Given the implicit link between the regression discontinuity design using birth cohort aggregates and instrumental variables estimation using quarter of birth to identify veteran status, problems of weakly identified first-stage results will jeopardize inferences based on this estimator.

Nevertheless, given the dramatic variation over cohorts in terms of the fraction of men who served in World War II, cohort dummies have considerable power in predicting veteran status. However, division of the sample of black men beyond the distinction between northern and southern regions yields weak estimates. In the most parsimonious specification with one endogenous variable (World War II veteran status), our results are robust to the conventional measures of instrument quality suggested by Bound, Jaeger and Baker (1995). Unfortunately,

⁸ In this regard, condition (3) is exactly analogous to the monotonicity condition discussed by Imbens and Angrist (1994). 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, 1985). 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 (e.g. Angrist,

our results do not allow for consistent estimation in specifications in which both World War II service and Korean War service are considered endogenous. As a result, we turn to the consideration of the effects of World War II service and the availability of Korean War benefits under a range of alternative specifications of the possible magnitude of the effects of the Korean War and the associated G.I. Bill.

III. 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 geographic place of birth. Tables 3 and 4 compare the educational attainment of World War II veterans to non-veterans. Using data from the 1970 Census representing 3% of the population, we present estimates of the relationship between service in World War II and educational attainment.⁹ These measures of the within-birth year differences in educational attainment between World War II veterans and men who did not serve in the military (neither World War II nor the Korean War) indicate substantial gaps in

1991; Moffitt, 1995).

⁹ The file used for the bulk of our analysis represents the aggregation of the three publicly available 1% samples. More details regarding the data, including information on the sample restrictions, can be found in the Data Appendix of Bound and Turner (2001). In classifying states into “non-South” and “South” in this analysis, our aim is to distinguish those states with legislatively enforced segregation. Plainly, colleges with missions specific to blacks were present in the “northern” states like Pennsylvania and Ohio (many of the colleges for blacks in these areas were founded by abolitionists in the pre-Civil War era) and discrimination in higher education was likely to have occurred in the absence of legislatively sanctioned segregation.

While 17 states maintained some form of segregation in higher education at the start of World War II, this classification among states is not tractable as it leaves too few observations of blacks in “non-southern” states to allow for significant comparisons across regions (see discussion of Appendix Table 1). What is more important, however, is that such a broad classification misses substantial variation within these states in the degree to which race limited higher educational opportunities across states. Among the states with legal segregation Maryland, Delaware, West Virginia, Missouri, and the District of Columbia had public and private colleges regularly enrolling blacks in the 1940s (Jenkins, 1947). Following important judicial decisions including *Missouri ex real Gaines v Canada* (1938) and *McLaurin v Oklahoma State Regents* (1950), 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 through the local judicial process.

educational attainment, particularly at the collegiate level. The tables also show large differences between blacks and whites in average educational attainment for veterans and non-veterans (Table 3) and between southern-born and non-southern born blacks (Table 4). For example, among white men who turned 18 in the first complete birth cohort after Pearl Harbor (those born after 1923), veterans received about .5 years more collegiate training than non-veterans. For blacks, the overall level of the difference in educational attainment between veterans and non-veterans is somewhat lower (.3 years of college and 4 percentage points in college completion), while the percentage differences between veterans and non-veterans are actually appreciably larger owing to the low baseline levels of educational attainment among blacks born in the 1920s. No doubt, these simple differences in education exaggerate the causal effect of World War II service on collegiate attainment and the extent of the overstatement of the causal effect could well be larger for blacks than for whites if blacks were more likely than whites to be rejected from the military for illiteracy.

In Table 4, which compares blacks born in the South to those born outside the South, we see that the overall difference in educational attainment between veterans and non-veterans is actually slightly higher among the southern born than northern born, while the level of educational attainment is uniformly higher outside the south. It is also noteworthy that blacks born in the South are observed to have much lower levels of secondary achievement than those born in the North. Among non-veterans born in the 1923-28 interval, black men born in the North were about twice as likely to have graduated from college as those born in the South. It is well-established that the southern public education systems lagged those in the North and, combined with literacy requirements for military service, it is plausible that southern- and northern-born blacks faced different likelihood of service by educational attainment. In this

regard, while the observed differences in educational attainment between veteran and nonveteran blacks born in different geographical areas are nearly identical, it need not follow that the causal effect of World War II and the availability of the availability of G.I. benefits was identical for blacks from the different regions.

