

NBER WORKING PAPER SERIES

TAKING THE EASY WAY OUT:
HOW THE GED TESTING PROGRAM INDUCES STUDENTS TO DROP OUT

James J. Heckman
John Eric Humphries
Paul A. LaFontaine
Pedro L. Rodriguez

Working Paper 14044
<http://www.nber.org/papers/w14044>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
May 2008

This research was supported by the American Bar Foundation, NIH R01-HD043411, the Spencer Foundation, the Mellon Foundation, the JB and MK Pritzker Family Foundation, the Buffett Early Childhood Fund at the Susan T. Buffett Foundation, and an anonymous foundation. We would like to thank the California Demographic Research unit for helpful assistance. We thank the editor and an anonymous referee for helpful comments. We also thank participants at the Spencer Foundation GED Conference at the University of Chicago, April 2011, for helpful comments. Tim Kautz, Janice Laurence, Lois Quinn, Chris Taber and Rob Warren gave especially helpful commentary. The views expressed in this paper are those of the authors and not necessarily those of the funders listed here. A Web Appendix is available at http://jenni.uchicago.edu/GED_dropout/GED_incentives/. The views expressed in this paper are those of the authors and not necessarily those of the funders listed here, nor of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2008 by James J. Heckman, John Eric Humphries, Paul A. LaFontaine, and Pedro L. Rodriguez. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Taking the Easy Way Out: How the GED Testing Program Induces Students to Drop Out
James J. Heckman, John Eric Humphries, Paul A. LaFontaine, and Pedro L. Rodriguez
NBER Working Paper No. 14044
May 2008, Revised September 2011
JEL No. C61

ABSTRACT

The option to obtain a General Education Development (GED) certificate changes the incentives facing high school students. This paper evaluates the effect of three different GED policy innovations on high school graduation rates. A six point decrease in the GED pass rate due to an increase in national passing standards produced a 1.3 point decline in overall high school dropout rates. The introduction of a GED certification program in high schools in Oregon produced a four percent decrease in high school graduation rates. Introduction of GED certificates for civilians in California increased the high school dropout rate by 3 points. The GED program induces students to drop out of high school.

James J. Heckman
Department of Economics
The University of Chicago
1126 E. 59th Street
Chicago, IL 60637
and University College Dublin and IZA
and also NBER
jjh@uchicago.edu

John Eric Humphries
Department of Economics
The University of Chicago
1126 E. 59th Street
Chicago IL 60637
johnerichumphries@gmail.com

Paul A. LaFontaine
NORC
1155 E. 60th Street
Chicago IL 60637
plafonta@gmail.com

Pedro L. Rodriguez
Center for Social Program Evaluation
1155 E. 60th Street
Chicago, IL 60637
pedrolrs@uchicago.edu

An online appendix is available at:
<http://www.nber.org/data-appendix/w14044>

1 Introduction

This paper examines how changes in the availability and difficulty of the General Education Development (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 U.S. in 2008 (Figure 1). Test takers are required to pass a five 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 GED test takers that study is 32 hours (Zhang, Han, and Patterson, 2009a).¹ In the early years of the test, the minimum passing score was low and on some sub-tests, passing scores were only slightly above what could be achieved by chance (Quinn, 1997).

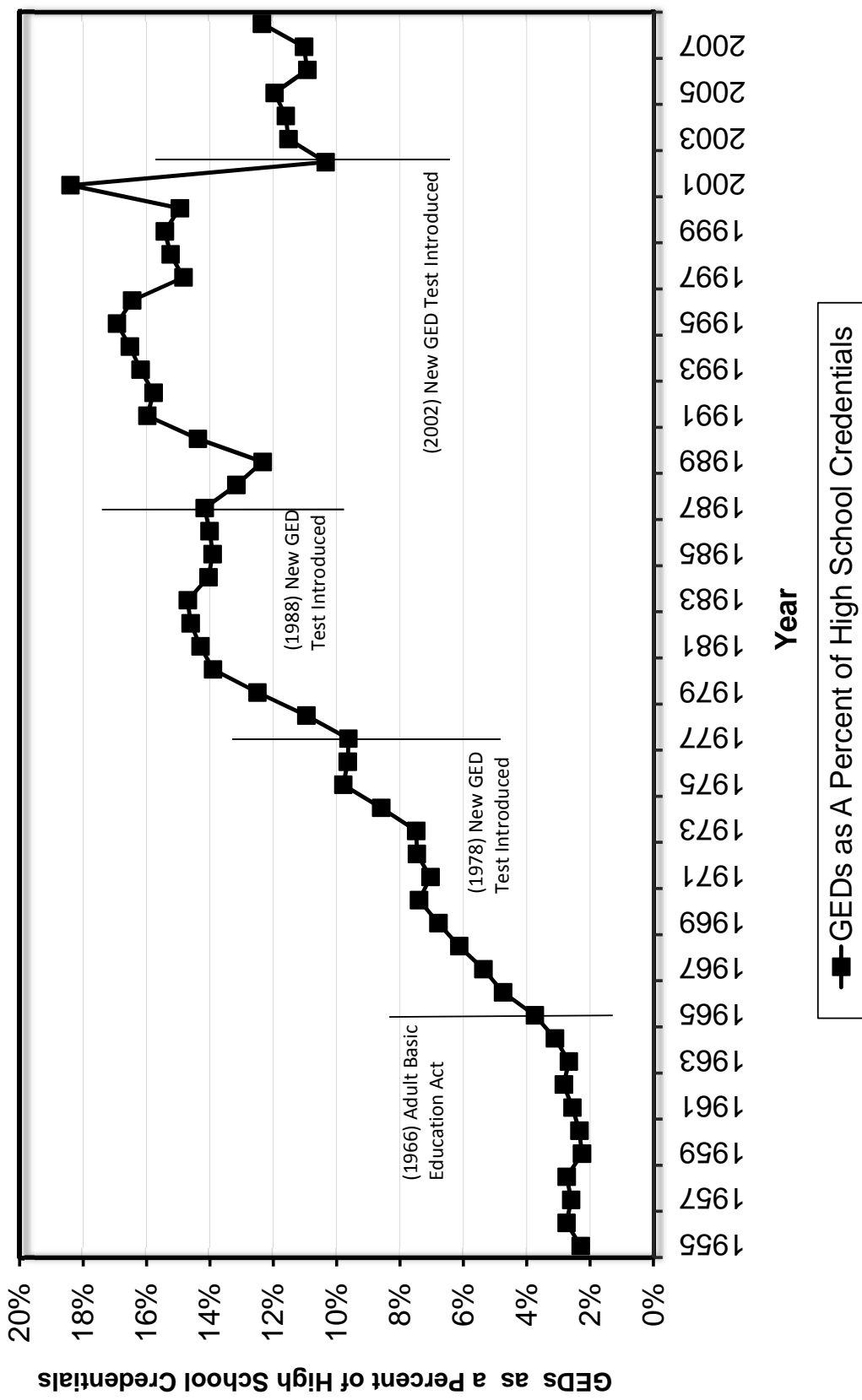
A large literature documents the small average labor market returns to GED certification.² Few papers have addressed whether the availability of the GED option induces students to drop out of school rather than graduate. Chaplin (1999) and Lillard (2001) estimate the effect of the availability of the 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

¹We do not know the amount of time spent studying by those who pass the exam. Data from 1989 (Boesel et al., 1998) shows 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 1000 hours per year, and most GEDs are a year or more below twelfth grade when they drop out of school.

