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Author(s): James J. Heckman, John Eric Humphries, Paul A. LaFontaine, and Pedro L. Rodríguez
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Taking the Easy Way Out: How the GED Testing Program Induces Students to Drop Out

James J. Heckman, *University of Chicago, American Bar Foundation, Irving B. Harris Graduate School of Public Policy, and University College Dublin*

John Eric Humphries, *University of Chicago*

Paul A. LaFontaine, *American Bar Foundation, Chicago*

Pedro L. Rodríguez, *Instituto de Estudios Superiores de Administración, Caracas, Venezuela*

The option to obtain a General Educational Development (GED) certificate changes the incentives facing high school students. This article evaluates the effect of three different GED policy innovations on high school graduation rates. A 6-point decrease in the GED pass rate produced a 1.3-point decline in high school dropout rates. The introduction of a GED certification program in high schools in Oregon produced a 4% decrease in high school graduation rates. Introduction of GED certificates for civilians in California increased the dropout rate by 3 points. The GED program induces students to drop out of high school.

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I. Introduction

This article examines how changes in the availability and difficulty of the GED test affect high school dropout rates. GED certification allows dropouts to earn a state-issued GED credential.

GED credentials account for approximately 12% of high school credentials issued in the United States in 2008 (fig. 1). Test takers are required to pass a 5-part, 7.5-hour test to certify their high school equivalence and earn a state-issued GED credential. Obtaining a GED is easier for most students than graduating in the traditional fashion. The option may be especially attractive for cognitively able students who lack credits or face other challenges. The median study time of young (16–18) first-time GED test takers who reported preparing for the exam is 32 hours (Zhang, Han,

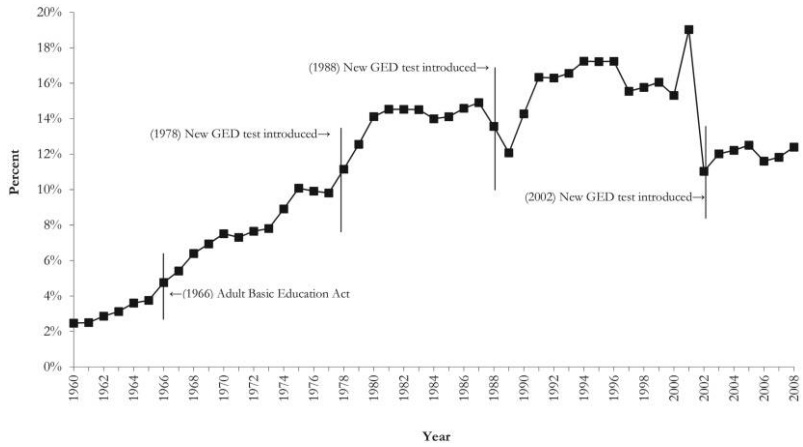

Fig. 1.—GED credentials issued as a percentage of all high school completers, 1955–2008. The figure plots the proportion of GEDs issued each year over the number of high school completers that year (regular high school graduates and GED recipients). Source: Public and private high school graduate totals from National Center for Education Statistics (2005), Digest of Educational Statistics, table 101; GED credentials issued from GED Testing Service (1959–2008).

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and Patterson 2009).[1] In the early years of the test, the minimum passing score was low, and on some subtests, passing scores were only slightly above what could be achieved by chance (Quinn 1997).

A large literature documents the small average labor market returns to GED certification.[2] Few papers have addressed whether the availability of the GED induces students to drop out of school rather than graduate. Chaplin (1999) and Lillard (2001) estimate the effect of the availability of the GED on high school continuation and dropout rates by exploiting cross-state variation in GED testing policies over time. Controlling for state, year, and age fixed effects, both studies find that state GED policies are statistically significant predictors of high school dropout rates. Policies that provide exemptions to age restrictions for GED testing or lower passing standards promote dropping out of high school. States with lower requirements for the GED have higher GED test-taking rates.

The endogeneity of cross-state variation in GED requirements is a potential problem with the identification strategy employed in previous studies. If states change GED requirements in response to trends in state-level dropout rates, estimates of the GED effect will be biased. States might respond to increased dropout rates by lowering the GED requirements. Estimates that do not account for this response would tend to overstate the effect of lower passing standards.

This article presents three studies of the incentive effects of the GED program. The first study uses an identification strategy based on a nationally mandated change in GED passing standards imposed in 1997 by the GED Testing Service. All states were required to meet new minimum and mean score requirements. This national mandate forced some states to raise passing standards while other states were unaffected. This strategy addresses the endogeneity problem because the timing and magnitude of the one-time change in requirements is exogenous to any state-specific trends or policy changes.

Students react strongly to the change in the difficulty of the GED test. Difference-in-difference estimates show that a 6 percentage point decrease in the probability of passing the GED causes a statistically significant 1.3 percentage point decline in the overall dropout rate. The policy has its greatest effect on older students who are less restricted in their GED testing and school-leaving decisions. The percentage of students enrolled in the twelfth grade who do not graduate declines by 3 points more in states that were required to raise GED requirements compared to those

[1] We do not know the amount of time spent studying by those who pass the exam. Data from 1989 (Boesel, Alsalam, and Smith 1998) show that 56% of people reported studying 40 hours or less, and 24% reported studying over 100 hours. Classroom attendance for a typical school year is over 1,000 hours per year, and most GEDs are a year or more below twelfth grade when they drop out of school.

[2] See Heckman, Humphries, and Mader (2011) for a review of the literature.

that were not required to do so. GED policy changes have larger effects on minorities because, at any grade, they tend to be older and hence less subject to minimum school-leaving-age requirements. They are also more likely to be behind majority students in meeting graduation requirements.

In a second study, we examine the effect of introducing the "GED Option Program" in Oregon. First introduced in 2001, this program offers GED preparation and certification in high schools. It targets students perceived to be at risk of dropping out of high school and guides them into GED certification. Using panel data, we show that the Option Program reduces high school graduation rates in Oregon by 4%.

In a third study, we examine the impact of introducing the GED in California. In 1974, California became the last state to award a high school equivalency credential to civilians who passed the GED exam.[3] Prior to recognizing the GED, California had higher graduation rates than other US states. After adopting the GED program, California graduation rates quickly fell to levels similar to those in other states. Difference-in-difference estimates show that high school graduation rates fell by 3 percentage points more in California compared to the rest of the United States.

Our findings are consistent with previous studies that show that the GED induces youth to drop out of school. We expand upon previous studies by showing that minorities and males are more strongly affected by GED policy changes. We also provide the first empirical estimates of the effect of introducing the GED program on high school graduation rates.

The article proceeds as follows. Section II presents a background discussion of the relationship between GED policies and dropout rates. Section III analyzes the impact of the 1997 GED policy change on the dropout rate. Section IV estimates the effect on the dropout rate of introducing the GED as an option for at-risk high school students in Oregon. Section V estimates the effect of introducing the GED program for civilians on California dropout rates. Section VI concludes with a discussion of our main findings and their implications for policy.

II. Evidence on the Effects of GED Policies and Incentives

The GED Testing Service (GEDTS) promotes its credential as being equivalent to a traditional high school diploma (Quinn 1997). A recent National Center for Education Statistics (NCES) study shows that many high school students view the GED credential as an attractive alternative to graduating (see Dalton et al. 2009). The Education Longitudinal Study (ELS) follows a representative sample of tenth graders enrolled in the

[3] Prior to 1974, the GED program in California was restricted to veterans and military personnel.

