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High School Equivalency Credentialing and Post-Secondary Success: Pre-Registered Quasi-Experimental Evidence from the GED® Test

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For the over 24 million American adults who do not hold a traditional high school diploma, high school equivalency (HSE) credentials represent the primary "second-chance" pathway to many careers or educational opportunities. This project uses current, representative data to assess whether, how, and for whom HSE credentials promote post-secondary success. Examining post-secondary outcomes in a sample of 102,000 GED testers who attempted a GED subject test in the United States between 2014 and 2023, I find that recent GED graduates persist and graduate from college at higher rates than past cohorts, demonstrating the growing importance of HSE credentials as a non-traditional post-secondary pathway. College-ready GED graduates enroll, persist, and graduate from college at even higher rates, primarily from four-year institutions. Even in this large, national dataset, regression discontinuity (RD) estimates assessing the causal impact of earning an HSE credential or college readiness designation on college outcomes are inconclusive. Estimates vary in sign, magnitude, and precision across different subject test thresholds and subgroups. However, exploratory analyses that pool across subjects suggest that earning an HSE credential or college readiness designation may increase college enrollment and persistence for the highest- and lowest-scoring GED graduates.

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Abstract
For the over 24 million American adults who do not hold a traditional high school diploma, high school equivalency (HSE) credentials represent the primary "second-chance" pathway to many careers or educational opportunities. This project uses current, representative data to assess whether, how, and for whom HSE credentials promote post-secondary success. Examining post-secondary outcomes in a sample of 102,000 GED testers who attempted a GED subject test in the United States between 2014 and 2023, I find that recent GED graduates persist and graduate from college at higher rates than past cohorts, demonstrating the growing importance of HSE credentials as a non-traditional post-secondary pathway. College-ready GED graduates enroll, persist, and graduate from college at even higher rates, primarily from four-year institutions. Even in this large, national dataset, regression discontinuity (RD) estimates assessing the causal impact of earning an HSE credential or college readiness designation on college outcomes are inconclusive. Estimates vary in sign, magnitude, and precision across different subject test thresholds and subgroups. However, exploratory analyses that pool across subjects suggest that earning an HSE credential or college readiness designation may increase college enrollment and persistence for the highest- and lowest-scoring GED graduates.

I. Introduction and Motivation

Nearly 10% of American adults lack a high school diploma or equivalent qualification (U.S. Department of Education, 2023a). High school equivalency (HSE) credentials represent the primary "second-chance" pathway for uncredentialed adults to meet minimum requirements for

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many jobs or educational opportunities. Typically, states award HSE credentials certifying proficiency in high-school-level content to individuals who pass a battery of standardized subject tests that comprise HSE assessments like the GED® test and HiSET® exam.[1] Nationwide, over $2 billion in annual public subsidies fund free adult education classes that help hundreds of thousands of adults learn English, develop basic skills, or prepare for HSE exams each year (U.S. Department of Education, 2022a; 2022b).

The first HSE test (the GED test) was introduced over 80 years ago, but there remain large gaps in knowledge about how HSE credentials impact recipients' lives today. While a mature literature has explored the relationship between HSE receipt and human capital, nationally representative analyses are almost exclusively limited to cohorts of HSE recipients who earned their credential in the 1980s or 1990s (e.g., Cameron & Heckman, 1993 or Tyler, Murnane & Willet, 2000; see Heckman, Humphries & Kautz, 2014 for a review), and even the most recent causal evidence studies testers in a single state (Missouri) who took discontinued editions of the GED test between 1995 and 2005 (Jepsen, Mueser, and Troske, 2016; 2017). While the size of the extant literature may suggest that characteristics, behaviors, and outcomes of the population of HSE recipients are well-understood, at the national level, even simple descriptive statistics are decades old.

Meanwhile, the HSE credentialing landscape has evolved. In 2014, GED Testing Service, LLC. (GEDTS) introduced the 5th edition of the GED test, transitioning to a predominantly computer-based format, increasing test standards to align with national college and career readiness standards, and introducing the subject-specific GED Honors designation for high

[1] GED® is a registered trademark of the American Council on Education (ACE) and administered exclusively by GED Testing Service LLC under license. HiSET® is a registered trademark of PSI Services LLC. This material is not endorsed or approved by ACE, GED Testing Service, or PSI Services.

achieving testers (i.e., those who reached a score of 170 or higher on a given subject test). This new edition emphasized the GED test as a "stepping-stone toward a college classroom or a better career and a family sustaining wage," acknowledging the test's role as "no longer an endpoint for adults, but a springboard for more education, training, and better-paying jobs" (GEDTS, 2014). Since then, alternative HSE exams (i.e., the HiSET exam and the now-defunct TASC exam) have been adopted in over half of U.S. states (usually alongside the GED test, but in some cases, replacing it). In 2016, GEDTS revised the subject test passing thresholds from 150 to 145 and replaced GED Honors with the GED College Ready (GED CR) and GED College Ready + Credit (GED CR+C) designations that are awarded to testers who reach specific subject test score thresholds in each subject (165 for GED CR and 175 for GED CR+C). GEDTS advertises its college readiness designations as a pathway toward potential credit for prior learning, recommending that institutions exempt GED CR students from placement exams or remedial coursework in that subject and award 1-3 college credits to students for each subject in which they qualify as GED CR+C, similar to the process by which students may receive waivers or college credits acknowledging their performance on the CLEP, IB, or AP exams (GEDTS, 2023).[2]

Additionally, educational and economic conditions have changed, with more students earning traditional high school diplomas, a greater share of jobs requiring post-secondary training, and stagnating or declining real wages for less educated workers (Watson, 2017; Binder & Bound, 2019). In the decade following the Great Recession, the share of job postings requiring

[2] HiSET exam score reports include a College and Career-Readiness (CCR) score, but CCR scores are not advertised as a pathway toward credit for prior learning. The HiSET website indicates that "[a] CCR score of 15 on each multiple-choice subtest and a 4 on the Language Arts – Writing essay demonstrates college and career readiness." See https://hiset.org/test-centers-adult-ed-scoring-credentials/ for more information.

a college degree increased by 60%, narrowing the path to middle class jobs for adults who do not hold a high school diploma or equivalent qualification (Blair & Deming, 2020). Finally, widespread availability of post-secondary degree-verification services has made it easier than ever for employers to enforce post-secondary (but not high school) educational requirements (e.g., via nscverifications.org). Each of these factors represent important shifts in the policy landscape that could change who pursues HSE credentials, what skills are required to earn an HSE credential, what signal an HSE credential sends to potential employers or admissions officers, and what types of opportunities or pathways an HSE credential is necessary or sufficient to access for otherwise uncredentialed adults.

Following 30 years of educational, economic, and technological progress—in addition to the evolution of HSE exams themselves—it is not clear whether or how past evidence about the role of HSE credentials in post-secondary education or the labor market will generalize to recent cohorts of HSE recipients or to past cohorts' experiences in the present day. This project uses current, representative data to answer pressing questions about HSE credentialing at the national level, assessing whether, how, and for whom HSE credentials promote post-secondary success. Descriptive analyses examine post-secondary outcomes in a sample of 101,829 GED testers who attempted a GED subject test in the United States between 2014 and 2023 (excluding those who resided or tested in Texas, tested while incarcerated in a Federal Bureau of Prisons institution, or resided in a state that did not administer the GED test), and regression discontinuity analyses focus on a subset of 94,611 of these GED testers whose first subject test attempt was between 2016 and 2023. By bringing current, representative data to bear on pressing questions about HSE credentialing and adult education at the national and state levels, this project extends and updates

the HSE literature. Specifically, this project will address the following pre-registered research questions:

> **RQ1**: How and for whom does earning an HSE credential affect individuals' post-secondary enrollment and attainment?
>
> **RQ2**: How and for whom does earning an HSE college-readiness designation affect individuals' post-secondary enrollment and attainment?

The pre-registration for this project includes a pre-analysis plan (see Appendix A), within which I report how I determined the sample size, all exclusions, all model parameters, and all measures for the quasi-experiment (adapted from Simmons, Nelson, & Simonsohn, 2012). I pre-registered the following hypotheses related to RQ1 and RQ2 prior to receiving access to National Student Clearinghouse (NSC) college outcome data:

> **H1:** Earning an HSE by passing the GED test will increase the probability that individuals enroll in a post-secondary institution.
>
> **H2:** Earning an HSE by passing the GED test will increase the probability that individuals persist in their post-secondary training.
>
> **H3:** Earning an HSE by passing the GED test will increase the probability that individuals graduate and/or earn a post-secondary credential.
>
> **H4:** The following groups will drive the positive relationship between marginally passing the GED test and post-secondary outcomes: testers who prepared via adult education; testers who reported education as their motivation for testing; and testers who completed more years of formal schooling prior to taking the GED test.[3]

[3] In my pre-analysis plan, I included "testers with higher scores on other subject tests" as an additional subgroup in this list. See Appendix B "Deviations from Pre-Analysis Plan" for a full accounting of all deviations from my original pre-analysis plan, with explanations.

H5: Earning a GED college readiness designation (GED CR or CR+C) will not change the probability that individuals enroll in, persist in, or graduate from a post-secondary institution.

Answering each research question will generate actionable evidence to guide the decisions of policymakers, practitioners, and potential HSE testers by assessing whether, how, and under what circumstances today's HSE credentials help adults without traditional high school diplomas reach their educational goals. This project characterizes the current landscape of high school equivalency in the United States, estimates the educational benefits of earning an HSE credential for individuals who marginally pass a GED subject test, measures heterogeneity in the educational impacts of earning an HSE credential within this population, and assesses the educational returns to college readiness designations that are packaged with HSE credentials for marginal GED CR and GED CR+C designees.

I find that recent GED graduates—particularly those who identify educational gain as their primary reason for testing—persist and graduate from college at higher rates than past cohorts, suggesting that HSE tests play an important role in facilitating "second-chance" transitions to post-secondary education for non-traditional students. However, passing the GED test does not appear to substantially improve college outcomes for individuals who are at the margin of earning an HSE credential via passing any particular GED subject test (i.e., the lowest-performing GED graduates). Exploratory analyses that pool across subjects suggest that earning an HSE credential may improve college enrollment and persistence outcomes for individuals whose lowest scoring subject is near the passing threshold.

Likewise, among GED graduates who are identified as college ready in one or more subjects, rates of college enrollment, persistence, and graduation are high relative to past

benchmarks, particularly among college-ready GED graduates who identify educational gain as their primary reason for testing. Consistent with my past work on this topic (Heller, 2024), the GED college readiness benchmarks appear to be strong predictors of college success, but it is unclear whether earning a GED CR or GED CR+C designation causally impacts students' post-secondary outcomes.

The remainder of this paper is organized as follows: in Section II, I describe past research assessing the impact of earning an HSE credential via passing the GED test. In Section III, I describe the research design, including data sources and sampling design as well as my empirical strategy and econometric models. In Section IV, I present the main results, heterogeneity analyses, and robustness checks. Finally, Section V concludes with a discussion of the results and policy implications.

II. Background on HSE Credentials and GED Graduates

II.A Theory about the function of HSE credentials

Theory suggests a complicated interplay between HSE credentials, educational investments, and labor market outcomes. While offering HSE credentials ensures that some students avoid becoming uncredentialed dropouts, they may encourage others who otherwise would have graduated to drop out and pursue an alternative credential (Agodini & Dynarski, 2000; Tyler, 2003; Heckman et al., 2012).

Araujo, Gottlieb, and Moreira (2007) suggest that attaining an HSE in lieu of a traditional high school diploma conveys a mixed signal to employers about an individual's skills, implying relatively high cognitive skills but low non-academic skills. They postulate the impact of earning

an HSE on labor market outcomes depends upon the relative weights employers place on different types of skills.

Heller and Slungaard Mumma (2019) theorize that HSE credentials play importantly different roles for different types of testers, functioning as both an "off-ramp" from formal schooling and an "on-ramp" to further training. While many teenagers may pursue HSE credentials with the goal of permanently leaving school, adults without diplomas—especially those who opt into adult education courses—may be motivated by a desire to reengage with formal education.

This project will contribute to the theoretical literature on HSE credentials by linking information about individuals' motivation for testing, test preparation behavior, demographics, and past academic performance to outcomes of interest.

II.B Empirical Evidence on Returns to HSE Credentialing

Focusing on cohorts of working-aged adults observed between the 1970s and early 2000s, a large literature describes differences in educational and workforce outcomes between adults with HSE credentials and their uncredentialed peers. Heckman, Humphries, and Kautz (2014) review past analyses and re-analyze nationally representative datasets to assess the labor market value of HSE credentials under a selection-on-observables assumption. Despite a raw advantage in labor force participation and income for HSE credential holders relative to uncredentialed adults, they find no improvements in labor market outcomes attributable to HSE credentialing after conditioning on observable characteristics in cohorts of otherwise uncredentialed adults from the National Longitudinal Survey of Youth 1979 (with outcomes observed between 1979 and 2003), the National Educational Longitudinal Survey of 1988 (with outcomes observed between 1988 and 2000), and the National Longitudinal Survey of Youth 1997 (with outcomes observed between 1997 and 2008).

This analysis followed a productive period of research measuring the value of earning an HSE credential in the labor market, with no clear consensus on whether or for whom HSE credentials improved career prospects and other outcomes. Researchers have explored the relationship between HSE credentials and labor market outcomes in various subgroups, including women (Boudett, Murnane, & Willett, 2000), foreign-born students (Clark & Jaeger, 2006), prisoners (Nuttall, Hollmen, & Staley, 2003; Tyler & Kling, 2007; Darolia, Mueser, & Cronin, 2020), and students with disabilities (Wagner et al., 2005). Beyond the workforce, a variety of alternative outcomes have been examined, including recidivism (Nuttall, Hollmen, & Staley, 2003), health outcomes (Kenkel, Lillard, & Mathios, 2006), and educational attainment (Tyler & Lofstrom, 2010; Maralani, 2011; Jepsen, Mueser, & Troske, 2017).

A growing literature uses regression discontinuity (RD) designs to measure the causal effects of obtaining an HSE credential on outcomes of interest (e.g., Tyler, Murnane, and Willett, 2000; Jepson, Mueser, & Troske, 2016, 2017; Heller & Slungaard Mumma, 2019), but even the most recent evaluations limit their analysis to cohorts who took the GED test 20–30 years ago.

Importantly, Jepsen, Mueser, and Troske's (2016) analysis calls into question the methodology of over a decade of findings based on RD designs. The authors note the importance of accounting for retaking behavior, ignored in previous RD evaluations of HSE credentials, in constructing and interpreting quasi-experimental evidence. After accounting for retaking behavior among GED test-takers in Missouri from 1995-2005, Jepsen, Mueser, and Troske (2016, 2017) find no evidence that passing the GED test improved labor market or long-run educational outcomes for marginal passers. These findings stand in stark contrast with Tyler, Murnane, and Willett's (2000) analysis, which suggested that earning a GED substantially improved the labor market outcomes of white men.

Heller (2024) is the only causal study to examine the role of GED College Readiness benchmarks in promoting post-secondary enrollment and attainment. Heller notes that while earning a GED CR and CR+C designation predicts higher levels of post-secondary enrollment and persistence, he finds no evidence that crossing a GED CR or GED CR+C benchmark impacts these outcomes, but in a small sample, null results are too imprecise to rule out modest effects in either direction. Notably, Heller (2024) finds that testers who score near the GED CR or CR+C threshold in a given subject show no greater proclivity to retake that subject test than those who barely reach these benchmarks, while testers at the minimum passing threshold are over 100 times more likely to retest conditional on failing their first attempt of a given subject test, suggesting that testers are willing to exert much greater effort to pass the GED test than to earn a GED CR or CR+C designation.

This project will extend Jepsen, Mueser, and Troske's (2017) analyses by estimating the educational returns to passing the GED test in a representative, modern sample of testers, and build on Heller's (2024) evaluation by examining the role of the GED CR or CR+C college readiness designations in promoting post-secondary success over a longer period and in a larger, better-powered sample.

II.C Descriptive Facts About GED Graduates' Post-Secondary Outcomes

Figures 1A and 1B present immediate college enrollment, second-year persistence, and six-year post-secondary award outcomes for different groups of 2014-2023 GED graduates against national benchmarks from recent high school graduates (Bureau of Labor Statistics, 2024; U.S. Department of Education, 2021; 2023b). Today, over a quarter of GED graduates (27%) enroll in college within one year of earning an HSE credential, and over 40% enroll within six years. These college enrollment rates are broadly consistent with historical patterns,

but modern GED graduates are more likely to persist beyond the first year of college, to re-enroll in subsequent years, and to complete a post-secondary award (e.g., a degree or certificate). Overall, 9% of recent GED graduates earn a post-secondary award within six years of earning an HSE credential, and conditional on college enrollment, 21% earn a post-secondary award within six years. Among those who enroll within one year of earning an HSE credential, 65% re-enroll during their second-year.

Figure 1, Figure 2, and Appendix Tables A1–A5 reveal a strong relationship between GED subject test performance and all college outcomes. Testers who achieve higher subject test scores (Figures 2A-2C) or earn a GED CR designation (Figures 1A-1B) have higher rates of post-secondary enrollment rates, second-year retention, and award completion than their peers who score lower or do not earn a college readiness designation. The highest-scoring testers—who earn a GED CR+C designation—have even higher rates of enrollment, persistence, and award completion. Appendix Tables A2 and A4 show that conditional on enrolling in college, the six-year completion rate for college-ready GED graduates approaches—and in some subgroups, substantially exceeds—the national average six-year completion rate for entrants to two-year institutions (29.5%), which account for a majority of initial college enrollments among GED graduates (U.S. Department of Education, 2023b). Appendix Table 5 shows that while most initial college enrollments occur in two-year institutions, enrollments and completions through four and six years are roughly evenly split between two- and four-year institutions.[4] Consistent

[4] Importantly, in this dataset, earning a post-secondary award from an IPEDS four-year (two-year) institution does *not* necessarily imply earning a Bachelor's (Associate's) degree. All certificates and degrees captured by NSC are recorded as a single "graduated" variable that does not distinguish between certificates, Associate's degrees, Bachelor's degrees, graduate degrees, and other post-secondary awards. The median total enrollment duration (in any institution) through six years after passing the GED test is 16 quarters for GED graduates who earned a post-secondary award from a four-year institution and 12 quarters for GED graduates who earned a post-secondary award from a two-year institution.

with the level of preparation implied by their GED College Ready + Credit designation, the highest achieving GED graduates are almost twice as likely to earn a post-secondary award from a four-year institution (12.3%) than a two-year institution (6.7%). Less than 0.5% of GED graduates in the sample enrolls in an institution that is classified as "less than two-year" by the U.S. Department of Education within 6 years of passing the GED test.

Additionally, at all levels, citing educational gain as one's primary motivation for testing predicts post-secondary enrollment and success among GED graduates (see Panel B of Appendix Tables A1 and A2). Among the highest achieving, educationally motivated GED graduates, over 50% enroll in post-secondary education within 1 year of earning their HSE credential, and 22.8% earn a post-secondary award within 6 years (33.3% complete an award conditional on enrolling).

To contextualize current patterns of post-secondary enrollment, persistence and completion, I present a series of historical benchmarks for GED graduates' post-secondary outcomes against the closest comparable measures constructed from my sample. In a sample of Texas GED graduates who earned their HSE credential in the late 1990s, Tyler and Lofstrom (2010) find that 22% enrolled in college within three years of earning a credential. Among the 2014-2021 GED graduates for whom I can observe three years of potential enrollment, 35% of all GED graduates—and 41% of college-ready GED graduates—enroll within three years. Following a national sample of individuals who took the GED test in 2003, Patterson and colleagues (2010) find that 43% of GED graduates enroll in some form of postsecondary education within seven years of earning an HSE credential—close to the 44% seven-year enrollment rate in my sample. However, in the 2003 cohort, 33.4% of those who enrolled did so for only a single semester, first-to-second-semester retention was 50.4%, and less than 12% of enrollees graduated with a post-secondary award within seven years. Among 2014-2016 GED

graduates in my sample, only 20.1% of enrollees enrolled for a single semester, first-to-second-semester retention was 79.0%, and 22.6% of enrollees graduated with a post-secondary award within seven years.

In a national sample of GED graduates who are observed through age 29, Murnane, Willett, and Boudett (1999) find that less than 12% complete at least one year of college and less than 3% earned an associate's degree. While I cannot observe course completion or separate post-secondary awards by type, if I restrict my outcome window and sample to individuals who earn an HSE credential before age 29, I estimate that 30.0% of this set of recent GED graduates enroll for at least two semesters, and 6.5% earn any post-secondary award by age 29.

Among 1995-2005 GED testers in Missouri, Jepsen, Mueser, and Troske (2017) find that while 29.4% of GED testers enroll in college, only 3.4% earn a post-secondary award within 7.5 years of their first GED subject test attempt. Today, post-secondary enrollment rates are similar, but award completion rates for GED testers are over twice as high. Among 2014-2016 GED testers, 34.7% enrolled in college within 7.5 years of their first GED subject test attempt (45.5% of GED graduates), and 8.0% earn a post-secondary award within 7.5 years (10.4% of GED graduates). Among all college-ready GED graduates, 7.5-year post-secondary award rates are 14.5%, with completion rates reaching 21.0% for the GED graduates who earn a GED CR+C designation in any subject. Appendix Figure A1 and Appendix Tables A1–A4 provide additional descriptive statistics documenting patterns of enrollment, persistence, and completion among different subgroups of GED graduates.

Heckman, Humphries, & Mader (2010) show that even for cohorts of GED graduates who earned their HSE credentials in the late 1970s or 1980s, rates of college enrollment and attainment continue increasing into middle age. Among GED graduates who completed the

National Longitudinal Survey of Youth 1979 (NLSY79) at age 14-22, fewer than 10% were enrolled in college at age 22, and almost none had earned a post-secondary credential (e.g., <1.5% had earned a two-year degree), however, by 2006, when respondents were 41-49 years old, nearly half (48.5%) had enrolled in college at some point, with 7.2% earning an Associate's Degree and 6% earning a Bachelor's degree. NLSY79 follows respondents over a 27-year post-period, so this project cannot offer comparable statistics on long-run enrollment or degree attainment. However, we note that rates of enrollment and attainment continue to grow through at least the first nine years after an individuals' first GED subject test attempt. In our oldest cohorts, the share of GED graduates who earn any post-secondary award steadily grows from 4.9% four years after an individual's first subject-test attempt to 12.5% through nine years.

III. Research Design

To causally assess the educational impacts of earning an HSE credential or GED college-readiness designation, I link GED test score and administrative survey records to NSC post-secondary educational outcomes and use RD methods to estimate the local impacts of crossing a given subject-test threshold. Additionally, I estimate impacts by subgroup to assess how tester characteristics (e.g., individual demographics, baseline education, motivation for testing, adult education attendance, etc.) predict the educational impacts of HSE credentialing.

III.A Data and Sampling Design

Data for this project come from GEDTS and National Student Clearinghouse (NSC) administrative records. GEDTS administrative data begins with GED subject test scores by attempt linked to survey responses for all U.S. testers from January 1, 2014 through June 30, 2023, excluding those who resided or tested in Texas or tested while incarcerated in a Federal Bureau of Prisons institution. A random sample of testers were selected and linked to NSC post-

secondary outcome data (see description of the sample selection process below), which includes college enrollment and graduation records by quarter and institution. In total, a representative sample of 101,829 GED testers were matched to NSC college outcome data, with 94,611 GED testers whose first subject test attempt was on or after January 26, 2016 forming the primary analytical sample for causal analyses related to college outcomes.

Table 1 reports summary statistics for each of the rich set of background characteristics that we can observe for the universe of GED testers outside of federal prisons in 49 U.S. states and the District of Columbia from 2014-2023. To construct the analytic sampling frame from which observations were random drawn to be matched to NSC post-secondary outcome data, I first dropped all observations from individuals whose first subject test attempt occurred before the age of 16 (<0.1% of the full sample), who tested while incarcerated (16.1%), who tested in a language other than English (4.3%), or who reported residing in a state that did not officially administer the GED test as a pathway to an HSE credential (0.2%).[5] I then stratified the sample by year of first GED subject test attempt and first-recorded state of residence and randomly sampled 1-in-10 individuals (94,611 individuals total) within each state-by-year cell for all individuals whose first subject test attempt was on or after January 26, 2016.[6] For descriptive analyses of college outcomes, I also randomly selected a 1-in-40 sample of GED testers (7,218 individuals total) whose first subject test attempt was between 2014 and January 25, 2016 to

[5] In addition to Texas, residents of the following states are excluded from the analytic sample, because that state did not officially administer the GED test at any time between 2014 and 2023: Iowa, Louisiana, Maine, Montana, and New Hampshire. Observations from the following states are excluded in some years when that state did not officially administer the GED test (excluded years in parentheses): Indiana (2014-2022), Massachusetts (2014-2016), New York (2014-2021), and Tennessee (2017-2023). These exclusions omit a small number of cases where someone who reported living in a state that did not officially administer the GED test appeared in the data, likely by taking the exam in a different state than their state of residence.

[6] This is the date that GEDTS revised the GED subject test passing threshold from 150 down to 145 and introduced the GED CR and CR+C designations (Gewertz, 2016).

match to NSC records. This final analytic dataset of 101,829 individuals includes observations from the 44 states and the District of Columbia, where the GED test was officially administered as a pathway to a state-issued HSE credential between 2014 and 2023.

The outcomes of interest come from NSC's post-secondary enrollment and attainment records. Following my pre-analysis plan, I construct binary indicators of post-secondary enrollment within 0.5, 1, 2, 4, and 6 years after an individual's first GED subject test attempt, cross-sectional enrollment by quarter after an individual's first GED subject test attempt, and post-secondary graduation within 2, 4, and 6 years after an individual's first GED subject test attempt. Next, I sum quarters enrolled through 2, 4, and 6 years after an individual's first GED subject test attempt as measures of post-secondary persistence over time.

I define post-secondary enrollment as appearing the NSC data as an enrolled student during a given period after an individual's first GED subject test attempt. I measure post-secondary persistence as the total number of terms enrolled after an individual's first GED subject test attempt within a given period. I define graduation as appearing as graduated or having completed a degree, certificate, or credential in the NSC outcome data within a given period.[7] These measures of post-secondary enrollment, persistence, and graduation are the primary outcomes of interest for the analysis. I also use a common institutional identifier to merge NSC records to institution-level data from the Integrated Postsecondary Education Data System (IPEDS). This allows me to analyze post-secondary outcomes by sector of enrollment (e.g., two-year versus four-year) and to explore the link between HSE credentials and post-

[7] NSC administrative data only reports whether an individual is recorded as completing a degree or credential at a given institution. I am unable to observe the type of degree that was awarded to GED testers. As such, I define graduation as receiving any degree or credential that results in an individual being recorded as a "graduate" by NSC.

secondary attainment in greater detail. Over 99% of NSC enrollment observations were successfully linked to their associated institution in IPEDS.

The availability of post-secondary outcomes varies based on when individuals first attempt a GED subject test. For the full analytic sample, I assess impacts on post-secondary enrollment during the first two quarters after the quarter in which an individual completes their first GED subject test, and for all testers who took their first GED subject test before April 1, 2023 (90,925 testers or 96% of the sample), I assess impacts on post-secondary enrollment within 1 year of their first attempt. For those who completed their first GED subject test before April 1, 2022 (78,198 testers or 83% of the analytic sample), I observe college enrollment, persistence, and completion through at least two years; for those whose first attempt is before April 1, 2020 (60,826 testers or 64% of the analytic sample), I observe college outcomes through at least four years; finally, for those who first attempt is before April 1, 2018 (34,072 testers or 36% of the analytic sample), I observe college outcomes through at least six years.

III.B Regression Discontinuity Methods

To address RQ1, I estimate the impact of earning an HSE using a fuzzy RD framework where each GED subject test score is a running variable that can be used to estimate a different local effect of earning an HSE for GED testers who are constrained by different dimensions of academic skill. I use the robust bias-corrected regression discontinuity methods developed by Calonico and coauthors (2017) to compare the predicted outcomes of individuals who score just above the passing threshold for a given subtest (on their first attempt) to those who score just below. This difference can be interpreted as the impact of passing that GED subject test on one's first attempt on outcomes of interest. Under standard instrumental variable assumptions (instrument relevance, independence, the exclusion restriction) the sharp RD estimate can be

rescaled by a first-stage RD estimate of the relationship between the running variable and the probability an individual ever earns an HSE (Imbens & Lemieux, 2008). This rescaled estimate can be interpreted as the local impact of earning an HSE credential for marginal passers who were induced to earn an HSE by passing a given GED subject test on their first attempt.

To address RQ2, I will use a similar RD framework to compare the predicted outcomes of individuals who score just above a college readiness threshold to those who score just below, interpreting the difference as the return to earning a college-readiness designation. Since the first-stage estimate of the relationship between the running variable and the subject-specific college readiness designation α_{jl} is very close to one for all subjects and college readiness thresholds ($0.99 < \alpha_{jl} < 1.01$ for all *j, l*), I will conduct the main analyses for RQ2 in a sharp RD framework. For a discussion of first-stage estimates, see section IV.A below and Table 3.