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

Figure 1: GED Credentials Issued as a Percentage of All High School Completers, 1960-2006



SOURCE: Public and private high school graduate totals from NCEES Digest of Educational Statistics (2005), Table 101; GED Credentials Issued from GED Statistical Reports (Various Years). NOTE: The figure plots proportion of GEDs issued each year over the number high school completers that year (regular high school graduates and GED recipients).

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 paper 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 12th grade who do not graduate declines by 3 points more in states that were required to raise GED requirements compared to those 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, these programs offer GED preparation and certification in high schools. They target students perceived to be at risk of dropping out of high school and guide them into GED certification. The program substantially reduces high school graduation rates. Using panel data, we show that such programs lower 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 states in the U.S. 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 U.S.

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 provide the first empirical estimate of the effect of introducing the GED program on high school graduation rates.

The paper proceeds as follows. Section two presents a background discussion of the relationship between GED policies and dropout rates. Section three analyzes the impact of the 1997 GED policy change on the dropout rate. Section four estimates the effect on the dropout rate of introducing the GED as an option for at risk high school students in Oregon. Section five estimates the effect of introducing the GED program for civilians on California dropout rates. Section six concludes with a discussion of our main findings and their implications for policy.

2 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 NCES study shows that many people view the GED credentials as an attractive alternative to graduating from high school. The Education Longitudinal Study (ELS) follows a representative sample of 10th graders enrolled

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

in the 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.” 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%) (Table 1).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 ages nineteen 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 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. Additionally, in 1970 Adult

⁴Answers are not mutually exclusive and therefore percentages do not sum to one hundred.

Table 1: Percentage of Spring 2002 HS sophomores who had not Completed a HS Degree by Spring 2004, by Reason for Leaving School
Table 2. Percentage of Spring 2002 HS sophomores who had not Completed a HS 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* | 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 |

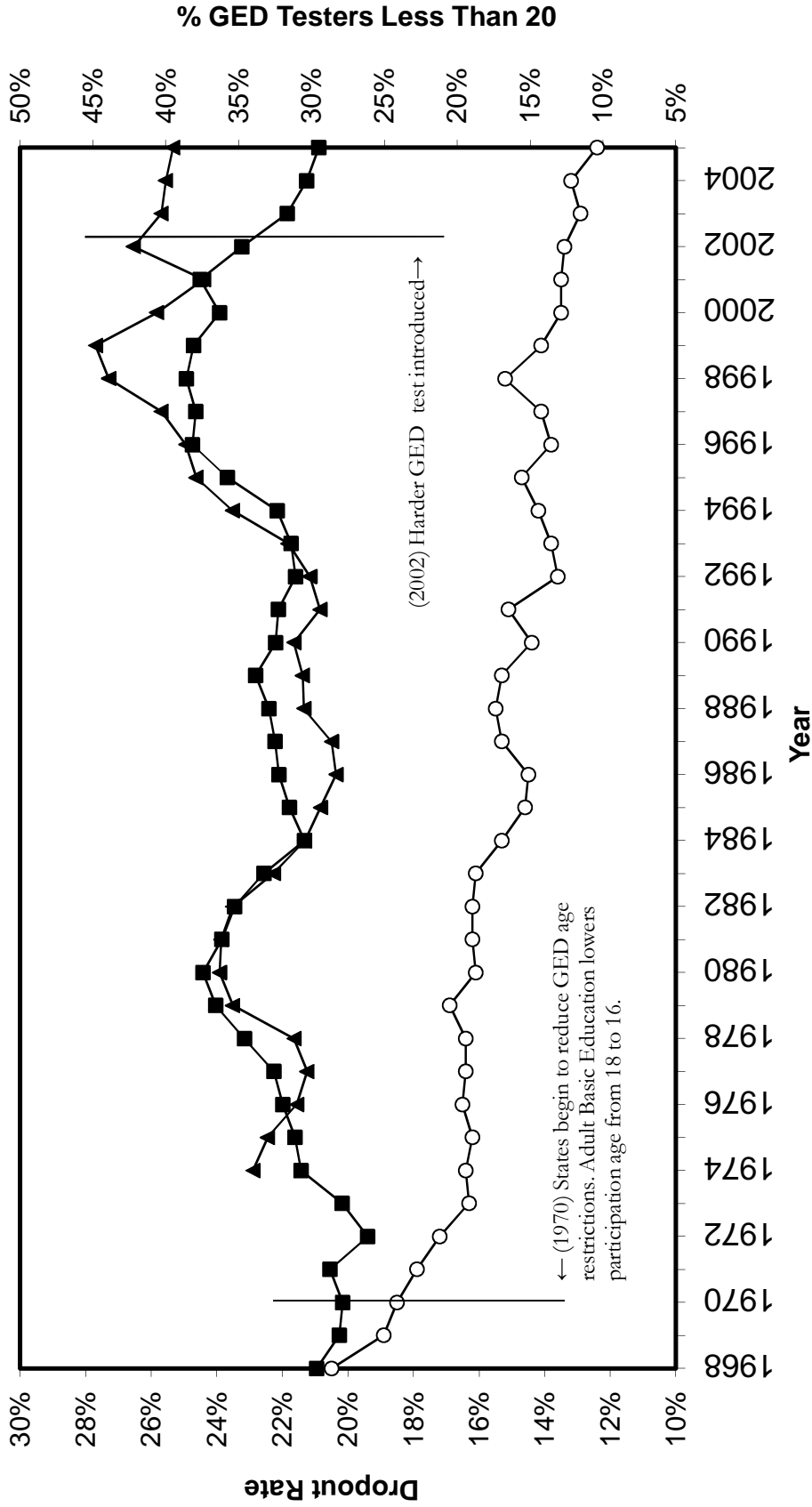
Note: This indicator shows the percentage of high school students in the spring of their sophomore year who, in the spring 2 years later, were not in school and had not graduated with a regular diploma or certificate of attendance. The 1 percent of sophomores who had not graduated with a regular diploma or certificate of attendance as of the spring 2 years later are counted as having left school without a regular diploma or certificate of attendance. The 1 percent 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. The 1 percent 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.

Source: Reproduced from U.S. Department of Education, National Center for Education Statistics, Education Longitudinal Study of 2002 (ELS:2002/04), "First Follow-up, Student Survey, 2004," previously unpublished tabulation (January 2006).

*Percentage of female respondents only. The reason could only be selected by female respondents.