To reduce the potential upward bias attributable to the greater selectivity of veterans relative to non-veterans, we employ a between-cohort estimation strategy that relies on the markedly different probabilities of induction faced by men from closely adjacent birth cohorts. The graphical presentation of this strategy (Figure 2) shows the trend in military participation and educational attainment over a long horizon of 50 years using data from the 1970 census for black men. Educational attainment is shown for men and women on the left axis, while the share of men who were veterans is superimposed, with the scale appearing on the right axis. If changes reflected purely secular variations – such as an increase or decrease in the demand for skilled workers – we might expect men and women to trend upwards in a similar fashion. On the other hand, if the combination of military service and veteran benefits had sizable effects on educational attainment, we would expect men, but not women, to have above-trend levels of educational attainment in cohorts that would have benefited from the G.I. Bill.

Limiting the comparisons to those turning 18 during the war (1941 to 1946) mitigates the effect of potential differences in the 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 than those born later. It is the variation in service participation that identifies the effect of military service and benefits for World War II participants. Essentially, we are comparing 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 for the educational outcomes of years of college and college completion are shown in Table 5, for blacks and whites overall and then distinguishing by region of birth for the 1923-28 birth cohorts.¹⁰ Estimates in Table 5 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.¹¹ 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 1.4 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.

A different angle on this comparison is the distinction in veteran service and educational attainment by region of birth. Figure 3 presents this difference for blacks and for whites. While the gap in educational attainment by geographic region is quite evident, with northern born men having higher levels of education overall, a uniform treatment effect for World War II and the G.I. Bill would be expected to change similarly the pattern of educational attainment for men in the service eligible cohorts. For whites, it is plain that there are no marked differences by region

¹⁰ 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.

¹¹ Appendix Table 1 shows the relevant F tests for the geographic subdivisions of the data for blacks and for whites, with two columns representing somewhat different geographical breaks. Focusing on column (1), which might be described as the distinction between the historically southern states and the northern and western states, provides a clear picture of the different estimation problems for blacks and whites. The second column of this table presents cell sizes and the associated F-statistics under an alternative classification of the states. In this case, "All Southern" includes AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA. Appendix Tables 2-5 present regression results using this alternative definition.

of birth in the effect of World War II service and the availability of benefits, as neither of the interactions between the share of veterans and southern place of birth is significant at conventional levels. For blacks, on the other hand, the difference in the effect of the treatment is marked, with the effect for southern born blacks going to zero and the effect for those born outside the South rising appreciably above the within-cohort estimate; this differential effect becomes particularly clear when we focus on the World War II era cohorts.

Turning to the estimates by region for blacks and whites presented in columns (2) and (4) of Table 5, it is evident that southern white veterans gained at least as much in collegiate attainment as men in the North; the point estimates for white men born in the South are modestly larger though not in a statistically significant sense. For blacks, men from the North experienced sizable gains at the collegiate level, while there is no significant gain in educational attainment for the southern born veterans.

Expanding the range of birth cohorts used in the estimates of the effect of veteran status on educational attainment helps to sharpen the analysis (Table 6). The point estimates for non-southern blacks do not change much with the addition of more years of observation, ranging from .3 to .41 years of college and 6-8 percentage points in 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. This table also presents the gains in high school completion associated with World War II and the G.I. Bill and the results are quite consistent with the pattern found at the tertiary levels. The average treatment effect for blacks born in northern states was an increase in high school completion by about 10 percentage points based on the 1923-28 interval of estimation. For southern-born blacks, the effects are uniformly negative in sign. The importance of this result is that it casts doubt on the

explanation that “gains” in education associated with World War II and veteran service were concentrated at different points in the educational pipeline for blacks and whites. 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 non-degree 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 the G.I. Bill 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 education benefits, the simple comparison of World War II veterans to non-World War II veterans will not accomplish this objective. However, those not serving in World War II were at increased risk for participation in the Korean conflict. For blacks, the contamination of the “treatment effect” with Korean War service may well be a larger problem than for whites (refer to Figure 1).