Table 1
Percentage of Spring 2002 High School Sophomores Who Had Not Completed a High School Degree by Spring 2004 (by Reason for Leaving School)

Reason for Leaving School	Percent
Missed too many school days	43.5
Thought it would be easier to get GED	40.5
Getting poor grades/failing school	38.0
Did not like school	36.6
Could not keep up with schoolwork	32.1
Became pregnant[a]	27.8
Got a job	27.8
Thought could not complete course requirements	25.6
Could not get along with teachers	25.0
Could not work at same time	21.7
Had to support family	20.0
Did not feel belonged there	19.9
Could not get along with other students	18.7
Was suspended from school	16.9
Had to care for a member of family	15.5
Became father/mother of a baby	14.4
Had changed schools and did not like new one	11.2
Thought would fail competency test	10.5
Did not feel safe	10.0
Was expelled from school	9.9
Got married/planned to get married	6.8

SOURCE.—Reproduced from National Center for Education Statistics (2006).
NOTE.—This indicator shows the percentage of high school students in the spring of their sophomore year who, in the spring 2 years later, were not in school and had not graduated with a regular diploma or certificate of attendance. The 1% of sophomores who left school and earned a General Educational Development (GED) certificate or other form of equivalency certificate as of the spring 2 years later are counted as having left school without a regular diploma or certificate of attendance.
[a] Percentage of female respondents only. The reason could only be selected by female respondents.

spring of 2002 through graduation and beyond. In the spring of 2004, over 40% of dropouts stated that they did not complete high school because they "Thought it would be easier to get a GED" (see table 1). This was the second most cited reason behind "Missed too many school days" (43.5%). It also placed far above what are commonly believed to be primary reasons for dropping out of school, such as pregnancy (27.8%), work (27.8%), and marriage (6.8%).[4]

There is a close relationship between trends in GED testing among school-age youth and the national dropout rate. Figure 2 plots the dropout rate both including and excluding GED recipients as graduates. It also plots the percentage of GED test takers age 19 or under in each year. Increases in the fraction of students who choose not to complete high school are associated with rising GED test taking among secondary school-age youth. The two time series move together in response to national GED policy changes. When GED age requirements are lowered, GED testing rates increase for the young along with dropout rates. When

[4] Answers are not mutually exclusive, and therefore percentages do not sum to 100.

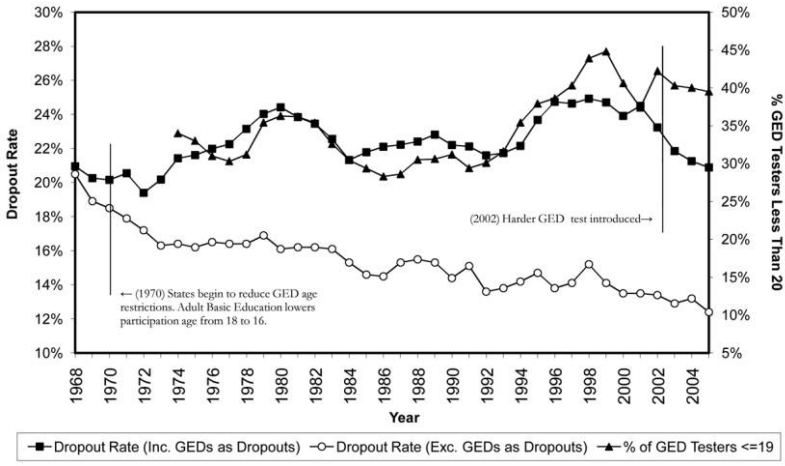

FIG. 2.—US high school dropout rate including and excluding GED recipients, 1968–2005. The true dropout rate is calculated as the fraction of public and private school eighth graders who do not obtain a regular high school diploma. Public school enrollment and public and private high school diploma counts come from the National Center for Education Statistics (2005), Digest of Educational Statistics. Annual private school enrollment is estimated from CPS October data. The NCES dropout rate is one minus the status completion rate. The status completion rate is computed from CPS October data as the percentage of 18–24-year-olds who are not enrolled in high school and who do not have any type of high school credential. High school credentials include a high school diploma or equivalent credential such as a GED.

standards are increased, dropout rates fall, and GED test taking by the young declines.

The dropout rate that classifies GED recipients as dropouts reached historic lows in the early 1970s and rose afterward (Heckman and LaFontaine 2010). In contrast, the dropout rate that counts GEDs as high school graduates steadily declines over the entire period. In the first few years depicted, the two measures are nearly equal. They begin to diverge sharply after 1970, coinciding with the rapid expansion of the GED testing program shown in figure 1.

Expansion of the GED testing program is associated with a number of important policy changes that made the GED more accessible to school-age youth. During the early 1970s, states began to eliminate age restrictions on GED testing in an attempt to make GED credentials more accessible to young dropouts (Quinn 1997). Previously, most states required that individuals be at least 20 years old in order to take the GED. In addition,

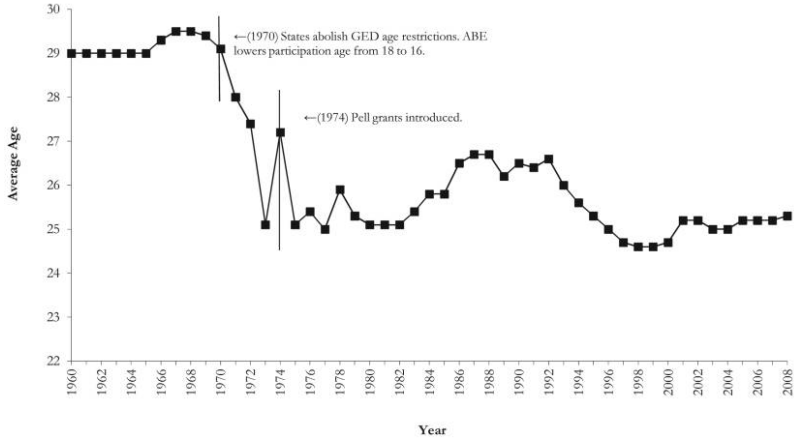

FIG. 3.—Average age of GED test takers from the GED Testing Service, 1960–2008. Source: GED Testing Service (1959–2008).

in 1970, Adult Education (AE) programs began targeting younger populations by lowering the minimum age requirement for participation from 18 to 16 (Heckman et al. 2011). In the same year, Adult Secondary Education (ASE) programs were introduced targeting those lacking secondary education. These two programs produced 20% of all GED credentials in 1972 and 40% by 1980 (Heckman et al. 2011).

Following these changes, both the dropout rate and the percentage of young GED test takers began to rise. Figure 3 shows that the average age of GED testing dropped precipitously in the early 1970s. The average age of GED test takers declined from 29 in 1970 to 25 in 1973.[5] The average age has remained low since then, except for a sharp increase in 1974 that coincides with the introduction of Pell grants financing higher education, which initially required at least a GED to qualify.[6]

III. The Effect of the 1997 GED Policy Change

The survey and time series evidence suggests that GED test taking is related to youth dropout behavior. Are the observed relationships causal?

[5] Heckman and LaFontaine (2010) show that the baby boom and the subsequent baby bust account for only a small portion of the variation in average age of GED test takers.