Figure 2: U.S. High School Dropout Rate Including and Excluding GED Recipients, 1968-2005



■ Dropout Rate (Inc. GEDs as Dropouts) ○ Dropout Rate (Exc. GEDs as Dropouts) ▲ % of GED Testers <=19

Note: The dropout rate is calculated as the number of students who do not graduate from high school divided by the total number of students who are enrolled in high school. The dropout rate is one minus the status completion rate. The status completion rate is computed as the percentage of 18- through 24-year-olds who are enrolled in high school and who have any type of high school credential. High school credential includes a high school diploma or equivalent credential such as a GED. The dropout rate is estimated from CPS October data as the percentage of 18- through 24-year-olds who are not enrolled in high school and who have any type of high school credential. High school credential includes a high school diploma or equivalent credential such as a GED.

Education (AE) programs began targeting younger populations by lowering the minimum age requirement for participation from 18 to 16 (Heckman, Humphries, and Mader, 2011). In the same year, Adult Secondary Education (ASE) programs were introduced targeting those lacking secondary education. These programs produced many GED credentials. AE programs issued 20% of GED credentials in 1972 and 40% by 1980 (Heckman, Humphries, and Mader, 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 70s. 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

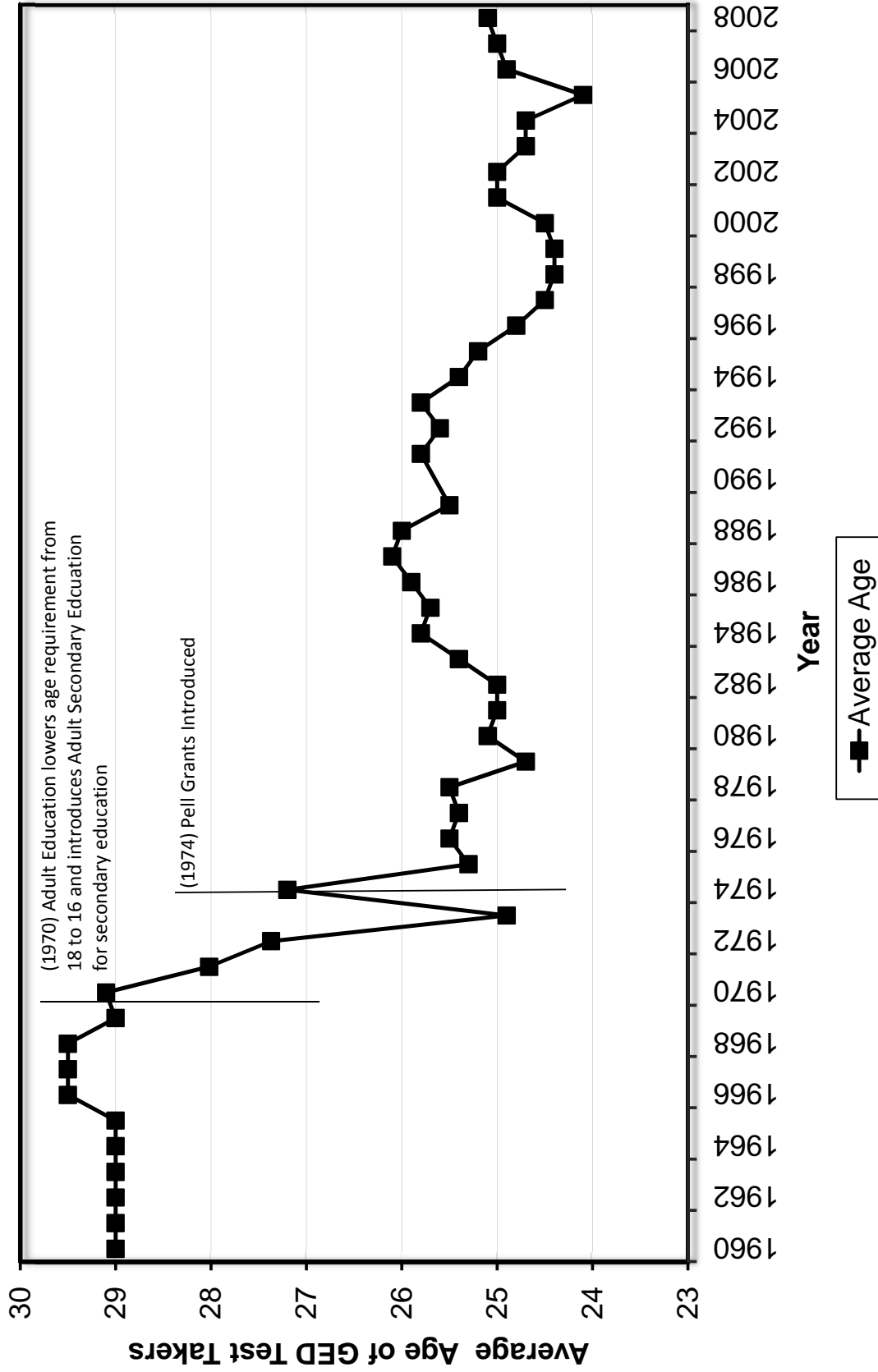
3 The Effect of the 1997 GED Policy Change

The survey and time series evidence suggests that GED test taking is related to youth dropout behavior. Are the observed relationships causal? In the first of the three studies reported in this paper, 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 sub-test and a mean score of 45 across all sub-tests; (2) 26 states with a 35 minimum and 45 mean requirement and; (3) a group of 5 states where GED candidates had to achieve a 40 minimum on each test and/or a mean score of 45 across all tests.

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

⁶The Federal Pell Grant Program provides need-based grants to low-income undergraduate and certain post-baccalaureate students to promote access to postsecondary education. (U.S. Department of Education Website, <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.

Figure 3: Average Age of GED Test Takers from the GED Testing Service, 1960-2006



Source: American Council on Education, General Educational Development Testing Service Statistical Reports.

Notes: The Federal Pell Grant Program provides need-based grants to low-income undergraduate and certain postbaccalaureate students to promote access to postsecondary education. (U.S. Department of Education Website).

Starting January 1st 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 was 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 states before and after 1997 reflect this difference (See the far right-hand column of Table 2).