To attempt to control for the confounding effects of service in Korea on our estimates of the effect of World War II service on educational attainment, we have attempted to estimate the effects of Korean War service directly, but we find that the limitations of sample size precludes the estimation of two endogenous variables. As an alternative, we have considered a range of alternatives generated as the assumed magnitude of the Korean War effect. 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 1923-28 interval of birth cohorts to the 1923-32

interval of birth cohorts. Plainly, the longer series yields more precise estimates, though the tradeoff is that the additional cohorts may face 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 and the availability of benefits 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. For black men in cohorts likely to face risk of conscription in both conflicts, estimates from the Survey of Veterans suggest that the educational attainment effects associated with the Korean War was a bit more than .2 years which would place the effect for black World War II veterans from the north close to .53 years of college and about .11 years of college for those men from the South. It is plausible that the treatment effect of Korean War service was not identical for northern and southern-born men and a clear outstanding objective is to provide additional evidence to sharpen this range of estimates.

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. While the Survey of Veterans records 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 effect of about .23 years of college (see Appendix Table 5) which would correspond to point estimates of .42 (.14) and .04 (.16) for black men born in the North and South, respectively, using data from the 1923-28 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 from the North and 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 the North; 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 non-veterans provide an alternative set of Korean War estimates with distinction by region. These estimates, which place the Korean War effect at .47 in the South and .35 in the North, effectively define an upper limit and would still suggest a difference between North and South in the point estimates of the effect of World War II and the G.I. Bill of over .3 years of collegiate attainment.

IV. 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. What we find is that the treatment effect of military service and the availability of the G.I. Bill differs markedly between black men born in the South and those born in the North, with southern born black men experiencing appreciably smaller gains in educational attainment than their counterparts in the North. With place of birth providing an indication (albeit imperfect) of the place of residence on completion of military service, we attribute the lower likelihood of educational attainment among southern black veterans to the largely segregated post-secondary institutions in place after the war in these states. The effectiveness of the G.I. Bill as a tool in

reducing socio-economic differences in educational opportunity was dampened by discrimination and inferior education opportunities for blacks in the South. What is striking about the results in this paper is the substantial difference in the treatment effect associated with place of birth for blacks. Such differences cannot be attributed to more general, race-neutral differences across states in educational opportunities as white men in the South show a response to veteran service and the availability of G.I. benefits that is quite similar to white men born in the North.

The G.I. Bill is notable in the absence of race from its statutory language. Moreover, models of educational investment suggest that the benefit provisions 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; the G.I. Bill might well have been expected to result in a substantial transformation in the economic opportunities for black men. Yet, the institutional structure of higher education in the South, including state-sanctioned segregation, served to undo most of these potentially large effects in the south. The absence of behavioral effects on black men from the south of World War II and the G.I. Bill parallel results found by Collins (2001) associated with the Fair Employment Practice Commission during World War II. Collins finds that efforts to enforce complaints associated with Executive Order 8802, barring discrimination in war-related industries, led to wage gains for black workers in war-related industries in the north; yet, the political opposition to the goals of this program in the South contributed to its ineffectiveness in this region.

Not only did white veterans evidence somewhat larger changes in educational attainment than black veterans, but white men were also disproportionately represented in the veteran population. As a result, the sharp jump in educational attainment among white men in the World War II era cohorts not only slowed convergence, but led to a widening in the absolute

gap in the educational attainment (and likely the economic outcomes as well)¹² between blacks and whites.

The results of this analysis illustrate some of the pitfalls associated with decentralized federal initiatives. Contemporary advocates for choice-based reform in education often trumpet the success of the G.I. Bill and use the experience with this policy as a motivation for vouchers (Hauptman, 1999). Yet, what is clear from this analysis is that state-level policies may undermine the potentially positive distributional implications 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 (Onkst, 1998). Congress did not create a set of uniform standards for implementation nor was there a regulatory mechanism to insure equal access to program benefits. As a result, the intersection of federal programs such as the G.I. Bill with entrenched differences across states in 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.

¹²In their survey article about post-War black economic progress, Smith and Welch (1989) acknowledge that the decade between 1950 and 1960 is the one interval they observe for which the black-white wage gap actually widened for young workers. They note (p. 526) that this is the “principal anomaly” in an interval in which wage differences were converging more generally.