[6] The Federal Pell Grant Program provides need-based grants to low-income undergraduate and certain postbaccalaureate students to promote access to postsecondary education (see http://www.ed.gov/programs/fpg/index.html). The sharp rise in the average age in 1974 was possibly due to a pent-up demand for college among older dropouts.

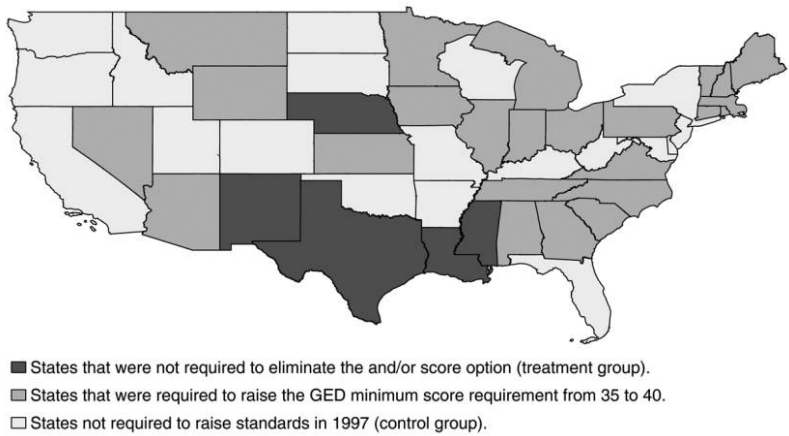

FIG. 4.—States that were required to raise GED passing standards in 1997. Alaska and Hawaii are not shown but were required to raise the GED minimum score requirement from 35 to 40. Source: 2001 GED Statistical Report (see GED Testing Service 1959–2008).

In the first of the three studies reported in this article, we address this question by exploiting exogenous variation in the difficulty of passing the GED arising from a nationally mandated toughening of GED passing score requirements in 1997. Prior to 1997, states fell into one of three groups: (1) 19 states with a requirement of a minimum score of 40 on each subtest and a mean score of 45 across all subtests, (2) 26 states with a 35 minimum and 45 mean requirement, and (3) a group of five states where GED candidates had to achieve a 40 minimum on each test and/or a mean score of 45 across all tests.

Starting January 1, 1997, all states had to meet the new standard of a minimum score of 40 on each test and a mean score of 45. This standard forced the second group of states to raise their minimum score requirement on each test from 35 to 40 and the third group of states to eliminate the and/or scoring option. The first group of states that already met the new standards did not change their requirements. Figure 4 shows the geographic distribution of the states by category.

According to a norming study conducted by the American Council on Education, only 67% of graduating high school seniors are able to meet a minimum score requirement of 40 and a mean score requirement of 45. A minimum of 35 and a mean of 45 were obtained by 70% and 75% scored at the 40 or mean of 45 threshold (table 2). Thus, the change in difficulty of passing the GED was far greater in the third group relative to the other two. Observed changes in pass rates in the three types of

Table 2
Percentage of High School Seniors Meeting Various GED Score Requirements and the Actual Change in Pass Rates Pre- and Post-1997

GED Score Standard	Number of States Prior to 1997 Change	% of HS Seniors Meeting Requirements[a]	Actual Change in Pass Rate[b]
Minimum 40 or Mean 45	5	73%	−7.43%
Minimum 35 and Mean 45	26	69%	−1.68%
Minimum 40 and Mean 45	19	67%	−1.26%

SOURCE.—The percentage of high school seniors in the GED norming study meeting the given score requirement is from the 1987 GED Statistical Report (see GED Testing Service 1959–2008). The actual change in pass rates is from authors' calculations based on various GED statistical reports.

[a] GED norming studies are based on the performance of a representative sample of high school seniors. Depending on performance, GED scores are normalized to obtain a normal distribution of mean 50 and standard deviation 10.

[b] In states that went from indicated requirement pre-1997 to minimum 40 and mean 45 post-1997.

states before and after 1997 reflect this difference. (See the far right-hand column of table 2.)

The third group of five states serves as our "treatment" group. The states that did not change their standards serve as the "control" group.[7] In our analysis, we compare GED testing and dropout rates in treatment and control states in the years 1994–96 to the same rates measured in 1998–2000. We exclude 1997 from our empirical analysis because the change in GED requirements occurred in the middle of the school year. The reform could cause some students to drop out and take the GED early in the year and others to stay in school after the requirements were changed later in the same year.

We compute three measures of annual dropout rates using the Common Core of Data (CCD) and a methodology similar to that developed by Kominski (1990).[8] The measures are: (1) the overall dropout rate, defined as the percentage of students enrolled in the tenth, eleventh, and twelfth grades in year t who are not enrolled and have not graduated in year $t + 1$; (2) the lower level dropout rate, defined as the percentage of students enrolled in tenth and eleventh grades in year t who are not enrolled in year $t + 1$; and (3) the upper level dropout rate, given by the percentage of students enrolled in twelfth grade in year t who did not graduate in

[7] In the online data file, we use as our control group the states that were required to minimally raise the difficulty of obtaining a GED. The results from this analysis are consistent with the results reported in the text.

[8] The CCD are collected from state departments of education and contain the number of students enrolled in each grade level in a given year in each state, as well as the number of high school diplomas issued in that year. From these annual counts, approximate annual exit rates from each grade can be computed. See app. A in the online data file for more details on the construction of these measures.

year $t + 1$.[9] These rates are yearly exit rates from school and therefore differ in levels from more commonly reported cohort dropout rates (see, e.g., Heckman and LaFontaine 2010). All dropout rate calculations are then weighted by the fraction of the US 15–17-year-old population that resides in each state for our sample period. Figure 5 plots our measures of GED test taking and dropout rates by year in treatment and control states during our sample period.[10]

We define dropout rates this way for the following reasons. First, we need to compute yearly exit rates from schooling to capture the timing of the school-leaving decision before and after the GED policy change. Second, we seek to examine whether there are differential effects by grade and age.[11] If students drop out to take the GED, we would expect to find larger effects for students enrolled in upper grade levels since they are older and, as a group, less restricted by compulsory schooling laws and GED testing age requirements. Third, these measures are less sensitive to migration than estimated cohort rates at the state level because they are defined over shorter intervals. Cohort dropout and graduation rates are generally calculated using up to 5-year lags of enrollment and diploma counts (e.g., diplomas issued in the spring of year t over fall eighth-grade enrollment in year $t - 5$). Our exit rates are lagged 1 year and therefore less sensitive to migration.[12] Finally, we do not include ninth graders because high rates of retention at that grade make it difficult to calculate yearly exit rates between that grade and tenth grade. Students enrolled in ninth grade are predominately younger than 16 and therefore not allowed to take the GED test in any state.

Conley and Taber (2011) show that standard asymptotic results do not apply to many difference-in-difference studies due to the small number of observed policy changes. They develop a permutation test methodology that consistently estimates the asymptotic distribution of the treatment effect under the null hypothesis of no treatment effect. Since our sample

[9] The labels "overall," "lower," and "upper" are our own and are not based on any official definitions. All formulas used to compute each of the dropout rate measures are included in app. B in the online data file.

[10] The plots by race are available in app. C in the online data file. Data on GED testing by age are from the 1994–2000 GED statistical reports (see GED Testing Service 1959–2008). Population totals by age are obtained from the Bureau of the Census.