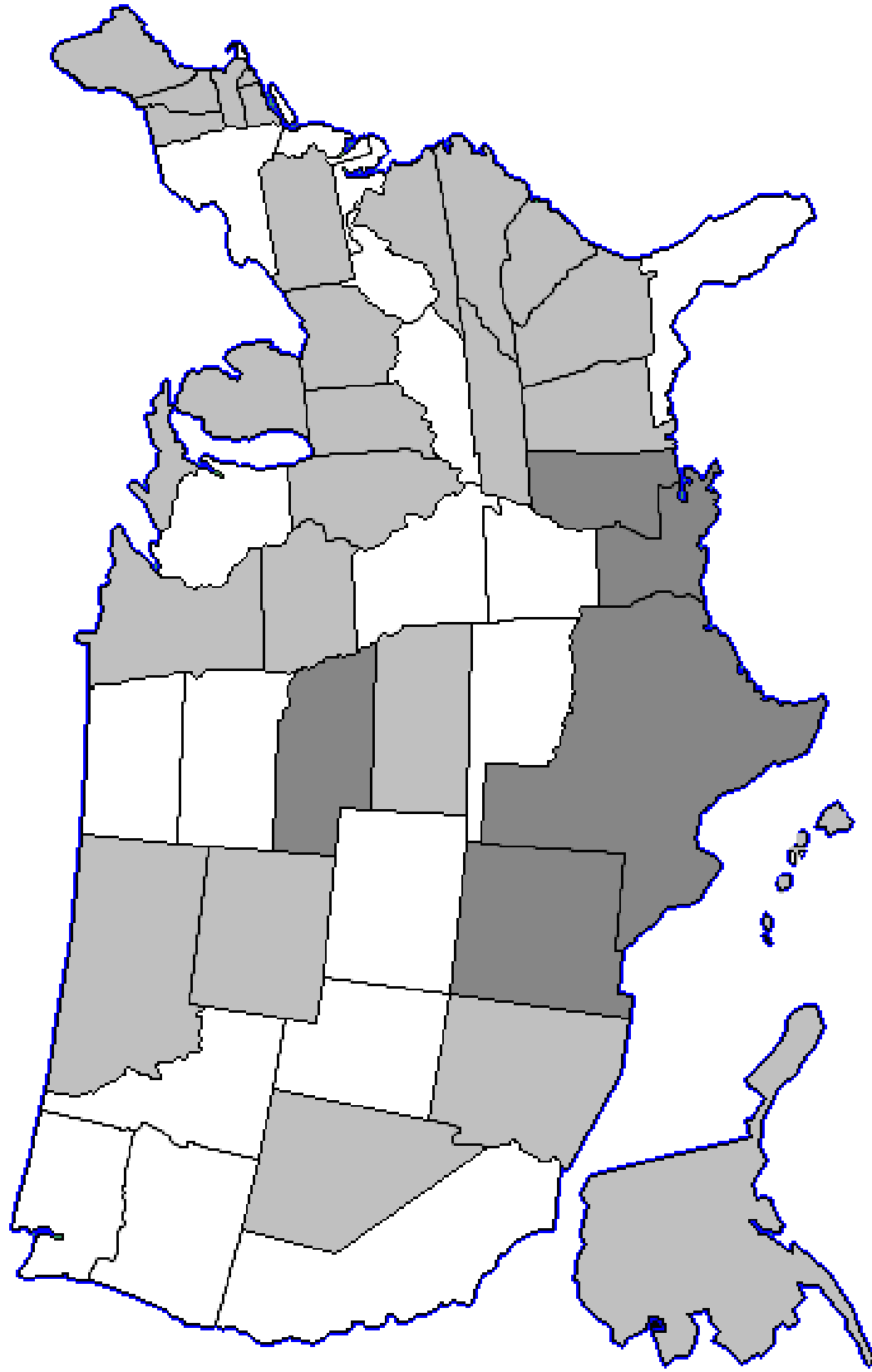
The third group of 5 states serves as our “treatment” group. The states that did not change their standards serve as the “control” group.⁷ In our analysis, we compare GED testing and dropout rates in treatment and control states in the years 1994-1996 to the same rates measured in 1998-2000. We exclude 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 10th,

⁷In the Web Appendix to this paper, we use as our control group the states that were required to minimally raise the difficulty of obtaining a GED to test the exogeneity assumption. The results from this analysis are consistent with the results reported in the text.

⁸The Common Core of Data (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 the Web Appendix for more details on the construction of these measures.

Figure 4. States That Were Required to Raise GED Passing Standards in 1997



- States that were required to eliminate the and/or score option (treatment group).
- States that were required to raise the GED minimum score requirement from 35 to 40.
- States that were not required to raise standards in 1997 (control group).

Source: GED Testing Service, 2001. GED Statistical Report.

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* | Actual Change in Pass Rate** |
|---------------------------|--|--|---|
| 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. The actual change in pass rates are from authors' calculation based on various GED statistical reports.

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

**In states that went from indicated requirement pre-1997 to Minimum 40 and Mean 45 post-1997.

11th and 12th 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 10th and 11th 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 12th grade in year t who did not graduate in 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 U.S. 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 8th grade enrollment in year $t-5$). Our exit rates are lagged one year and therefore less sensitive to migration.¹² Finally, we do not include 9th