All RD analyses use Calonico and coauthors' (2017) robust bias-corrected regression discontinuity method to assess the impact of crossing a given HSE exam subject test passing or college readiness threshold on one's first attempt on outcomes of interest, using the rdrobust package in Stata to estimate equation (1):

$$Y_{it} = f\left(Distance_{ijl}\right) + \beta_{jl} Z_{ijl} + \boldsymbol{X_i'\theta} + \gamma_c + \delta_s + \epsilon_{itjlsc} \qquad (1)$$

where $Distance_{ijl}$ is the running variable, representing the centered score of an individual's first attempt of subject test *j* relative to the relevant threshold level *l* (i.e., centered using minimum subject test passing threshold to answer RQ1 and using the minimum College Ready or College Ready + Credit thresholds to answer RQ2). Z_{ijl} is an indicator variable that takes on a value of one if $Distance_{ijl}$ is above the relevant threshold and zero otherwise (i.e., $Distance_{ijl}$>=0 implies $Z_{ijl} = 1$), which means individual *i* reached or exceeded score-level-threshold *l* in subject test *j* on their first attempt. Y_{it}, the dependent variable, may represent a

first-stage measure (e.g., whether an individual eventually earned an HSE credential by passing the GED test) or an outcome of interest (e.g., whether an individual enrolled in college or earned a college degree by year *t*). The local-linear function $f\left(Distance_{ijl}\right)$ will model the relationship between individual's distance from reaching a given score-level-threshold on a given subject test and each outcome of interest Y_{it}.

The vector, $\boldsymbol{X_i}$, accounts for a set of individual-level baseline covariates comprised of the demographic variables listed in panel A of Table 1, a set of indicators characterizing motivation for testing, an indicator for preparing via adult education, and indicators for studying via a high school program, a community college program, or while incarcerated. Each model will include exam cohort fixed effects by quarter, γ_c, and state-of-residence fixed effects, δ_s. Cohort and state fixed effects account for common shocks and trends that may vary over time and geography.

The estimand β_{jl} represents our parameter of interest, estimating of the discontinuous change in the predicted value of Y_{it} from the left and right of the relevant score-level-threshold l on subject test j, which I interpret as the total causal impact of crossing that subject test's passing or college-readiness threshold on one's first attempt on Y_{it}. I estimate β_{jl} separately for each subject test j and each score-level-threshold l, as each estimate identifies the local impact of crossing a particular threshold for a different subpopulation of compliers who are constrained along different dimensions and levels of academic skill.

In Table 2, I replace Y_{it} with the covariates listed in each row to assess the internal validity of the research design by conducting placebo tests for discontinuities in baseline covariates at each subject test threshold. The results broadly show that the changes in the sample composition at the GED subject test score passing and college-readiness thresholds are no larger than one would expect to observe by random chance. However, there is one exception: there are

unexpectedly large changes in the predicted observable characteristics of the sample from above and below the GED CR Social Studies threshold (a score of 165 on the GED Social Studies subject test). Following my pre-registered pre-analysis plan, while I will present estimates at the GED CR Social Studies threshold in main tables for completeness, I omit the GED CR Social Studies threshold from my analysis of the causal impacts of earning a GED college readiness designation on post-secondary outcomes.

For Fuzzy RD models, I will first estimate equation (1) where Y_{it} is replaced with an indicator for whether an individual ever passed all four GED subject tests ($EverPassed_i$):

$$EverPassed_i = f(Distance_{ijl}) + \alpha_{jl} Z_{ijl} + \boldsymbol{X_i'}\boldsymbol{\xi} + \lambda_s + \psi_c + e_{itjlsc} \qquad (2)$$

I use this equation to estimate the first-stage relationships (α_{jl}) between the running variables (each GED subject test score) and the receipt of an HSE credential via passing the GED test at each subject test passing threshold. The sharp RD estimates from equation (1) are rescaled by these first-stage impacts to estimate the local average treatment effect (LATE) of earning an HSE credential on post-secondary outcomes for marginal passers who were induced to earn an HSE by passing a given GED subject test on their first attempt ($\lambda_{LATE,jl}$):

$$\lambda_{LATE,jl} = \frac{\beta_{jl}}{\alpha_{jl}} \qquad (3)$$

The fuzzy RD standard errors and confidence intervals for the resulting LATE estimates are calculated by an analogous process to the robust, bias-corrected sharp RD estimates, as described by Calonico, Cattaneo, and Titiunik (2015).

III.C Modeling Decisions

Following my pre-analysis plan, in the main specifications, $f(Distance_{ijl})$ will represent a local-linear function linking individual's distance from reaching a given score-level-threshold on a given subject test to the outcome of interest Y_{it}, estimated within the optimal bandwidths

generated by the rdbwselect command in Stata using a triangular kernel (Calonico et al., 2017; 2019), and controlling for a selection of 20 baseline covariates from the GED baseline survey (and 6 missing data indicators). I present results from alternative models that vary functional form and bandwidth as appendix tables.

III.D Multi-Subject RD Model

Following my pre-analysis plan, the subject-specific estimates generated by equations (1)-(3) comprise my primary impact estimates, however I also pre-specified an exploratory multi-subject RD model whose estimates are presented alongside the main results. The multi-subject RD model pools across subjects by using an alternative multi-subject running variable constructed from a tester's minimum score on any GED subject test (for the multi-subject RD analysis at the subject test passing threshold) or their maximum score on any GED subject test (for the multi-subject RD analyses at the GED CR and CR+C thresholds), controlling for which subject (or subjects) that individual scored lowest (highest) in, in addition to the usual state, quarter, and demographic controls. Holding bandwidth fixed, the multi-subject analysis has the advantage of increasing sample size (and statistical power) and estimates the average impact of crossing the passing threshold in a tester's lowest-performing subject, ensuring that above the passing threshold, a tester's first attempt is binding for those who complete the full battery of subject tests (increasing the first-stage relationship between crossing the passing threshold and earning an HSE via passing the GED test) . Equation (2) is adapted to estimate the Multi-subject RD model at the GED Passing Threshold:

$$Y_{it} = f\left(MinScoreDist_{i,pass}\right) + \beta'_{pass} Z_{i,pass} + \boldsymbol{X_i'\theta'} + \gamma'_{c} + \delta'_{s} + \xi'_{j\_min} + \epsilon_{itjsc} \quad (4),$$

as well as at the GED CR and CR+C Thresholds for $l \in \{CR, CR+C\}$:

$$Y_{it} = f(MaxScoreDist_{il}) + \beta''_{l} Z_{il} + \boldsymbol{X_i'\theta''} + \gamma''_{c} + \delta''_{s} + \xi''_{j\_max} + \epsilon_{itjlsc} \quad (5),$$

where ξ'_{j_min} and ξ''_{j_max} represent sets of fixed effects identifying each tester's lowest or highest scoring subject(s).

Multi-subject RD estimates can be thought of as local estimates identifying the impact of crossing the GED subject test passing threshold in one's lowest-scoring subject or earning a GED college readiness designation in one's highest-scoring subject. These pooled estimates identify a subtly different subset of testers than the subject-specific estimates, whose scores in other subjects may be higher or lower than the target subject. In effect, the pooled estimates identify a relatively high-performing subset of marginal GED graduates and a relatively low-performing subset of college-ready GED testers.

IV. Results

IV.A First-Stages

Table 3 presents first-stage estimates of the relationship between an individual's first GED subject test score and their HSE credentialing outcomes by subject. Panel A reports the first-stage relationship between crossing the passing threshold on a given subject test and the probability that an individual eventually earns an HSE credential via passing the GED test. While testers who marginally pass the Mathematical Reasoning subject test are nearly 18pp more likely to earn an HSE, passing other subject tests on one's first attempt increase overall HSE attainment rates by roughly 10pp (ranging from 6.8pp in Science to 10.4pp in Reasoning Through ELA), implying that the fuzzy RD local average treatment effect (LATE) estimates will be 5-15 times larger in absolute value than the sharp RD ITT estimates. All first-stage estimates are statistically significant at the 1% level. Sharp RD estimates of the impact of passing a GED subject test on one's first attempt on college outcomes are reported in Panel A of Table 4. LATE estimates of the impact of earning an HSE via passing the GED test are reported in Panel B of Table 4.

Panel B of Table 3 shows that near the GED CR or GED CR+C thresholds, an individual's first attempt score almost perfectly predicts whether they ever qualify as GED CR or GED CR+C in that subject. The contrast between the first-stage estimates in Panel A and Panel B can be explained by the fact that while testers who marginally fail a subject test have strong incentives to retake that subject test, there are low rates of exam retaking near the GED CR or GED CR+C thresholds. In addition to any extrinsic and intrinsic incentives related to earning an HSE credential, testers who just fail a subject test may receive encouragement to retest, fee waivers, or discounts from GEDTS. Panel D shows that individuals who fall just short of a subject test passing threshold are 75pp-85pp more likely to retest in that subject than their peers who just pass, while individuals who fall just short of a GED CR or GED CR+C threshold are generally no more likely to retest than their peers who just earn a college readiness designation.

Because the first-stage estimates for GED college readiness in a given subject are practically (and statistically) indistinguishable from one, I will estimate the impact of earning a college-readiness designation in a sharp RD framework and report estimates from equation (1) as the main results rather than LATE estimates from equation (3) that rescale the estimated discontinuity by the difference in rates of eventual GED CR and GED CR+C qualification. The subject-specific LATE estimates are qualitatively and statistically indistinguishable from the corresponding ITT estimates in all cases.

However, if one conceives of the GED college readiness designations as functioning as a general signal of academic preparedness and not primarily as a subject-specific signal or path out of non-credit bearing remedial coursework in that subject, we can reformulate the first stage equation with a measure of college readiness in *any* subject as the dependent variable (i.e., replace $Distance_{ij,CR}$ with $Distance_{i,CR} = \max\left(Distance_{ij,CR}, j \in \{Math, ELA, Science, SS\}\right)$

in equations 1 and 2. In this case, the first stage impact of crossing any particular subject test college readiness threshold ranges from 25pp to 60pp, implying that depending on the specific threshold in question, the fuzzy RD LATE estimates will be about 1.6 to 4 times larger than the sharp RD ITT estimates in their absolute value. We can also estimate the impact of earning a GED college readiness impact in one's highest-scoring subject, pooling across subjects (i.e., individuals at the margin of earning any GED college readiness designation, rather than a specific designation), by replacing replace $Distance_{ij,CR}$ with $Distance_{i,CR} = \max(Distance_{ij,CR}, j \in \{Math, ELA, Science, SS\})$ directly in equation (1). Sharp RD estimates of the impact of earning specific GED college readiness designations are reported in Panels B and C of Table 4 (columns 1–4). Sharp RD estimates of the impact of earning any GED college readiness designation are reported in Panels B and C of Table 4 (column 5).

IV.B Crossing a GED Subject Test Passing Threshold

Table 4 presents estimates of the local impact of passing the GED test on one's first attempt (Panel A) or earning an HSE via passing the GED test (Panel B) on post-secondary enrollment, persistence, and attainment. In panel A, each cell presents the estimated causal relationship between crossing the subject test passing threshold listed in the column header and the college outcome listed in each row. Each cell in Panel B presents LATE estimates that scale selected estimates from Panel A by the first-stage relationship between crossing a subject-test passing threshold and earning an HSE credential via passing the GED test that are reported in panel A of Table 3.

Collectively, there is little evidence that crossing any particular GED subject test passing thresholds influences GED testers' post-secondary enrollment, persistence, or attainment. At each subject test threshold and for all outcomes I consider, I fail to reject the null hypothesis that

individuals' college outcomes are unrelated to subject test performance near the GED subject test threshold. The left columns of Figures 3A-3D provide a graphical representation of these results at each subject test passing threshold. Figures 4A-4D plot estimates of the impact of crossing each subject test passing threshold on post-secondary enrollment in each of the first 24 quarters following an individual's first GED subject test attempt.

Exploratory analyses that pool across subjects suggest that for testers whose lowest scoring subject is near the GED subject test passing threshold, passing on one's first attempt may play a decisive role in future college enrollment (column 5 of Table 4) and that this increase in enrollment may translate to a modest increase in quarters completed, but not degree or credential attainment. The left column of Figure 3E provides a graphical representation of these pooled results. Figure 4E plots estimates of the impact of crossing the GED subject test threshold in one's lowest-scoring subject on post-secondary enrollment in each of the first 24 quarters following an individual's first GED subject test attempt. An alternative specification where enrollment outcomes are defined separately by college sector (i.e., measuring enrollment, persistence, and graduation separately in four-year, two-year, and sub-two-year institutions) is presented in Panel A of Appendix Table 6, replicating the analyses in section IV.B by college sector. Across sectors, the results are broadly aligned with the findings in Table 4. Given that the majority of college enrollments in the analytic sample occur in the two-year and four-year sectors, enrollments and graduations in these sectors drive the pattern of results.

IV.C Earning a GED College Ready Designation

Panel A of Table 5 presents estimates of the local impact of earning a GED CR designation on post-secondary enrollment, persistence, and attainment. Each cell presents the

estimated causal relationship between earning a GED CR designation in the subject listed in the column header and the college outcome listed in each row.

Ignoring the estimates in column 4 of Panel A due to concerns about baseline imbalance (see discussion in section III.E of the pre-registered pre-analysis plan in Appendix A), there is little evidence that earning a GED CR designation in Mathematical Reasoning, Reasoning Through ELA, or Science influences GED testers' post-secondary enrollment, persistence, or attainment. At each subject test CR threshold and for nearly all outcomes I consider, I fail to reject the null hypothesis that individuals' college outcomes are unrelated to subject test performance near the GED CR thresholds in these subjects. The center columns of Figures 3A-3C provide a graphical representation of these results at each GED CR threshold. Figures 5A-5C plot estimates of the impact of earning a GED CR designation on post-secondary enrollment in each of the first 24 quarters following an individual's first GED subject test attempt.

Exploratory analyses that pool across subjects suggest that for testers whose highest scoring subject is near a GED CR threshold, earning a GED CR designation may have a small, transitory effect on college enrollment (column 5 of Table 4). The center column of Figure 3E provides a graphical representation of these pooled results. Figure 5E plots estimates of the impact of earning a GED CR designation in one's highest-scoring subject on post-secondary enrollment in each of the first 24 quarters following an individual's first GED subject test attempt. As above, an alternative specification where enrollment outcomes are defined separately by college sector (i.e., measuring enrollment, persistence, and graduation separately in four-year, two-year, and sub-two-year institutions) is presented in Panel B of Appendix Table 6, replicating the analyses in sections IV.C, and IV.D below by sector. Across sectors, the observed pattern of results is consistent with the findings in Table 5.

IV.D Earning a GED College Ready + Credit Designation

Panel C of Table 4 presents estimates of the local impact of earning a GED CR+C designation on post-secondary enrollment, persistence, and attainment. Each cell presents the estimated causal relationship between earning a GED CR+C designation in the subject listed in the column header and the college outcome listed in each row.

There is suggestive evidence that earning a GED CR+C designation may increase testers' post-secondary enrollment and persistence, but not degree or credential attainment. While I fail to reject the null hypothesis that individuals' college outcomes are unrelated to subject test performance for most outcomes near the GED CR+C thresholds in Reasoning Through ELA and Science, earning a GED CR+C designation in Social Studies and Mathematics appears to enhance GED graduates' post-secondary outcomes. The right columns of Figures 3A-3D provide a graphical representation of these results at each GED CR+C threshold. Figures 6A-6D plot estimates of the impact of earning a GED CR+C designation on post-secondary enrollment in each of the first 24 quarters following an individual's first GED subject test attempt.

Testers who earn a GED CR+C designation in Social Studies remain enrolled for 1 to 2 additional quarters of college and have higher rates of immediate post-secondary enrollment that are sustained for roughly 5 years after their first GED subject test attempt. Taking noisy point estimates at face-value, testers who earn a GED CR+C designation in Mathematical Reasoning remain enrolled for 3 to 7 additional quarters of college and have higher rates of post-secondary enrollment that emerge 4 to 6 years after their first GED subject test attempt.

Exploratory analyses that pool across subjects suggest that for testers whose highest scoring subject is near a GED CR+C threshold show similar trends, with modest increases in short-term and cumulative enrollment. The right column of Figure 3E provides a graphical

representation of these pooled results. Figure 6E plots estimates of the impact of earning a GED CR+C designation in one's highest-scoring subject on post-secondary enrollment in each of the first 24 quarters following an individual's first GED subject test attempt.

While this analysis is underpowered to detect small effects on degree-attainment ($\beta_{jl} < 0.1$), we can confidently rule out moderately sized or large effects of crossing a GED subject test passing threshold or earning a GED college readiness designations on degree or credential attainment for the marginally qualifying tester. Once again, an alternative specification is presented in Panel C of Appendix Table 6, replicating the analyses in section IV.D by college sector. As above, the observed pattern of results is broadly consistent with the results in Table 5. The following sections explore explanations for the overall pattern of results, exploring potential heterogeneity in impacts.

IV.E Heterogeneity in Impacts by Subgroup

In Tables 6A-6E, I repeat the main analyses at each subject test threshold within subgroups formed based on the characteristics reported in the GED baseline survey, including by gender, membership in under-represented racial/ethnic groups, highest grade completed, motivation for testing, adult education participation, and the minimum wage in an individual's state of residence. Examining the estimates in Tables 6A-6D reveals no subgroups of testers within which passing any particular GED subject test or earning a GED college readiness designation consistently leads to higher rates of college enrollment, persistence, or completion. While estimated impacts are statistically significant for particular combinations of outcomes, subgroups, and subject-test thresholds, they are not consistent across subjects or outcomes. Examining the positive relationship between earning a GED CR+C Social Studies designation

and college outcomes, the largest impacts appear for testers who are male, members of under-represented minority groups or who cite educational gain as their primary motivation for testing.

In the exploratory subgroup analysis that pools across subjects, enrollment impacts at the GED subject test passing threshold appear to be driven by testers who have higher levels of educational attainment at baseline, cite educational gain as a primary motivation for testing, or attend adult education classes to prepare for the GED test. While educationally motivated testers also drive the positive impacts of earning a GED CR+C designation in one's highest-scoring subject, impacts are also largest for testers with lower-levels of educational attainment and those who did not attend adult education to prepare for the GED test, demonstrating that impacts may be heterogeneous within and across subgroups and thresholds. Notably, there is no subgroup or subject in which crossing a GED subject test passing threshold leads to higher rates of degree or credential completion.

Appendix Tables A7A-A7E report additional subgroup analyses individual by race and ethnicity, baseline employment, and reason for not completing HS.

IV.F Alternative Models

Appendix Tables A8A-A8E and A9 present RD estimates using alternative bandwidths and alternative local polynomial trends.

Bandwidth selection is an important consideration in any RD analysis. For the main analyses and balance tests, I calculate and use optimal bandwidths using the methods described in Calonico et al. (2019). In Appendix Tables A8A-A8E, I present alternative RD estimates for all analyses in Table 4 using all possible bandwidths between 3 to 9 points[8] in addition to the

[8] This range represents all possible symmetric integer bandwidths that can be used in the GED CR and CR+C samples without encountering potential non-linearities caused by marginal eligibility for the other GED college readiness designation.

Calonico et al. (2019) optimal bandwidths that are used in the main analysis. The estimates generated by alternative bandwidths demonstrate that the main results are not particularly sensitive to choice of bandwidth—while there is some variation in estimated impacts by bandwidth, the 95% confidence interval of estimates generated within the optimal bandwidth generally includes the estimates from other candidate bandwidths.

Similarly, Calonico and coauthors' (2017) robust bias-corrected regression discontinuity method can accommodate any local polynomial trend, not just the local-linear trend I use to generate my main results in Table 4. A visual inspection of Figures 3A-3E demonstrates that a linear model is a good fit to the data, however, Appendix Table 7 demonstrates that the results are robust to the inclusion of the quadratic model as well. While point estimates and standard errors change such that the p-values of some estimates cross critical value thresholds, the correlation between the linear and quadratic estimates is greater than 0.95.

IV.G Density Checks

Appendix Figures A2A-A2D plot the density of observations at each point of the discrete subject test score distribution. Each figure is labeled with the p-values from tests of score manipulation at each threshold.[9] While the majority of the tests, which measure the smoothness of the subject test score density function at the qualifying threshold, reject the null hypothesis that the distribution is smooth, in most cases where the test rejects the null hypothesis of a smooth distribution, the change in density at the threshold runs counter to the expected change in densities that would be caused by intentional manipulation. In these cases, the density of

[9] I use a test developed by Frandsen (2017) that builds on the methods described by McCrary (2008) to develop correctly-sized tests for smoothness of the density function in regression discontinuity analyses that use a discrete running variable. Importantly, Frandsen's test assumes a smoothness condition that may be violated in educational settings where raw performance on standardized tests is converted to scale scores and there can be natural clustering at particular scores based on common response patterns without manipulation.

observations *falls* at a subject test passing or college readiness threshold rather than rising, which would be the expected effect if individuals were manipulating their score placement to cross a threshold. As such, I interpret the density plots and tests as showing no evidence of score manipulation but hypothesize that the bunching observed near some subject test score thresholds are psychometric artifacts that arise from the coarseness of the mapping from raw scores to scale scores, especially toward the tails of the test score distributions where the thresholds are located.

V. Discussion

The 2014 and 2016 revisions to the GED test foreshadowed a future wherein HSE credentials would play an expanded role as an alternative pathway to post-secondary education. Aligning subject test content with national college and career readiness standard should help ensure that GED graduates are more likely to have the foundational academic skills to succeed in college-level coursework or to pass necessary prerequisites. For college-ready GED graduates, the GED CR and CR+C college readiness designations were designed to help this group of high-achieving HSE credential holders learn and signal their ability, avoid costly remediation, and potentially earn transferable college credits. Eight years later, I link 10 cohorts of GED testers to post-secondary enrollment and completion data to describe the post-secondary outcomes of modern GED graduates, to assess the impact of earning an HSE credential via passing the GED test on college outcomes, and to assess the impact of earning a GED college readiness designation on college outcomes.

While overall rates of post-secondary enrollment among GED graduates are broadly consistent with past evidence, I find strong evidence that modern GED graduates are substantially more likely to persist past their first semester of college and to earn a post-

secondary award than past cohorts. The highest rates of post-secondary attainment are observed among college-ready GED graduates and those who cite educational gain as their primary motivation for testing. With respect to award completion rates, college-ready GED graduates compare favorably to the national pool of entrants to two-year institutions, where the majority of GED graduates who enroll in college begin. While nationally, 29.5% of two-year enrollees graduate within six years, 30.4% of all college-ready GED graduates and 38.7% of GED graduates who earn a GED CR+C designation earn a post-secondary award within six years of their first enrollment after earning an HSE credential via passing the GED test (U.S. Department of Education, 2023b). Over time, GED graduates' enrollment in four-year institutions nearly matches their participation in two-year institutions, and for the highest scoring GED graduates—those who earn a GED College Ready or College Ready + Credit designation, the majority of post-secondary awards earned through six years are from four-year institutions.

Overall, regression discontinuity estimates suggest that while earning an HSE credential may modestly increase rates of college enrollment for some GED graduates, credential receipt does not meaningfully increase credential or degree attainment among the lowest-scoring GED graduates. Even for students who do not complete, participating in post-secondary education may have non-trivial wage returns (Kane & Rouse, 1995) or allow GED graduates to pool with traditional high school graduates in the labor market by listing their college enrollment as their highest level of education.

At the GED passing threshold, the only evidence of positive impacts on college outcomes is observed at the pooled threshold. Notably, the pooled subject sample is constructed based on testers' lowest subject test score. This results in a relatively high-achieving set of marginal passers relative to marginal passers at the subject-specific thresholds (since testers who just cross

any particular subject-specific threshold may score higher OR lower on other subjects, but in the pooled sample, they score weakly higher on all other subjects). This finding is consistent with the notion that the largest post-secondary benefits to earning a GED are likely to accrue to testers with better academic preparation.

In my past work (Heller, 2024), I found that while testers who earned GED CR and GED CR+C designations enrolled and persisted in college at higher rates than other GED graduates, the college outcome of GED CR and GED CR+C testers were indistinguishable from that of GED testers who fell narrowly short of qualifying for these designations. Even in this larger, better-powered sample, point estimates are imprecise and estimated impacts vary substantively by subject test threshold.

Exploratory analyses that pool across subjects suggest that earning a GED CR+C designation may promote college enrollment and persistence, but not award completion, among the highest-scoring GED graduates. In this case, the pooled subject sample is constructed based on testers' highest subject test score. This results in a relatively low-achieving set of marginally "college-ready" GED graduates relative to the sample that is marginally college-ready at any subject-specific thresholds (since testers who just cross any particular subject-specific threshold may score higher OR lower on other subjects, but in the pooled sample, they score weakly lower on all other subjects).

Appendix Figure A1 demonstrates that college-ready GED graduates in "any" subject have worse college outcomes than college-ready GED graduates in each specific subject; this counter-intuitive result is explained by the fact that GED graduates can earn multiple GED CR or CR+C designations, and those who do so have the highest rates of enrollment, persistence, and graduation. The fact that the pooled estimates (and Social Studies, which is the least selective

GED CR or CR+C subject) yield the most positive impacts on college outcomes is consistent with the notion that the largest post-secondary benefits to earning a GED CR or CR+C are likely to accrue to college-ready testers with weaker academic preparation. This could be the case if, for example, those testers self-image is more likely to be influenced by receiving a signal of their college readiness (e.g., if higher achievers already believe they are "college material") or because they benefit more by avoiding remediation (e.g., if higher achievers would pass out of remedial coursework with or without a waiver). In any case, it remains clear that the GED college readiness benchmarks predict better college outcomes, but their causal role in shaping students' longer-term success remains uncertain.

There are many potential explanations for the inconsistent or null effects of being marginally eligible for an HSE credential or college readiness designation on college outcomes. First, the testers near the margin of passing the GED test who provide identifying variation for our local average treatment effect estimates are, by definition, negatively selected among the larger population of GED testers with respect to academic skill and retaking rates. Appendix Figure A3 demonstrates the extent to which GED subject test performance operates as a signal of general ability, plotting performance by subject based on testers' performance on other subjects. The localness of regression discontinuity estimates means we can only glean credibly causal insights about the impact of earning an HSE credential via passing the GED test on college outcomes for the population of GED graduates who are least academically prepared to succeed in post-secondary education.

Additionally, the availability of exam retaking means that the lion's share of the first-stage relationship between first-attempt subject test score and eventual HSE receipt is explained by GED testers who fall narrowly short of passing a subject test but do not retest. Among GED

testers who attempted their first subject test between 2016-2021 and fell just 1-point short of passing in their lowest scoring subject on their first attempt, 21.7% did not retest in any subject. The most highly motivated and best-resourced testers are less likely to fail to retest, and the identifying variation for all local average treatment effects comes from those who "comply" with the outcome of their first-attempt subject test score (i.e., those marginal passers of a given GED subject test who earn an HSE credential by passing all other GED subject tests and those marginal failers of a given GED subject test who do earn an HSE credential, either because they fail to retest, fail to pass after retesting, or fail to pass a different subject test). If one believes that GED subject test scores are a valid signal of academic college-readiness (a reasonable assumption, given that the 2014 revision was designed to align content with national college and career readiness standards) and that retaking a test after narrowly failing is a valid signal of traits like grit, persistence, or determination, RD methods estimate the impacts of earning a GED for a pool of GED graduates who are negatively selected on multiple dimensions of skill (in general and relative to the overall population of GED graduates) that might be expected to be important determinants of post-secondary success. That is—for the population of GED graduates who are least likely to intend to use their HSE credential to pursue post-secondary education and least likely to succeed, conditional on enrolling.

There is a tension between the questions that would be most useful to answer from the perspective of policymakers and systems leaders, e.g., "How does passing the GED test impact uncredentialed adults' lives?" or "How does the availability of HSE credentials impact the educational attainment of at-risk youth or otherwise uncredentialed adults?" or even "How does earning an HSE credential impact the post-secondary outcomes of college-ready GED graduates?" and the questions we can credibly answer with the available data and plausibly

exogenous variation in credentialing (i.e., "How does earning an HSE credential via passing the GED test impact the post-secondary outcomes of the lowest-scoring GED graduates whose first-attempt subject test score is decisive with respect to their receipt of an HSE credential?" or "How does marginally qualifying to earn a GED CR or CR+C designation impact the post-secondary outcomes of college-ready GED graduates?").

Despite the limitations of available quasi-experimental strategies with respect to answering "big questions" about the causal role of HSE credentials in GED graduates' lives, the descriptive evidence highlights the GED test's unique role as a credit for prior learning (CPL) pathway serving a target population of more disadvantaged, non-traditional students, making CPL awarded through GED performance a potentially potent driver of educational equity, but also potentially requiring that GED graduates who do enroll in college receive adequate supports to promote college matriculation and persistence. Indeed, Appendix Table 5 demonstrates that among college-ready GED graduates who enroll in college within six years, post-secondary award rates are higher in four-year institutions, which tend to have more resources to support students.

The GED test and its college readiness benchmarks are designed to identify academic preparedness, but do not measure non-academic skills that may be necessary for post-secondary success and are generally found to be negatively correlated with pursuing a high school equivalency credential through examinations like the GED rather than completing a traditional high school diploma (e.g., Heckman & Rubinstein, 2001). Recent evidence suggests that counselors exert a strong influence on high school students' post-secondary outcomes, particularly for lower-achieving students (Mulhern, 2023); future research may assess whether

college counselors, admissions officers, advisors, or other mentors play a similarly important role in helping college ready GED graduates access program benefits and earn CPL.