References

- Angrist, J. D. (1991). Grouped-data estimation and testing in simple labor-supply models. Journal of Econometrics, 47, 243-266.
- Bolte, Charles & Louis Harris. (1947) *Our Negro Veteran*. Public Affairs Pamphlet No. 128.
- Bound, J., Jaeger, D.A., & Baker, R. M. (1995). Problems with instrumental variables estimation when the correlation between the instruments and the endogenous explanatory variable is weak. Journal of the American Statistical Association, 90, (430), 443-50.
- Bound, John & Sarah Turner. (2001). Going to War and Going to College: Did World War II and the G.I. Bill Increase Educational Attainment for Returning Veterans? Forthcoming *Journal of Labor Economics*.
- Brown, F. (1946) Educational Opportunities for Veterans. American Council on Education.
- Campbell, D. T., & Stanley, J.C. (1963). Experimental and quasi-experimental designs for research on teaching. In N.L. Gage (Ed.), Handbook of Research on Teaching. Chicago: Rand-McNally.
- Coleman, J. (1992). Some points on choice in education. Sociology of Education, 65, (4), 260-262.
- Flynn, G. (1993). *The Draft, 1940-1973*. Lawrence, KS: University of Kansas Press.
- Goldin, C., & Margo, R.A. (1992). The great compression: The wage structure in the United States at mid-century. The Quarterly Journal of Economics, 107, (1), 1-34.
- Hauptman, A. (1999). Vouchers and American higher education. In Vouchers and Related Delivery Mechanisms: Consumer Provision of Public Services. Washington, D.C.: Council for Aid to Education.
- Heckman, J., & Robb, R. (1985). Alternative methods for evaluating the impact of interventions. In Heckman & Singer (eds.), Longitudinal Analysis of Labor Market Data. Cambridge: Cambridge University Press.
- Imbens, G. & Angrist, J. (1994). Identification and estimation of local average treatment effects. Econometrica, 62, 467-75.
- Jenkins, M. (1947) The Availability of Higher Education for Negroes in Southern States. Journal of Negro Education 16(3), 459-473.

- MacGregor, Jr., Morris J. 1981. *Integration of the Armed Forces 1940-1965*. Washington, DC: U.S. Government Printing Office.
- Moffit, R. (1995). Selection bias adjustments in a treatment-effect model as a method of aggregation. NBER Technical Working Paper 187.
- Olson, K.W. (1973). The G.I. Bill and higher education: Success and surprise. American Quarterly, 25, (5), 596-610.
- Olson, K.W. (1974). The G.I. Bill, the veterans, and the colleges. Lexington: The University of Kentucky Press.
- Onkst, David. 1998. "First a Negro ... incidentally a veteran: Black World War II Veterans and the G.I. Bill of Rights in the Deep South, 1944-1948." *Journal of Social History* v. 31. n 3.
- Selective Service System. (1948). Selective Service and Victory. Washington, D.C.: U.S. Government Printing Office.
- Selective Service System. (1948). Quotas, Calls and Inductions. Special Monograph, 12, Washington, D.C.: U.S. Government Printing Office.
- Selective Service Administration. (1999). <http://www.sss.gov/induct.htm> (October 29).
- Smith, Graham. 1987. *When Jim Crow Met John Bull: Black American Soldiers in World War II Britain*. New York, NY: St. Martin's Press, Inc.
- Stanley, M. (2000). "College education and the mid-century G.I. Bills," Mimeo, (January).
- Thompson, C. (1953) The Relative Enrollment of Negroes in Higher Educational Institutions in the United States. Journal of Negro Education. 22(3), 432-441.
- U.S. Census Bureau. 2000. "Table P-7. Age--People by Median Income and Gender: 1947 to 1997" <<http://www.census.gov/income/p07.txt> >
- U.S. Government Printing Office. (1955). Annual Report of the Director of the Selective Service for the Fiscal Year of 1954. Washington, D.C.
- U.S. Government Printing Office. (1973) Report of Educational Testing Service, Princeton University, on Educational Assistance Programs for Veterans. House Committee Print No. 1, 93rd Congress, 1st Session.

Table 1: Distribution of selective service registrants by classification and race in 1945

	Number of Registrants (1)	Distribution by classification						II-C, III-D, Other (8)
		I-C (2)	I-C D (3)	I-A (4)	Share Deferred (5)	IV-F (6)	II-A & II-B (7)	
<i>A. Black Men</i>								
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
<i>B. White Men</i>								
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

Source: Tables 89-93, 171-175, Selective Service and Victory (1948).

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.