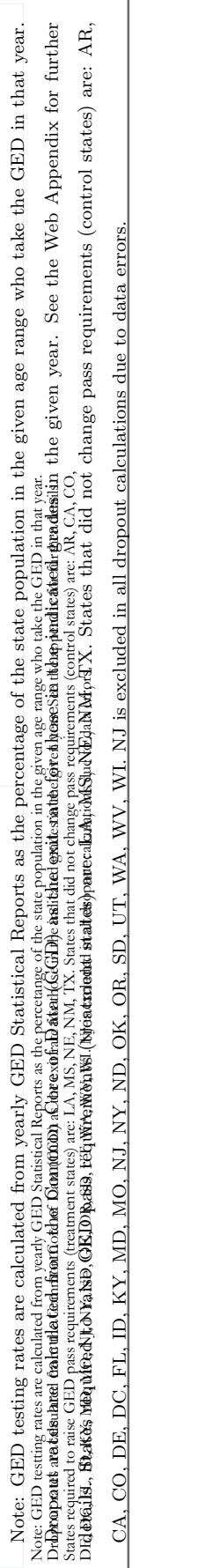
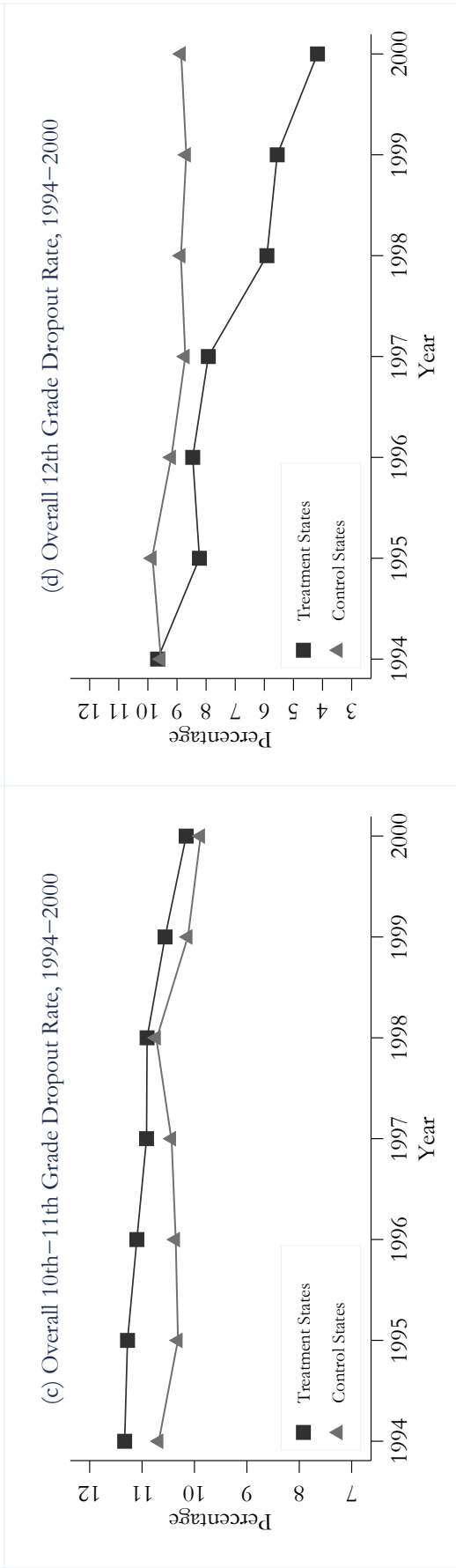
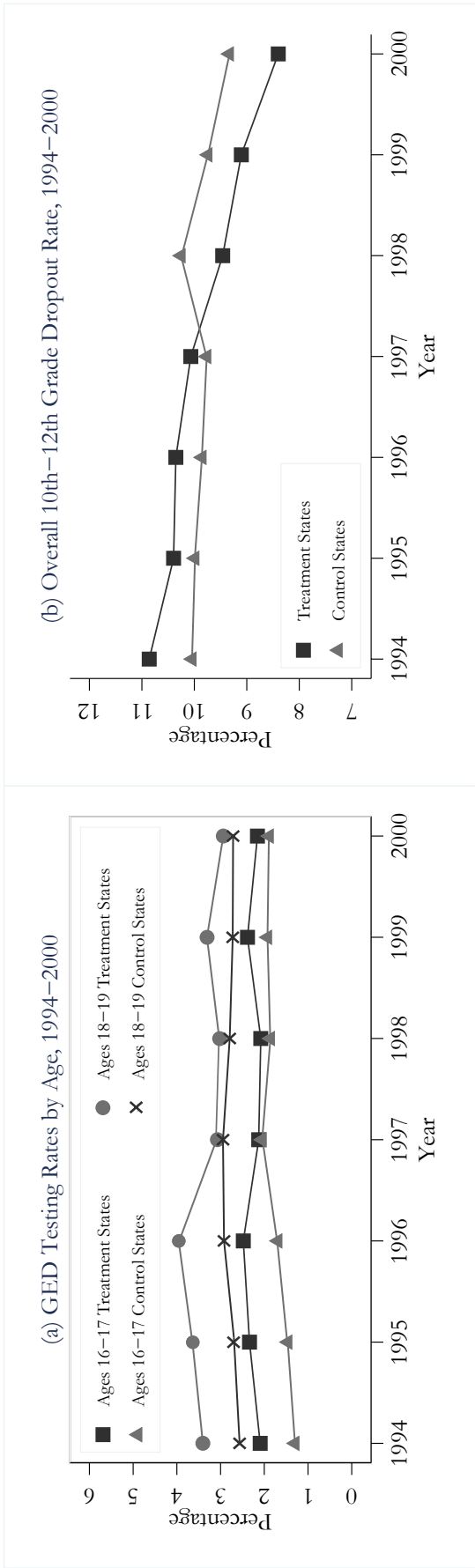
⁹The labels “overall”, “lower” and “upper” are our own and are not based on any official definitions. All formulas used to compute each of the dropout rate measures are included in the Web Appendix.

¹⁰The plots by race are available in the Web Appendix. Data on GED testing by age is from the 1994-2000 GED Statistical reports (See GED Testing Service, Various). Population totals by age are obtained from the Census bureau.

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

¹²A 1997 immigration reform generally made it more difficult to migrate and reside in the U.S. To test the sensitivity of our Hispanic estimates to this reform, we compare Hispanic dropout rates in high immigration control states to the large estimates we find in treatment states. We find no significant declines in dropout rates in these control states suggesting that bias due to migration is minimal. See the Web Appendix Table G-38 for this analysis.

Figure 5. GED Testing and Dropout Rates by Year, Treatment vs. Control States



Note: GED testing rates are calculated from yearly GED Statistical Reports as the percentage of the state population in the given age range who take the GED in that year. Note: GED testing rates are calculated from yearly GED Statistical Reports as the percentage of the state population in the given age range who take the GED in that year. Dropout rates are calculated from yearly GED Statistical Reports as the percentage of the state population in the given age range who take the GED in that year. Note: GED testing rates are calculated from yearly GED Statistical Reports as the percentage of the state population in the given age range who take the GED in that year. Dropout rates are calculated from yearly GED Statistical Reports as the percentage of the state population in the given age range who take the GED in that year. 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.

graders because high rates of retention at that grade make it difficult to calculate yearly exit rates between that grade and 10th grade. Students enrolled in 9th grade are predominately younger than 16 and therefore not allowed to take the GED test in any state.

Conley and Taber (2005) 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 is limited to only five states that were required to change GED testing policies, we follow their methodology when computing our test statistics. We also report robust standard errors clustered at the state level for purposes of comparison.

Figure 6 presents the average GED test taking rate by age pre- and post-1997. The unadjusted mean difference-in-difference estimates and standard errors are also reported for each age group at the top of the figure. 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 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.

The overall dropout rates pre- and post-1997 across all races in both control and treatment states are presented in Figure 7. Unadjusted difference-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.¹³ The estimated change in the 10th-12th 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.

In contrast, younger students did not drop out at higher rates, likely because they did not meet the minimum age requirements for the GED (see Figure C-1 in the Web Appendix). 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.

The estimated effect of the GED testing reform on school dropout rates is also much larger for older students (See Figure 8). The estimated change in the 12th grade dropout rate across all race groups combined is 3.1 points and is statistically significant at the 5% level. Again, we observe larger effects among minority students. Whereas the 12th 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 12th grade dropout rate account for nearly all of the decline in the overall dropout rate in states that increased GED standards.