[11] The age of students is not available in CCD data so we use the grade level as a proxy measure.

[12] A 1997 immigration reform generally made it more difficult to migrate and reside in the United States. To test the sensitivity of our Hispanic estimates to this reform, we restrict the control group sample to high-immigration states (CA and FL) and find that our estimated effect sizes on this sample are similar to our overall estimates, suggesting that bias due to migration is minimal. See table G38 in the online data file for this analysis.

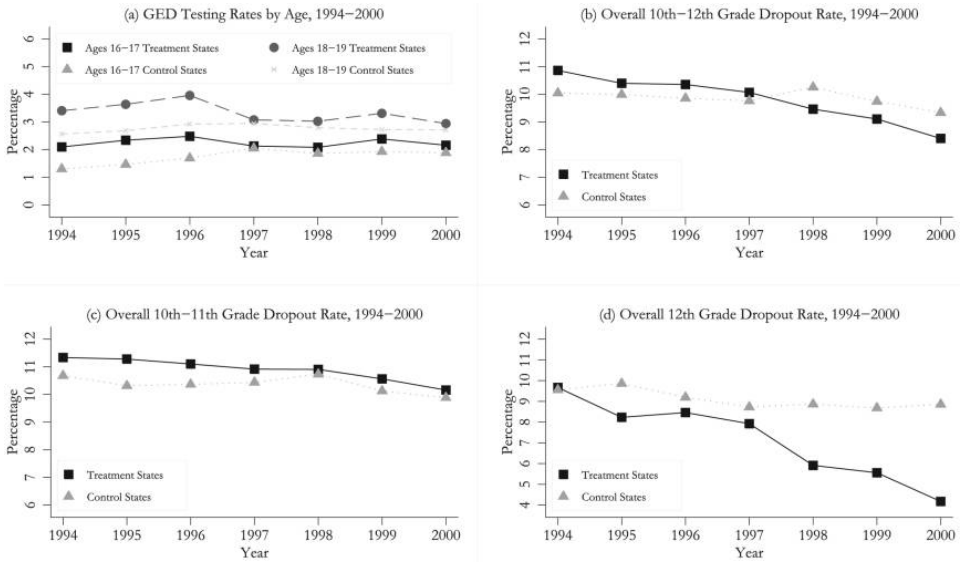

FIG. 5.—GED testing and dropout rates by year, treatment vs. control states. GED testing rates are calculated from yearly GED Statistical Reports (see GED Testing Service 1959–2008) as the percentage of the state population in the given age range who take the GED in that year. Dropout rates are calculated from the CCD as the exit rate for those in the indicated grades in the given year. See app. B in the online data file for further details. States required to raise GED pass requirements (treatment states) are: LA, MS, NE, NM, TX. States that did not change pass requirements (control states) are: AR, CA, CO, DE, DC, FL, ID, KY, MD, MO, NJ, NY, ND, OK, OR, SD, UT, WA, WV, WI. NJ is excluded in all dropout calculations due to data errors.

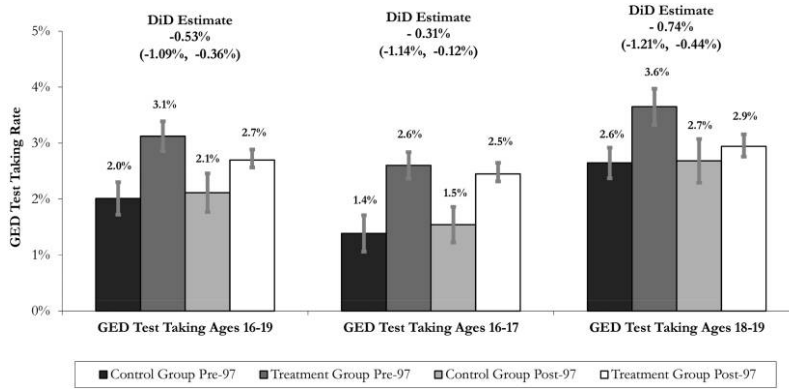

FIG. 6.—Average pre- and post-1997 GED test-taking rate by age group. GED test-taking rates are defined as the ratio between total number of test takers of a given age and total population of that age. The plot above shows the average GED test-taking rate for the period pre-1997 (i.e., 1994–96) and post-1997 (i.e., 1998–2000). All estimates are weighted by the 15–17-year-old population by state. (Conley-Taber-adjusted confidence intervals in parentheses, while standard error bars show robust standard errors clustered at the state level.) The treatment group consists of states that were required to eliminate the and/or score option. These include: LA, MS, NE, NM, TX. The control group consists of states that already had high enough standards by 1997. These include: AR, CA, CO, DE, DC, FL, ID, KY, MD, MO, NJ, NY, ND, OK, OR, SD, UT, WA, WV, WI. The state of NJ is dropped in order for test-taking rates to be consistent with dropout rate regressions. Source: GED Testing Service Annual Reports: "Who Took the GED?" (1994–2000).

is limited to only five states that were required to change GED testing policies, we follow their methodology when computing our test statistics.

Figure 6 presents the average GED test-taking rate by age pre- and post-1997. The unadjusted mean difference-in-difference estimates and confidence intervals are also reported for each age group. Conley-Taber confidence intervals are reported at the top of figure 6, while the standard error bars show robust standard errors clustered at the state level. For the control group, average GED testing rates remained essentially flat over the two periods for all age groups. In contrast, treatment group states exhibit a sharp decline in GED testing post-1997, especially for the older cohorts (ages 18–19) that face fewer restrictions in both leaving school and taking the GED test. The estimated change in the treatment group GED test-taking rate for the older cohorts relative to that of the control group is about −0.74 points and is statistically significant at the 5% level. This is a 20% decline relative to the average GED test-taking rate in

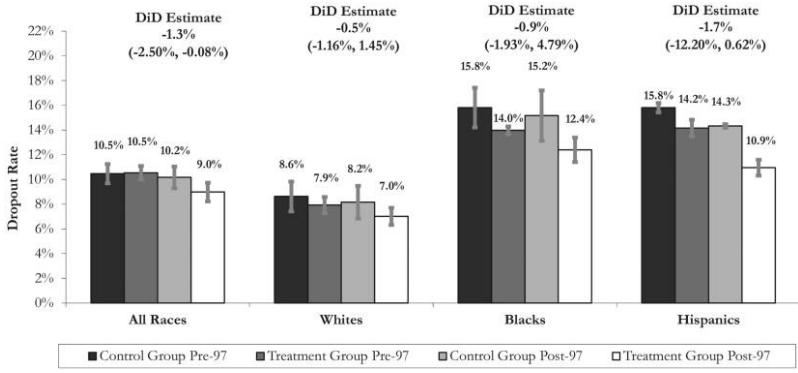

FIG. 7.—Average pre- and post-1997 tenth–twelfth grade dropout rate for treatment and control group. The dropout rate is defined as the ratio of students enrolled in a given grade(s) in year t and the number of students enrolled in the previous grade(s) in year $t - 1$, where $t = 1994–2000$. All estimates are weighted by the 15–17-year-old population in the given state. The plot above shows the average dropout rate for the period pre-1997 (i.e., 1994–96) and post-1997 (i.e., 1998–2000). (Conley-Taber-adjusted confidence intervals in parentheses, while standard error bars show robust standard errors clustered at the state level.) Treatment states are those states that were required to eliminate the and/or score option. These include: LA, MS, NE, NM, TX. Control states are those that already had high enough standards by 1997. These include: AR, CA, CO, DE, DC, FL, ID, KY, MD, MO, NJ, NY, ND, OK, OR, SD, UT, WA, WV, WI. States with fewer than two observations per period are dropped for "all races" category. States with fewer than two observations per period for any of the dropout rate measures by race are dropped for by race categories. Control states dropped from "all races" regressions due to missing and negative dropout rates include: NJ. Control states dropped from regressions by race due to missing and negative dropout rates include: AR, ID, KY, MO, ND, NJ, NY, SD, UT, WA, WV. No treatment states are dropped from any regressions. Since there are more missings in the dropout rates by race, the "all races" category is not directly comparable to the categories by race. Source: CCD.