In a post-secondary educational environment characterized by dropping or stagnating enrollments and stark declines in FAFSA completions, GED graduates represent a diverse pool of increasingly college-ready talent. In addition to serving students who have dropped out or interrupted their schooling, HSE credentials offer a way for home-schooled students and international students to validate their proficiency in high-school level content that is aligned to U.S. college-and-career-readiness standards. GED graduates are older and more likely to come from under-represented demographic groups. Adopting and strengthening policies to support the post-secondary success of this set of nontraditional students stands out as a potentially potent driver of educational equity.

References

Agodini, R., & Dynarski, M. (2000). Understanding the trend toward alternative certification for high school graduates. Princeton, NJ: Mathematica Policy Research.

Araujo, A., Gottlieb, D., & Moreira, H. (2007). A model of mixed signals with applications to countersignaling. *The RAND Journal of Economics, 38*(4), 1020-1043.

Binder, A. J., & Bound, J. (2019). The declining labor market prospects of less-educated men. *Journal of Economic Perspectives, 33*(2), 163-190.

Blair, P. Q., & Deming, D. J. (2020). Structural increases in demand for skill after the great recession. *AEA Papers and Proceedings*, *110*, 362-365.

Boudett, K. P., Murnane, R. J., & Willett, J. B. (2000). Second-chance strategies for women who drop out of school. *Monthly Labor Review, 123*, 19.

Bureau of Labor Statistics, U.S. Department of Labor. (2024). 61.4 percent of recent high school graduates enrolled in college in October 2023. *The Economics Daily.* Retrieved October 3, 2024 from: https://www.bls.gov/opub/ted/2024/61-4-percent-of-recent-high-school-graduates-enrolled-in-college-in-october-2023.htm.

Calonico, S., Cattaneo, M. D., & Titiunik, R. (2015). Rdrobust: an R package for robust nonparametric inference in regression-discontinuity designs. *R J.*, *7*(1), 38.

Calonico, S., Cattaneo, M. D., Farrell, M. H., & Titiunik, R. (2017). rdrobust: Software for regression-discontinuity designs. *The Stata Journal, 17*(2), 372-404.

Calonico, S., Cattaneo, M. D., Farrell, M. H., & Titiunik, R. (2019). Regression discontinuity designs using covariates. *Review of Economics and Statistics*, *101*(3), 442-451.

Cameron, S. V., & Heckman, J. J. (1993). The nonequivalence of high school equivalents. *Journal of Labor Economics, 11*(1), 1-47.

Clark, M. A., & Jaeger, D. A. (2006). Natives, the foreign-born and high school equivalents: New evidence on the returns to the GED. *Journal of Population Economics, 19*(4), 769-793.

Darolia, R., Mueser, P. R., & Cronin, J. (2020). *Labor Market Returns to a Prison GED* (No. 13534). Institute of Labor Economics (IZA).

Frandsen, B. R. (2017). Party Bias in Union Representation Elections: Testing for Manipulation in the Regression Discontinuity Design when the Running Variable is Discrete. *Advances in Econometrics, 38*, 281-315.

GED Testing Service, LLC. (2014). The new assessment is a stepping-stone to a brighter

future. Retrieved February 18, 2021 from https://web.archive.org/web/20130209081225/http://www.gedtestingservice.com/educators/new-assessment.

GED Testing Service, LLC. (2023). *Understanding Your Scores.* GED.com. https://ged.com/about_test/scores/college_ready/

Gewertz, C. (2016). "Passing Score Lowered on New GED Exam." EdWeek. Retrieved March 18, 2021 from: https://www.edweek.org/teaching-learning/passing-score-lowered-on-new-ged-exam/2016/01

Heckman, J. J., Humphries, J. E., & Kautz, T. (2014). The economic and social benefits of GED certification. In *The myth of achievement tests: The GED and the role of character in American life*, 268-289.

Heckman, J. J., Humphries, J. E., LaFontaine, P. A., & Rodriguez, P. L. (2012). Taking the easy way out: How the GED testing program induces students to drop out. *Journal of Labor Economics, 30*(3), 495-520.

Heckman, J. J., Humphries, J. E., & Mader, N. S. (2010). The GED. NBER Working Paper no. w16064.

Heckman, J. J., & Rubinstein, Y. (2001). The importance of noncognitive skills: Lessons from the GED testing program. *American economic review*, *91*(2), 145-149.

Heller, B.H. (2024). GED College Readiness Benchmarks and Post-Secondary Success. EdWorkingPaper no.24-914. Annenberg Institute at Brown University. Retrieved February 23, 2024 from: https://doi.org/10.26300/mvvp-cf18

Heller, B. H. & Slungaard Mumma, K. (2019). Who Benefits from the GED? New Regression Discontinuity Evidence from Massachusetts. SSRN Working Paper 3118546.

Imbens, G. W., & Lemieux, T. (2008). Regression discontinuity designs: A guide to practice. *Journal of Econometrics, 142* (2), 615-635.

Jepsen, C., Mueser, P. R., & Troske, K. R. (2016). Labor-market returns to the GED using regression discontinuity analysis. *Journal of Political Economy, 124*(3), 621-649.

Jepsen, C., Mueser, P. R., & Troske, K. R. (2017). Second chance for high school dropouts? A regression discontinuity analysis of postsecondary educational returns to the GED. *Journal of Labor Economics, 35*(S1), S273-S304.

Kane, T. J., & Rouse, C. (1995). Labor-market returns to two-and four-year college. The *American Economic Review, 85*(3), 600-614.

Kenkel, D., Lillard, D., & Mathios, A. (2006). The roles of high school completion and GED receipt in smoking and obesity. *Journal of Labor Economics, 24*(3), 635-660.

Maralani, V. (2011). From GED to college: Age trajectories of nontraditional educational paths. *American Educational Research Journal, 48*(5), 1058-1090.

McCrary, J. (2008). Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics, 142,* 698–714.

Mulhern, C. (2023). Beyond teachers: Estimating individual school counselors' effects on educational attainment. *American Economic Review*, *113*(11), 2846-2893.

Murnane, R. J., Willett, J. B., & Boudett, K. P. (1999). Do male dropouts benefit from obtaining a GED, postsecondary education, and training?. *Evaluation Review*, *23*(5), 475-503.

Nuttall, J., Hollmen, L., & Staley, E. M. (2003). The effect of earning a GED on recidivism rates. *Journal of Correctional Education*, *54*(3), 90-94.

Patterson, M. B., Zhang, J., Song, W., & Guison-Dowdy, A. (2010). Crossing the Bridge: GED Credentials and Postsecondary Educational Outcomes. Year One Report. *GED Testing Service*.

Schochet, P. Z. (2009). Statistical power for regression discontinuity designs in education evaluations. *Journal of Educational and Behavioral Statistics*, *34*(2), 238-266.

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2012). A 21 word solution. Retrieved October 11, 2024 from: https://doi.org/10.2139/ssrn.2160588

Tyler, J.H. (2003). Economic benefits of the GED: lessons from recent research. Review of *Educational Research, 73*(3), 369-403.

Tyler, J., & Kling, J. (2007). Prison-based education and reentry into the mainstream labor market. In S. Bushway, M. Stoll & D. Weiman (Eds.) *Barriers to reentry? The labor market for released prisoners in post-industrial America*. New York: Russell Sage Foundation.

Tyler, J.H. & Lofstrom, M. (2010). Is the GED an effective route to postsecondary education for school dropouts?. *Economics of Education Review, 29*(5), 813-825.

Tyler, J.H., Murnane, R. J., & Willett, J. B. (2000). Estimating the labor market signaling value of the GED. *The Quarterly Journal of Economics, 115*(2), 431-468.

U.S. Department of Education. (2021). Institute of Education Sciences, National Center for Education Statistics. Table 326.30. Retention of first-time degree-seeking undergraduates at degree-granting postsecondary institutions, by attendance status, level and control of institution, and percentage of applications accepted: Selected years, 2006 through 2020.

U.S. Department of Education. (2022a). Institute of Education Sciences, National Center for

Education Statistics. Table 236.20. Total expenditures for public elementary and secondary education and other related programs, by function and subfunction: Selected school years, 1990-91 through 2019-20.

U.S. Department of Education. (2022b). Institute of Education Sciences, National Center for Education Statistics. Table 507.20. Participants in state-administered adult basic education, secondary education, and English as a second language programs, by type of program and state or jurisdiction: Selected fiscal years, 2000 through 2020.

U.S. Department of Education. (2023a). Institute of Education Sciences, National Center for Education Statistics. Table 104.30. Number of persons age 18 and over, by highest level of educational attainment, sex, race/ethnicity, and age: 2022.

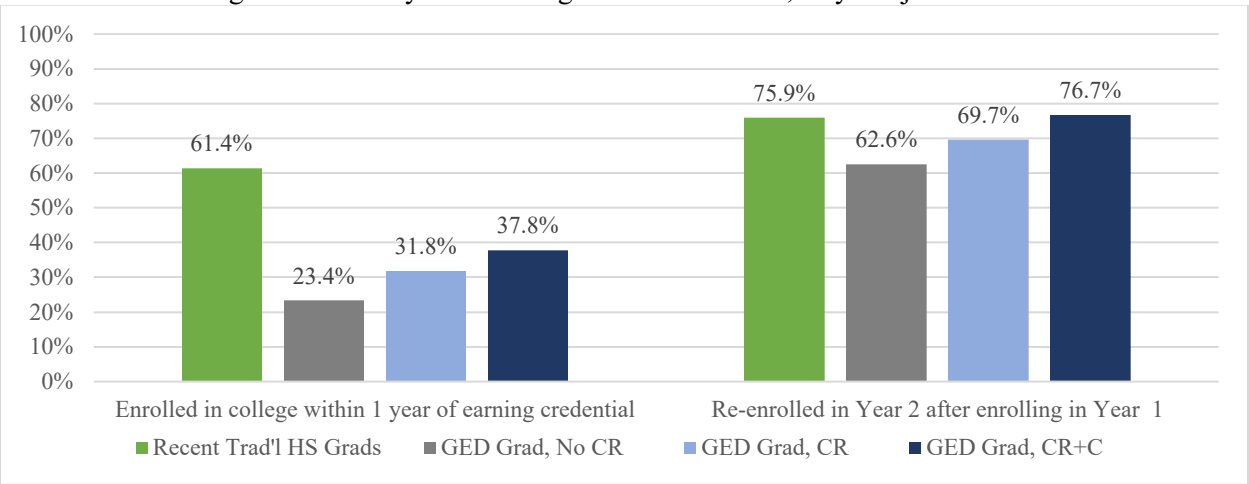
U.S. Department of Education. (2023b). Institute of Education Sciences, National Center for Education Statistics. Table 326.27. Number of degree/certificate-seeking undergraduate students entering a postsecondary institution and percentage of students 4, 6, and 8 years after entry, by completion and enrollment status at the same institution, institution level and control, entering and attendance status, Pell Grant recipient status, and acceptance rate: Cohort entry year 2014-15

Wagner, M., Newman, L., Cameto, R., Garza, N., & Levine, P. (2005). After High School: A First Look at the Postschool Experiences of Youth with Disabilities. A Report from the National Longitudinal Transition Study-2 (NLTS2).

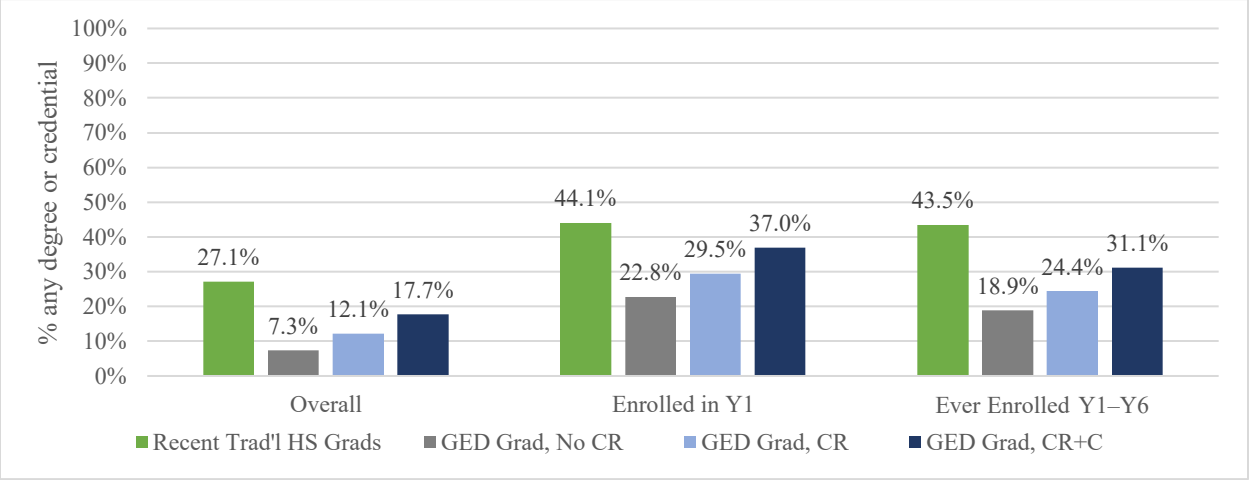
Watson, A. (2017). Employment trends by typical entry-level education requirement. Monthly Labor Review, U.S. Bureau of Labor Statistics. https://doi.org/10.21916/mlr.2017.22

Figure 1: College outcomes by GED performance level, versus national benchmarks

A. Short-Run College Outcomes by GED College Readiness Level, Any Subject



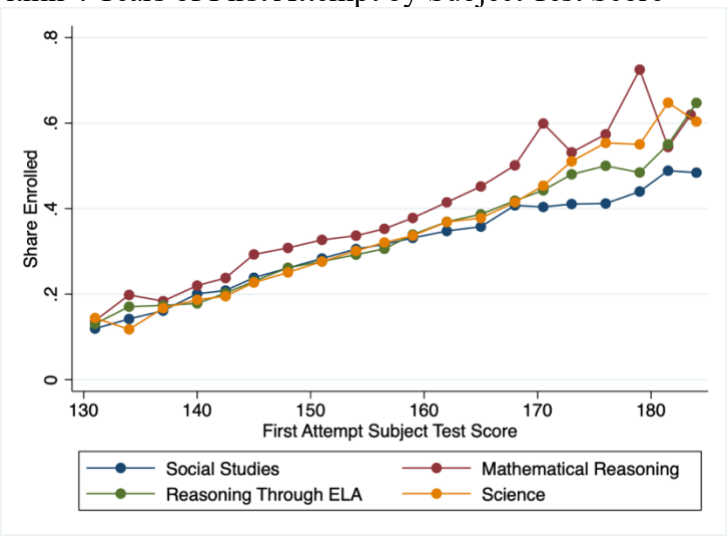
B. 6-Year Completion Rates of GED graduates by GED College Readiness Level, Any Subject



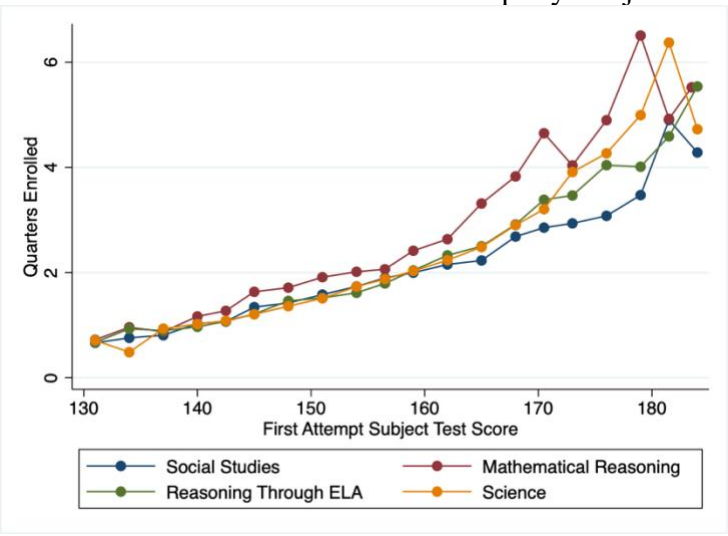
Notes: Graphs plot outcome means overall and by subgroup for 2014-2023 GED graduates. Benchmark Y1 enrollment rate comes from U.S. Bureau of Labor Statistics (2024). Re-enrollment and graduation benchmarks come from U.S. Department of Education (2021, 2023). Benchmark graduation rates for Y1 enrollees are calculated from first-time students, while benchmark rates for "ever" enrollees include non-first-time students. The overall benchmark scales the Y1 benchmark by the immediate enrollment rate.

Figure 2: College outcomes by subject test score bin

A. Share Enrolled Within 4 Years of First Attempt by Subject Test Score



B. Average Quarters Enrolled Within 4 Years of First Attempt by Subject Test Score



C. Share Received Post-Secondary Award Within 4 Years of First Attempt by Subject Test Score

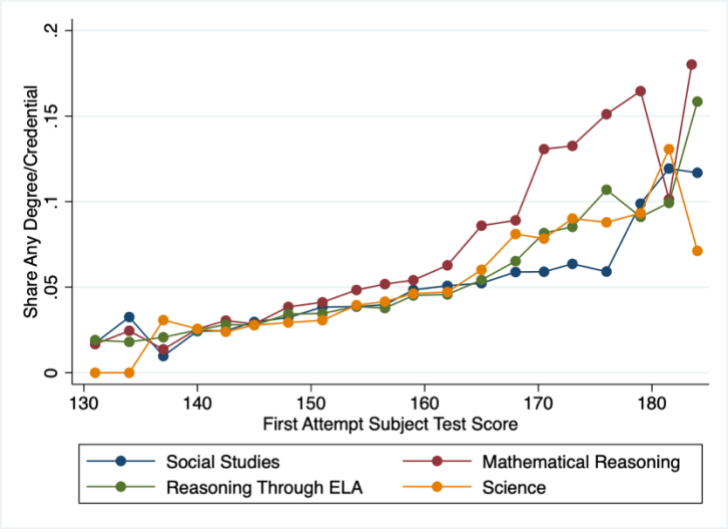
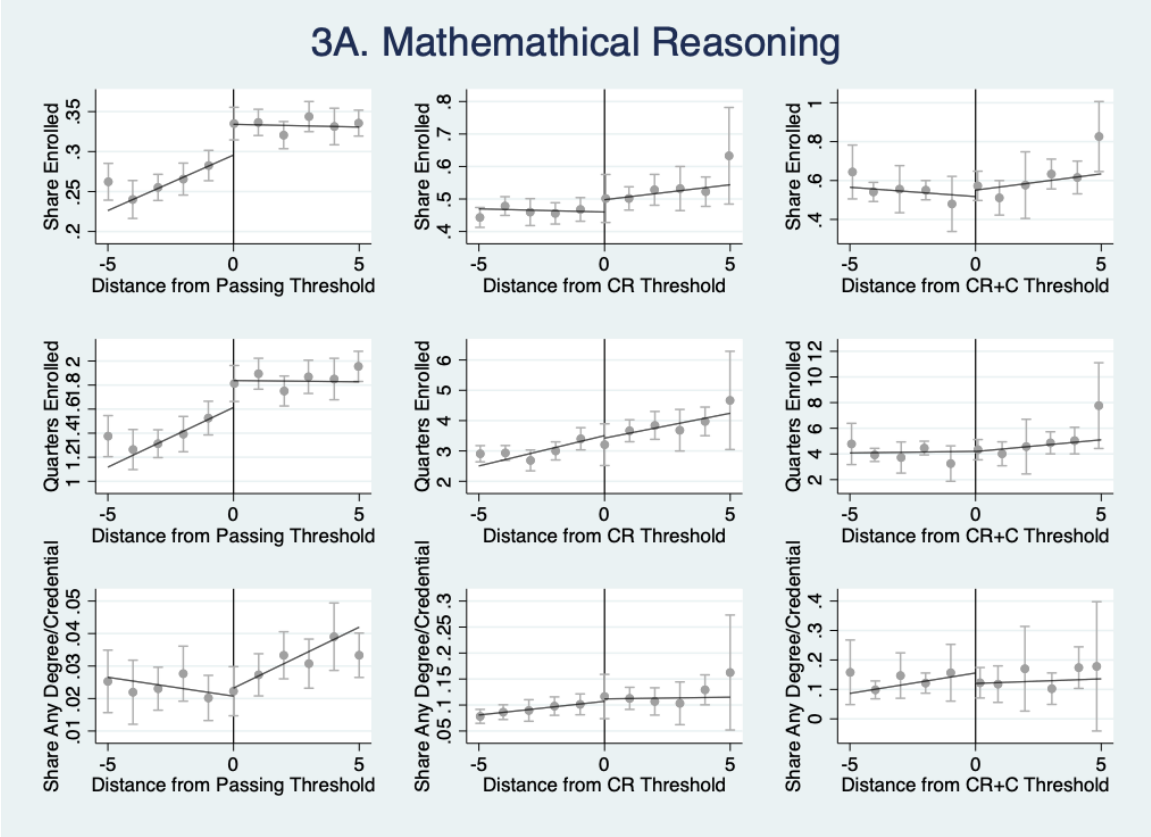
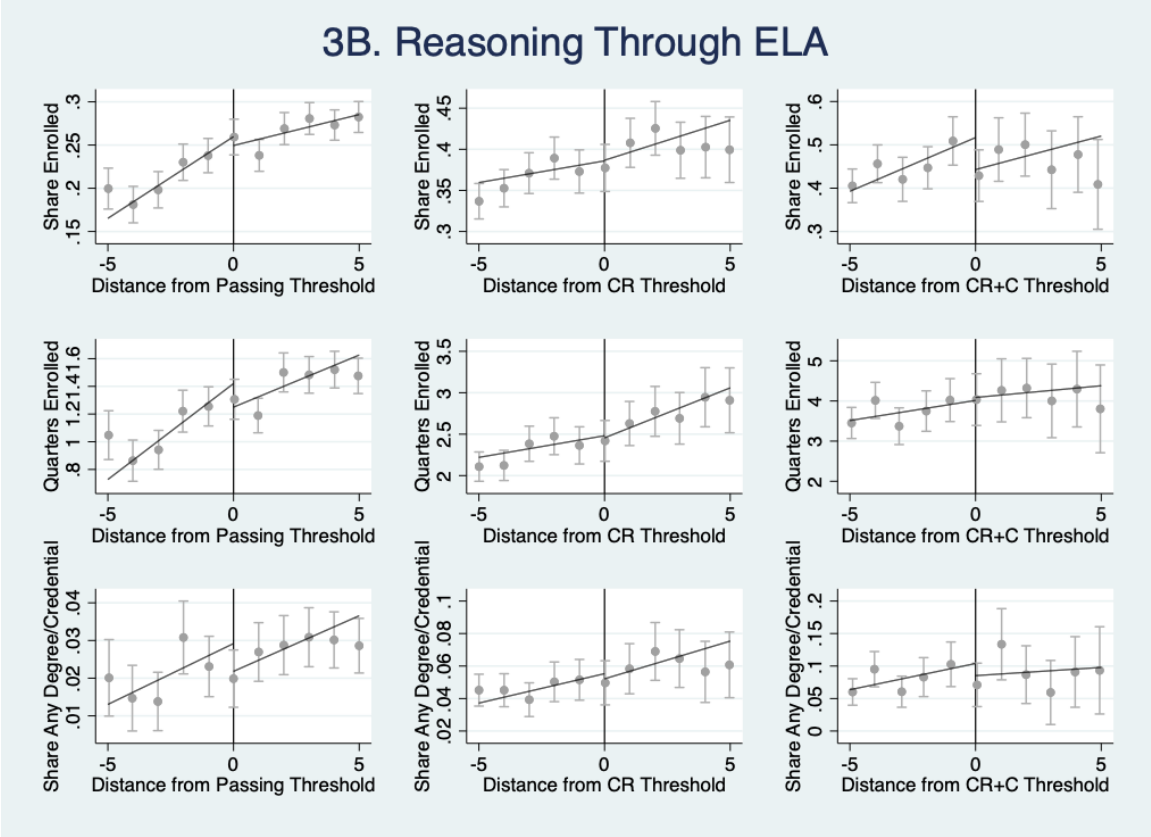
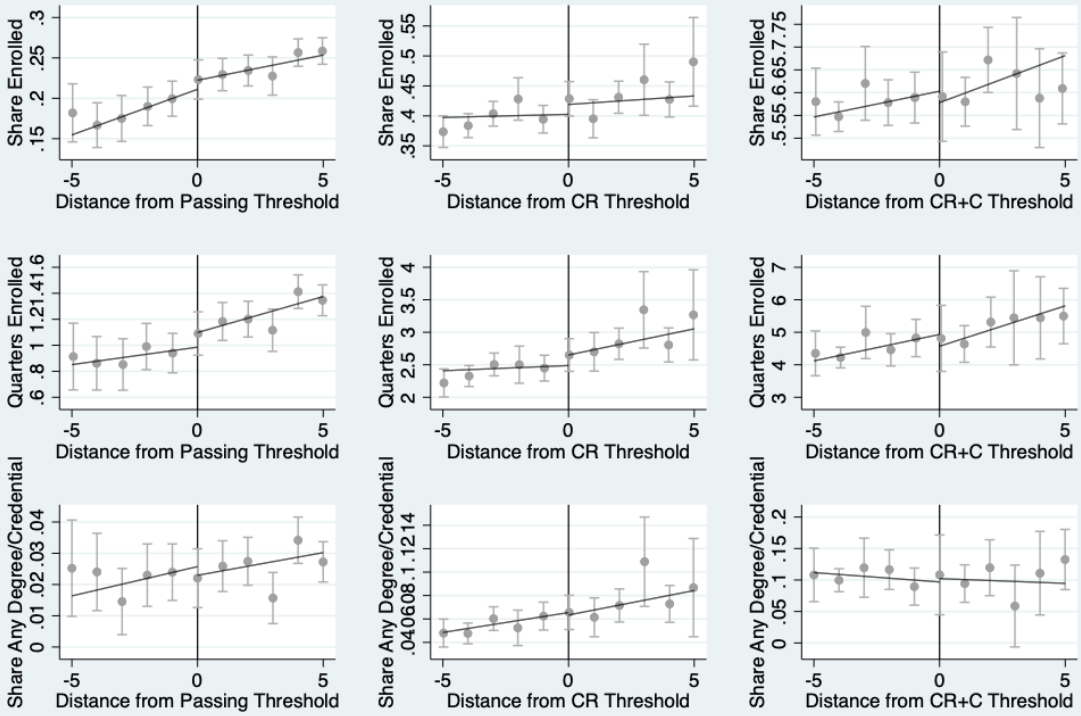