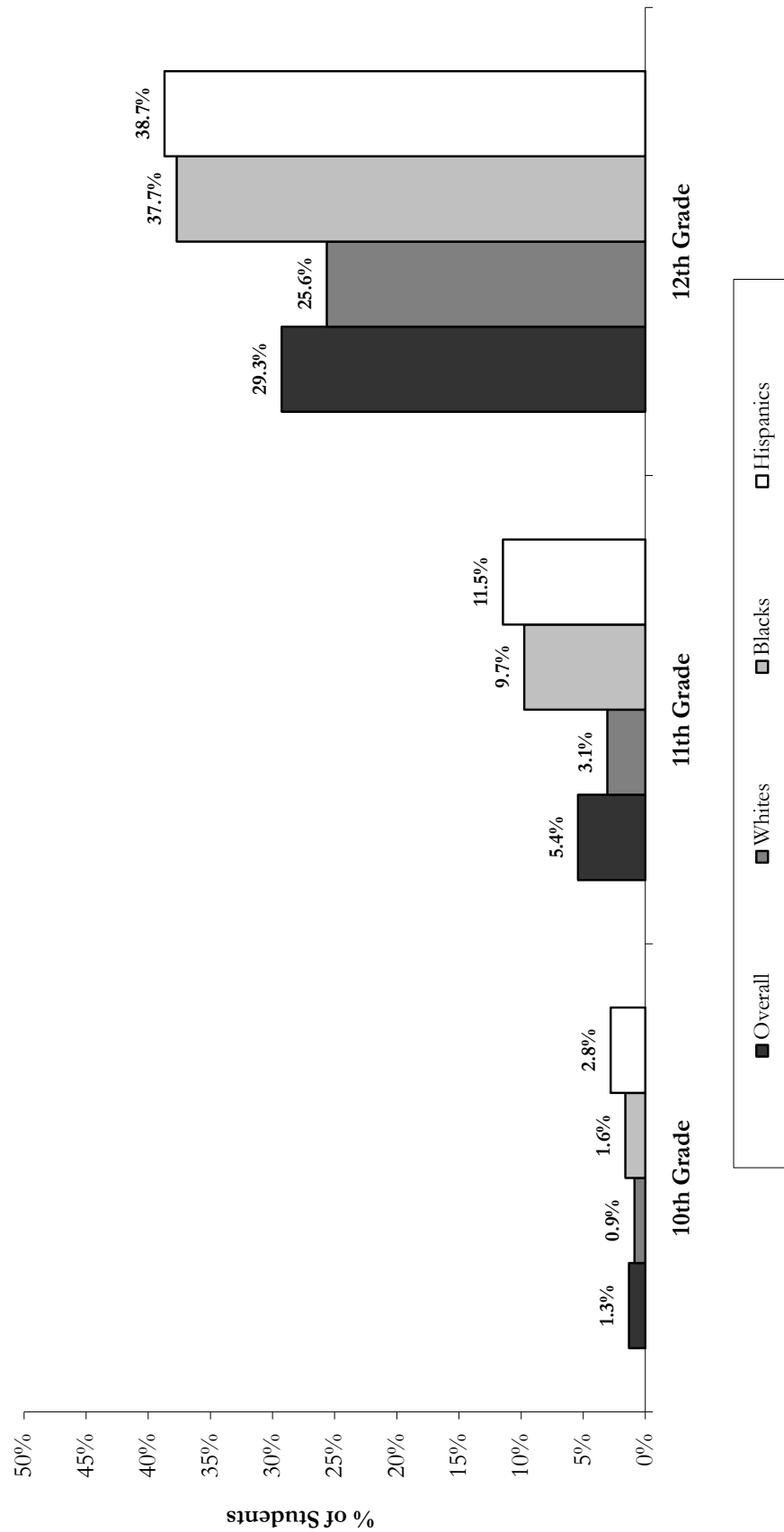
Students enrolled in lower grade levels in treatment states effectively provide a second control group in our analysis. Most of the students in this group are not affected by changes in GED requirements because they are too young to take the GED test without obtaining a special exemption.¹⁴ The greater 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).

¹³The 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 sub-sample of states.

¹⁴Special 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, Various.)

Figure 10. Percentage of HS Students Eighteen or Older by Grade and Race, CPS October 1994-2000

Figure 9: Percentage of HS Students Eighteen 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. 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.

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.¹⁵

Figure 9 shows that differences in age between whites and minority students might explain why the reform has greater impact on minority students. For whites, 25.6% of the students are 18 and above in the fall of 12th 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.¹⁶ Restricting the minimum age of GED test taking is one way to prevent early exit from secondary education.¹⁷

4 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.

¹⁵See Web Appendix D.4 for this and other sensitivity analyses. In Section D.5 of the web appendix we show that the trends prior to 1994 and post-2000 are in line with the trends displayed in Figure 5. The trends in the time period studies are not anomalous.

¹⁶ Heckman and LaFontaine (2010).

¹⁷The Web Appendix Section E (locate at http://jenni.uchicago.edu/GED_dropout/GED_incentives/) presents a fixed effect analysis of the introduction of higher passing standards on dropout rates which corroborate the analysis of Section 3.

As shown in Figure 10a, 16 to 19 year old GED test takers are the largest and fastest growing group. Figure 10b shows that the bulk of the growth in the 16 to 19 age category comes from 16 to 17 year olds. The GED may be inducing students to leave high school rather than graduate.

4.1 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 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. This is higher than the passing standard. In contrast, Oregon reports a median of 20 study hours and median enrollment of 75 days.^{18,19} Despite the stated goal of targeting students behind in credits and likely to dropout, the majority of Option Program participants graduate before their high school class.²⁰

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

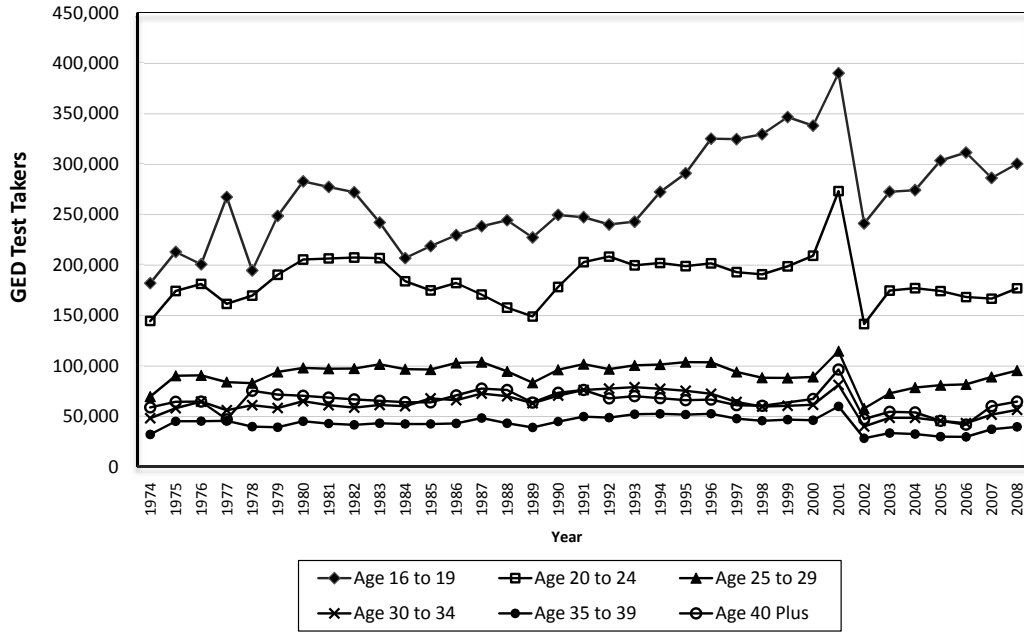
¹⁸GED Option Statistical Report (2009).