Table 2: Educational attainment and use of G.I. benefits among World War II Veterans

Year of Birth	White Men							Black Men						
	N=	Age at Military Discharge	Education at end of Service	Used GI Benefits	Months of GI Benefits	Received BA with G.I. Benefits	Yrs Coll with G.I. Benefits	N=	Age at Military Discharge	Education at end of Service	Used GI Benefits	Months of GI Benefits	Received BA with G.I. Benefits	Yrs Coll 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
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: Data are from the 1979 Survey of Veterans.

Notes: The data are limited to observations for men born with valid educational attainment measures.

Table 3: Educational attainment of World War II veterans and non-veterans, Black-White Comparison

Year of Birth	World War II Veterans			Non-Veterans			Absolute Difference			
	Fraction High Sch	Average Years of College	Fraction College Graduate	Fraction High Sch	Average Years of College	Fraction College Graduate	Fraction High Sch	Average Years of College	Fraction College Graduate	
<i>White</i>										
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	
23-28	0.64	1.00	0.19	0.46	0.55	0.10	0.18	0.45	0.09	
<i>Black</i>										
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	
23-28	0.40	0.42	0.06	0.17	0.14	0.02	0.23	0.29	0.04	

Source: Data are from a 3% sample of the 1970 Decennial Census.

Notes: This tabulation includes observations for white men born between 1915 and 1930 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.

Table 4: Educational attainment of World War II veterans and non-veterans, South-Non-South Comparison, Blacks Only

Year of Birth	World War II Veterans			Non-Veterans			Absolute Difference		
	Fraction High Sch Graduate	Average Years of College	Fraction College Graduate	Fraction High Sch Graduate	Average Years of College	Fraction College Graduate	Fraction High Sch Graduate	Average Years of College	Fraction College Graduate
<i>Black, Non-South</i>									
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
23-28	0.45	0.47	0.07	0.24	0.19	0.03	0.21	0.28	0.04
<i>Black, South</i>									
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
23-28	0.33	0.36	0.06	0.12	0.09	0.02	0.21	0.27	0.04

Source: Data are from a 3% sample of the 1970 Decennial Census.

Notes: This tabulation includes observations for white men born between 1915 and 1930 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.

Table 5: Between cohort estimates of the effect of World War II service on collegiate attainment, blacks and whites, 1923-28

	Years of College		College Completion	
	(1)	(2)	(3)	(4)
<i>White</i>	0.135 (0.036)		0.035 (0.009)	
North		0.135 (0.035)		0.032 (0.009)
South		0.172 (0.097)		0.065 (0.025)
p N-S		0.72		0.21
<i>Black</i>	0.093 (0.102)		0.027 (0.026)	
North		0.300 (0.147)		0.058 (0.026)
South		-0.058 (0.158)		0.004 (0.033)
p N-S		0.10		0.21
p W-B	0.70		0.76	

Source: 3% sample from the 1970 Decennial Census; see Data Appendix for information on other sample restrictions.

Notes: Estimates are based on aggregates for white men at the quarter of birth level for white men for the indicated years. Regressions also include a constant and a linear time trend defined by year and quarter of birth. *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.

Table 7: Between cohort estimates of the effect of World War II service on collegiate attainment by region of birth, Blacks Only

	1923-28	1923-29	1923-30	1923-31	1923-32
	(1)	(2)	(3)	(4)	(5)
<i>High School Degree</i>					
Non-South	0.101 (0.059)	0.061 (0.050)	0.051 (0.053)	0.044 (0.052)	0.040 (0.049)
South	-0.083 (0.086)	-0.107 (0.082)	-0.091 (0.080)	-0.006 (0.080)	-0.034 (0.070)
p N-S	0.08	0.09	0.15	0.60	0.39
<i>Years of College</i>					
Non-South	0.300 (0.147)	0.348 (0.120)	0.343 (0.114)	0.354 (0.108)	0.410 (0.104)
South	-0.058 (0.158)	-0.088 (0.150)	-0.062 (0.152)	-0.002 (0.162)	0.013 (0.138)
p N-S	0.10	0.03	0.04	0.07	0.02
<i>College Completion</i>					
Non-South	0.058 (0.026)	0.077 (0.022)	0.070 (0.021)	0.070 (0.021)	0.081 (0.021)
South	0.004 (0.033)	-0.008 (0.031)	-0.001 (0.031)	0.006 (0.037)	0.004 (0.029)
p N-S	0.21	0.03	0.06	0.13	0.03

Source: 3% sample from the 1970 Decennial Census; see Data Appendix for information on other sample restrictions.