treatment states prior to the change. Also, before raising passing requirements, treatment group states had much higher GED testing rates than did states in the control group. This difference in GED testing levels is nearly eliminated once the treatment states increased their standards.[13]

The overall dropout rates pre- and post-1997 across all races in both control and treatment states are presented in figure 7. Unadjusted differ-

[13] We obtain essentially the same estimates from a variety of specifications adjusting for regressors. They are presented in app. D in the online data file and in a fixed effects analysis presented in app. E, also in the online data file.

ence-in-difference estimates and standard errors are reported at the top of each set of figures. The overall dropout rate declines sharply across all race groups in the treatment states, with the largest declines occurring for blacks and Hispanics.[14] The estimated change in the tenth-to-twelfth-grade dropout rate across all races combined is −1.3% and is statistically significant at the 5% level. The effect for whites is −0.5 percentage points whereas for blacks and Hispanics it is −0.9 and −1.7 percentage points, respectively.

If high school students respond to changes in GED score requirements, GED testing rates would likely increase immediately before increases in the standards and decline immediately afterward, artificially increasing our estimate of the dropout effect. In order to check that our estimates are not produced from a surge in test taking in 1996 and a subsequent decline induced by the shift to higher standards in 1997, we delete the 1996 observations. This barely affects our estimates. See appendix D in the online data file for sensitivity analyses.[15]

The estimated effect of the GED testing reform on school dropout rates is much larger for older students than younger students (see fig. 8). The estimated increase in the twelfth-grade dropout rate across all race groups combined is 3.1 points and is statistically significant at the 5% level. We observe larger effects among minority students. Whereas the twelfth-grade dropout for whites decreases by 1.4 points, black and Hispanic dropout rates decline by 4.4 and 7 points more in treatment states, respectively. Declines in the twelfth-grade dropout rate account for nearly all of the decline in the overall dropout rate in states that increased GED standards.

In contrast, younger students did not drop out at lower rates, likely because they did not meet the minimum age requirements for the GED either before or after the mandated scoring change (see fig. C1 in the online data file). Dropout rates at lower levels decline in both treatment and control states for whites, blacks, and Hispanics, but none of the difference-in-difference estimates are statistically significantly different from zero.

Students enrolled in lower grade levels in treatment states effectively provide a second control group in our analysis. Most of the students in this group are not affected by changes in GED requirements because they are too young to take the GED test without obtaining a special ex-

[14] The estimates by race are not directly comparable with the "all races" category, since the former include fewer states as a result of missing enrollment data by race. All estimates by race are restricted to the same subsample of states.

[15] Also in app. D, we show that the trends prior to 1994 and post-2000 are in line with the trends displayed in fig. 5. The trends in the time period studies are not anomalous.

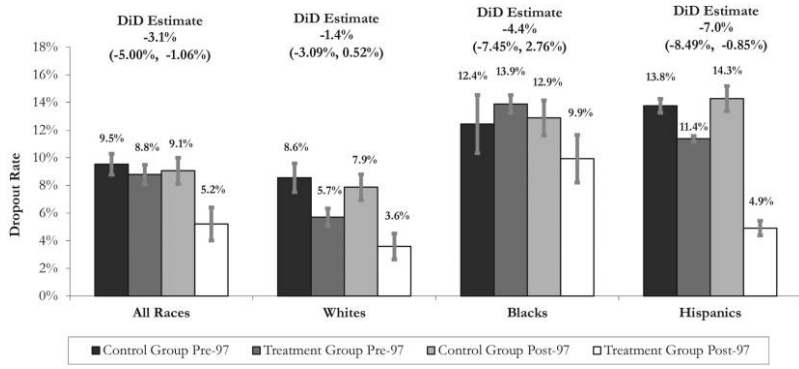

FIG. 8.—Average pre- and post-1997 twelfth-grade dropout rate for treatment and control group. The dropout rate is defined as the ratio of students enrolled in a given grade(s) in year t and the number of students enrolled in the previous grade(s) in year $t - 1$, where $t = 1994–2000$. All estimates are weighted by the 15–17-year-old population in the given state. The plot above shows the average dropout rate for the period pre-1997 (i.e., 1994–96) and post-1997 (i.e., 1998–2000). (Conley-Taber-adjusted confidence intervals in parentheses, while standard error bars show robust standard errors clustered at the state level.) Treatment states are those states that were required to eliminate the and/or score option. These include: LA, MS, NE, NM, TX. Control states are those that already had high enough standards by 1997. These include: AR, CA, CO, DE, DC, FL, ID, KY, MD, MO, NJ, NY, ND, OK, OR, SD, UT, WA, WV, WI. States with fewer than two observations per period are dropped for "all races" category. States with fewer than two observations per period for any of the dropout rate measures by race are dropped for by race categories. Control states dropped from "all races" regressions due to missing and negative dropout rates include: NJ. Control states dropped from regression by race due to missing and negative dropout rates include: AR, ID, KY, MO, ND, NJ, NY, SD, UT, WA, WV. No treatment states are dropped from any regressions. Since there are more missings in the dropout rates by race, the "all races" category is not directly comparable to the categories by race. Source: CCD.

emption.[16] The greater decline in dropout rates for older students suggests that the relationship between students' behavior and the reform does not stem from a confounding factor that would affect all students (e.g., increased spending per pupil or number of teachers per pupil).

Figure 9 shows that differences in age between whites and minority students might explain why the reform has greater impact on minority

[16] Special exemptions to age requirements vary by state and include such conditions as teenage pregnancy, residence in a juvenile detention facility, and enrollment in Job Corps programs. The 2006 GED statistical report contains additional information on this topic (see GED Testing Service 1959–2008).