¹⁹ Figures F-1 and F-2 in the Web Appendix show that the state option programs vary greatly in terms of average days enrolled and average preparation.

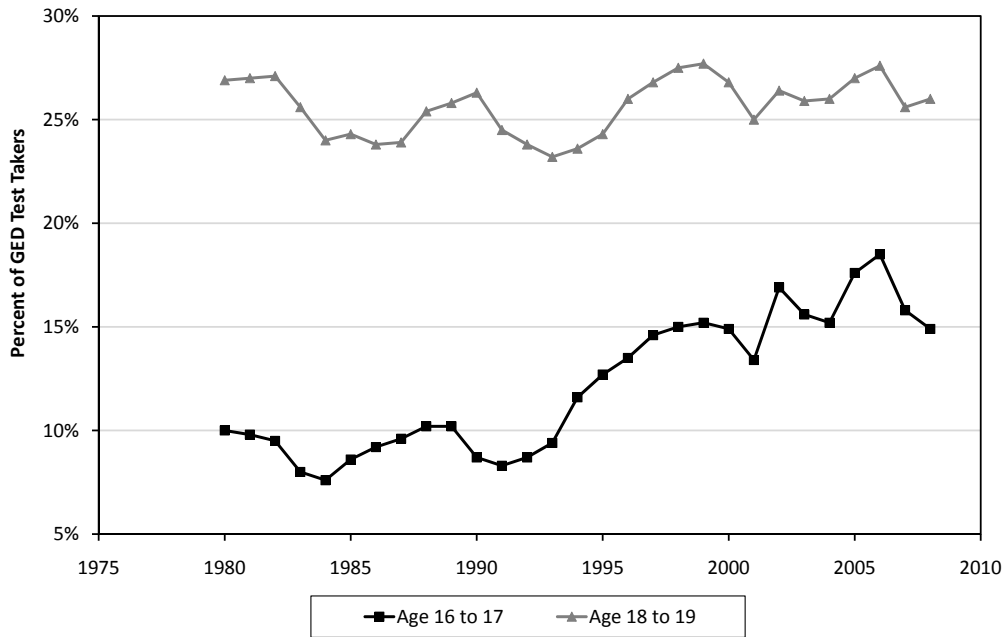
²⁰See Figure F-3 in the Web Appendix.

Figure 10: Decomposing GED Testing Trends by Age

(a) Number of Test Takers by Age



(b) Decomposing 16 to 19 year of Test Taking



Source: GED Testing Services Annual Statistical Reports (1974-2009).

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 is further bolstered by the fact that in many states the GED credential is semantically indistinguishable from a high school diploma.²¹ (See Table F-1 in the Web Appendix.)

4.2 The Oregon GED Option Program

We evaluate the effect of the Oregon GED Option program on high school graduation rates using administrative records. Oregon implemented 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 non-traditional 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.

4.3 The Effect of the GED Option Program on Cohort Completion Rates

Using the Common Core Data, we construct 8th grade, 9th grade, and 10th grade cohort completion rates, where the 8th grade cohort completion rate is the number of diplomas issued in a year divided by the number of 8th graders enrolled four years earlier. 9th and

²¹However, No Child Left Behind legislation prohibits states from issuing actual diplomas based on GED certification.

10th grade cohort completion rates are constructed in the same manner, but using 9th grade enrollment lagged three years or 10th 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 4.4.

Using this 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:

$$Y_{i,t} = \alpha GED_{i,t} + \beta_1 X_{i,t} + \beta_2 Year_t + \beta_3 District_i + \epsilon_{i,t}, \quad i = 1, \dots, I; \quad t = 1, \dots, T$$

where $Y_{i,t}$ is either 8th, 9th, or 10th grade cohort completion rates; $GED_{i,t}$ 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 $District_i$ 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 non-operating 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. 8th, 9th, and 10th grade cohort completion rates decrease by 4.2%, 3.0%, and 4.2% after districts implement a district-wide program (Figure 11a). These estimates are all statistically significant.²² We find similar results ranging from 3% to 4% for districts that have any option program in a regular high school.²³ Cohort completion rates are not affected in districts with Option programs implemented outside of regular high schools. (See Figure 11b.) 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 Option program GED certify. We find an increase in GED certification rates²⁴ across cohorts in districts that adopt a GED Option program. The presence of a district-wide Option program is associated with a 1.7% increase in the cohort GED certification rate for the 8th, 9th, and 10th grade cohorts.²⁵ This increase is only half of the estimated decrease in cohort diploma rates.²⁶

4.4 Which Districts Adopt Option Programs?

Districts select into Option Programs. Such selection 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. We find only small differences between districts that adopt GED Option programs and those that do not, suggesting that selection does not play a role (see Figure F-5 and Figure F-6 in the Web Appendix).

²²Estimates are statistically significant at the 0.05 level for 8th and 10th grade cohort completion rates and the 0.1 level for 9th grade rates.

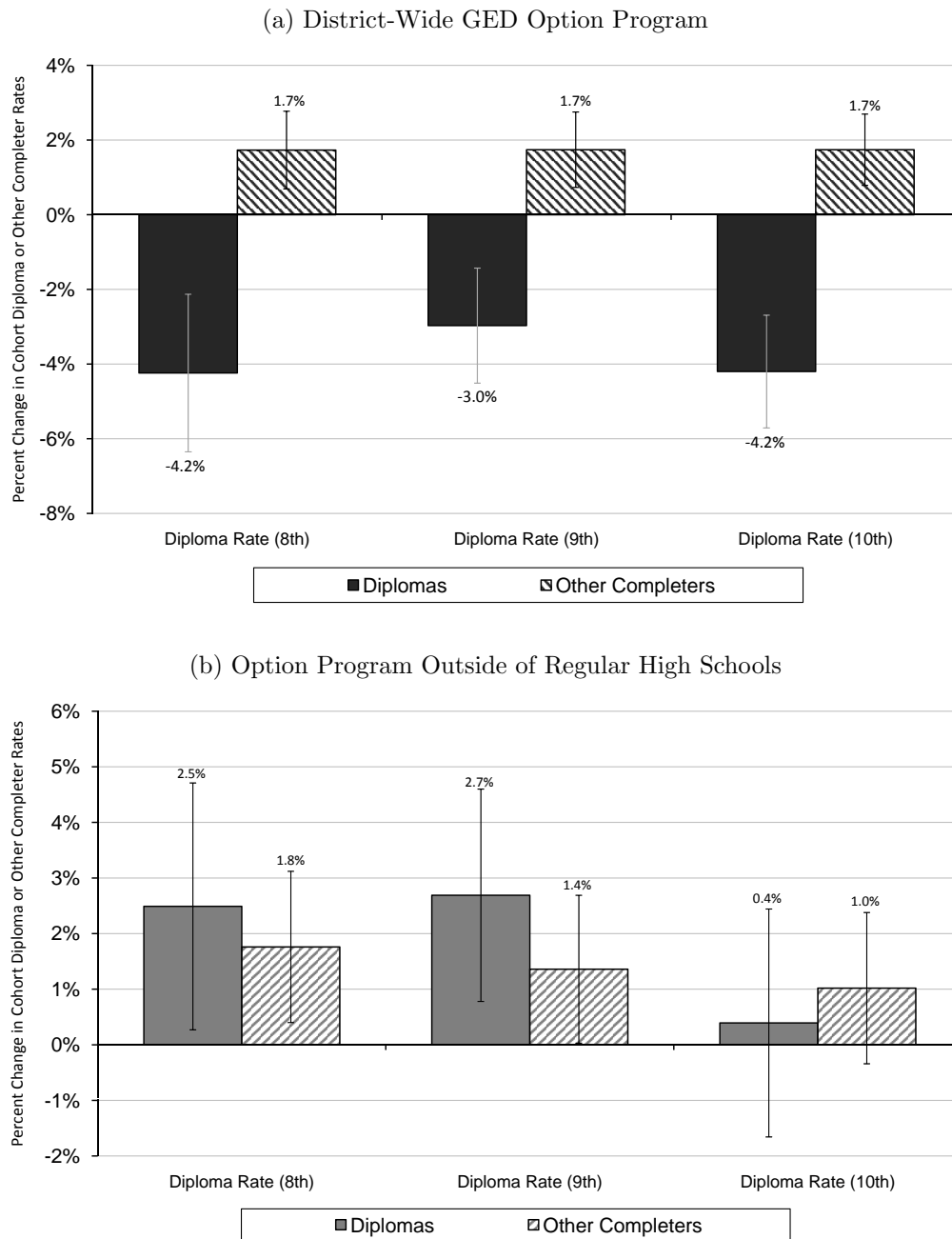
²³See Figure F-4 in the Web Appendix.