Notes: Estimates are based on aggregates for white men at the quarter of birth level for white men for the indicated years. Regressions also include a constant and a linear time trend defined by year and quarter of birth. *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.

Table 8: Between cohort estimates of the effect of World War II & Korean service on collegiate attainment, 1923-32 restricted estimates

World War II				World War II			
23-32	23-30	23-28	Korean	23-32	23-30	23-28	Korean
<i>Non-Southern</i>							
0.47	0.40	0.35	0.1	0.09	0.08	0.07	0.02
(0.10)	(0.11)	(0.14)		(0.02)	(0.02)	(0.03)	
0.53	0.46	0.40	0.2	0.10	0.09	0.08	0.04
(0.10)	(0.11)	(0.14)		(0.02)	(0.02)	(0.03)	
0.59	0.51	0.46	0.3	0.12	0.10	0.09	0.06
(0.10)	(0.11)	(0.13)		(0.02)	(0.02)	(0.03)	
0.65	0.57	0.51	0.4	0.13	0.12	0.10	0.08
(0.10)	(0.11)	(0.13)		(0.02)	(0.02)	(0.02)	
0.71	0.63	0.56	0.5	0.14	0.13	0.11	0.1
(0.10)	(0.11)	(0.13)		(0.02)	(0.02)	(0.02)	
<i>Southern</i>							
0.06	-0.02	-0.02	0.1	0.01	0.01	0.01	0.02
(0.14)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)	
0.11	0.03	0.03	0.2	0.02	0.02	0.02	0.04
(0.13)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)	
0.16	0.08	0.07	0.3	0.03	0.03	0.03	0.06
(0.13)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)	
0.21	0.13	0.11	0.4	0.04	0.04	0.04	0.08
(0.13)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)	
0.26	0.17	0.16	0.5	0.05	0.05	0.05	0.1
(0.13)	(0.15)	(0.16)		(0.03)	(0.03)	(0.03)	

Source: 3% sample from the 1970 Decennial Census; see Data Appendix for information on other sample restrictions.

Notes: Estimates are based on aggregates for white men at the quarter of birth level for white men for the indicated years. Regressions also include a constant and a linear time trend defined by year and quarter of birth.

Appendix Table 1: F-Tests of significance of quarter of birth in explaining variation in World War II veteran status, men only, 1923-28

		"Historic South" (1)	"All South" (2)
<i>White</i>			
North		F value: 429.1328	F value: 379.1278
		Prob>F: 0.0001	Prob>F: 0.0001
	N=	137,817	111,929
South		F value: 48.8816	F value: 106.7793
		Prob>F: 0.0001	Prob>F: 0.0001
	N=	17,905	43,793
<i>Black</i>			
North		F value: 7.2473	F value: 3.1856
		Prob>F: 0.0001	Prob>F: 0.0001
	N=	7,051	3,577
South		F value: 5.1719	F value: 8.5301
		Prob>F: 0.0001	Prob>F: 0.0001
	N=	6,883	10,357

Source: 3% sample from the 1970 Decennial Census; see Data Appendix for information on other sample restrictions.

Notes: Estimated regressions include a time trend and a full set of quarter of birth effects for the years 1923-28. "Historical South" is defined to include the states: AL, FL, GA, MS, NC, SC, and VA and "All Southern" includes AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA.

Appendix Table 2: Educational attainment of World War II veterans and non-veterans, Blacks, South-Non South Comparison

Year of Birth	World War II Veterans			Non-Veterans			Absolute Difference		
	Fraction High Sch Graduate	Average Years of College	Fraction College Graduate	Fraction High Sch Graduate	Average Years of College	Fraction College Graduate	Fraction High Sch Graduate	Average Years of College	Fraction College Graduate
<i>Black, Non-South</i>									
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
23-28	0.50	0.51	0.07	0.33	0.26	0.04	0.17	0.25	0.03
<i>Black, All South</i>									
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
23-28	0.35	0.38	0.06	0.13	0.10	0.02	0.22	0.28	0.04

Notes: "All Southern" includes AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA.