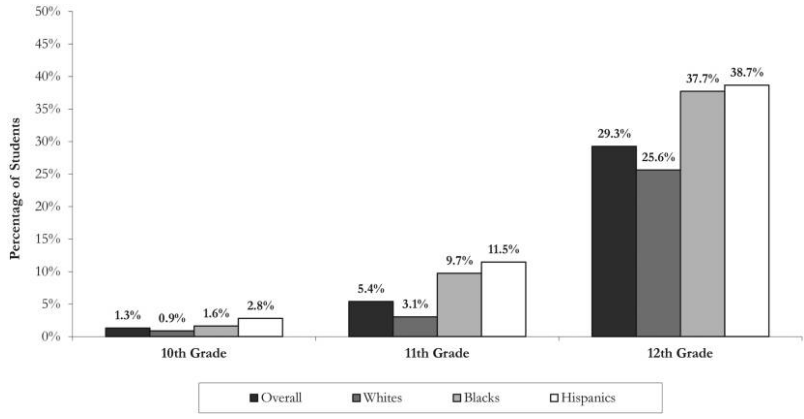

FIG. 9.—Percentage of HS students 18 or older by grade and race, CPS October 1994–2000. Authors' calculations from CPS October 1994–2000 data. The sample is restricted to those who report being enrolled in high school between the ages of 12 and 20.

students. For whites, 25.6% of the students are 18 and above in the fall of twelfth grade. The corresponding figures for blacks and Hispanics are 37.7% and 38.7%, respectively. Far more minority students are in the age group that is not restricted by mandatory school-leaving age requirements or GED minimum age requirements. Thus, more minority students are at risk of being induced to drop out of school by the GED at any given grade level. In addition, minority students have fewer credits than white students at each grade level, making the GED a more attractive option for them (see Agodini and Dynarski 1998). Availability of the GED will induce more students to drop out as more students both delay entry into school and are held back in school (Heckman and LaFontaine 2010). Restricting the minimum age of GED test taking is one way to prevent early exit from secondary education.[17]

IV. The GED Option Program

In our second study, we evaluate the effect of introducing school-sanctioned GED preparation programs into high schools. As previously noted, a large and growing number of GED test takers certify before age 20 and before their high school class graduates. This represents a shift away from the traditional concept of the GED as a second chance for older dropouts.

As shown in figure 10*A*, 16–19-year-old GED test takers are the largest

[17] App. E in the online data file presents a fixed effects analysis that corroborates the results in this section.

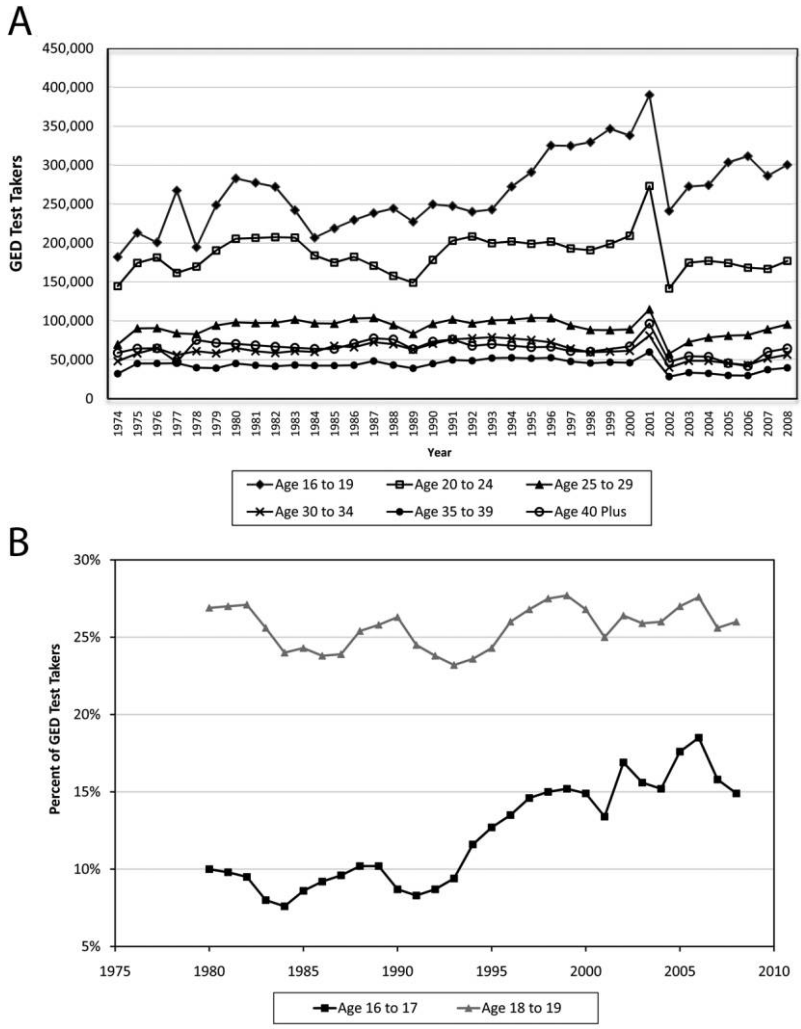

FIG. 10.—Decomposing GED testing trends by age. Source: 1974–2009 GED Testing Services Annual Statistical Reports (see GED Testing Service 1959–2008).

and fastest growing group. Figure 10*B* shows that the bulk of the growth in the 16–19 age category comes from 16–17-year-olds. The GED may be inducing students to leave high school rather than graduate.

A. The GED Option Program

The American Council on Education (ACE), the organization that operates the GED test, allows some states to offer the GED Option Program.

This program offers GED preparation and certification in high schools. It aims to target students at a high risk of dropping out and guide them into GED certification as an alternative. The definition of high risk varies by state but typically is defined to mean that the student is at risk of not graduating with his or her class or is a year behind in credits.

Originally started in 1989, implementation of the Option Program varies greatly by state. Virginia requires 15 hours of academic preparation per week and work- or career-based training for 10 hours a week, for a median of 12 weeks. Virginia also requires scores of 450 on each subsection of the official practice test prior to taking the GED through the GED Option Program. This is higher than the passing standard. In contrast, Oregon reports a median of 20 study hours and median enrollment of 75 days.[18] The majority of Option Program participants graduate before their high school class, providing a faster route out of high school for students behind in credits or at risk of dropping out (see fig. F3 in the online data file).

The GED Option Program offers at-risk students a mixed bag. The program may help teach valuable skills to students who would otherwise drop out. However, introducing the GED directly into the high school may induce some students to GED-certify rather than graduate. It may do this in several ways. Its presence in regular high schools lowers the information costs of learning about, preparing for, and taking the GED. Integrating it into the school system may also give the GED credential credibility. Teachers and counselors may encourage at-risk students to pursue the GED, not knowing the evidence of its minimal beneficial impact. School districts can count GED Option students for funding purposes while they are enrolled in the program, but remove them from the classroom. Administrators may encourage disruptive students to take the GED Option. The GED Option may have peer effects, as those preparing for the GED are still present at their local high schools. The credibility of the GED Option Program is further bolstered by the fact that in many states the GED credential is semantically indistinguishable from a high school diploma.[19] (See table F1 in the online data file.)

B. The Oregon GED Option Program

We evaluate the effect of the Oregon GED Option Program on high school graduation rates using administrative records. Oregon imple-

[18] See the GED Option report in GED Testing Service (2009). Figs. F1 and F2 in the online data file show that the state Option Programs vary greatly in terms of average days enrolled and average hours of preparation.

[19] However, No Child Left Behind legislation will soon be enforced, which prohibits states from issuing actual diplomas based on GED certification.

mented a GED Option Program in 2001. The requirements of Oregon's program are lower than those of many other states.

Oregon allows school districts to petition the state for permission to implement GED option programs. Once permitted, school districts typically implement the program in one of the following ways: (1) district wide, (2) in specific high schools in the district, or (3) only in nontraditional high schools or community colleges in the district. By 2005, 54% of districts had some form of an option program, with 49% having option programs in some schools and 28% having district-wide option programs.