²⁴GED 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.

²⁵These estimates are jointly statistically significant at the 0.10 level.

²⁶We 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.

Figure 11: The Effect of the GED Option Program on High School Cohort Completion Rates



Source: National Center for Education Statistics, Common Core Data and Oregon School Districts Administrative Data. Notes: Cohort completion rates are defined as the number of diplomas issued divided by 8th, 9th, or 10th 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 2001-2002 school year through 2007-2008 school year. The bars show standard errors.

5 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.²⁷ 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.²⁸ 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.”

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 age 16 to 19.²⁹

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 three 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 9th grade enrollment.³⁰

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.³¹ 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

²⁷See Allen and Jones (1992).

²⁸California Legislature (1973).

²⁹See Figures 1 and 2.

³⁰Population 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 1st of each year. We use the July 1st 15 year old population in the next year to proxy for the previous years fall 14 year old population. U.S. population estimates by age are from the Census Bureau and are also estimates of the resident population on July 1st.

³¹Figure G-1 in the Web Appendix displays completion rates by year for California and the rest of the country for the years 1971-1977.

states. While graduation rates fell both in California and the rest of the U.S. 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 from 1975-1977.

The adverse effect of introducing the GED program on graduation rates was larger for males than females.³² Male graduation rates fell by 3.6 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. Additionally, males are farther 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 GED option 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.

³²Data for this period are not available by race.

6 Conclusion

This paper 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 12th 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. There are smaller changes in dropout behavior for younger students not eligible to drop out.

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 four percent 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 U.S., and

graduation levels dropped to those of the other states. Eliminating the GED option 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, post-secondary 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, Humphries, and Mader, 2011). Given the poor performance of GED recipients relative to high school graduates, the findings reported in this paper 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.

References

- Agodini, R. and M. Dynarski (1998, June). Understanding the trend toward alternative certification for high school graduates. Document PR98-39, 37, Mathematica Policy Research, Inc., Princeton, NJ.
- Allen, C. A. and E. V. Jones (1992). *GED Testing Program: The First Fifty Years*. Washington, D.C.: American Council on Education.
- Boesel, D., N. Alsalam, and T. M. Smith (1998). *Educational and Labor Market Performance of GED Recipients*. Washington, DC: U.S. Dept. of Education, Office of Educational Research and Improvement, National Library of Education.
- California Legislature (1973). Chapter 6 of division 6 of the education code, article 9. In *West's Education Code, Chapter 872*, pp. 1594. Sacramento, CA: State of California.
- Chaplin, D. (1999, November). GEDs for teenagers: Are there unintended consequences? Technical report, The Urban Institute.
- Conley, T. and C. Taber (2005, June). Inference with “difference in differences” with a small number of policy changes. Technical Working Paper 312, NBER.
- GED Testing Service (Various). *Who Took the GED?: GED Statistical Report*. Washington, DC: American Council on Higher Education.
- GED Testing Service, American Council on Education (2009, December). *2008–2009 GED Option Statistical Report*. Washington, DC: GED Testing Service, American Council on Education.
- Heckman, J. J., J. E. Humphries, and N. Mader (2011). The GED. In E. A. Hanushek, S. Machin, and L. Wößmann (Eds.), *Handbook of the Economics of Education*, Volume 3, Chapter 9, pp. 423–484. Amsterdam: North Holland, Elsevier.

- Heckman, J. J. and P. A. LaFontaine (2010, May). The American high school graduation rate: Trends and levels. *Review of Economics and Statistics* 92(2), 244–262.
- Kominski, R. (1990, May). Estimating the national high school dropout rate. *Demography* 27(2), 303–311.
- Lane Community College (2008). Online GED preparation, GED 2002 changes. <https://teach.lanecollege.edu/ged/ged2002.htm> (accessed May 9, 2008).
- Lillard, D. R. (2001). Do general educational development certificate policies induce youth out of high school? Unpublished manuscript, Cornell University.
- Lillard, D. R. and P. DeCicca (2001). Higher standards, more dropouts? evidence within and across time. *Economics of Education Review* 20(5), 459–473.
- National Center for Education Statistics (2005). Education longitudinal study of 2002/2004: Base-year to first follow-up data file documentation. Technical report, National Center for Education Statistics, Washington, DC.
- National Center for Education Statistics (2006). *Education Longitudinal Study of 2002 (ELS:2002/04), First Follow-up, Student Survey, 2004*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.
- National Center for Education Statistics (Various). *Digest of Education Statistics*. Washington, DC: National Center for Education Statistics.
- Quinn, L. M. (1997). An institutional history of the GED. Unpublished manuscript.
- Van Slyke, C. (2005). *GED 2005-2006 (Kaplan)*. New York: Simon and Schuster.
- Zhang, J., M. Han, and M. Patterson (2009a). Young GED examinees and their performance on the GED Tests. Research Studies 2009-1. Washington, DC: GED Testing Service.

Zhang, J., M. Y. Han, and M. B. Patterson (2009b). Young GED examinees and their performance on the GED tests. GED Testing Service Research Studies 2009-1, GED Testing Service, Center for Adult Learning and Educational Credentials, American Council on Education.