Appendix Table 3: Between cohort estimates of the effect of World War II service on collegiate attainment, 1923-28

	Years of College		College Completion	
	(1)	(2)	(3)	(4)
<i>White</i>	0.135 (0.036)		0.035 (0.009)	
North		0.159 (0.046)		0.037 (0.012)
All South		0.117 (0.108)		0.039 (0.027)
p N-S		0.72		0.96
<i>Black</i>	0.093 (0.102)		0.027 (0.026)	
North		0.464 (0.271)		0.079 (0.054)
All South		-0.039 (0.119)		0.007 (0.028)
p N-S		0.10		0.24
p W-B	0.70		0.76	

Notes: "All Southern" includes AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA.

Appendix Table 4: Between cohort estimates of the effect of World War II service on collegiate attainment by region of birth, Blacks Only

	1923-28	1923-29	1923-30	1923-31	1923-32
<i>Years of College</i>					
Non-South	0.46 (0.27)	0.40 (0.23)	0.39 (0.22)	0.37 (0.21)	0.43 (0.18)
All South	-0.04 (0.12)	-0.01 (0.11)	0.01 (0.11)	0.09 (0.12)	0.12 (0.10)
<i>College Completion</i>					
Non-South	0.079 (0.054)	0.086 (0.046)	0.076 (0.046)	0.075 (0.043)	0.086 (0.037)
All South	0.007 (0.028)	0.008 (0.024)	0.013 (0.024)	0.021 (0.026)	0.024 (0.021)

Notes: 1970 Census, 3% Sample. Each regression includes a linear time trend and constant. “All Southern” includes AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA.

Appendix Table 5: Educational attainment and use of G.I. benefits among Korean War Veterans (not including World War II Veterans), black men only

Year of Birth	N=	Age at Military Discharge	Ed attain. at end of service	Used GI Benefits	Months of G.I. Benefits	Received BA with G.I. Benefits	Yrs Coll with G.I. Benefits
27	4	29.6	10.5	0.50	9.25	0.00	0.00
28	11	26.6	10.0	0.45	6.18	0.00	0.45
29	9	25.6	11.3	0.44	6.00	0.00	0.22
30	14	23.6	9.3	0.43	8.36	0.00	0.00
31	16	25.4	11.4	0.44	6.75	0.00	0.00
32	17	24.9	12.2	0.61	11.22	0.00	0.50
33	13	24.3	12.0	0.57	12.21	0.14	0.79
34	5	22.8	11.4	0.80	18.40	0.20	1.20
35	6	26.8	10.5	0.83	13.00	0.00	0.33
36	6	23.8	11.8	0.50	2.00	0.00	0.17
37	4	20.5	10.5	0.50	1.50	0.25	1.75

Source: Data are from the 1979 Survey of Veterans.

Universe: The data are limited to observations for white men born between 1927 and 1938 with valid educational attainment measures.

Notes: The measure “Years of College with G.I Benefits” is an average and takes on non-zero values for men who attended college after service and received G.I. benefits.