C. The Effect of the GED Option Program on Cohort Completion Rates

Using the Common Core Data, we construct eighth-grade, ninth-grade, and tenth-grade cohort completion rates, where the eighth-grade cohort completion rate is the number of diplomas issued in a year divided by the number of eighth-graders enrolled 4 years earlier. Ninth- and tenth-grade cohort completion rates are constructed in the same manner, but using ninth-grade enrollment lagged 3 years or tenth-grade enrollment lagged 2 years. We use all three cohort completion rates to check the robustness of our estimates. Using Oregon Department of Education Administrative data, we construct three variables to capture the presence of a GED Option Program: (1) a dummy for district-wide implementation, (2) a dummy if the district has any regular high schools offering GED Option Programs, and (3) a dummy for implementation of a GED Option Program, but not in regular high schools. Districts with GED option programs outside of regular high schools typically have GED option programs in local community colleges, or second-chance schools for expelled students. School districts with option programs in regular schools typically have a large number of schools offering the program and resemble district-wide programs. We present evidence on the exogeneity of the presence of these programs in districts in Section IV.D.

Using these data, we regress one of our three cohort completion rates on one of the three measures of the GED Option Program, a set of district controls, and district and year fixed effects:

$$Y_{i,t} = \alpha \mathrm{GED}_{i,t} + \beta_1 X_{i,t} + \beta_2 \mathrm{Year}_t + \beta_3 \mathrm{District}_i + \varepsilon_{i,t},$$

$$i = 1, \ldots, I; \quad t = 1, \ldots, T,$$

where $Y_{i,t}$ is either eighth-, ninth-, or tenth-grade cohort completion rates; $\mathrm{GED}_{i,t}$ is a binary variable indicating the presence or absence of a GED Option Program, $X_{i,t}$ is a vector of time-variant district characteristics, Year_t is a year fixed effect, and $\mathrm{District}_i$ is a district fixed effect. We include among the $X_{i,t}$: percent black enrollment, percent Hispanic enrollment, percent free lunch eligible, percent free or reduced lunch eligible, the

pupil-teacher ratio, total expenditure per pupil, and total revenue per pupil. State and federally operated districts, charter districts, vocational or special needs districts, and nonoperating districts are excluded from our analysis. We include data from 2000 through 2008 in our analysis, with 2002 being the first year programs were offered.

The presence of district-wide GED option programs in schools decreases cohort completion rates. Eighth-, ninth-, and tenth-grade cohort completion rates decrease by 4.2%, 3.0%, and 4.2% after districts implement a district-wide program (fig. 11*A*). These estimates are all statistically significant.[20] We find similar results ranging from 3% to 4% for districts that have any option program in a regular high school (see fig. F4 in the online data file). Cohort completion rates are not affected in districts with option programs implemented outside of regular high schools. (See fig. 11*B*.) This evidence supports the notion that information and availability play key roles in the decision to GED-certify.

Not all students induced to drop out of high school by the GED Option Program necessarily GED-certify. We find an increase in GED certification rates across cohorts in districts that adopt a GED Option Program.[21] The presence of a district-wide Option Program is associated with a 1.7% increase in the cohort GED certification rate for the eighth-, ninth-, and tenth-grade cohorts.[22] This increase is only half of the estimated decrease in cohort diploma rates.[23]

D. Which Districts Adopt Option Programs?

Districts select option programs, which may bias our results. Using NCES Common Core Data and district-level 2000 census data, we compare districts prior to the 2001 introduction of the GED Option Program. We find only small differences between districts that adopt GED option programs and those that do not, suggesting that selection on observables does not play a role (see figs. F5 and F6 in the online data file).

[20] Estimates are statistically significant at the .05 level for eighth- and tenth-grade cohort completion rates and the .10 level for ninth-grade rates. Due to biases in the ninth-grade estimator resulting from high rates of retention at that grade, these estimates using this measure should be given less weight. See Heckman and LaFontaine (2010) for further details.

[21] GED certification rates are measured by the number of "other completers" reported by a district, which includes individuals that GED-certify through school or state preparation programs.

[22] These estimates are jointly statistically significant at the .10 level.

[23] We find no statistically significant effect of the Option Program on dropout rates when it is placed in alternative schools. This provides evidence that its presence in ordinary high school advertises its availability and possibly fosters iatrogenic peer effects.

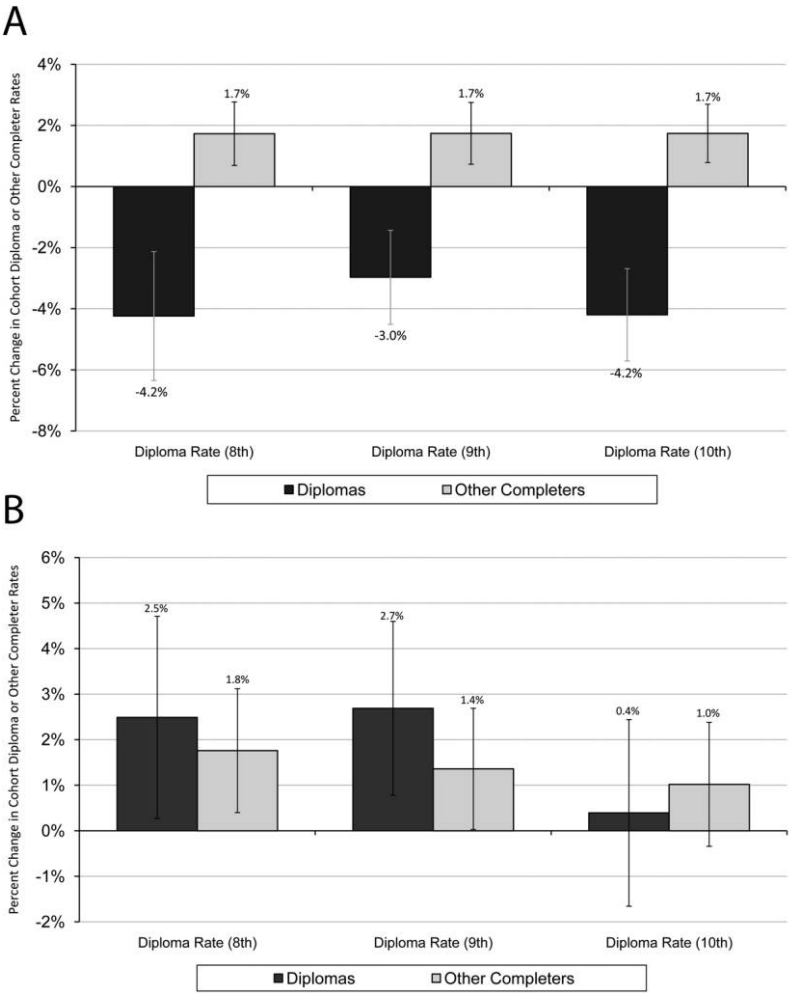

FIG. 11.—The effect of the GED Option Program on high school cohort completion rates. Notes: Cohort completion rates are defined as the number of diplomas issued divided by eighth-, ninth-, or tenth-grade enrollment lagged the appropriate number of years. The definition of other completers includes students who GED-certify through a district- or state-sanctioned certification program, and thus should capture students who GED-certify through the GED Option Program. Regressions include controls for percent black enrollment, percent Hispanic enrollment, percent free lunch eligible, percent free or reduced lunch eligible, pupil teacher ratio, expenditures per pupil, revenue per pupil, and district and year fixed effects. Regressions include 2001–2 school year through 2007–8 school year. The bars show standard errors. Source: National Center for Education Statistics, CCD, and Oregon School Districts Administrative Data.