Figure 3: Cumulative 4-Year Post-Secondary Impacts by Subject and Threshold

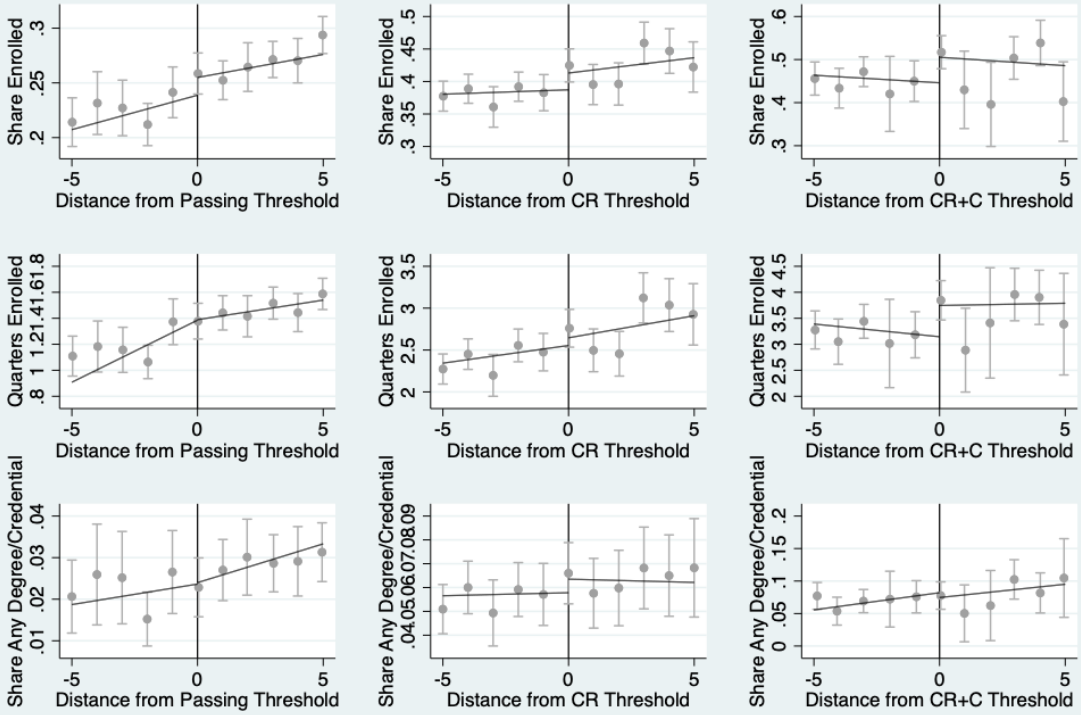


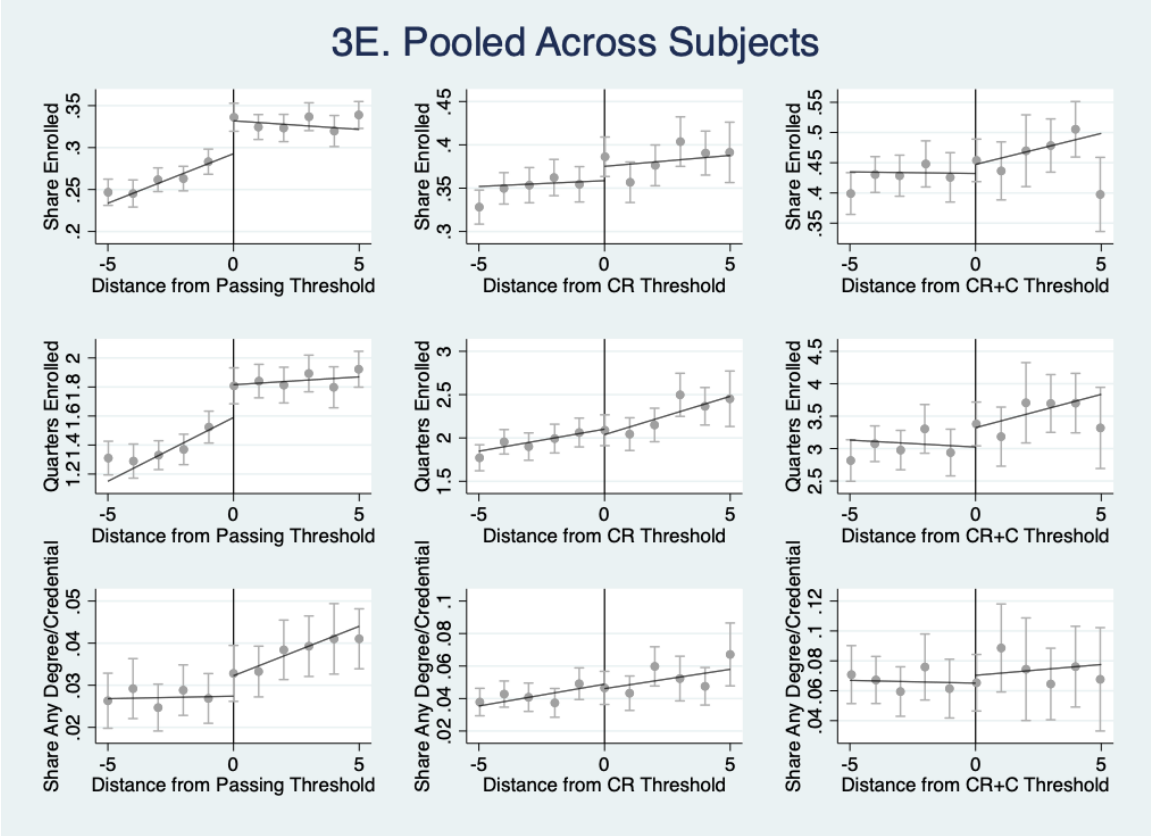


3C. Science



3D. Social Studies

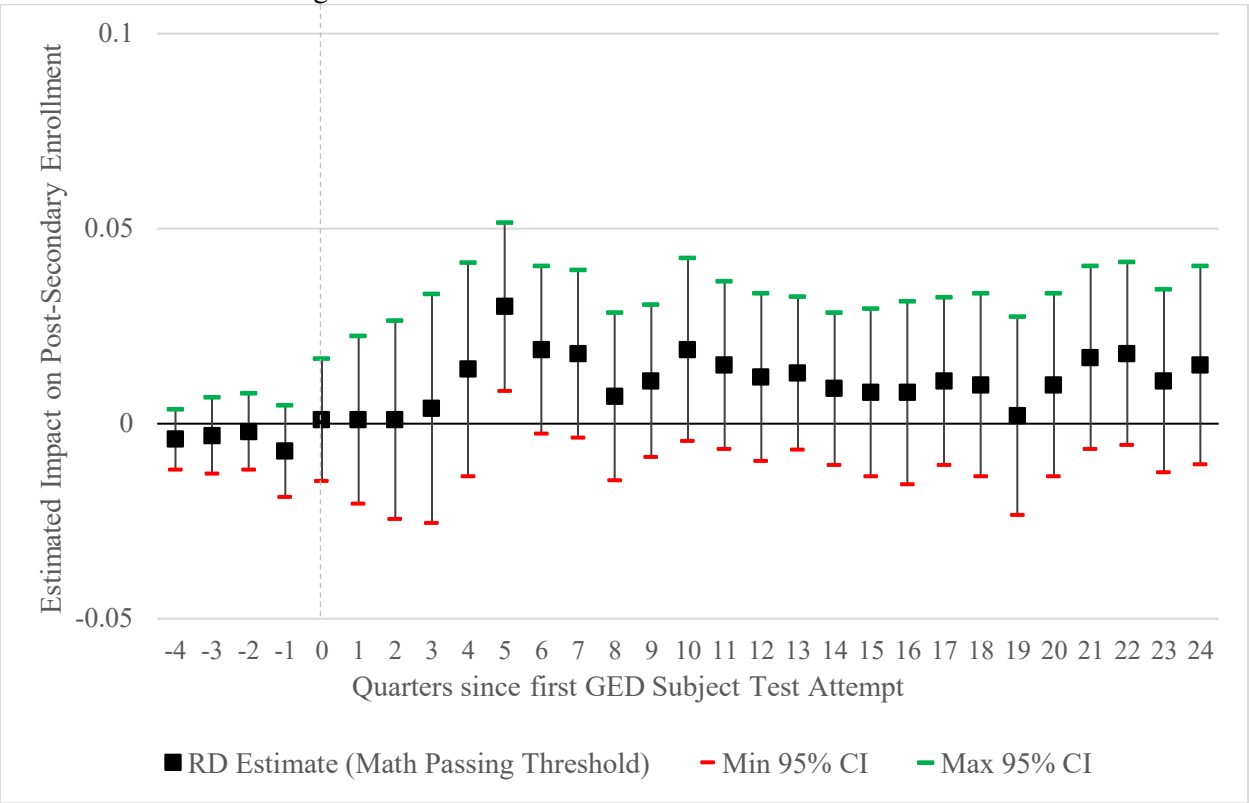




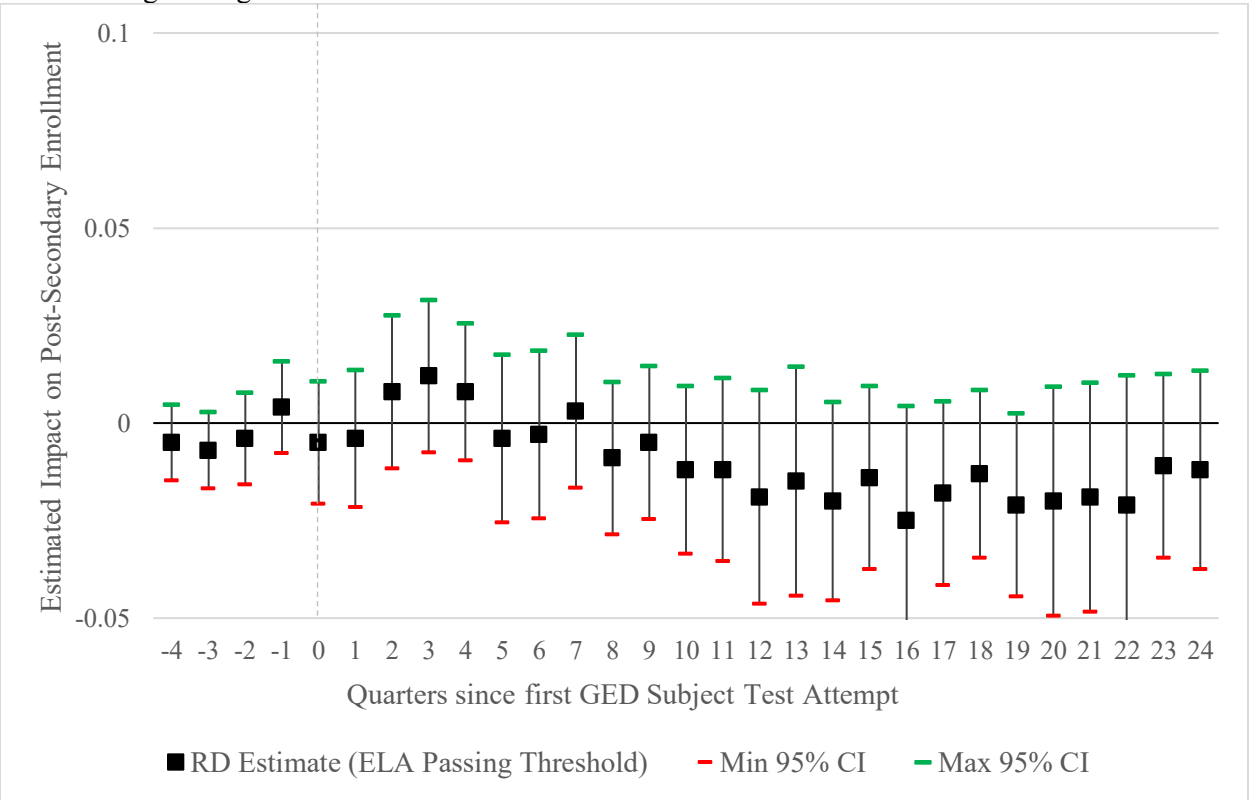
Notes: Subfigures plot binned average values of the post-secondary outcomes indicated on the Y-axis by the discrete values of the running variable indicated on the graph title and X-axis. Lines of best fit and confidence intervals are generated using Calonico and coauthors' (2017) robust, bias-corrected local-linear regression discontinuity method, as described in equation (1) with a bandwidth of 5 points.

Figure 4: Impact of Crossing a GED Subject Test Passing Threshold (145) on Post-Secondary Enrollment, by Quarter Since First GED Subject Test Attempt

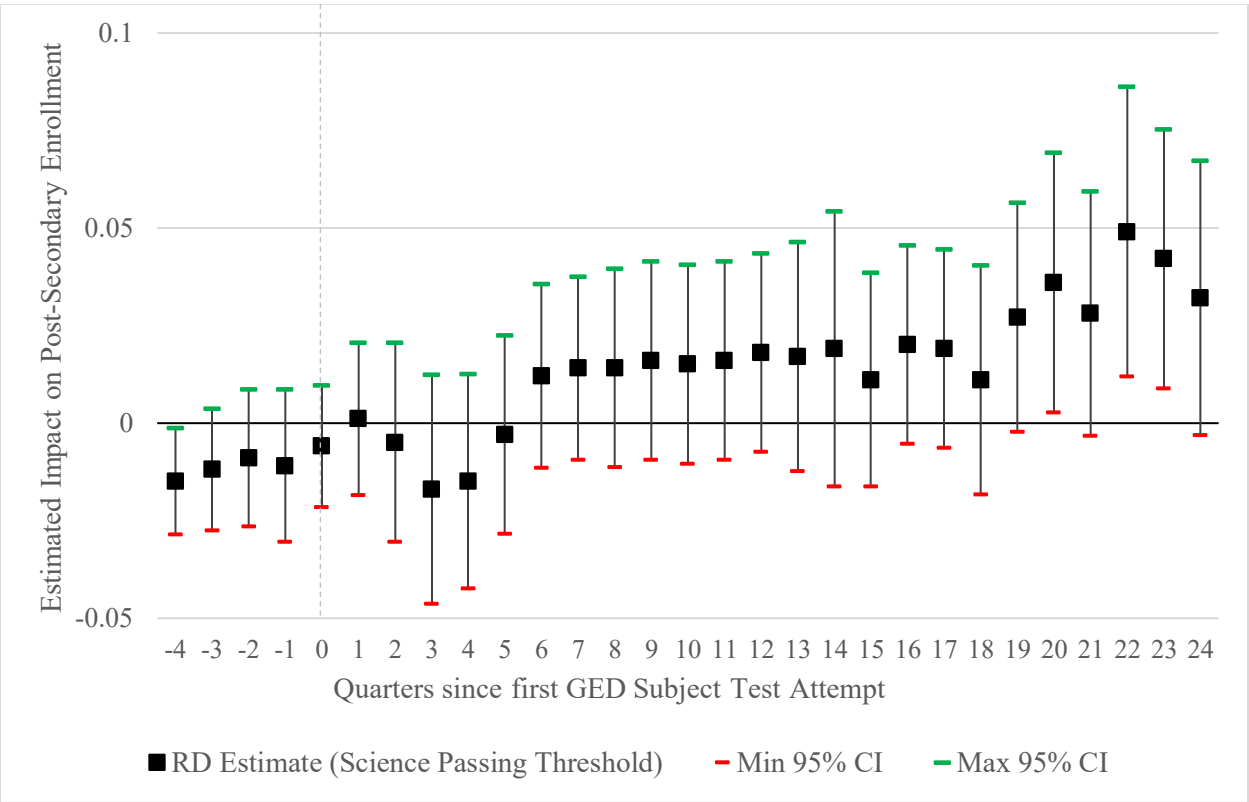
A. Mathematical Reasoning



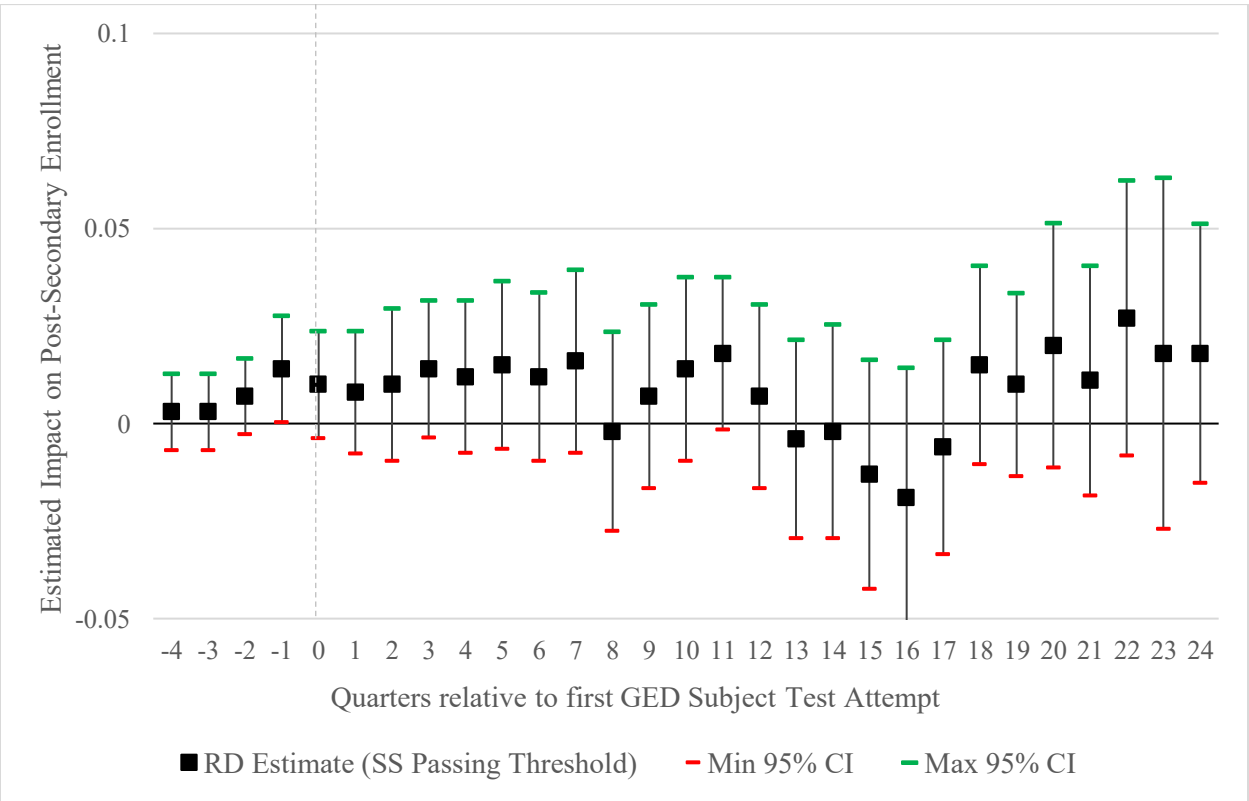
B. Reasoning Through ELA



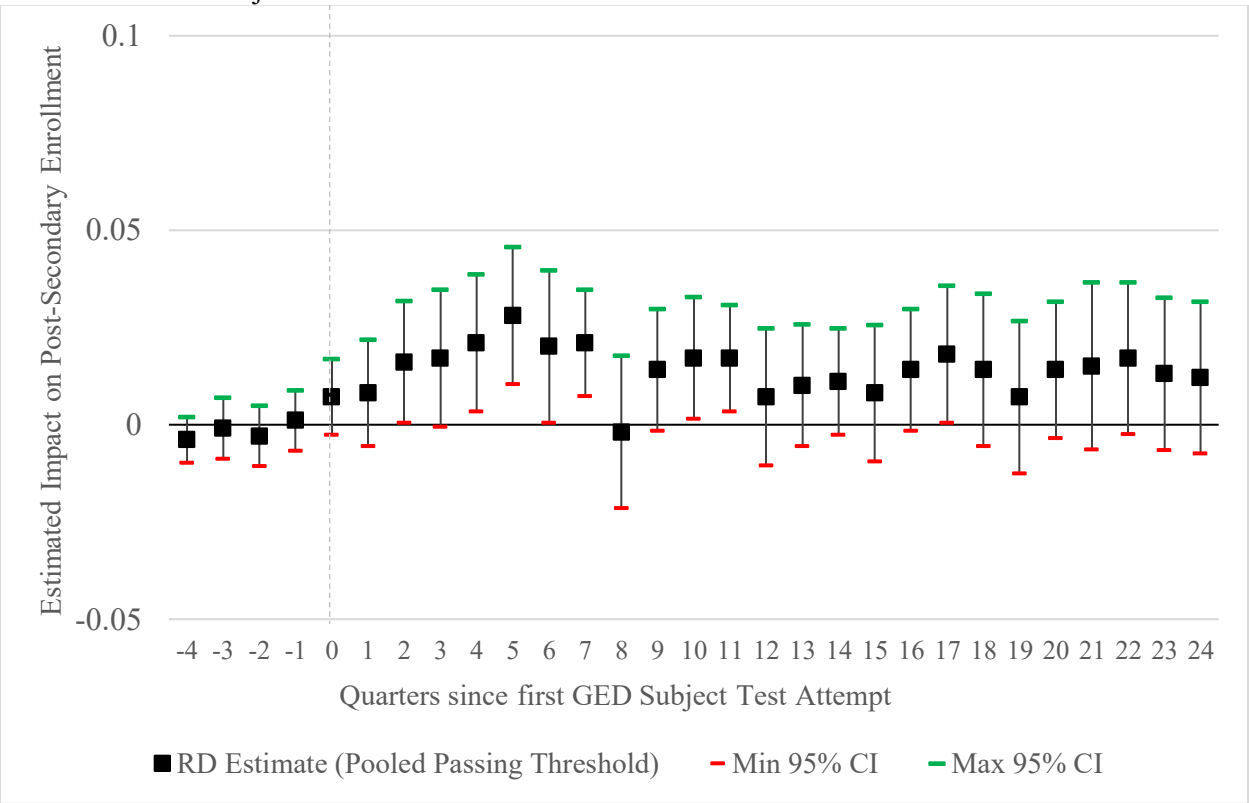
C. Science



D. Social Studies



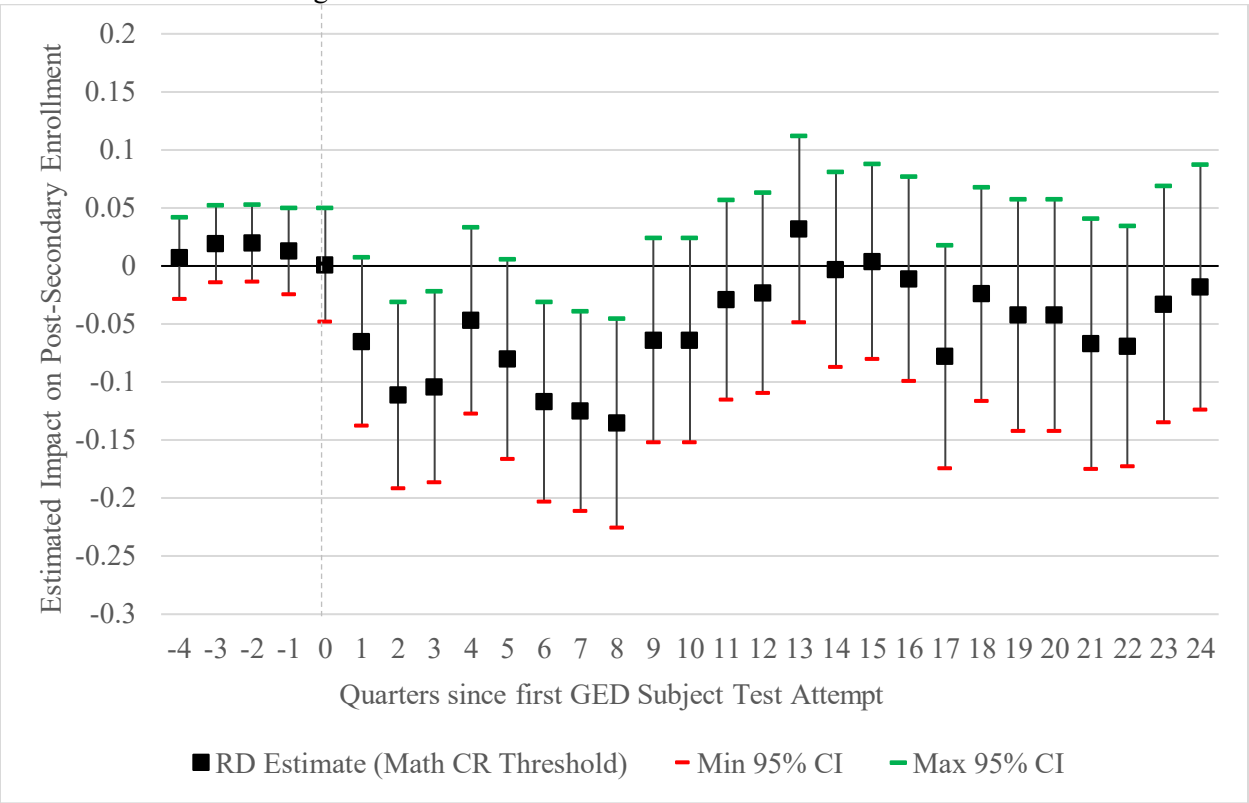
E. Pooled Across Subjects



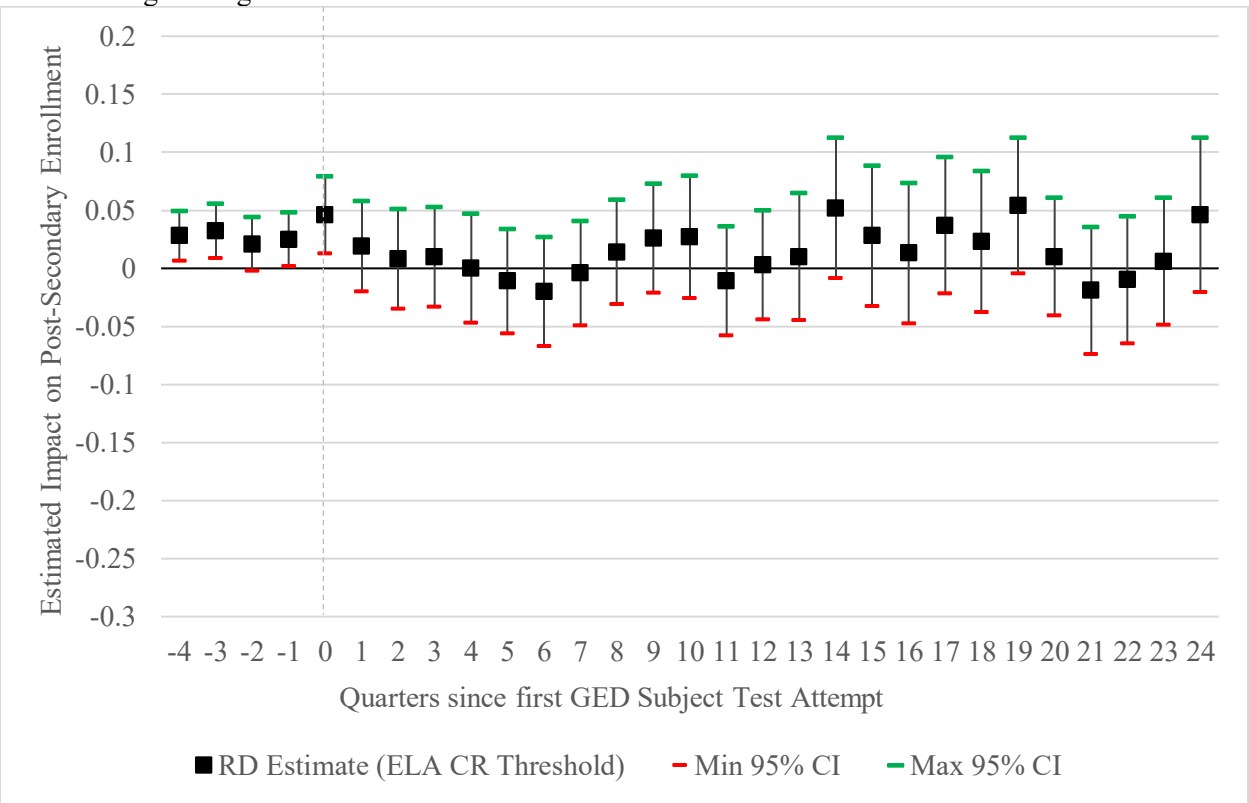
Notes: Each graph plots the predicted discontinuity in post-secondary enrollment by quarter since an individual's first GED subject test attempt at the indicated GED subject test passing threshold, within its 95% confidence interval. Discontinuities are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear regression discontinuity method, as described in equation (1). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of individual covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, and are determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). Point estimates are reported in Appendix Table A10.