Figure 1: Share of veterans among men, 1900-1950 birth cohorts, 1970 Census data

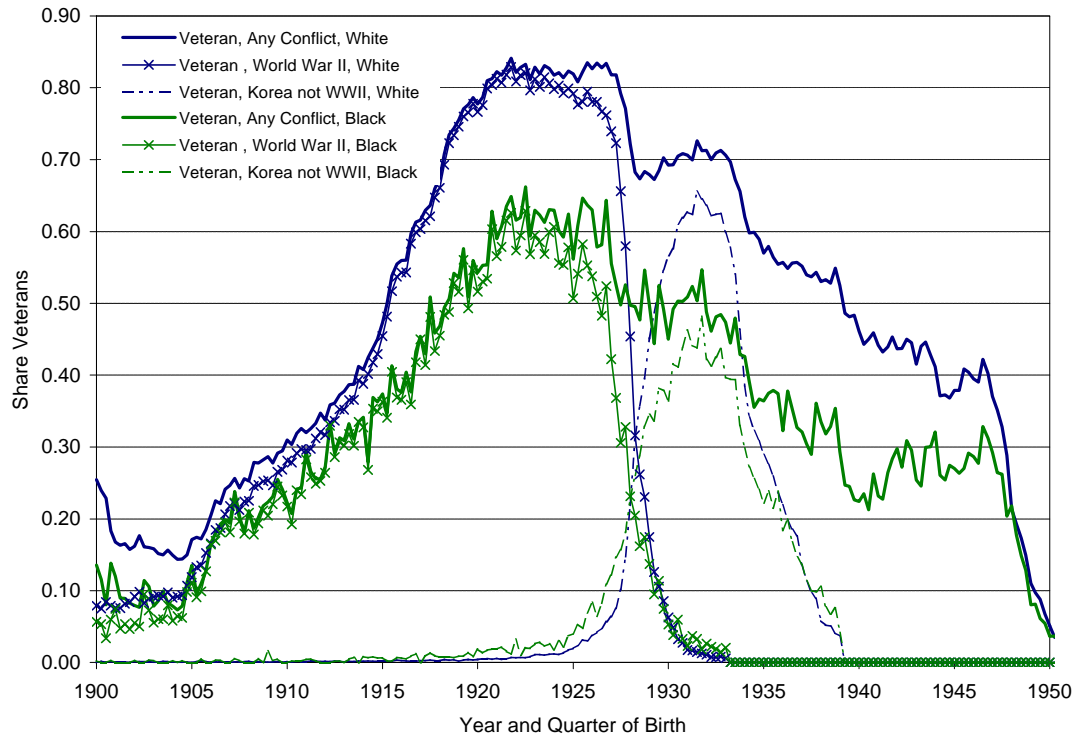


Figure 2: Educational Attainment and Veteran Status

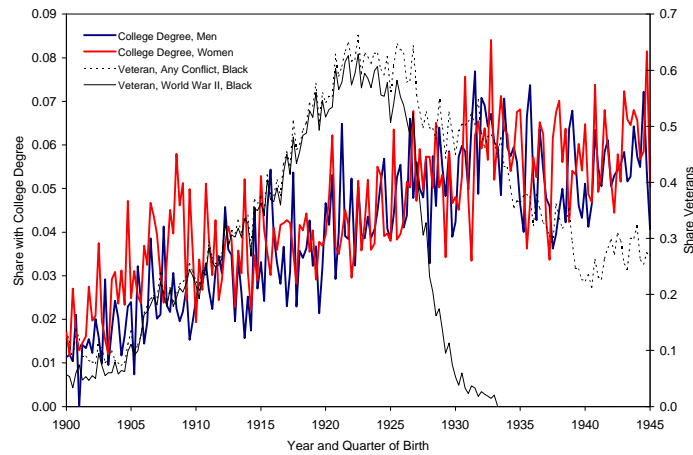
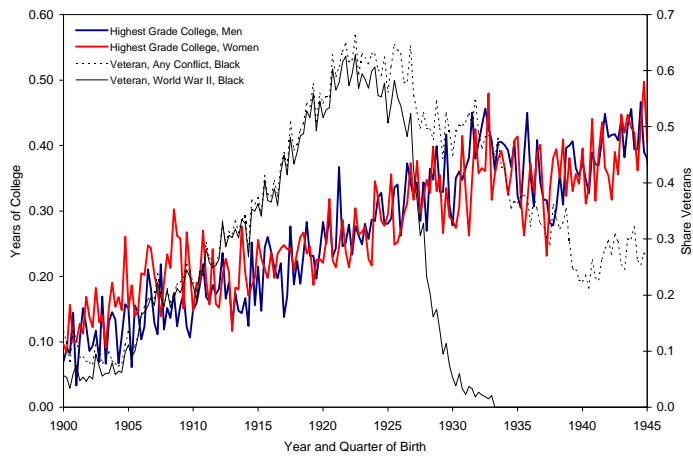
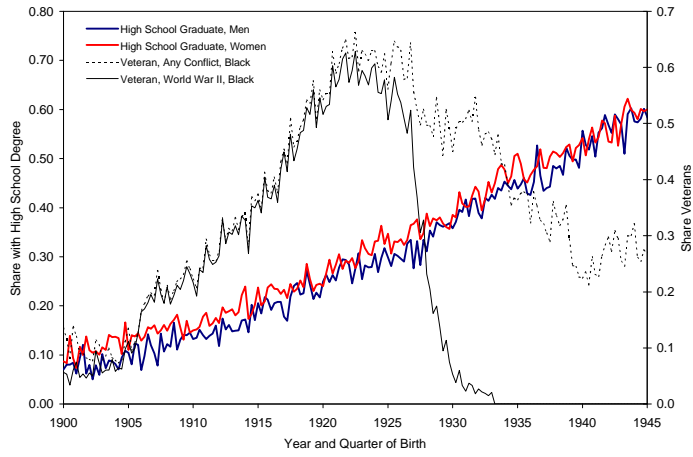


Figure 3: Regional differences in educational attainment and veteran status by race