V. Eliminating the GED Option in California

Our third study examines the effect of introducing the GED for civilians on dropout rates in California. In 1974, California became the last state to offer a state-recognized credential for GEDs (see Allen and Jones 1992). The California legislature amended the state education code to include provisions for the issuance of the California High School Equivalency Certificate to be given out on the basis of GED test scores. According to the new law, this certificate would be "deemed to be a high school diploma for the purpose of meeting the requirements of employment by all state and local public agencies."[24]

In 1974, the GED testing program was neither as large as it is today nor as popular among school-age youth. However, even then, it accounted for nearly 9% of all high school credentials issued, and 34% of the test takers were ages 16–19 (see figs. 1 and 2).

To assess the impact of introducing the GED program, we compare the high school graduation rate in California with that of all other states in the 3 years before and after 1974. Since enrollment counts by grade are not available on a state-by-state basis in this period, we use an estimate of the 14-year-old population as a proxy for the entering ninth-grade enrollment.[25]

Figure 12 displays the overall, male and female, mean high school graduation rates pre- and post-1974 in both California and the rest of the country.[26] Difference-in-difference estimates are also reported. Prior to the introduction of the GED program, California had a high school graduation rate that was higher than that in the rest of the United States. Once the GED was introduced, California graduation rates immediately fell to the levels of other states. While graduation rates fell in both California and the rest of the United States during this time, difference-in-difference estimates show that introducing the GED program resulted in a 3 percentage point greater drop in California relative to other states in the period 1975–77.

The adverse effect of introducing the GED program on graduation rates was larger for males than females.[27] Male graduation rates fell by 3.6

[24] See chap. 6 of div. 6 of the Education Code, art. 9 (in California Legislature [1973], chap. 872, p. 1594).

[25] Population estimates for California were obtained from the California Demographic Research Unit. They provide estimates of the state population by age for the resident population on July 1 of each year. We use the July 1 15-year-old population in the next year to proxy for the previous years' fall 14-year-old population. US population estimates by age are from the Bureau of the Census and are also estimates of the resident population on July 1.

[26] Figure G1 in the online data file displays completion rates by year for California and the rest of the country for the years 1971–77.

[27] Data for this period are not available by race.

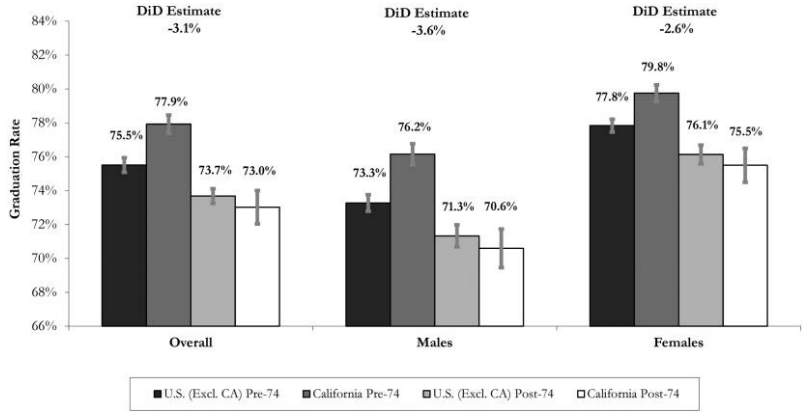

FIG. 12.—Graduation rate before and after implementing the GED program, California vs. all other states. Authors' calculations based on NCES data. The graduation rate is the number of regular public and private high school diplomas issued over the 14-year-old population four years previous. Population totals for the United States were obtained from the US Bureau of the Census. California population estimates were obtained from the California Demographic Research Unit. Huber-White robust standard error bars shown. State 15-year-old population are used as weights. Preperiod is defined as 1971–73 and postperiod as 1975–77.

percentage points while the graduation rate for females declined by 2.6 points. One reason for this differential is that males might have better immediate employment opportunities and would, therefore, find an early exit from high school through GED certification a more attractive option. In addition, males are further behind in school than females at any given age. This finding is also consistent with the evidence reported in Heckman and LaFontaine (2010), who show that male graduation rates have declined more than female rates since the early 1970s.

Evidence from the late introduction of the GED program in California further suggests that the GED induces youth to drop out of school. Eliminating the option to GED-certify would increase high school graduation rates. Arguably, estimates based on 1974 data understate the effect we would observe today if the GED were not available to students. Since 1974, the GED program has expanded and become more popular with adolescents and young adults. In addition, high school standards, as measured by mandatory courses and high-stakes testing requirements, have increased substantially since the mid-1980s (see Lillard and DeCicca 2001). These changes increase the cost of graduating from high school and the attractiveness of the GED. For all of these reasons, it is plausible that our

estimates based on California in the mid-1970s understate the potential impact of enacting this reform under current conditions.

VI. Conclusion

This article presents three studies of the effect of the GED program on the high school graduation rate. In the first study, we find that raising the difficulty of obtaining the GED, through increasing passing requirements, reduces dropout rates. A nationally mandated increase in GED passing standards in 1997 resulted in a 1.3 percentage point drop in the overall dropout rate in states that were required to change their standards relative to those that were not required to do so. The observed reduction in dropout rates was stronger for older students enrolled in upper grade levels, since these individuals are less restricted in both school-leaving and GED testing. The twelfth-grade high school dropout rate fell by 3 percentage points following the 1997 reform.

Minorities are more sensitive to the availability of GED credentials than are whites. At a given grade level, minority students tend to be older and further behind than majority students. These factors make obtaining a GED credential more attractive than high school graduation for minorities. Minority dropout rates exhibit the sharpest declines following the increase in GED passing standards. Black twelfth-grade dropout rates declined by 4.8 percentage points, those for Hispanics by 6.2 points, and those for whites by 1.3 percentage points.

In a second study, we examine the effect of introducing the GED into the high school setting. The GED Option Program integrates GED test preparation and certification for struggling students directly into high schools. The introduction of the GED Option Program in Oregon led to a 4% decrease in graduation rates.

In a third study, we show that introducing the GED produces substantial changes in overall graduation rates. Prior to the introduction of the GED program in 1974, California had higher graduation rates compared to those in the rest of the country. Our estimates show that when the California legislature established credentials for civilian dropouts passing the GED test, graduation rates fell by 3 points in California relative to the rest of the United States, and graduation levels dropped to those of the other states. Eliminating the GED today would likely have much larger effects given the wider acceptance of the program.

Taken together, these studies suggest that the GED program induces students to drop out of school. The program has changed from its original intention of providing a second chance for adults to becoming a primary vehicle for obtaining high school certification among many students enrolled in secondary education.

This evidence should be a source of concern. The benefits of GED

certification are slight. GED recipients perform in the labor market, postsecondary schooling, the military, and, in general, society at a level very close to that of dropouts and below that of high school graduates (see Heckman et al. 2011). Given the poor performance of GED recipients relative to high school graduates, the findings reported in this article provide evidence that states should adopt policies to eliminate the availability of the GED for school-age children. Such a change in policy would not only raise high school graduation rates, but could also improve the future prospects of disadvantaged students.

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