Figure 5: Impact of Crossing a GED College Ready Threshold (165) on Post-Secondary Enrollment, by Quarter Since First GED Subject Test Attempt

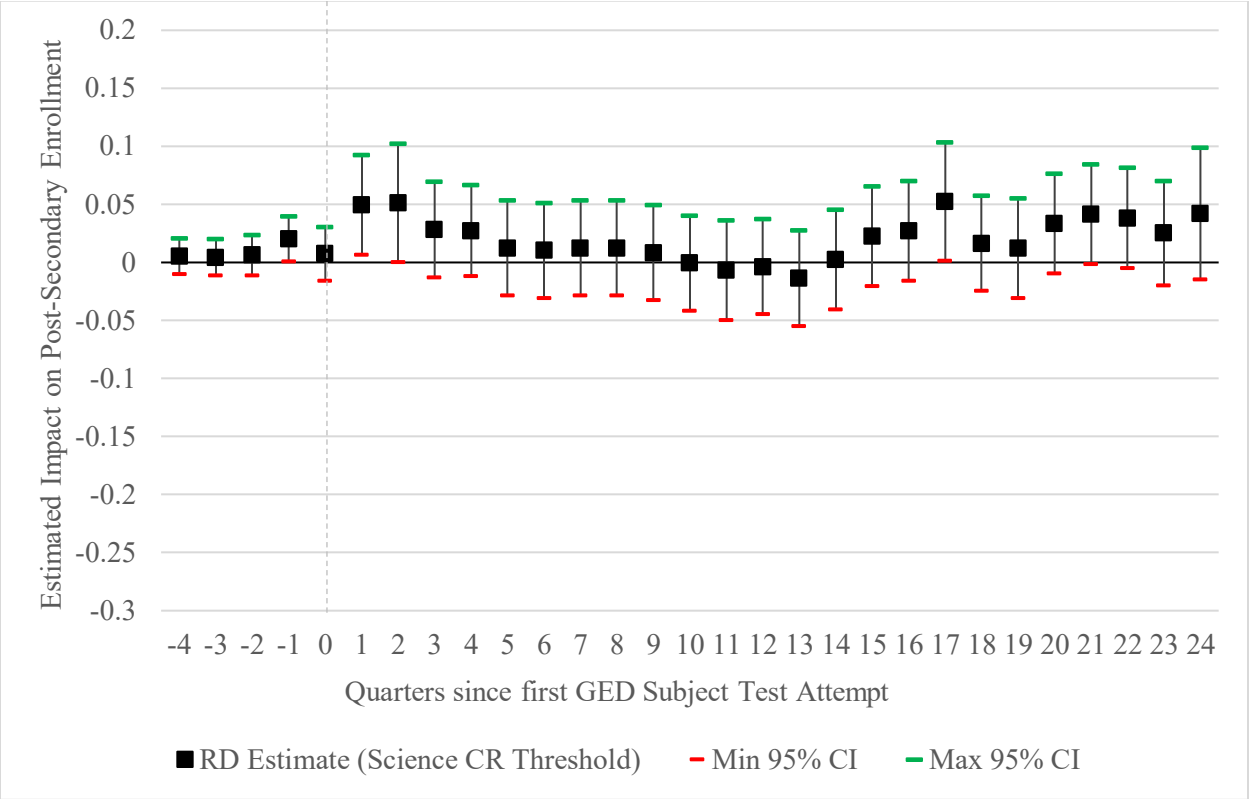
A. Mathematical Reasoning



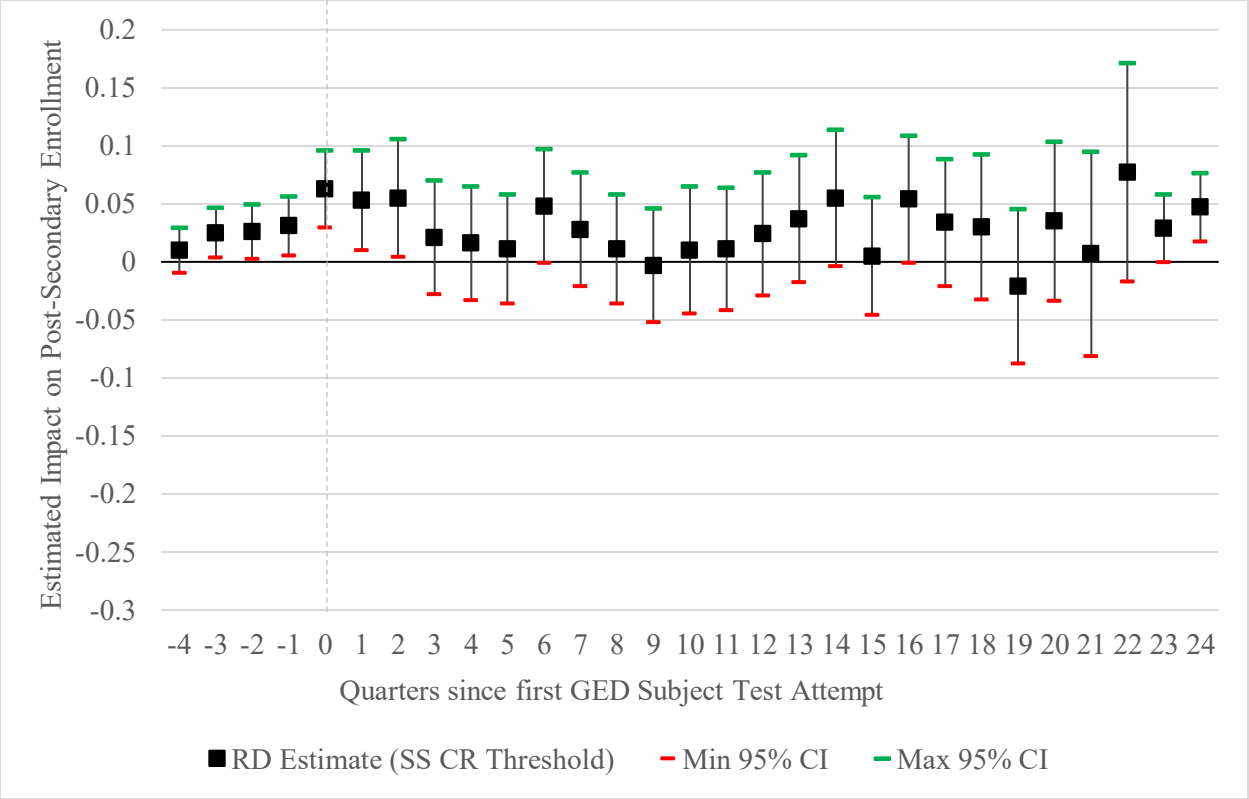
B. Reasoning Through ELA



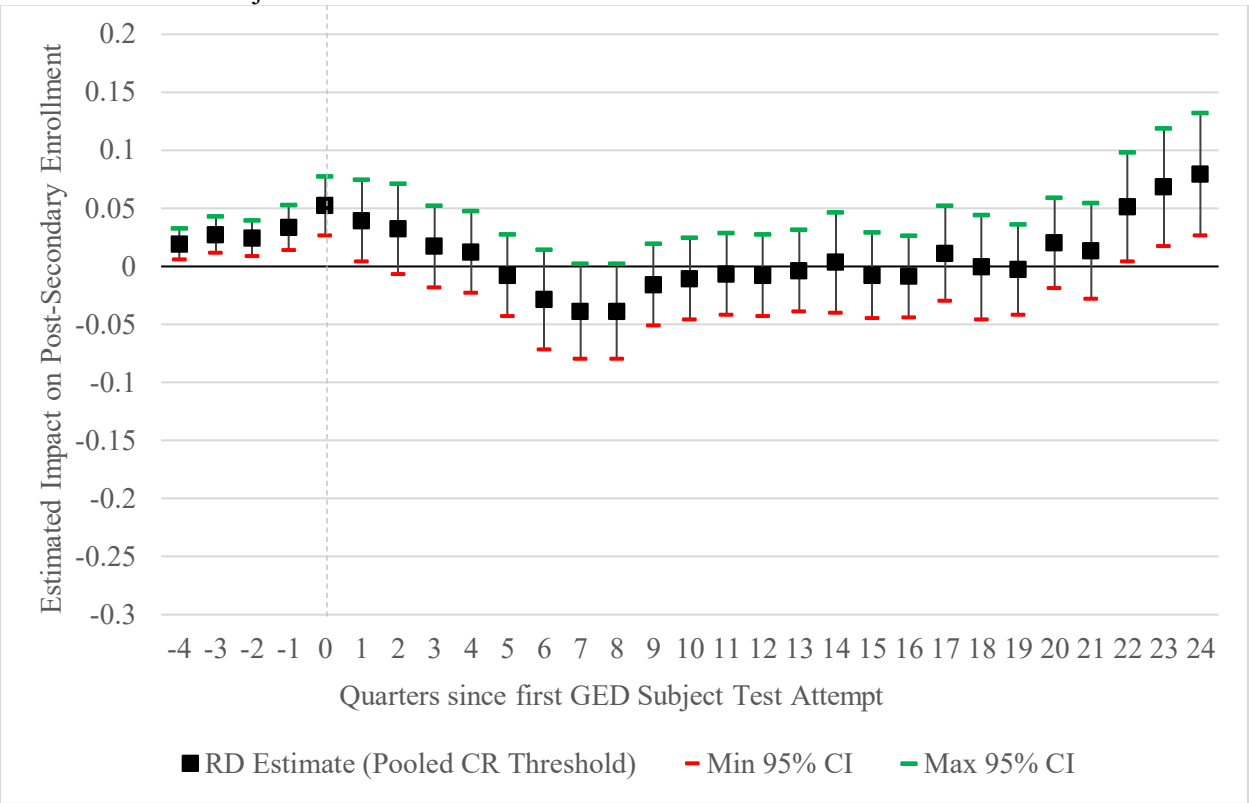
C. Science



D. Social Studies



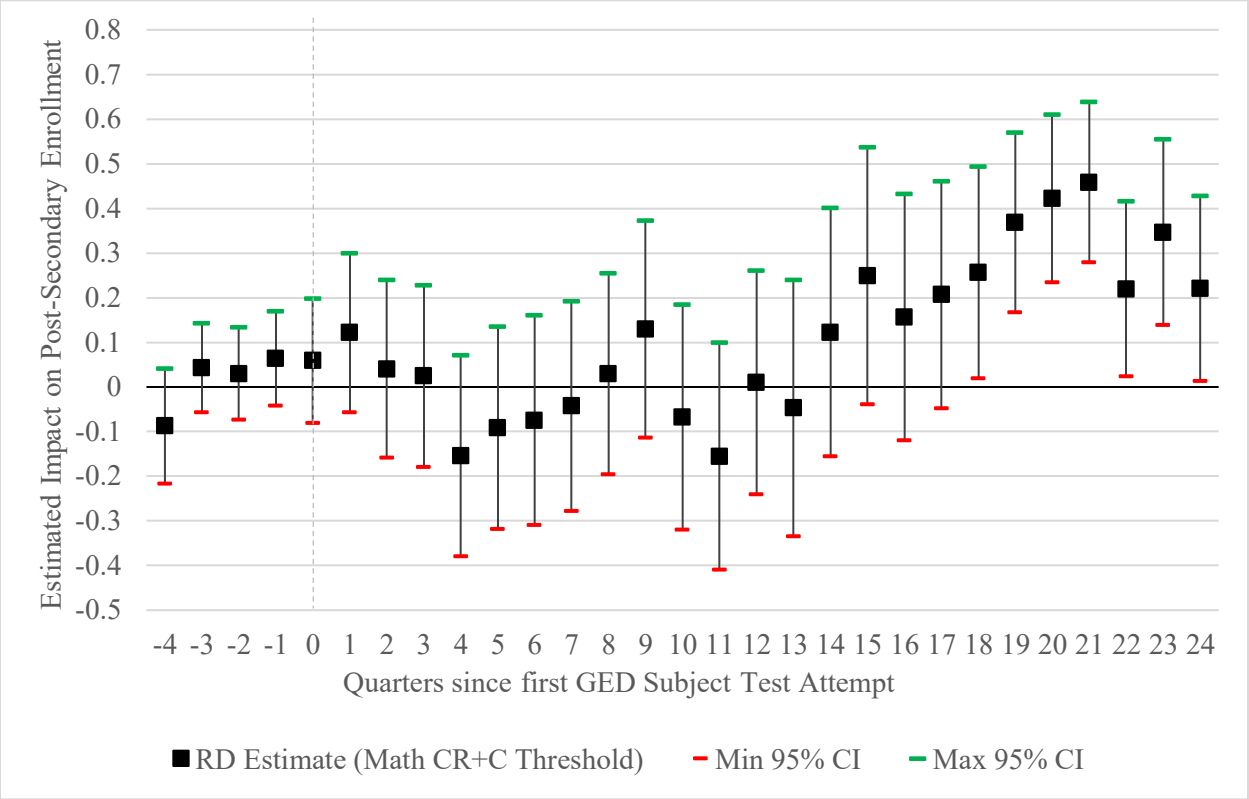
E. Pooled Across Subjects



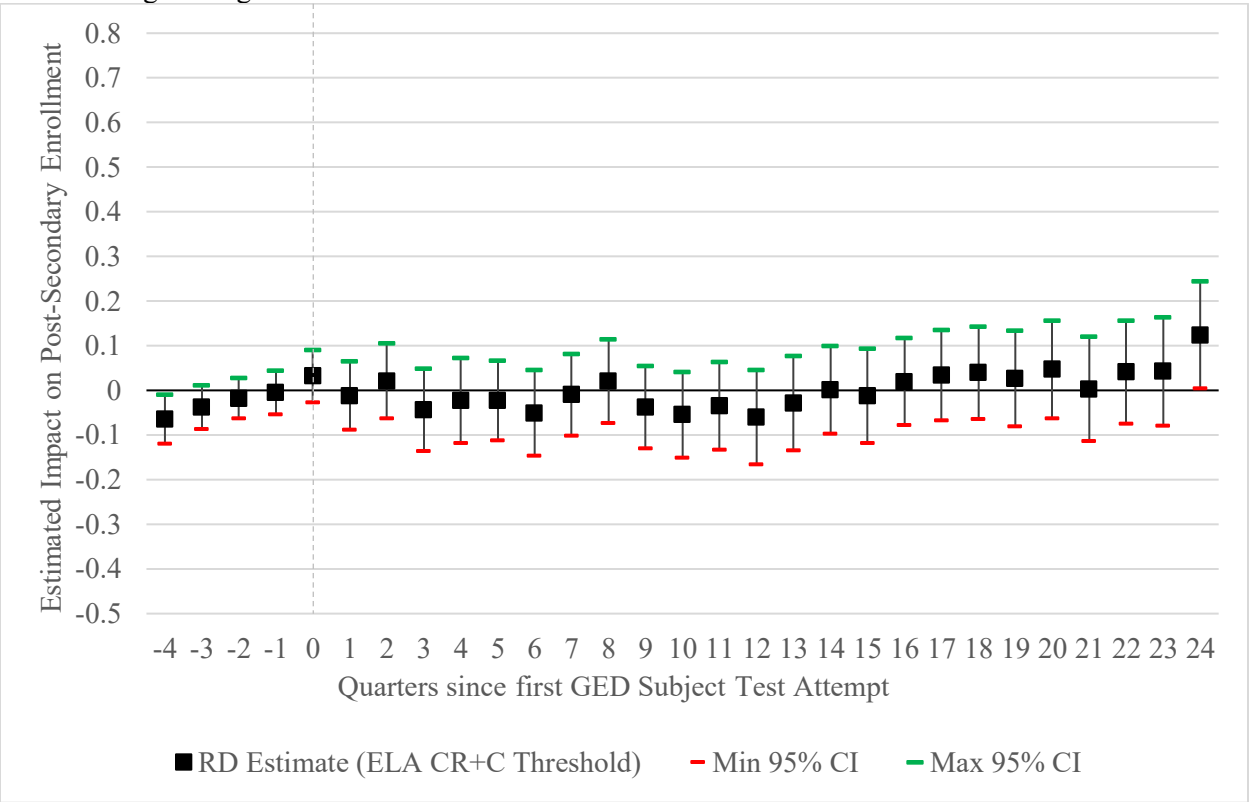
Notes: Each graph plots the predicted discontinuity in post-secondary enrollment by quarter since an individual's first GED subject test attempt at the indicated GED College Ready threshold, within its 95% confidence interval. Discontinuities are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear regression discontinuity method, as described in equation (1). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of individual covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, and are determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). Point estimates are reported in Appendix Table A10.

Figure 6: Impact of Crossing a GED College Ready + Credit Threshold (175) on Post-Secondary Enrollment, by Quarter Since First GED Subject Test Attempt

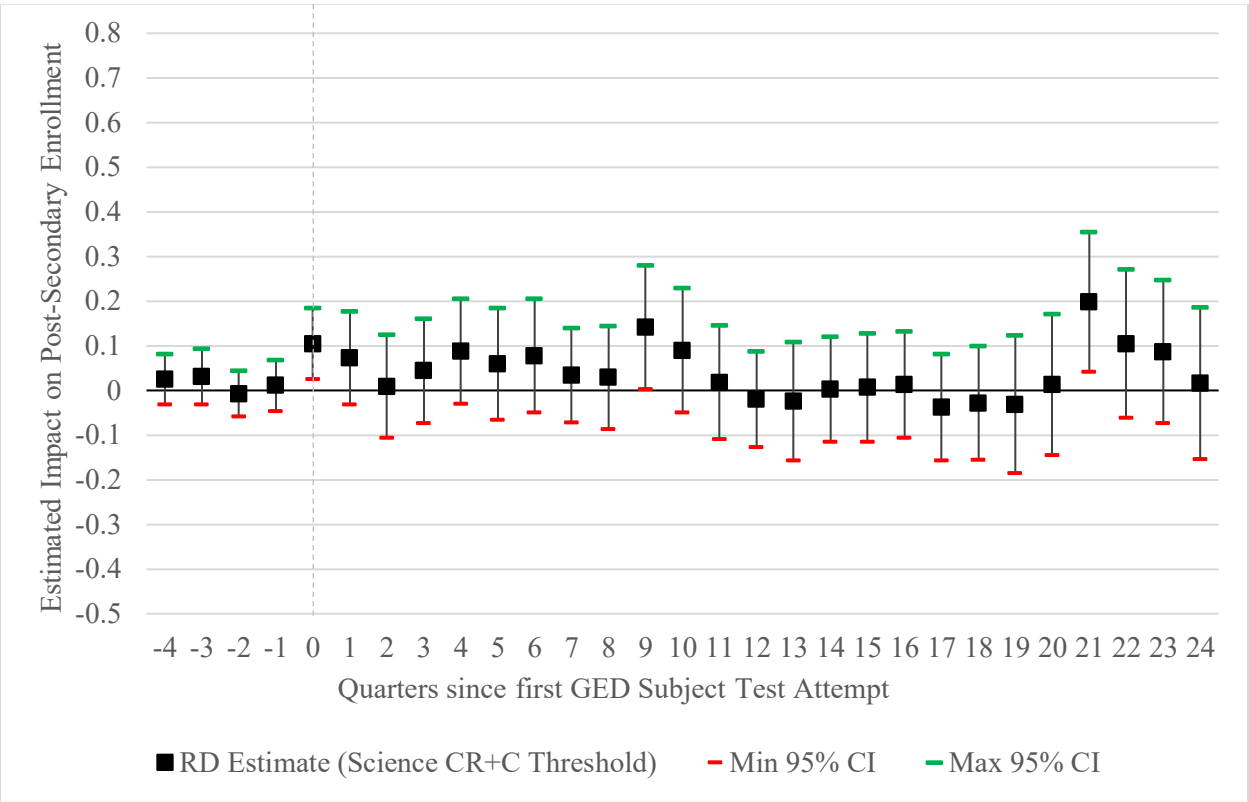
A. Mathematical Reasoning



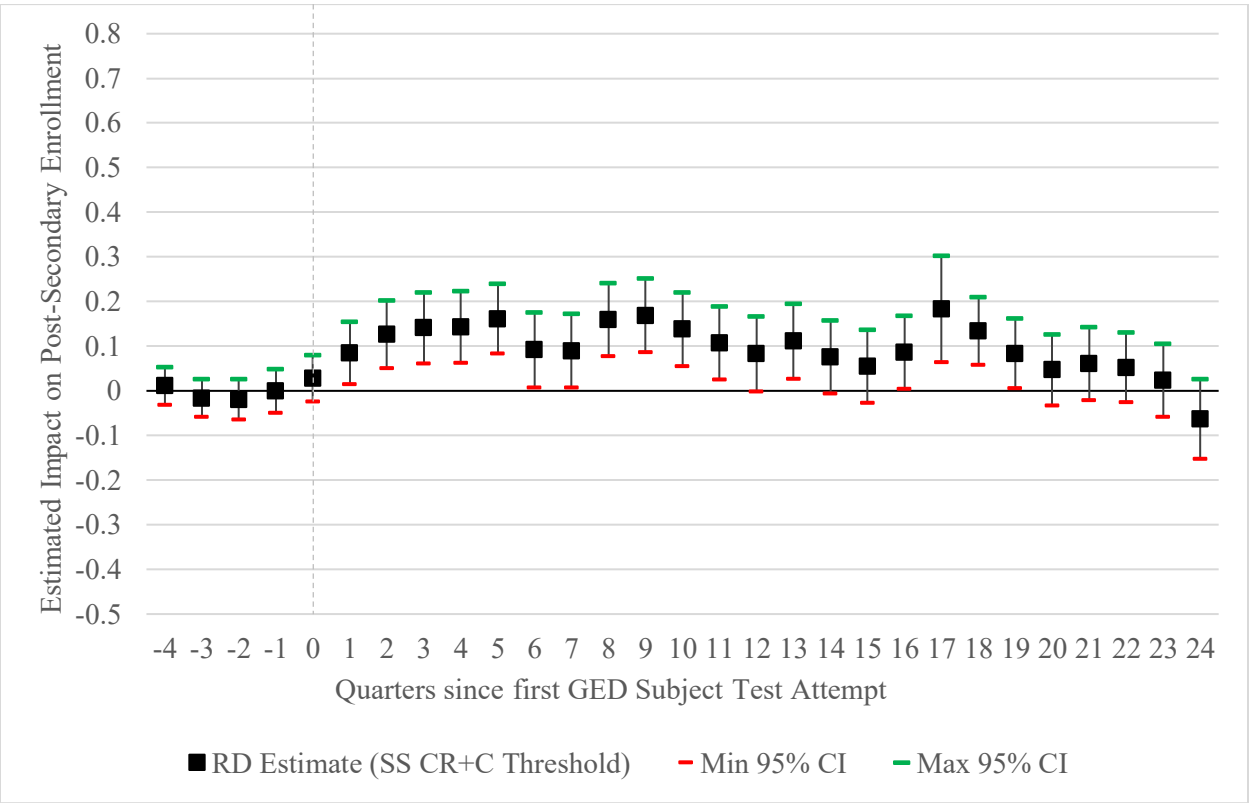
B. Reasoning Through ELA



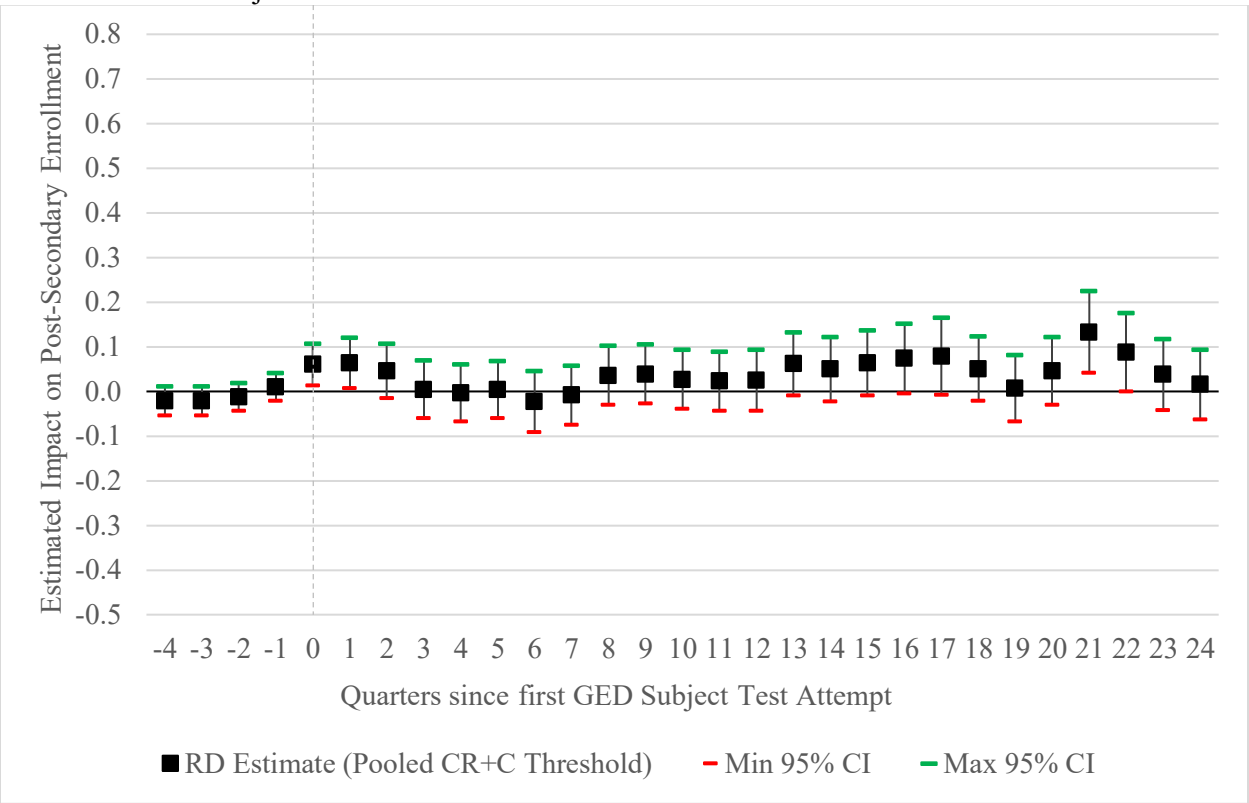
C. Science



D. Social Studies



E. Pooled Across Subjects



Notes: Each graph plots the predicted discontinuity in post-secondary enrollment by quarter since an individual's first GED subject test attempt at the indicated GED College Ready + Credit threshold, within its 95% confidence interval. Discontinuities are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear regression discontinuity method, as described in equation (1). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of individual covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, and are determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). Point estimates are reported in Appendix Table A10.

Table 1: Summary Statistics	All Testers	Analytic Sample	Matched Sample	P-Value (2)=(3)	GED Grads	GED CR	GED CR+C
Characteristic	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Demographics							
Age at first test attempt	26.01	25.09	25.04	0.848	24.52	23.81	23.72
Male	.563	.506	.508	.749	.589	.622	.651
Asian	.026	.030	.030	.613	.026	.037	.058
Black	.185	.162	.162	.251	.142	.061	.039
Hispanic	.222	.191	.193	.327	.199	.141	.108
Native American	.017	.017	.017	.464	.015	.011	.007
White	.455	.479	.480	.916	.522	.631	.651
Multi-Racial	.041	.047	.047	.485	.046	.056	.057
Other Race	.054	.074	.070	.826	.050	.064	.080
Employed	.402	.469	.464	.236	.398	.426	.427
Unemployed	.325	.343	.347	.963	.325	.325	.304
Highest grade = 9 or lower	.216	.202	.202	.813	.200	.164	.148
Highest grade = 10 or above	.784	.798	.798	.813	.800	.836	.852
Past Year Income Above Median	.364	.425	.423	.120	.357	.390	.386
Past Year Income Below Median	.636	.575	.577	.120	.643	.610	.614
B. Baseline Survey Data							
Motivation: Personal	.303	.279	.277	.639	.282	.224	.183
Motivation: Work	.206	.230	.230	.399	.201	.210	.201
Motivation: Education	.415	.441	.445	.930	.443	.507	.568
Motivation: Special Requirement	.052	.020	.019	.071	.046	.029	.023
Motivation: Military	.025	.030	.030	.734	.028	.028	.025
Prepared via Practice Test	.357	.401	.397	.836	.370	.352	.325
Prepared via Books	.252	.225	.229	.769	.256	.256	.261
Prepared via Online Resources	.154	.192	.188	.214	.165	.211	.242
Prepared via Audio Resources	.013	.016	.015	.171	.011	.010	.009
Prepared via Television	.004	.005	.005	.188	.004	.003	.003
Prepared via Mobile App	.037	.048	.047	.811	.040	.051	.053
Prepared via Social Network	.022	.026	.025	.187	.022	.022	.021
Prepared via Other Resources	.020	.022	.021	.195	.021	.023	.023
Prepared via Adult Education	.427	.371	.371	.635	.399	.294	.218
Studied for Exam	.828	.812	.813	.837	.822	.781	.742
Studied at Test Prep Center	.280	.308	.309	.394	.269	.222	.171
Studied at Testing Center	.033	.036	.036	.975	.031	.020	.014
Studied at HS Program	.101	.117	.115	.473	.096	.079	.062
Studied at CC Program	.056	.063	.063	.802	.054	.047	.039
Studied at Workplace Program	.014	.015	.015	.922	.012	.008	.005
Studied at Online Program	.101	.125	.123	.626	.108	.128	.135
Studied at Military Program	.005	.005	.004	.354	.005	.003	.002
Studied at Correctional Facility	.140	.026	.027	.015	.133	.079	.054
Studied via Tutoring	.063	.070	.070	.897	.061	.057	.051
Studied in Self-Directed Setting	.279	.333	.331	.806	.306	.389	.444
Studied at Other	.027	.026	.026	.526	.025	.018	.014
Reason for no diploma: Academic	.445	.436	.434	.102	.439	.409	.379
Reason for no diploma: Personal	.716	.720	.720	.501	.715	.700	.656

Reason for no diploma: Other	.068	.055	.055	.437	.065	.061	.067
Reason for no diploma: Homeschool	.041	.050	.051	.030	.052	.085	.122
Reason for no diploma: Internat'l	.037	.035	.034	.659	.034	.039	.051
Permanently Disabled	.009	.009	.009	.161	.006	.006	.006
Retired	.004	.003	.003	.332	.004	.003	.003
C. Missing Data Indicators							
Missing Race Data	.078	.056	.058	.828	.081	.078	.082
Missing Gender Data	.053	.069	.066	.920	.054	.072	.098
Missing Labor Force/Income Data	.249	.310	.287	.012	.212	.254	.290
Missing Motivation Data	.017	.008	.007	.681	.018	.011	.008
Missing Educational Attainment	.078	.061	.059	.093	.074	.068	.072
Missing Reason for Not Completing	.017	.007	.007	.679	.018	.011	.007
D. Sample Exclusion Criteria							
First attempt on or after 1/26/2016	.781	1.000	.929		.774	.774	.811
Took Exam in English	.957	1.000	1.000		.970	.989	.994
Took Exam in a Correctional Facility	.162	.000	.000		.154	.088	.061
E. GED Test Score Data							
Ever Passed GED (subtest scores)	.631	.642	.643	.972	1.000	.905	.928
GED CR - Math	.072	.082	.083	.107	.085	.286	.523
GED CR - ELA	.127	.142	.144	.700	.163	.540	.744
GED CR - Science	.120	.143	.140	.139	.152	.492	.732
GED CR - Social Studies	.148	.171	.169	.887	.189	.624	.863
GED CR - Any Subject	.213	.241	.240	.700	.305	1.000	1.000
GED CR+C - Math	.019	.024	.024	.360	.023	.078	.284
GED CR+C - ELA	.022	.026	.026	.740	.028	.092	.345
GED CR+C - Science	.018	.023	.023	.728	.023	.075	.277
GED CR+C - Social Studies	.040	.049	.048	.790	.051	.166	.617
GED CR+C - Any Subject	.057	.070	.069	.745	.084	.268	1.000
1st Math Subj. Test Score	149.9	150.5	150.5	.182	151.9	159.4	166.7
1st ELA Subj. Test Score	153.1	153.7	153.8	.780	155.6	164.4	170.0
1st Science Subj. Test Score 1st Soc.	154.1	155.1	155.0	.418	156.3	164.1	169.6
Stud. Subj. Test Score	153.4	154.3	154.2	.616	156.0	166.3	174.8
Observations	1,556,764	947,510	101,829		981,851	330,942	88,558

Notes: Each cell in columns (1) – (3) and (5) – (7) reports the mean value of the covariate listed each row for the sample indicated in each column. Column (3) reports the p-value from a test of equivalence between the means in column (2) and column (3) of each row.

Table 2: Placebo Tests	Math	ELA	Science	Soc. Stud.	Pooled
Placebo Outcome	(1)	(2)	(3)	(4)	(5)
A. Pass GED Subject Test (145+)					
Age at first test attempt	-.005	-.015	.612	.660	.034
	(.392)	(.429)	(.470)	(.458)	(.272)
Male	.009	-.008	-.051	.025	-.004
	(.021)	(.021)	(.029)	(.019)	(.015)
Asian	-.008	.009	.005	.009	.001
	(.006)	(.007)	(.007)	(.007)	(.005)
Black	.013	.009	-.006	-.017	-.001
	(.013)	(.015)	(.019)	(.020)	(.011)
Hispanic	.021	-.007	-.019	.048*	.005
	(.015)	(.015)	(.020)	(.020)	(.011)
Native American	-.002	-.011	.015*	.005	.001
	(.006)	(.006)	(.007)	(.006)	(.003)
White	-.024	-.015	.019	-.018	-.009
	(.018)	(.019)	(.022)	(.018)	(.014)
Multi-Racial	-.005	.015*	-.002	-.003	.008
	(.008)	(.007)	(.008)	(.007)	(.006)
Other Race	-.004	-.004	-.013	-.020	-.009
	(.010)	(.012)	(.014)	(.013)	(.009)
Employed	.034	.016	-.001	.031	.032
	(.023)	(.026)	(.029)	(.027)	(.02)
Unemployed	-.001	-.009	-.049	-.048	-.012
	(.018)	(.024)	(.041)	(.026)	(.016)
Motivation: Personal	.006	-.029	.062	-.030	-.003
	(.017)	(.017)	(.032)	(.019)	(.011)
Motivation: Work	.008	-.013	.032	.025	.021
	(.017)	(.015)	(.021)	(.02)	(.014)
Motivation: Education	-.013	.036*	-.065	.010	-.011
	(.019)	(.018)	(.035)	(.019)	(.016)
Motivation: Special Requirement	-.006	-.005	-.002	-.014	-.007
	(.005)	(.006)	(.006)	(.008)	(.004)
Motivation: Military	.005	.007	-.002	.005	.013*
	(.008)	(.007)	(.008)	(.007)	(.006)
Prepared via Practice Test	.001	.006	-.019	.016	-.003
	(.016)	(.023)	(.024)	(.019)	(.013)
Prepared via Books	.017	.026	-.003	.003	.018
	(.017)	(.018)	(.017)	(.015)	(.012)
Prepared via Online Resources	-.009	.024	.017	-.002	.003
	(.012)	(.02)	(.018)	(.014)	(.011)
Prepared via Mobile App	.006	.004	-.012	-.009	-.001
	(.009)	(.009)	(.011)	(.008)	(.005)
Prepared via Social Network	.001	.003	-.009	-.006	-.003
	(.007)	(.006)	(.008)	(.006)	(.004)
Prepared via Other Resources	-.009	.003	.016*	-.006	-.005
	(.006)	(.005)	(.007)	(.007)	(.004)
Prepared via Adult Education	-.014	-.001	-.028	-.011	-.015
	(.017)	(.018)	(.022)	(.018)	(.012)
Studied for Exam	.016	.022	-.022	-.018	.000
	(.015)	(.018)	(.016)	(.015)	(.011)
Studied at Test Prep Center	.018	-.007	-.013	-.031	.007

	(.019)	(.017)	(.023)	(.018)	(.014)
Studied at Testing Center	-.010	.009	.005	-.002	.001
	(.008)	(.008)	(.009)	(.008)	(.006)
Studied at HS Program	-.013	.020	-.020	.002	-.013
	(.012)	(.016)	(.014)	(.012)	(.008)
Studied at CC Program	-.008	.018	.007	.004	.000
	(.01)	(.010)	(.010)	(.010)	(.008)
Studied at Online Program	-.005	.014	.016	.001	-.004
	(.013)	(.013)	(.016)	(.012)	(.011)
Studied at Correctional Facility	.006	-.023*	.004	.000	-.006
	(.005)	(.010)	(.009)	(.006)	(.005)
Studied via Tutoring	-.012	-.006	.009	.000	-.002
	(.010)	(.011)	(.011)	(.010)	(.006)
Studied in Self-Directed Setting	.032	.017	-.010	-.003	.023
	(.019)	(.021)	(.024)	(.015)	(.013)
Studied at Other	.001	.001	-.008	.000	-.002
	(.006)	(.007)	(.009)	(.007)	(.005)
Highest grade = 9 or lower	.030	-.057**	.011	.039	-.012
	(.016)	(.021)	(.025)	(.020)	(.011)
Past Year Income Below Median	.000	.015	-.003	.007	-.010
	(.024)	(.022)	(.028)	(.024)	(.016)
Reason for no diploma: Academic	-.018	.017	-.029	-.024	-.018
	(.02)	(.020)	(.028)	(.024)	(.014)
Reason for no diploma: Personal	.000	.007	.022	.031	.000
	(.016)	(.019)	(.027)	(.024)	(.013)
Reason for no diploma: Other	.009	-.022*	-.016	-.002	-.005
	(.009)	(.010)	(.012)	(.009)	(.007)
Reason for no diploma: Homeschool	.003	.011	.013	-.001	.012*
	(.008)	(.007)	(.007)	(.007)	(.006)
Reason for no diploma: International	-.009	.003	.009	-.010	-.009
	(.006)	(.007)	(.011)	(.008)	(.006)
B. GED College Ready (165-174)					
Age at first test attempt	.208	.403	.478	2.105***	.392
	(.673)	(.450)	(.399)	(.614)	(.379)
Male	.025	.029	.067	-.001	.048
	(.046)	(.036)	(.038)	(.034)	(.028)
Asian	.050*	.004	.005	.007	.007
	(.024)	(.010)	(.009)	(.011)	(.009)
Black	.021	-.014	.005	.017	.010
	(.025)	(.015)	(.012)	(.018)	(.016)
Hispanic	.017	-.014	-.003	-.008	-.066**
	(.031)	(.022)	(.019)	(.026)	(.023)
Native American	.003	.007	.010	-.017	-.003
	(.010)	(.006)	(.007)	(.009)	(.006)
White	-.070	.045	-.041	.015	.022
	(.051)	(.033)	(.036)	(.036)	(.024)
Multi-Racial	-.033	-.014	.009	.012	.016
	(.024)	(.015)	(.015)	(.017)	(.012)
Other Race	.009	-.019	.014	-.029	.008
	(.028)	(.020)	(.019)	(.019)	(.013)
Employed	.035	.090*	.002	-.015	.099**
	(.066)	(.045)	(.033)	(.046)	(.036)

Unemployed	.045	-.083	.002	.034	-.022
	(.053)	(.043)	(.031)	(.038)	(.029)
Motivation: Personal	-.006	-.019	.029	.002	-.003
	(.037)	(.027)	(.025)	(.029)	(.021)
Motivation: Work	.000	.042	-.005	-.002	.009
	(.039)	(.025)	(.023)	(.028)	(.020)
Motivation: Education	.003	-.032	-.027	.012	-.006
	(.045)	(.032)	(.028)	(.035)	(.024)
Motivation: Special Requirement	-.009	-.001	-.020**	-.005	-.016*
	(.01)	(.006)	(.007)	(.009)	(.007)
Motivation: Military	.015	.008	.018	-.006	.016
	(.017)	(.011)	(.010)	(.014)	(.010)
Prepared via Practice Test	.014	-.038	-.023	.006	.010
	(.050)	(.037)	(.026)	(.035)	(.024)
Prepared via Books	.007	-.013	-.023	-.062*	-.013
	(.038)	(.026)	(.023)	(.031)	(.020)
Prepared via Online Resources	-.089*	.004	-.021	.107***	.004
	(.044)	(.025)	(.022)	(.030)	(.020)
Prepared via Mobile App	.033	-.015	-.003	.014	.008
	(.021)	(.016)	(.013)	(.017)	(.012)
Prepared via Social Network	.020	.003	.006	.006	-.002
	(.013)	(.009)	(.008)	(.011)	(.009)
Prepared via Other Resources	.004	.017	-.010	-.001	-.008
	(.013)	(.009)	(.008)	(.010)	(.008)
Prepared via Adult Education	.023	-.020	-.004	-.061***	-.048
	(.038)	(.027)	(.024)	(.014)	(.028)
Studied for Exam	-.030	-.060*	-.005	-.085**	-.012
	(.041)	(.029)	(.022)	(.030)	(.021)
Studied at Test Prep Center	-.034	-.036	.010	-.204***	-.028
	(.043)	(.026)	(.023)	(.032)	(.025)
Studied at Testing Center	.009	-.006	.001	-.006	.001
	(.012)	(.010)	(.008)	(.011)	(.010)
Studied at HS Program	.004	-.004	-.016	-.045*	-.005
	(.026)	(.017)	(.016)	(.020)	(.015)
Studied at CC Program	.018	.012	-.001	-.043*	-.023
	(.018)	(.013)	(.012)	(.018)	(.014)
Studied at Online Program	-.018	.042*	-.015	.060*	.011
	(.032)	(.021)	(.019)	(.026)	(.019)
Studied at Correctional Facility	.016	-.008	-.003	-.020*	.001
	(.011)	(.009)	(.007)	(.010)	(.007)
Studied via Tutoring	.012	-.005	-.005	.011	.006
	(.021)	(.019)	(.013)	(.018)	(.015)
Studied in Self-Directed Setting	-.02	-.010	-.014	.060	.030
	(.044)	(.030)	(.026)	(.034)	(.029)
Studied at Other	.000	-.012	.005	-.006	-.006
	(.012)	(.009)	(.010)	(.009)	(.007)
Highest grade = 9 or lower	-.125***	-.015	.039	-.126***	-.037
	(.038)	(.024)	(.021)	(.029)	(.023)
Past Year Income Below Median	-.098	-.028	.027	-.046	-.010
	(.060)	(.036)	(.032)	(.043)	(.029)
Reason for no diploma: Academic	.036	.043	.014	-.105**	.014
	(.052)	(.030)	(.037)	(.036)	(.025)

Reason for no diploma: Personal	-.006	-.025	.003	.036	.026
	(.042)	(.030)	(.024)	(.031)	(.023)
Reason for no diploma: Other	-.007	-.012	-.011	-.035*	-.016
	(.025)	(.014)	(.012)	(.016)	(.013)
Reason for no diploma: Homeschool	-.001	.002	.006	.016	.000
	(.025)	(.017)	(.014)	(.018)	(.012)
Reason for no diploma: International	.035	.000	-.001	-.003	-.003
	(.022)	(.009)	(.011)	(.011)	(.008)
C. GED College Ready + Credit (175+)					
Age at first test attempt	.671	-.638	.645	.110	-.217
	(1.979)	(.782)	(.712)	(.892)	(.648)
Male	-.015	.043	.026	.034	-.062
	(.125)	(.061)	(.055)	(.053)	(.042)
Asian	.052	.023	.006	-.004	.020
	(.065)	(.016)	(.023)	(.017)	(.013)
Black	-.013	-.016	.022	-.025	-.014
	(.054)	(.019)	(.027)	(.025)	(.021)
Hispanic	.054	-.027	.020	.052	-.016
	(.081)	(.037)	(.033)	(.034)	(.029)
Native American	-.003	.001	-.014	.027	.003
	(.007)	(.010)	(.010)	(.016)	(.008)
White	-.037	.045	.030	-.128	-.002
	(.127)	(.054)	(.057)	(.082)	(.039)
Multi-Racial	-.014	-.007	.011	-.009	.018
	(.057)	(.028)	(.034)	(.029)	(.024)
Other Race	-.051	-.019	-.074	.075*	-.022
	(.081)	(.036)	(.042)	(.038)	(.023)
Employed	.053	-.129	-.177	.059	.069
	(.162)	(.067)	(.092)	(.056)	(.050)
Unemployed	-.165	.066	.077	-.054	-.049
	(.153)	(.064)	(.08)	(.054)	(.048)
Motivation: Personal	.027	.025	.040	-.033	-.025
	(.093)	(.043)	(.054)	(.042)	(.034)
Motivation: Work	.045	.001	.016	.025	-.035
	(.094)	(.047)	(.051)	(.066)	(.039)
Motivation: Education	-.033	-.005	-.011	.063	.070
	(.119)	(.054)	(.059)	(.053)	(.045)
Motivation: Special Requirement	-.020	-.010	.003	.000	-.006
	(.032)	(.012)	(.009)	(.008)	(.008)
Motivation: Military	-.017	-.019	-.043*	.035	.003
	(.039)	(.019)	(.022)	(.027)	(.015)
Prepared via Practice Test	.100	.027	-.048	-.042	-.042
	(.11)	(.053)	(.068)	(.053)	(.049)
Prepared via Books	.030	.061	-.026	.001	-.014
	(.109)	(.045)	(.051)	(.046)	(.036)
Prepared via Online Resources	.066	.007	-.013	.051	.053
	(.106)	(.050)	(.050)	(.043)	(.035)
Prepared via Mobile App	.014	.042	.012	-.031	-.002
	(.064)	(.028)	(.033)	(.026)	(.020)
Prepared via Social Network	-.053	.007	.014	-.042	.015
	(.047)	(.019)	(.016)	(.024)	(.015)
Prepared via Other Resources	-.048	.039*	-.059**	.002	-.002

	(.045)	(.018)	(.021)	(.015)	(.014)
Prepared via Adult Education	.078*	.010	-.015	.052	-.005
	(.033)	(.043)	(.055)	(.044)	(.035)
Studied for Exam	.028	.106*	-.083	.023	-.051
	(.109)	(.050)	(.065)	(.047)	(.042)
Studied at Test Prep Center	.063	-.008	-.010	-.088	-.056
	(.072)	(.042)	(.045)	(.055)	(.037)
Studied at Testing Center	.061***	.001	-.008	-.012	.010
	(.017)	(.014)	(.018)	(.012)	(.012)
Studied at HS Program	.093	-.006	.022	.067	.036
	(.051)	(.027)	(.029)	(.038)	(.022)
Studied at CC Program	.001	.014	.030	-.052*	.005
	(.041)	(.022)	(.028)	(.024)	(.018)
Studied at Online Program	.045	.029	-.041	.003	.025
	(.085)	(.041)	(.044)	(.037)	(.030)
Studied at Correctional Facility	.026	-.003	.003	.003	-.009
	(.014)	(.008)	(.010)	(.013)	(.009)
Studied via Tutoring	.081	-.013	-.029	-.043	-.059*
	(.051)	(.028)	(.027)	(.027)	(.024)
Studied in Self-Directed Setting	-.144	-.004	.012	.035	-.025
	(.121)	(.055)	(.056)	(.052)	(.042)
Studied at Other	.021	.017	-.020	.011	.015
	(.027)	(.013)	(.017)	(.018)	(.011)
Highest grade = 9 or lower	.080	-.029	-.069	-.082	-.054
	(.073)	(.043)	(.042)	(.058)	(.032)
Past Year Income Below Median	-.218	.059	.019	-.112*	-.051
	(.159)	(.068)	(.086)	(.055)	(.049)
Reason for no diploma: Academic	.161	-.023	-.112	-.095	-.097
	(.112)	(.054)	(.071)	(.055)	(.050)
Reason for no diploma: Personal	.064	.082	.010	.056	.014
	(.123)	(.051)	(.067)	(.050)	(.038)
Reason for no diploma: Other	.091	-.033	.039	-.057*	.004
	(.062)	(.027)	(.030)	(.027)	(.018)
Reason for no diploma: Homeschool	-.066	-.055	-.037	.060	.004
	(.083)	(.040)	(.035)	(.033)	(.026)
Reason for no diploma: International	-.020	.011	.058*	-.005	.005
	(.079)	(.016)	(.028)	(.015)	(.013)

Notes: Each cell reports the predicted discontinuity in the placebo outcome listed in each row at the GED subject test threshold described in each panel header and column (based on first-attempt scores), followed by its standard error in parentheses. Discontinuities are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear RD method, as described in equation (1). All regressions are weighted using a triangular kernel, controlling for state of residence and quarter of first GED subject test attempt. Bandwidth and effective sample size varies by placebo outcome and subject test threshold, determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). To conserve space, I do not report effective sample size for each row, and I have omitted placebo tests for all missing data variables as well as any baseline characteristics that characterize less than 1.5% of the sample in column (1) of Table 1. The sample is limited to the matched sample described in column (3) of Table 1 whose first GED subject test attempt was after January 26, 2016. Total sample N varies by covariate, with $N \in [65431, 94611]$; effective sample N varies by estimate, with $N \in [552, 52843]$. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table 3: First-Stage Estimates	Math	ELA	Science	Soc. Stud.	Pooled
Outcome	(1)	(2)	(3)	(4)	(5)
A. Discontinuities in ever passing the GED Test					
At Passing Threshold (145)	.178***	.104***	.068**	.102***	.186***
	(.018)	(.018)	(.026)	(.019)	(.015)
	22,788	26,741	17,521	26,408	37,986
B. Discontinuities in subject-specific college-readiness designations					
At GED CR Threshold (165)	.994***	.997***	1.001***	.997***	.990***
	(.006)	(.003)	(.002)	(.002)	(.004)
	4,090	8,079	7,880	8,483	12,659
At GED CR+C Threshold (175)	1.002***	1.000***	.995***	1.000***	.997***
	(.004)	(.000)	(.006)	(.000)	(.005)
	1,083	1,967	1,911	1,866	3,814
C. Discontinuities in any college-readiness designation					
At GED CR Threshold (165)	.251***	.421***	.408***	.600***	.990***
	(.044)	(.033)	(.031)	(.034)	(.004)
	4,090	8,079	7,880	8,483	12,659
At GED CR+C Threshold (175)	.463***	.506***	.371***	.648***	.997***
	(.116)	(.058)	(.062)	(.066)	(.005)
	1,083	1,967	1,911	1,866	3,814
D. Discontinuities in Exam Retaking Behavior					
At Passing Threshold (145)	-.851***	-.770***	-.781***	-.777***	-.753***
	(.013)	(.017)	(.018)	(.016)	(.010)
	26,816	22,111	17,521	26,408	37,986
At GED CR Threshold (165)	.000	.000	.004	-.008**	.003
	(.006)	(.003)	(.003)	(.003)	(.018)
	5,248	11,392	7,880	8,483	16,926
At GED CR+C Threshold (175)	-.002	.003	-.013	-.002	.003
	(.007)	(.003)	(.010)	(.001)	(.016)
	1,083	3,642	1,911	1,659	5,846
E. Discontinuities in Subject Test Count					
At Passing Threshold (145)	.128***	.294***	.258***	.274***	.313***
	(.028)	(.045)	(.060)	(.040)	(.034)
	26,816	22,111	13,641	20,748	37,986
At GED CR Threshold (165)	.023	.005	.002	.019	.013
	(.049)	(.039)	(.020)	(.036)	(.034)
	4,090	11,392	11,235	10,463	16,926
At GED CR+C Threshold (175)	-.008	-.053	.011	-.022	-.009
	(.148)	(.055)	(.040)	(.039)	(.044)
	1,083	2,722	2,265	3,829	5,846
F. Discontinuities in Completing All 4 Subject Tests					
At Passing Threshold (145)	.060***	.124***	.114***	.133***	.132***
	(.012)	(.018)	(.028)	(.018)	(.013)
Observations	26,816	26,741	13,641	26,408	37,986

Notes: Each cell reports the predicted discontinuity in the outcome listed in each panel header at the GED subject test threshold described in each row and column, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear RD method, as described in equation (1). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, determined by the optimal bandwidth calculations described by Calonico and coauthors (2019). *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table 4: Cumulative Impacts on College Outcomes at GED Passing Thresholds

Outcome	Math (1)	ELA (2)	Science (3)	Soc. Stud. (4)	Pooled (5)
A. ITT Impacts of Passing GED Subject Test on First Attempt (145+)					
Enrolled within 2 quarters after first attempt	.005	.009	-.005	.008	.023**
	(.014)	(.012)	(.014)	(.011)	(.008)
	22,788	22,111	17,521	26,408	45,910
Enrolled within 1 year	.024	.005	-.009	.02	.033**
	(.016)	(.014)	(.016)	(.012)	(.011)
	22,151	21,467	17,004	25,648	36,609
Enrolled within 2 years	.026	.006	.006	.026	.031*
	(.018)	(.014)	(.02)	(.015)	(.014)
	22,703	22,824	14,898	22,368	31,703
Enrolled within 4 years	.037	-.016	.005	.025	.034*
	(.02)	(.022)	(.025)	(.02)	(.017)
	17,984	15,148	11,917	17,794	25,086
Enrolled within 6 years	.005	-.019	.049	.104	.018
	(.028)	(.029)	(.032)	(.056)	(.023)
	10,396	8,929	6,703	6,501	14,156
Total quarters enrolled within 2 years	.091	-.019	-.022	.074	.09
	(.08)	(.064)	(.088)	(.073)	(.063)
	22,703	22,824	14,898	22,368	31,703
Total quarters enrolled within 4 years	.211	-.229	.129	-.095	.192
	(.147)	(.151)	(.164)	(.192)	(.114)
	17,984	15,148	11,917	14,119	25,086
Total quarters enrolled within 6 years	.145	-.521	.734*	.46	.188
	(.239)	(.296)	(.332)	(.419)	(.203)
	12,909	6,933	4,925	8,423	14,156
Earned degree or credential within 4 years	.006	-.009	-.007	-.001	.007
	(.008)	(.008)	(.011)	(.01)	(.007)
	17,984	15,148	11,917	14,119	25,086
Earned degree or credential within 6 years	.016	-.025	.017	.03	.011
	(.014)	(.013)	(.017)	(.024)	(.011)
Observations	10,396	10,806	6,703	6,501	14,156
B. LATE Impacts of Earning an HSE by Passing the GED Test					
Enrolled within 2 quarters after first attempt	.043	.041	-.078	.102	.110*
	(.072)	(.089)	(.219)	(.091)	(.047)
	22,788	26,741	17,521	29,969	37,986
Enrolled within 1 year	.175*	.001	-.144	.187	.186***
	(.083)	(.099)	(.225)	(.110)	(.055)
	26,050	30,513	17,004	25,648	36,609
Enrolled within 2 years	.143	.066	.033	.272	.198**
	(.099)	(.141)	(.261)	(.145)	(.063)
	22,703	22,824	18,839	22,368	38,431
Enrolled within 4 years	.191	-.171	.091	.227	.197*
	(.104)	(.196)	(.292)	(.166)	(.078)
	17,984	15,148	15,037	17,794	30,450
Enrolled within 6 years	.048	-.225	.491	1.110*	.117
	(.149)	(.371)	(.357)	(.554)	(.114)
	10,396	8,929	8,730	6,501	14,156
Total quarters enrolled within 2 years	.426	-.151	-.116	.893	.735*
	(.452)	(.604)	(1.160)	(.642)	(.294)

	19,402	22,824	18,839	25,226	38,431
Total quarters enrolled within 4 years	1.103	-2.229	1.828	.115	1.170*
	(.754)	(1.444)	(2.106)	(1.483)	(.568)
	17,984	15,148	15,037	14,119	30,450
Total quarters enrolled within 6 years	1.055	-6.618	7.163*	3.03	1.567
	(1.301)	(4.31)	(3.266)	(1.739)	(.975)
	12,909	8,929	6,703	11,779	17,192
Earned degree or credential within 4 years	.034	-.077	-.059	.030	.036
	(.040)	(.074)	(.127)	(.070)	(.035)
	17,984	18,363	15,037	17,794	25,086
Earned degree or credential within 6 years	.083	-.276	.167	.194*	.064
	(.071)	(.167)	(.181)	(.099)	(.065)
Observations	10,396	10,806	6,703	9,969	14,156

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row at the GED subject test threshold described in each panel header and column, followed by its standard error in parentheses and effective sample size. Discontinuities in Panel A are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear RD method, as described in equation (1); estimates in Panel B are rescaled by the first-stage relationship reported in Panel A of Table 3, and followed by its standard error in parentheses and effective sample size. Discontinuities in Panel B are estimated using Calonico and coauthors' (2015, 2017) robust, bias-corrected local-linear fuzzy regression discontinuity method, as described in equations (1)–(3). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of individual covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, and are determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table 5: Cumulative Impacts on College Outcomes at GED College Readiness Thresholds

Outcome	Math (1)	ELA (2)	Science (3)	Soc. Stud. (4)	Pooled (5)
A. GED College Ready (165-174)					
Enrolled within 2 quarters after first attempt	-.082	.019	.064*	.088**	.052*
	(.043)	(.023)	(.027)	(.027)	(.021)
	4,090	11,392	7,880	8,483	12,659
Enrolled within 1 year	-.051	.009	.044	.07*	.027
	(.045)	(.026)	(.025)	(.031)	(.024)
	3,969	11,042	10,873	8,190	12,210
Enrolled within 2 years	-.032	.013	.054	.05	.009
	(.053)	(.03)	(.033)	(.036)	(.024)
	3,469	9,533	6,631	7,134	14,246
Enrolled within 4 years	.024	.033	.076	.099*	.027
	(.058)	(.036)	(.041)	(.044)	(.035)
	3,288	7,176	5,084	5,433	8,082
Enrolled within 6 years	-.027	.018	.008	.203	.026
	(.087)	(.049)	(.045)	(.124)	(.053)
	1,357	3,820	4,176	3,017	4,429
Total quarters enrolled within 2 years	-.695*	.079	.157	.344	-.006
	(.299)	(.148)	(.14)	(.18)	(.114)
	3,469	9,533	9,403	7,134	14,246
Total quarters enrolled within 4 years	-1.16	.345	.313	.971**	-.06
	(.634)	(.341)	(.271)	(.367)	(.228)
	2,606	5,065	7,232	5,433	10,979
Total quarters enrolled within 6 years	-2.122	0.574	.287	.903**	.158
	(1.203)	(.595)	(.461)	(.319)	(.461)
	1,357	2,693	4,176	1,329	6,025
Earned degree or credential within 4 years	.005	-.006	-.002	.009	-.016
	(.032)	(.021)	(.016)	(.019)	(.015)
	3,288	5,065	7,232	6,988	8,082
Earned degree or credential within 6 years	-.063	.02	.007	.007	-.001
	(.066)	(.029)	(.026)	(.068)	(.026)
Observations	1,357	3,820	4,176	3,017	6,025
B. GED College Ready + Credit (175+)					
Enrolled within 2 quarters after first attempt	.063	.015	.014	.118**	.046
	(.105)	(.044)	(.06)	(.042)	(.033)
	1,083	2,722	2,265	3,829	5,846
Enrolled within 1 year	-.18	-.042	.056	.113*	-.004
	(.117)	(.05)	(.063)	(.046)	(.038)
	1,034	2,595	2,179	3,685	5,600
Enrolled within 2 years	-.085	-.089	.073	.119*	-.002
	(.133)	(.055)	(.067)	(.05)	-0.044
	877	2,212	1,803	3,130	4,771
Enrolled within 4 years	.126	-.164*	-.002	.13*	.057
	(.18)	(.077)	(.065)	(.055)	(.051)
	643	1,628	2,173	2,254	3,524
Enrolled within 6 years	.299	-.049	.064	.084	.076

	(.176)	(.091)	(.138)	(.066)	(.066)
	335	868	635	1,263	1,949
Total quarters enrolled within 2 years	-.287	-.243	.148	1.052***	.114
	(.796)	(.308)	(.379)	(.272)	(.224)
	877	2,212	1,803	3,130	4,771
Total quarters enrolled within 4 years	3.178	-.429	.215	1.887***	1.059*
	(1.842)	(.632)	(.791)	(.53)	(.474)
	643	1,628	1,317	2,254	3,524
Total quarters enrolled within 6 years	7.14**	.731	2.671	1.321	1.4
	(2.287)	(1.149)	(1.768)	(.822)	(.776)
	335	868	635	1,263	1,949
Earned degree or credential within 4 years	-.144	-.06	.039	.001	.009
	(.124)	(.041)	(.044)	(.029)	(.025)
	643	1,628	1,317	2,254	3,524
Earned degree or credential within 6 years	.165	.016	.134	.063	.048
	(.12)	(.066)	(.098)	(.042)	(.039)
Observations	335	868	635	1,263	1,949

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row at the GED subject test threshold described in each panel header and column, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear RD method, as described in equation (1). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of individual covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, and are determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table 6A: Impacts by Subgroup (Math)	Male	Female	URM	Non-URM	Below Grade 10	Grade 10 plus	Motiv. Educ.	Motiv. Other	Adult Ed	No Adult Ed	LowMin Wage	HiMin Wage
Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. Pass GED Mathematical Reasoning Subject Test (145+)												
Enrolled	.021	.037	.014	.036	.000	.053*	.053	.021	.049	.028	.034	.048
w/in 4 years	(.034)	(.029)	(.031)	(.030)	(.038)	(.025)	(.033)	(.026)	(.029)	(.027)	(.027)	(.026)
	7,139	8,884	7,813	8,790	4,853	13,032	7,745	10,093	8,776	10,832	10,523	10,846
Total qtrs. enrolled	.024	.265	.025	.212	-.148	.346*	.257	.148	.157	.277	.220	.274
w/in 4 years	(.203)	(.227)	(.225)	(.203)	(.305)	(.171)	(.266)	(.161)	(.237)	(.161)	(.199)	(.182)
	8,301	8,884	7,813	8,790	3,992	13,032	7,745	10,093	7,152	15,744	10,523	10846
Earned degree/cred.	-.003	.014	-.011	.015	.003	.011	.020	-.003	.025	.000	.017	-.002
w/in 4 years	(.008)	(.013)	(.012)	(.010)	(.016)	(.009)	(.014)	(.009)	(.014)	(.010)	(.012)	(.009)
	12,186	8,884	7,813	8,790	3,992	13,032	7,745	10,093	6,165	10,832	9061	10846
B. GED College Ready in Mathematical Reasoning (165-174)												
Enrolled	.045	.013	-.065	.024	.000	-.007	.053	-.025	-.145	.057	.131	-.104
w/in 4 years	(.080)	(.094)	(.120)	(.075)	(.146)	(.065)	(.083)	(.09)	(.107)	(.068)	(.084)	(.086)
	1,493	1,191	617	1,742	432	2,670	1,818	1,148	691	2,420	1,343	1,263
Total qtrs. enrolled	-.706	-1.687	-1.498	-1.793*	-.222	-1.762*	-.726	-1.581*	-3.902***	-.442	-.391	-2.158*
w/in 4 years	(.708)	(1.135)	(1.173)	(.779)	(1.334)	(.711)	(.988)	(.650)	(1.114)	(.728)	(.801)	(.870)
	1,493	943	617	1,742	432	2,109	1,435	1,148	691	1,915	1,721	1,263
Earned degree/cred.	-.028	.061	.022	-.027	-.017	-.020	.061	-.051	-.059	.013	.061	-.056
w/in 4 years	(.037)	(.059)	(.060)	(.039)	(.071)	(.036)	(.053)	(.034)	(.064)	(.037)	(.049)	(.045)
	1,888	943	809	2,173	432	2,670	1,435	1,444	868	2,420	1,343	1,567
C. GED College Ready + Credit in Mathematical Reasoning (175+)												
Enrolled	.510*	-.532	.168	.095	-2.178***	.160	-.220	.064	1.721***	.320	-.373	.361
w/in 4 years	(.220)	(.300)	(.176)	(.203)	(.147)	(.202)	(.240)	(.212)	(.100)	(.199)	(.208)	(.295)
	385	211	138	445	73	529	418	223	46	524	305	338
Total qtrs. enrolled	7.744***	-2.931	-.317	4.012*	3.332**	2.641	-1.052	6.004***	-.665	4.814*	-.096	4.226
w/in 4 years	(1.608)	(3.693)	(1.916)	(1.944)	(1.111)	(2.067)	(2.688)	(1.439)	(1.555)	(2.126)	(2.252)	(2.94)
	385	211	138	445	73	529	418	223	119	524	305	338
Earned degree/cred.	.088	-.654**	.111	-.106	.528***	-.208	-.307	-.022	.178*	-.129	-.724***	.035
w/in 4 years	(.107)	(.233)	(.096)	(.132)	(.076)	(.135)	(.167)	(.133)	(.083)	(.143)	(.152)	(.145)
Observations	385	211	138	445	73	529	418	223	119	524	305	338

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table 6B: Impacts by Subgroup (ELA)	Male	Female	URM	Non-URM	Below Grade 10	Grade 10 or Higher	Motiv Educ.	Motiv. Other	Prep via Adult Ed	No Adult Ed	LowMin Wage	HiMin Wage
Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. Pass GED Reasoning Through ELA Subject Test (145+)												
Enrolled	-.024	-.015	.009	-.038	-.012	-.006	-.040	-.010	-.012	-.021	-.006	-.028
w/in 4 years	(.029)	(.027)	(.024)	(.040)	(.041)	(.023)	(.042)	(.022)	(.031)	(.026)	(.028)	(.029)
	7,168	8,869	10,358	5,015	3,445	13,081	4,805	10,652	6,539	10,477	8,941	7,498
Total qtrs. enrolled	-.080	-.432	-.157	-.264	-.188	-.302	-.535	-.064	-.348	-.176	-.089	-.446*
w/in 4 years	(.178)	(.234)	(.200)	(.282)	(.250)	(.170)	(.345)	(.142)	(.250)	(.166)	(.185)	(.225)
	7,168	7,308	8,903	5,015	3,445	10,809	4,805	10,652	5,092	10,477	8,941	6,207
Earned degree/cred.	.003	-.014	-.003	-.003	.016	-.015	-.014	-.006	-.009	-.006	.009	-.029*
w/in 4 years	(.010)	(.013)	(.014)	(.012)	(.013)	(.011)	(.015)	(.009)	(.012)	(.010)	(.011)	(.012)
	8,686	7,308	5,800	6,509	4,920	10,809	7,553	10,652	7,886	10,477	8,941	7,498
B. GED College Ready in Reasoning Through ELA (165-174)												
Enrolled	.094	-.023	.154*	.013	.033	.054	-.002	.112	-.006	.049	.031	.031
w/in 4 years	(.053)	(.052)	(.074)	(.043)	(.075)	(.044)	(.065)	(.057)	(.062)	(.042)	(.048)	(.051)
	2,476	3,262	1,272	4,772	1,253	3,969	2,606	2,431	1,971	5,205	3,751	3,425
Total qtrs. enrolled	1.109**	-.431	1.661**	.167	-.174	.595	.170	.579	-.048	.444	.174	.497
w/in 4 years	(.42)	(.483)	(.609)	(.380)	(.624)	(.391)	(.482)	(.413)	(.504)	(.382)	(.396)	(.521)
	2,476	3,262	1,272	4,772	1,253	3,969	3,695	2,431	1,971	5,205	3,751	2,439
Earned degree/cred.	-.004	-.011	-.007	-.003	-.024	.000	-.008	-.010	-.036	.012	.003	-.021
w/in 4 years	(.022)	(.033)	(.040)	(.020)	(.037)	(.019)	(.033)	(.019)	(.042)	(.019)	(.027)	(.025)
	3,496	2,288	1,272	4,772	1,253	5,595	2,606	3,441	1,378	5,205	2,626	3,425
C. GED College Ready + Credit in Reasoning Through ELA (175+)												
Enrolled	-.157	-.182	-.121	-.179	.106	-.191*	-.178	-.050	-.700***	-.070	-.160	-.134
w/in 4 years	(.091)	(.110)	(.140)	(.091)	(.130)	(.077)	(.093)	(.092)	(.155)	(.076)	(.089)	(.101)
	792	696	301	849	251	1,306	951	673	227	1,318	837	791
Total qtrs. enrolled	-.482	-.945	-1.484	-.598	-.411	-.288	-1.171	.563	-1.82	-.141	-.436	-.370
w/in 4 years	(.804)	(1.121)	(1.363)	(.777)	(1.411)	(.672)	(.990)	(.662)	(1.401)	(.714)	(.869)	(.905)
	792	696	301	1,150	251	1,306	951	896	227	1,318	837	791
Earned degree/cred.	-.043	-.073	-.070	-.084	-.040	-.083	-.103	.033	-.045	-.056	-.054	-.058
w/in 4 years	(.049)	(.072)	(.084)	(.056)	(.070)	(.048)	(.060)	(.045)	(.063)	(.046)	(.055)	(.057)
Observations	792	696	301	849	251	1,306	951	896	310	1,318	837	791

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table 6C: Impacts by Subgroup (Science)	Male	Female	URM	Non-URM	Below Grade 10	Grade 10 or Higher	Motiv Educ.	Motiv. Other	Prep via Adult Ed	No Adult Ed	LowMin Wage	HiMin Wage
Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. Pass GED Science Subject Test (145+)												
Enrolled	.123*	-.070	.023	-.039	.024	.016	-.003	.006	.020	.006	.007	-.001
w/in 4 years	(.049)	(.051)	(.033)	(.050)	(.059)	(.032)	(.039)	(.032)	(.039)	(.028)	(.032)	(.038)
	2,849	4,803	6,332	3,387	2,116	8,349	6,184	6,944	5,114	9,981	7,009	4,908
Total qtrs. enrolled	.218	.123	.102	-.006	-.077	.532	.107	.083	.136	.223	.072	.107
w/in 4 years	(.267)	(.231)	(.270)	(.281)	(.440)	(.295)	(.283)	(.161)	(.264)	(.273)	(.197)	(.235)
	4,917	8,108	6,332	4,644	2,116	10,809	6,184	8,731	5,114	4,983	8,852	6,185
Earned degree/cred.	-.016	-.005	-.030	.009	-.028	.007	-.013	-.003	-.016	.002	-.025	-.004
w/in 4 years	(.016)	(.015)	(.017)	(.015)	(.022)	(.011)	(.020)	(.011)	(.019)	(.011)	(.017)	(.013)
	4,917	6,484	4,685	4,644	2,833	8,349	4,877	6,944	3,765	8,582	5,192	6,185
B. GED College Ready in Science (165-174)												
Enrolled	.032	.065	.030	.086	.020	.097*	.091	.028	.223**	.033	.108	.047
w/in 4 years	(.051)	(.052)	(.078)	(.044)	(.072)	(.046)	(.064)	(.042)	(.075)	(.042)	(.058)	(.045)
	2,988	2,579	1,205	4,835	1,201	4,008	2,577	3,542	1,409	5,156	2,699	3,378
Total qtrs. enrolled	.190	.121	-.309	.556	.168	.422	.812	-.225	1.405**	.107	.440	.286
w/in 4 years	(.327)	(.518)	(.590)	(.331)	(.608)	(.305)	(.500)	(.295)	(.532)	(.327)	(.365)	(.395)
	4,231	2,579	1,750	4,835	1,201	5,697	3,639	3,542	1,409	5,156	3,854	3,378
Earned degree/cred.	-.001	-.003	-.036	.008	-.028	.002	.010	-.028	.039	-.015	-.035	.049
w/in 4 years	(.019)	(.028)	(.031)	(.019)	(.037)	(.017)	(.032)	(.021)	(.027)	(.019)	(.024)	(.026)
	4,231	2,579	1,750	4,835	1,201	5,697	2,577	2,469	2,076	5,156	3,854	3,378
C. GED College Ready + Credit in Science (175+)												
Enrolled	.011	.107	.221	-.059	-.447*	.008	-.109	.147	-.076	.054	.068	-.080
w/in 4 years	(.088)	(.117)	(.135)	(.076)	(.178)	(.082)	(.114)	(.134)	(.116)	(.080)	(.090)	(.107)
	1,341	396	214	1,553	174	1,051	672	445	415	1,066	1,079	674
Total qtrs. enrolled	1.112	1.315	2.029	-.233	-2.662	-.184	-.248	.793	-.819	.632	.776	-.386
w/in 4 years	(1.060)	(1.293)	(1.643)	(.754)	(1.901)	(.972)	(.968)	(1.013)	(1.100)	(.866)	(.915)	(1.257)
	802	396	185	1,553	174	1,051	1,269	525	251	1,066	1,079	674
Earned degree/cred.	.113*	-.004	.214**	.011	-.166*	.038	.026	-.010	-.096	.105	-.013	.091
w/in 4 years	(.055)	(.067)	(.073)	(.045)	(.083)	(.046)	(.068)	(.042)	(.051)	(.058)	(.053)	(.072)
Observations	684	659	185	942	174	1,051	672	894	415	904	643	573

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table 6D: Impacts by Subgroup (Social Stud.)	Male	Female	URM	Non-URM	Below Grade 10	Grade 10 or Higher	Motiv Educ.	Motiv. Other	Prep via Adult Ed	No Adult Ed	LowMin Wage	HiMin Wage
Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. Pass GED Social Studies Subject Test (145+)												
Enrolled	.007	.040	.036	-.031	.024	.026	-.007	.038	.035	-.001	.027	.020
w/in 4 years	(.025)	(.031)	(.033)	(.037)	(.040)	(.022)	(.040)	(.027)	(.035)	(.033)	(.023)	(.031)
	8,725	9,214	6,907	6,177	3,993	14,290	5,931	8,081	5,969	8,150	11,656	7,383
Total qtrs. enrolled	.004	-.141	-.040	-.463	.136	-.090	-.334	.147	.156	-.363	.014	-.091
w/in 4 years	(.194)	(.303)	(.261)	(.307)	(.305)	(.221)	(.401)	(.154)	(.211)	(.282)	(.25)	(.204)
	7,752	6,120	6,907	5,036	3,224	10,809	4,896	10,184	7,504	6,733	8,257	8,300
Earned degree/cred.	.005	.006	.005	-.005	.009	-.003	-.009	.006	.014	-.008	-.002	.005
w/in 4 years	(.015)	(.011)	(.011)	(.016)	(.014)	(.013)	(.017)	(.012)	(.013)	(.012)	(.010)	(.015)
	6,086	10,318	9,583	6,177	4,493	10,061	5,931	8,081	5,969	10,290	11,656	5,862
B. GED College Ready in Social Studies (165-174)												
Enrolled	.023	.219**	.195*	.005	.099	.114*	.218**	-.005	.042	.128*	.126*	.053
w/in 4 years	(.052)	(.075)	(.083)	(.049)	(.088)	(.051)	(.069)	(.049)	(.067)	(.055)	(.056)	(.066)
	4,033	1,961	1,443	4,545	1,205	4,210	2,669	3,517	2,125	3,758	3,776	2,474
Total qtrs. enrolled	.896*	1.57*	.704	.820	.839	1.092*	2.682***	-.245	-.507	1.85***	.269	1.353*
w/in 4 years	(.432)	(.647)	(.687)	(.424)	(.704)	(.426)	(.629)	(.325)	(.510)	(.458)	(.428)	(.547)
	3,170	1,961	1,841	3,519	955	4,210	2,669	3,517	2,125	3,758	3,776	2,474
Earned degree/cred.	-.005	.053	-.002	.007	.032	.002	.090*	-.064**	-.076*	.062**	-.020	.060*
w/in 4 years	(.023)	(.036)	(.032)	(.026)	(.038)	(.021)	(.036)	(.023)	(.037)	(.024)	(.027)	(.027)
	4,033	1,961	1,841	4,545	1,205	5,433	2,669	2,719	1,675	3,758	3,776	2,474
C. GED College Ready + Credit in Social Studies (175+)												
Enrolled	.216*	.037	.241*	.110	.179	.122*	.235**	-.045	.147	.099	.150	.136
w/in 4 years	(.099)	(.103)	(.115)	(.066)	(.122)	(.062)	(.076)	(.079)	(.106)	(.063)	(.109)	(.075)
	752	695	470	1,549	368	1,782	1,215	1,028	500	1,754	630	1,094
Total qtrs. enrolled	3.355***	.580	4.202***	1.746**	3.228*	1.326*	2.199**	.739	1.980*	1.287*	1.808*	2.005**
w/in 4 years	(.913)	(1.061)	(1.104)	(.620)	(1.254)	(.593)	(.814)	(.599)	(.995)	(.613)	(.752)	(.713)
	752	695	470	1,549	368	1,782	1,215	1,028	500	1,754	1,160	1,094
Earned degree/cred.	-.015	.010	.071	-.008	-.110	.029	-.008	.015	-.051	.010	-.014	.015
w/in 4 years	(.033)	(.061)	(.060)	(.035)	(.081)	(.030)	(.045)	(.033)	(.057)	(.033)	(.041)	(.04)
Observations	1,396	695	470	1,549	368	1,782	1,215	1,028	500	1,754	1,160	1,094

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table 6E: Impacts by Subgroup (Pooled Subj.)	Male	Female	URM	Non-URM	Below Grade 10	Grade 10 or Higher	Motiv Educ.	Motiv. Other	Prep via Adult Ed	No Adult Ed	LowMin Wage	HiMin Wage
Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. Pass GED Subject Test in Lowest-Scoring Subject (145+)												
Enrolled	.028	.042	.042	.020	.019	.046*	.060**	.017	.058**	.007	.034	.041
w/in 4 years	(.023)	(.025)	(.022)	(.026)	(.034)	(.018)	(.021)	(.021)	(.020)	(.023)	(.021)	(.023)
	11,807	12,138	12,967	10,242	5,556	18,141	14,899	14,229	12,505	12,140	14,397	12,999
Total qtrs. enrolled	.106	.243	.119	.056	.134	.269*	.436*	.074	.280	.213	.169	.196
w/in 4 years	(.145)	(.189)	(.171)	(.185)	(.236)	(.115)	(.174)	(.13)	(.169)	(.131)	(.164)	(.158)
	11,807	12,138	12,967	10,242	5,556	10,809	14,899	14,229	10,349	20,741	14,397	12,999
Earned degree/cred.	.002	.014	-.003	.011	0.010	.008	.013	.000	.012	.007	.011	.002
w/in 4 years	(.007)	(.011)	(.009)	(.008)	(.012)	(.009)	(.012)	(.006)	(.011)	(.007)	(.009)	(.007)
	16,521	12,138	12,967	15,124	6,694	15,014	10,641	19,809	8,553	20,741	14,397	14,922
B. GED College Ready in Highest-Scoring Subject (165-174)												
Enrolled	.012	.056	.045	-.006	.033	.050	.048	.038	.028	.043	.038	.012
w/in 4 years	(.042)	(.055)	(.062)	(.035)	(.062)	(.040)	(.054)	(.038)	(.059)	(.040)	(.046)	(.051)
	4,409	3,279	2,330	6,915	1,982	6,194	3,898	5,623	2,628	5,454	4,407	3,675
Total qtrs. enrolled	.013	-.167	.087	-.385	.304	-.075	.431	-.169	-.181	.065	-.115	.098
w/in 4 years	(.277)	(.391)	(.414)	(.299)	(.448)	(.270)	(.447)	(.243)	(.364)	(.284)	(.307)	(.340)
	5,907	4,528	3,154	6,915	1,982	8,427	3,898	5,623	3,563	7,416	6,015	4,964
Earned degree/cred.	-.001	-.034	-.004	-.026	-.021	-0.005	.001	-.029	-.042	.002	-.036	.002
w/in 4 years	(.016)	(.027)	(.022)	(.019)	(.028)	(.016)	(.021)	(.018)	(.027)	(.015)	(.022)	(.018)
	5,907	3,279	3,154	5,100	1,982	8,427	5,261	4,113	2,628	7,416	4,407	4,964
C. GED College Ready + Credit in Highest-Scoring Subject (175+)												
Enrolled	.095	.048	.173	.040	.322*	.027	.169*	-.054	-.150	.126	.019	.074
w/in 4 years	(.074)	(.087)	(.112)	(.061)	(.129)	(.056)	(.073)	(.068)	(.110)	(.066)	(.076)	(.070)
	1,346	1,264	506	2,438	357	2,803	1,933	1,579	578	1,795	1,787	1,737
Total qtrs. enrolled	1.714**	.233	2.431*	.969	2.578*	.800	1.590*	.310	.010	1.321*	.540	1.399*
w/in 4 years	(.59)	(.928)	(1.118)	(.542)	(1.251)	(.496)	(.743)	(.504)	(.841)	(.589)	(.693)	(.630)
	1,346	1,264	506	2,438	357	2,803	1,933	1,579	856	2,668	1,787	1,737
Earned degree/cred.	.012	.006	.054	-.001	-.029	.008	.010	.023	-.033	.018	-.003	.030
w/in 4 years	(.028)	(.051)	(.046)	(.030)	(.077)	(.027)	(.042)	(.026)	(.051)	(.030)	(.038)	(.032)
Observations	2,017	1,264	755	2,438	357	2,803	1,933	1,579	856	2,668	1,787	1,737

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Appendix A: Pre-Analysis Plan, Filed 2/25/2024

Pre-Analysis Plan for:

High School Equivalency Credentialing and Post-Secondary Success: New Quasi-Experimental Evidence from the GED® Exam

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February 25, 2024

Abstract
For the over 24 million American adults who do not hold a traditional high school diploma, high school equivalency (HSE) credentials represent the primary "second-chance" pathway to meet minimum requirements for many jobs or educational opportunities. This project will update and extend knowledge about HSE credentialing in the United States in several ways, filling important gaps in the extant evidence. I will bring current, representative data to bear on pressing questions about HSE credentialing and adult education at the national and state levels and probe the mechanisms that explain whether, how, and for whom HSE credentials help adults without high school diplomas meet their post-secondary educational goals. Specifically, I will use regression discontinuity (RD) methods to estimate the causal educational impacts of earning an HSE credential via passing the GED® exam on post-secondary enrollment and attainment, measure heterogeneity in the educational impacts of earning an HSE credential, and assess the educational returns to earning a GED® college readiness designation for higher-scoring testers in a representative sample of 94,000 GED® testers in 45 states who attempted a GED® subject test between 2016 and 2023.

I. Introduction and Motivation

Nearly 10% of American adults lack a high school diploma or equivalent qualification (U.S. Department of Education, 2023). High school equivalency (HSE) credentials represent the primary "second-chance" pathway for uncredentialed adults to meet minimum requirements for many jobs or educational opportunities. States award HSE credentials certifying proficiency in high school-level content to individuals who pass the battery of standardized subject tests that comprise HSE exams like the GED® and HiSET®. Nationwide, over $2 billion in annual public subsidies fund free adult education classes that help hundreds of thousands of adults learn English, develop basic academic skills, or prepare for HSE exams (U.S. Department of Education, 2022a; 2022b).

The first HSE exam (the GED®) was introduced over 80 years ago, but there remain large gaps in knowledge about how HSE credentials impact recipients' lives today. While a mature literature has explored the relationship between HSE receipt and human capital, nationally representative analyses are almost exclusively limited to cohorts of HSE recipients who earned their credential in the 1980s or 1990s (e.g., Cameron & Heckman, 1993 or Tyler, Murnane & Willet, 2000; see Heckman, Humphries & Kautz, 2014 for a review), and even the most recent causal evidence studies testers in a single state (Missouri) who took discontinued editions of the GED® between 1995 and 2005 (Jepsen, Mueser, and Troske, 2016; 2017). While the size of the extant literature may suggest that characteristics, behaviors, and outcomes of the population of HSE recipients are well-understood, at the national level, even simple descriptive statistics are decades old.

Meanwhile, the HSE credentialing landscape has evolved. In 2014, GED Testing Service, LLC. (GEDTS) introduced the 5th edition of the GED® exam, transitioning to a predominantly computer-based format, increasing test standards to align with national college and career readiness standards, and introducing the subject-specific GED® Honors designation for high achieving testers (i.e., those who reached a score of 170 or higher on a given subject test). This new edition emphasized the GED® as a "stepping-stone toward a college classroom or a better career and a family sustaining wage," acknowledging the GED® exam's role as "no longer an endpoint for adults, but a springboard for more education, training, and better-paying jobs" (GEDTS, 2014). Since then, alternative HSE exams (i.e., the HiSET® exam and the now-defunct TASC exam) have been adopted in over half of U.S. states (usually alongside the GED®, but in some cases, replacing it). In 2016, GED® replaced GED Honors with GED® College Ready (GED® CR) and GED® College Ready Plus Credit (GED® CR+C) designations that are awarded

to testers who reach specific subject test score thresholds in a given subject. GED® advertises its College Ready designations as a pathway toward credit for prior learning (similar to the CLEP, IB, or AP exams), recommending that institutions exempt GED® CR students from placement exams or remedial coursework in that subject and award 1-3 college credits to students for each subject in which they qualify as GED® CR+C (GED Testing Service, 2023).[1]

Additionally, educational and economic conditions have changed, with more students earning traditional high school diplomas, a greater share of jobs requiring post-secondary training, and stagnating or declining real wages for less educated workers (Watson, 2017; Binder & Bound, 2019). In the decade following the Great Recession, the share of job postings requiring a college degree increased by 60%, narrowing the path to middle class jobs for adults who do not hold a high school diploma or equivalent qualification (Blair & Deming, 2020). Finally, widespread availability of post-secondary degree-verification services has made it easier than ever for employers to enforce post-secondary (but not high school) educational requirements (e.g., via nscverifications.org).

Each of these factors represent important shifts in the policy landscape that could change who pursues HSE credentials, what skills are required to earn an HSE credential, what signal an HSE credential sends to potential employers or admissions officers, and what types of opportunities or pathways an HSE credential is necessary or sufficient to access. Accurately understanding the role of HSE credentials in the modern educational ecosystem and economy

[1] HiSET® exam score reports include a College and Career-Readiness (CCR) score, but CCR scores are not advertised as a pathway toward credit for prior learning. The HiSET® website indicates that "[a] CCR score of 15 on each multiple-choice subtest and a 4 on the Language Arts – Writing essay demonstrates college and career readiness." See https://hiset.org/test-centers-adult-ed-scoring-credentials/ for more information.

will help uncredentialed adults and the adult education programs that serve them make more effective decisions about where to focus their time, money, and effort.

This project will address the following research questions:

RQ1: How and for whom does earning an HSE credential affect individuals' post-secondary enrollment and attainment?

RQ2: How and for whom does earning an HSE college-readiness designation affect individuals' post-secondary enrollment and attainment?

I pre-register the following hypotheses related to RQ1 and RQ2:

H1: Earning an HSE by passing the GED® exam will increase the probability that individuals enroll in a post-secondary institution.

H2: Earning an HSE by passing the GED® exam will increase the probability that individuals persist in their post-secondary training.

H3: Earning an HSE by passing the GED® exam will increase the probability that individuals graduate and/or earn a post-secondary credential.

H4: The following groups will drive the positive relationship between marginally passing the GED® exam and post-secondary outcomes: testers with higher scores on other subject tests; testers who prepared via adult education; testers who reported education as their motivation for testing; testers who completed more years of formal schooling prior to taking the GED® exam.

H5: Earning a GED® college readiness designation (GED® CR or CR+C) will not change the probability that individuals enroll in, persist in, or graduate from a post-secondary institution.

Answering each research question will generate actionable evidence to guide the decisions of policymakers, practitioners, and potential HSE testers by assessing whether, how, and under what circumstances today's HSE credentials help adults without traditional high school diplomas reach their educational and career goals. This project will characterize the current landscape of high school equivalency in the United States, estimate the educational benefits of earning an HSE credential for individuals who marginally pass a GED® subject test, measure heterogeneity in the educational impacts of earning an HSE credential within this population, and assess the educational returns to college readiness designations that are packaged with HSE credentials for marginal GED® CR and GED® CR+C designees.

Given myriad changes in the educational and economic landscapes over the past 30 years—in addition to the evolution of HSE exams themselves—it is not clear whether or how past evidence about the role of HSE credentials in post-secondary education or the labor market will generalize to recent cohorts of HSE recipients or to past cohorts' experiences in the present day. By bringing current, representative data to bear on pressing questions about HSE credentialing and adult education at the national and state levels, this project will extend and update the HSE literature.

II. Prior Research on HSE Credentials

II.A Theory about the function of HSE credentials

Theory suggests a complicated interplay between HSE credentials, educational investments, and labor market outcomes. While offering HSE credentials ensures that some students avoid becoming uncredentialed dropouts, they may encourage others who otherwise would have graduated to drop out and pursue an alternative credential (Agodini & Dynarski, 2000; Tyler, 2003; Heckman et al., 2012).

Araujo, Gottlieb, and Moreira (2007) suggest that attaining an HSE in lieu of a traditional high school diploma conveys a mixed signal to employers about an individual's skills, implying relatively high cognitive skills but low non-cognitive skills. They postulate the impact of earning an HSE on labor market outcomes depends upon the relative weights employers place on different types of skills.

Heller and Slungaard Mumma (2019) theorize that HSE credentials play importantly different roles for different types of testers, functioning as both an "off-ramp" from formal schooling and an "on-ramp" to further training. While many teenagers may pursue HSE credentials with the goal of permanently leaving school, adults without diplomas—especially those who opt into adult education courses—may be motivated by a desire to reengage with formal education.

This project will contribute to the theoretical literature on HSE credentials by linking information about individuals' motivation for testing, test preparation behavior, demographics, and past academic performance to outcomes of interest.

II.B Empirical Evidence on Returns to HSE Credentialing

Focusing on cohorts of working-aged adults observed between the 1970s and early 2000s, a large literature describes differences in educational and workforce outcomes between adults with HSE credentials and their uncredentialed peers. Heckman, Humphries, and Kautz (2014) review past analyses and re-analyze nationally representative datasets to assess the labor market value of HSE credentials under a selection-on-observables assumption. Despite a raw advantage in labor force participation and income for HSE credential holders relative to uncredentialed adults, they find no improvements in labor market outcomes attributable to HSE credentialing after conditioning on observable characteristics in cohorts of otherwise uncredentialed adults from the National Longitudinal Survey of Youth 1979 (with outcomes observed between 1979 and 2003),

the National Educational Longitudinal Survey of 1988 (with outcomes observed between 1988 and 2000), and the National Longitudinal Survey of Youth 1997 (with outcomes observed between 1997 and 2008).

This analysis followed a productive period of research measuring the value of earning an HSE credential in the labor market, with no clear consensus of whether or for whom HSE credentials improved career prospects and other outcomes. Researchers have explored the relationship between HSE credentials and labor market outcomes in various subgroups, including women (Boudett, Murnane, & Willett, 2000), foreign-born students (Clark & Jaeger, 2006), prisoners (Nuttall, Hollmen, & Staley, 2003; Tyler & Kling, 2007; Darolia, Mueser, & Cronin, 2020), and students with disabilities (Wagner et al., 2005). Beyond the workforce, a variety of alternative outcomes have been examined, including recidivism (Nuttall, Hollmen, & Staley, 2003), health outcomes (Kenkel, Lillard, & Mathios, 2006), and educational attainment (Tyler & Lofstrom, 2010; Maralani, 2011; Jepsen, Mueser, & Troske, 2017).

A growing literature uses regression discontinuity (RD) designs to measure the causal effects of obtaining an HSE credential on outcomes of interest (e.g., Tyler, Murnane, and Willett, 2000; Jepson, Mueser, & Troske, 2016, 2017; Heller & Slungaard Mumma, 2019), but even the most recent evaluations limit their analysis to cohorts who took versions of the GED® exam that were discontinued in 2001 or 2013.

Importantly, Jepsen, Mueser, and Troske's (2016) analysis calls into question the methodology of over a decade of findings based on RD designs. The authors note the importance of accounting for retaking behavior, ignored in previous RD evaluations of HSE credentials, in constructing and interpreting quasi-experimental evidence. After accounting for retaking behavior among GED® test-takers in Missouri from 1995-2005, Jepsen, Mueser, and Troske (2016, 2017)

find no evidence that passing the GED® improved labor market or long-run educational outcomes for marginal passers. These findings stand in stark contrast with Tyler, Murnane, and Willett's (2000) analysis, which suggested that earning a GED® substantially improved the labor market outcomes of white men.

Heller (2024) is the only causal study to examine the role of GED® College Readiness benchmarks in promoting post-secondary enrollment and attainment. Heller finds no evidence that crossing a GED® CR or GED® CR+C benchmark promotes college enrollment or persistence, but in a small sample, his null results are too imprecise to rule out modest effects in either direction. Notably, Heller (2024) finds that testers who score near the GED® CR or CR+C threshold in a given subject show no greater proclivity to retake that subject test than those who barely reach these benchmarks, while testers at the minimum passing threshold are over 100 times more likely to retest conditional on failing their first attempt of a given subject test, suggesting that testers are willing to exert much greater effort to pass the GED® exam than to earn a GED® CR or CR+C designation.

This project will extend Jepsen, Mueser, and Troske's (2017) analyses by estimating the educational returns to earning a GED® in a nationally representative, modern sample of testers, and build on Heller's (2024) evaluation by examining the role of the GED® CR or CR+C college readiness designations in promoting post-secondary success in a larger, better-powered sample.

III. Research Design

In this project, I will link HSE test score and administrative records to post-secondary educational outcomes and use an RD framework to causally assess the educational impacts of earning an HSE credential or college-readiness designation for marginal recipients and estimate these impacts by subgroup to assess how tester characteristics (e.g., individual demographics,

baseline employment, motivation for testing, adult education attendance, etc.) predict returns to investments in HSE credentialing.

III.A Data and Sampling Design

Data for this project will come from GEDTS administrative records (GED® scores by subject test attempt linked to survey responses for all U.S. testers from 2014-2023, excluding those who resided or tested in Texas or tested while incarcerated in a Federal Bureau of Prisons institution) linked to National Student Clearinghouse post-secondary outcome data (college enrollment and graduation records by quarter and institution for a representative sample of 94,611 GED® testers).

Table 1 reports summary statistics for each of the rich set of background characteristics that we can observe for the universe of GED® testers outside of federal prisons in 49 U.S. states and the District of Columbia from 2014-2023. To construct the analytic sampling frame from which observations were random drawn to be matched to National Student Clearinghouse (NSC) post-secondary outcome data, I first dropped all observations from individuals whose first subject test attempt occurred before the age of 16 (<0.1% of the full sample), who tested while incarcerated (16.1%), who tested in a language other than English (4.3%), or who reported residing in a state that did not officially administer the GED® exam as a pathway to an HSE credential (0.2%).[2] I then stratified the sample by year of first GED® subject test attempt and

[2] The following states are excluded from the analytic sample, because they did not officially administer the GED® exam at any time between 2014 and 2023: Iowa, Louisiana, Maine, Montana, and New Hampshire. Observations from the following states are excluded in some years when that state did not officially administer the GED® exam (excluded years in parentheses): Indiana (2014-2022), Massachusetts (2014-2016), New York (2014-2021), and Tennessee (2017-2023). These exclusions omit a small number of cases where someone who reported living in a state that did not officially administer the GED® exam appeared in the data, likely by taking the exam in a different state than their state of residence.

first-recorded state of residence and randomly sampled 1-in-10 individuals (94,611 individuals total) within each state-by-year cell for all individuals whose first subject test attempt was on or before January 26, 2016.[3] For descriptive analyses of college outcomes, I also randomly selected a 1-in-40 sample of GED® testers (7,218 individuals total) whose first subject test attempt was between 2014 and January 25, 2016 to match to NSC records. This final analytic dataset of 101,829 individuals includes observations from the 45 states that officially administered the GED® exam as a pathway to a state-issued HSE credential between 2014 and 2023.

The outcomes of interest will come from NSC's post-secondary enrollment and attainment records. First, I will construct binary indicators of post-secondary enrollment within 0.5, 1, 2, 4, and 6 years after an individual's first GED® subject test attempt, cross-sectional enrollment by quarter after an individual's first GED® subject test attempt, and post-secondary graduation within 2, 4, and 6 years after an individual's first GED® subject test attempt. Next, I will sum total quarters enrolled through 2, 4, or 6 years after an individual's first GED® subject test attempt as measures of post-secondary persistence over time.

I will define post-secondary enrollment as appearing the NSC data as an enrolled student during a given period after an individual's first GED® subject test attempt. I will measure post-secondary persistence as the total number of terms enrolled after an individual's first GED® subject test attempt within a given period. I will define graduation as appearing as graduated or having completed a degree, certificate, or credential in the NSC outcome data within a given period.[4] These measures of post-secondary enrollment, persistence, and graduation will be the

[3] This is the date that GED® revised its subject test passing threshold from 150 down to 145 and introduced the GED® CR and CR+C designations (Gewertz, 2016).
[4] If the final NSC dataset allows me to identify the type of degree that was awarded to GED® testers, I will use this information to refine my definition of graduation (e.g., earned a BA or BS degree within 4 or 6 years), however, I may only observe a measure of degree or credential

primary outcomes of interest for the analysis. I will also construct measures of post-secondary selectivity and sector of enrollment (e.g., two-year versus four-year; public versus private; for-profit versus non-profit) as a measure of educational quality and to explore the mechanisms by which HSE credentials influence post-secondary attainment.

The outcome space for post-secondary outcomes will vary based on when individuals first attempted a GED® subject test. For the full sample, I will assess post-secondary enrollment during the first two quarters after an individual completes their first GED® subject test, and for all cohorts who took their first GED® subject test before January 1, 2023 (87,403 testers or 92% of the sample), I will assess post-secondary enrollment within 1 year after an individual completes their first GED® subject test. For individuals who completed their first GED® subject test before January 1, 2022 (75,372 testers or 80% of the analytic sample), I am able to observe college enrollment, persistence, and completion through at least two years after their first GED® subject test attempt. For individuals who completed their first GED® subject test before January 1, 2020 (57,800 testers or 61% of the analytic sample), I am able to observe college enrollment, persistence, and completion through at least four years after their first GED® subject test attempt. Finally, for individuals who completed their first GED® subject test before January 1, 2018 (30,439 testers or 32% of the analytic sample), I am able to observe college enrollment, persistence, and completion through at least six years after their first GED® subject test attempt. For outcomes where there is a potential for the sample composition to change based on when an outcome is measured (e.g., enrollment by quarter through 16 quarters, where the full sample is observed through 2 quarters, but only 61% of the sample is observed through 16 quarters), I will

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completion that does not distinguish between e.g., Associate's, Bachelor's, and advanced degrees.

present the full sample (unbalanced panel) results as a main table and replicate the findings in a balanced sample in an appendix table.

III.B. Regression Discontinuity Methods

To address RQ1, I will estimate the impact of earning an HSE using a fuzzy RD framework where each GED® subject test score is a running variable that can be used to estimate a different local effect of earning an HSE for a GED® testers who are constrained by different dimensions of academic skill. First, I will use the robust bias-corrected regression discontinuity methods developed by Calonico and coauthors (2017) to compare the predicted outcomes of individuals who score just above the passing threshold for a given subtest (on their first attempt) to those who score just below. This difference can be interpreted as the impact of passing that GED® subject test on one's first attempt on outcomes of interest. Under standard instrumental variable assumptions (instrument relevance, independence, the exclusion restriction) the sharp RD estimate can be rescaled by a first-stage RD estimate of the relationship between the running variable and the probability an individual ever earns an HSE (Imbens & Lemieux, 2008). This rescaled estimate can be interpreted as the local impact of earning an HSE credential for marginal passers who were induced to earn an HSE by passing a given GED® subject test on their first attempt.

To address RQ2, I will use a similar RD framework to compare the predicted outcomes of individuals who score just above a college readiness threshold to those who score just below, interpreting the difference as the return to earning a college-readiness designation. Since the first-stage estimate of the relationship between the running variable and the subject-specific college readiness designation α_{jl} is very close to one for all subjects and college readiness

thresholds ($0.99 < \alpha_{jl} < 1.01$ for all *j, l*), I will conduct the main analyses for RQ2 in a sharp RD framework.

All RD analyses will use Calonico and coauthors' (2017) robust bias-corrected regression discontinuity method to assess the impact of crossing a given HSE exam subject test passing or college readiness threshold on one's first attempt on outcomes of interest, using the rdrobust package in Stata to estimate equation (1):

$$Y_{it} = f\left(Distance_{ijl}\right) + \beta_{jl} Z_{ijl} + \boldsymbol{X_i'\theta} + \gamma_c + \delta_s + \epsilon_{itjlsc} \qquad (1)$$

where $Distance_{ijl}$ is the running variable, representing the centered score of an individual's first attempt of subject test *j* relative to the relevant threshold level *l* (i.e., centered using minimum subject test passing threshold to answer RQ1 and using the minimum College Ready and College Ready Plus Credit thresholds to answer RQ2). Z_{ijl} is an indicator variable that takes on a value of one if $Distance_{ijl}$ is above the relevant threshold and zero otherwise (i.e., $Distance_{ijl}$>=0 implies $Z_{ijl} = 1$), which means individual *i* reached or exceeded score-level-threshold *l* in subject test *j* on their first attempt. Y_{it}, the dependent variable, may represent a first-stage measure (e.g., whether an individual eventually earned an HSE credential) or an outcome of interest (e.g., whether an individual enrolled in college or earned a college degree by year *t*). The local-polynomial function $f\left(Distance_{ijl}\right)$ will represent a linear or quadratic function of the relationship between individual's distance from reaching a given score-level-threshold on a given subject test and the outcome of interest Y_{it}.

The vector, $\boldsymbol{X_i}$, accounts for individual-level baseline covariates such as age, gender, race, educational attainment, employment at baseline, test preparation behaviors, and motivation for testing. Each model will include exam cohort fixed effects by quarter, γ_c, and state-of-residence fixed effects, δ_s. Cohort and state fixed effects account for common shocks and trends that may

vary over time and geography.

The estimand β_{jl} represents our parameter of interest, estimating of the discontinuous change in the predicted value of Y_{it} from the left and right of the relevant score-level-threshold l on subject test j, which I interpret as the total causal impact of crossing that subject test's passing or college-readiness threshold on Y_{it}. I will estimate β_{jl} separately for each subject test j and each score-level-threshold l, as each estimate identifies the local impact of crossing a particular threshold for a different subpopulation of compliers who are constrained along different dimensions and levels of academic skill.

For Fuzzy RD models, I will first estimate equation (1) where Y_{it} is replaced with an indicator for whether an individual ever passed the GED® exam ($EverPassed_i$):

$$EverPassed_i = f(Distance_{ijl}) + \alpha_{jl} Z_{ijl} + \boldsymbol{X_i'}\boldsymbol{\xi} + \lambda_s + \psi_c + e_{itjlsc} \qquad (2)$$

I will use this equation estimate the first-stage relationships (α_{jl}) between the running variables (each GED® subject test score) and the receipt of an HSE credential via passing the GED® exam at each subject test passing threshold. The sharp RD estimates from equation (1) will be rescaled by these first-stage impacts to estimate the local average treatment effect (LATE) of earning an HSE credential on post-secondary outcomes for marginal passers who were induced to earn an HSE by passing a given GED® subject test on their first attempt ($\lambda_{LATE,jl}$):

$$\lambda_{LATE,jl} = \frac{\beta_{jl}}{\alpha_{jl}}$$

The fuzzy RD standard errors and confidence intervals for the resulting LATE estimates are calculated by an analogous process to the robust, bias-corrected sharp RD estimates, as described by Calonico, Cattaneo, and Titiunik (2015).

III.C Modeling Decisions

Functional Form:

In the main specification, $f(Distance_{ijl})$ will represent a local-linear or local-quadratic function linking individual's distance from reaching a given score-level-threshold on a given subject test to the outcome of interest Y_{it}. Main results from both local-linear and local-quadratic models will be presented, and the functional form of the preferred model will be chosen based on model fit. Results using the preferred functional form will be presented in the main tables, while the other will be presented as an appendix table. For simplicity, I will select a common functional form as the preferred model for all subjects and thresholds.

Bandwidth Selection:

My preferred models will be estimated using optimal bandwidths generated by the rdbwselect command in Stata (Calonico et al., 2017). This means that the bandwidth (and sample) that generates each estimate may vary by outcome, subject, and threshold. For all RD analyses, I will also present results from RD models estimated using all integer bandwidths from 3 to 9 as well as from the maximum symmetric bandwidths over which each running variable can be extended without crossing the nearest college readiness threshold (max BW=9pts for the GED® CR thersholds; max BW=10pts for the GED® CR+C thresholds; max BW=19pts for the GED® subject test passing thresholds).

In cases where the bias-robust optimal BW yields imprecise estimates with large standard errors (e.g., in samples where the total sample size is under 15,000 observations; in samples where the standard errors of bias-robust RD estimates using the optimal BW imply <80% power to detect minimum detectable effect size of 10 percentage points or 0.1 standard deviations), I

will examine whether results from the widest possible symmetric BW for a given threshold (i.e., the BW that maximizes sample size and statistical power) are consistent with the results estimated using the optimal BWs. I will emphasize these results from the widest BW as suggestive evidence insofar as they are consistent with the results from the optimal BW (i.e., point estimates have the same sign as the optimal BW and optimal BW point estimate is within the 95% CI of the more precise point estimate and vice versa).

Schochet (2009) estimates that "[…]sample sizes typically need to be about three to four times larger under RD than [random assignment] designs to achieve impact estimates with the same levels of precision" (p.261). Under random assignment, standard power calculations suggest that a sample of 3,142 is sufficient to achieve a minimum detectable effect size of 0.1 standard deviations with 80% power and 5% tolerance for Type I error. This suggests that a similarly powered RD research design would require between 9,426 and 12,568 observations. This suggests that in practice, challenges with statistical power are most likely to be binding for impact estimates of longer-term outcomes, where fewer cohorts contribute data and at the GED® CR and GED® CR+C thresholds, where even the widest bandwidths may not yield a sample size of 10,000 individuals.

Covariates

To improve statistical precision and correct for idiosyncratic shifts in the sample composition at the relevant subject test score thresholds, my preferred models will control for a selection of 20 baseline covariates from the GED® baseline survey (and 5 missing data indicators). The covariates included in the preferred specification will be age at first GED® subject test attempt (calculated from date of first test and date of birth); an indicator for male

gender; a mutually exclusive and exhaustive set of six race and ethnicity indicators; indicators for being employed or unemployed at the time of one's first GED® subject test attempt; a mutually exclusive and exhaustive set of four motivation for testing indicators; an indicator for preparing for the exam via adult education; an indicator for studying for the exam through a high school program; an indicator for studying for the exam through a community college program; an indicator for studying for the exam in a correctional facility; an indicator for reporting income above the sample median at the time of one's first GED® subject test attempt; an indicator for highest grade competed being grade 9 or lower at the time of one's first GED® subject test attempt; and a set of five missing data indicators by category. Results estimated without the inclusion of baseline covariates will be presented in an appendix table.

Kernel Type

The preferred models will use a triangular kernel to generate local polynomial RD estimates. Main results will be re-estimated using alternative kernels (i.e., uniform and Epanechnikov) in appendix tables.

III.D Anticipating Potential Estimation Issues

With high-dimensional fixed effects (the 30 calendar quarters and 45 states require 73 fixed effects; the baseline covariates and missing data indicators add 23 fixed effects to the model), occasionally the local polynomial estimation procedure executed using the rdrobust command encounters estimation problems. Often these problems can be resolved by subtly changing the model's bandwidth or removing covariates. In this section I will pre-specify a process for modifying my model in the case that the rdrobust command returns an error.

For models where the rdrobust command returns an error (such as an "invertibility problem" error message) using the optimal bandwidth, I will remove the baseline covariates and re-estimate the model using the optimal bandwidth. If the invertibility problem persists, I will re-estimate the model using an alternate bandwidth (BW) chosen by rounding the optimal BW to the nearest whole number and increasing the BW by 0.5 subject test score points until estimation is achieved (first with baseline covariates and then without) or all possible BWs have been attempted. If the invertibility problem persists at all possible BWs, tested with and without baseline covariates, I will attempt to re-estimate the model with and without baseline covariates using the alternative functional form (i.e., local-linear if the preferred specification is local-quadratic and vice versa). If the model cannot be estimated at any BW, set of covariates, and functional form, I will report the invertibility problem in the analysis and re-estimate the RD model using OLS and 2SLS, as in Imbens and Lemieux (2008).

III.E Anticipating Concerns About Internal Validity at the GED® CR Social Studies Threshold

The placebo tests for discontinuities in covariates in Table 2A and Table 2B broadly show that the changes in the sample composition at the GED® subject test score passing and college-readiness thresholds are no larger than one would expect to observe by random chance. However, there is one exception: there seem to unexpectedly large changes in the predicted observable characteristics of the sample from above and below the GED® CR Social Studies threshold (a score of 165 on the GED® Social Studies subject test).

Of the 52 covariates that are tested for placebo discontinuities at the GED® CR Ready Social Studies threshold using the optimal bandwidths, I estimate discontinuities in baseline covariates that are statistically significant at the 5% level in 14 covariates using a local-linear

model and 12 covariates using a local-quadratic model. This 23-27% rate of statistically significant coefficients is roughly 5 times higher than one would expect by random chance if the changes in the composition of the sample were smooth at this threshold. In contrast, of the 572 placebo tests for discontinuities in covariates at all other thresholds for all subject tests, 38 are statistically significant at the 5% level or lower (6.6%) using a local linear model, and 36 are statistically significant at the 5% level or lower (6.3%) using a local quadratic model.

Since there is no reason to believe that individuals have any way to manipulate their subject test score relative to this threshold, and Heller (2024) shows that those who score just below the GED® CR thresholds do not appear to be willing to exert effort to earn a college readiness designation by retesting, I view the possibility of intentional test-score manipulation as extremely unlikely and interpret this as an idiosyncratic psychometric artifact. Nevertheless, this shift in the observable characteristics of the sample at the GED® CR Social Studies threshold threatens the internal validity of inferences drawn from RD estimates at this threshold. For this reason, while I will present estimates at the GED® CR Social Studies threshold in main tables for completeness, I pre-specify that I will omit the GED® CR Social Studies threshold from my analysis of the causal impacts of earning a GED college readiness designation on post-secondary outcomes.

III.F Anticipating Concerns About Instrument Validity at the GED® Social Studies Subject Test Passing Threshold

The first-stage estimates in Panels A, B, and C of Table 3A and Table 3B broadly show that an individual's first subject test score in a given subject is a strong predictor of whether they eventually pass the GED® exam (i.e., qualify to earn an HSE credential) or earn a GED® college

readiness designation. However, there is one exception: initial performance on the GED® Social Studies subject test is only a weak predictor of whether an individual eventually passes the GED® exam when the relationship between GED® Social Studies subject test score and passing the GED® exam is modeled using a local-quadratic functional form.

If I choose the local-quadratic functional form as my preferred specification based on model fit, the GED® Social Studies subject test score is not a valid instrument for passing the GED® exam or earning an HSE credential. In this case, I will use a sharp RD model to estimate the impact of crossing the GED® Social Studies subject test passing threshold on one's first attempt, but the fuzzy RD estimates cannot be interpreted as reflecting the impact of passing the GED® exam for testers who are constrained by their initial GED® Social Studies subject test score.

If I choose the local-linear functional form as my preferred specification based on model fit, the GED® Social Studies subject test score is a valid, relevant instrument for passing the GED® exam (or earning an HSE credential), and I will not modify my analysis plans.

IV. Pre-Specified Exploratory Analyses

Subgroup Analyses

I will repeat the main analyses within subgroups formed based on the characteristics reported in the GED® baseline survey, including by gender, race/ethnicity, employment status, motivation for testing, reason for not completing HS, highest grade completed, past-year income, adult education participation, and score levels in other subjects.

Multi-Subject RD Model

I will repeat the main analyses using an alternative multi-subject running variable constructed from a tester's minimum score on any GED® subject test (for the multi-subject RD analysis at the subject test passing threshold) or their maximum score on any GED® subject test (for the multi-subject RD analyses at the GED® CR and CR+C thresholds), controlling for which subject (or subjects) that individual scored lowest (highest) in, in addition to the usual state, quarter, and demographic controls. Equation (3) will be used to estimate the Multi-subject RD model at the GED® Passing Threshold:

$$Y_{it} = f\left(MinScoreDist_{i,pass}\right) + \beta'_{pass} Z_{i,pass} + \boldsymbol{X_i'\theta'} + \gamma'_{c} + \delta'_{s} + \xi_{j\_min} + \epsilon_{itjsc} \qquad (3)$$

Equation (4) will be used to estimate the Multi-subject RD model at the GED® CR and CR+C Thresholds for $l \in \{CR, CR+C\}$:

$$Y_{it} = f(MaxScoreDist_{il}) + \beta''_{l} Z_{il} + \boldsymbol{X_i'\theta''} + \gamma''_{c} + \delta''_{s} + \xi''_{j\_max} + \epsilon_{itjlsc} \qquad (4)$$

V. Timing of Analyses

This pre-registration was written in February, 2024. I received access to the deidentified GED® administrative data (excluding NSC post-secondary outcome data) on October 23, 2023. I cleaned the data and constructed an analysis dataset before conducting a random draw of GED® testers on February 7, 2024. I sent the masked IDs for the random sample of testers to GEDTS on February 7, 2024. GEDTS used a key linking the masked IDs to GEDTS's internal identifiers to re-merge personally identifiable information for each tester (i.e., their name and date of birth) to the data. GEDTS then sent the data to NSC to be merged to NSC post-secondary enrollment and attainment records on February 12, 2024. As of 10:46pm U.S. Central Time on Sunday, February 25, 2024, when this pre-registration was last saved, NSC has not returned the matched dataset to

GEDTS or to me, and I have not (and could not have) accessed the NSC records that will be used to construct outcomes of interest for this project. All analyses of NSC outcome data will only occur after the registration of this pre-analysis plan.

The code that was used to clean the data, conduct the random draw of the analytic sample, and produce the initial summary statistics and covariate placebo test tables is saved and posted on the OSF as Heller_HSE_PostSec_PreAnalysis_Build_20240225.do.

The following tables were constructed using GED® administrative data before accessing NSC post-secondary enrollment records and uploaded as part of the pre-analysis plan:

Table 1: Summary Statistics

Table 2A: Placebo Tests for Discontinuities in Covariates (Local-Linear Model)

Table 2B: Placebo Tests for Discontinuities in Covariates (Local-Quadratic Model)

Table 3A: First-Stage Estimates (Local-Linear Model)

Table 3B: First-Stage Estimates (Local-Quadratic Model)

Note: I previously analyzed similar data linking GED® administrative records to NSC college enrollment data for a different sample of testers who passed the GED® exam between 2014 and 2019 and who do not contribute data to this project, except insofar as I unknowingly sampled the same observations.[5] I used this data to evaluate the impact of crossing a GED® college readiness threshold on post-secondary outcomes, which was published as chapter of my Ph.D. dissertation titled "GED® College Readiness Benchmarks and Post-Secondary Success," and is available

[5] As a part of their own internal research and evaluation, GEDTS linked 1,000-5,000 records from individuals who passed the GED® to NSC data between 2014 and 2019. They shared a deidentified version of this linked data with me as a part of my dissertation research. I no longer have access to this data and have no way of knowing which deidentified observations were included in the 2014-2019 linked sample.

online at https://nrs.harvard.edu/URN-3:HUL.INSTREPOS:37368346. The most recent version of this manuscript is published online at https://doi.org/10.26300/mvvp-cf18XX (Heller, 2024). Importantly, this prior study excluded data from individuals who attempted but did not pass the GED® exam, and did not follow subjects for more than 2 years after they passed the GED® exam. As such, the data are not informative with respect to RQ1, except insofar as they establish that some GED® graduates do, in fact, enroll and persist in college, as there is no valid uncredentialed comparison group for the sample of GED® testers who did pass the exam. The null results of this prior study do inform my hypothesis H5 regarding RQ2, but this pre-registered study represents a new test of similar hypotheses with updated methods and new data with a longer panel of outcome data.

References

Agodini, R., & Dynarski, M. (2000). Understanding the trend toward alternative certification for high school graduates. Princeton, NJ: Mathematica Policy Research.

Araujo, A., Gottlieb, D., & Moreira, H. (2007). A model of mixed signals with applications to countersignaling. *The RAND Journal of Economics, 38*(4), 1020-1043.

Binder, A. J., & Bound, J. (2019). The declining labor market prospects of less-educated men. *Journal of Economic Perspectives, 33*(2), 163-190.

Blair, P. Q., & Deming, D. J. (2020). Structural increases in demand for skill after the great recession. *AEA Papers and Proceedings*, *110*, 362-365.

Boudett, K. P., Murnane, R. J., & Willett, J. B. (2000). Second-chance strategies for women who drop out of school. *Monthly Labor Review, 123*, 19.

Calonico, S., Cattaneo, M. D., & Titiunik, R. (2015). Rdrobust: an R package for robust nonparametric inference in regression-discontinuity designs. *R J.*, *7*(1), 38.

Calonico, S., Cattaneo, M. D., Farrell, M. H., & Titiunik, R. (2017). rdrobust: Software for regression-discontinuity designs. *The Stata Journal, 17*(2), 372-404.

Cameron, S. V., & Heckman, J. J. (1993). The nonequivalence of high school equivalents. *Journal of Labor Economics, 11*(1), 1-47.

Clark, M. A., & Jaeger, D. A. (2006). Natives, the foreign-born and high school equivalents: New evidence on the returns to the GED. *Journal of Population Economics, 19*(4), 769-793.

Darolia, R., Mueser, P. R., & Cronin, J. (2020). *Labor Market Returns to a Prison GED* (No. 13534). Institute of Labor Economics (IZA).

GED Testing Service, LLC. (2014). The new assessment is a stepping-stone to a brighter future. Retrieved February 18, 2021 from https://web.archive.org/web/20130209081225/http://www.gedtestingservice.com/educators/new-assessment.

GED Testing Service, LLC. (2023). *Understanding Your Scores.* GED.com. https://ged.com/about_test/scores/college_ready/

Gewertz, C. (2016). "Passing Score Lowered on New GED Exam." EdWeek. Retrieved March 18, 2021 from: https://www.edweek.org/teaching-learning/passing-score-lowered-on-new-ged-exam/2016/01

Heckman, J. J., Humphries, J. E., & Kautz, T. (2014). The economic and social benefits of GED

certification. In *The myth of achievement tests: The GED and the role of character in American life*, 268-289.

Heckman, J. J., Humphries, J. E., LaFontaine, P. A., & Rodriguez, P. L. (2012). Taking the easy way out: How the GED testing program induces students to drop out. *Journal of Labor Economics, 30*(3), 495-520.

Heller, B.H. (2024). GED® College Readiness Benchmarks and Post-Secondary Success. EdWorkingPaper no.24-914. Annenberg Institute at Brown University. Retrieved February 23, 2024 from: https://doi.org/10.26300/mvvp-cf18

Heller, B. H. & Slungaard Mumma, K. (2019). Who Benefits from the GED? New Regression Discontinuity Evidence from Massachusetts. SSRN Working Paper 3118546.

Imbens, G. W., & Lemieux, T. (2008). Regression discontinuity designs: A guide to practice. *Journal of Econometrics, 142* (2), 615-635.

Jepsen, C., Mueser, P. R., & Troske, K. R. (2016). Labor-market returns to the GED using regression discontinuity analysis. *Journal of Political Economy, 124*(3), 621-649.

Jepsen, C., Mueser, P. R., & Troske, K. R. (2017). Second chance for high school dropouts? A regression discontinuity analysis of postsecondary educational returns to the GED. *Journal of Labor Economics, 35*(S1), S273-S304.

Kenkel, D., Lillard, D., & Mathios, A. (2006). The roles of high school completion and GED receipt in smoking and obesity. *Journal of Labor Economics, 24*(3), 635-660.

Maralani, V. (2011). From GED to college: Age trajectories of nontraditional educational paths. *American Educational Research Journal, 48*(5), 1058-1090.

Nuttall, J., Hollmen, L., & Staley, E. M. (2003). The effect of earning a GED on recidivism rates. *Journal of Correctional Education*, *54*(3), 90-94.

Schochet, P. Z. (2009). Statistical power for regression discontinuity designs in education evaluations. *Journal of Educational and Behavioral Statistics*, *34*(2), 238-266.

Tyler, J.H. (2003). Economic benefits of the GED: lessons from recent research. Review of *Educational Research, 73*(3), 369-403.

Tyler, J., & Kling, J. (2007). Prison-based education and reentry into the mainstream labor market. In S. Bushway, M. Stoll & D. Weiman (Eds.) *Barriers to reentry? The labor market for released prisoners in post-industrial America*. New York: Russell Sage Foundation.

Tyler, J.H. & Lofstrom, M. (2010). Is the GED an effective route to postsecondary education for school dropouts?. *Economics of Education Review, 29*(5), 813-825.

Tyler, J.H., Murnane, R. J., & Willett, J. B. (2000). Estimating the labor market signaling value of the GED. *The Quarterly Journal of Economics, 115*(2), 431-468.

U.S. Department of Education. (2022a). Institute of Education Sciences, National Center for Education Statistics. Table 236.20. Total expenditures for public elementary and secondary education and other related programs, by function and subfunction: Selected school years, 1990-91 through 2019-20.

U.S. Department of Education. (2022b). Institute of Education Sciences, National Center for Education Statistics. Table 507.20. Participants in state-administered adult basic education, secondary education, and English as a second language programs, by type of program and state or jurisdiction: Selected fiscal years, 2000 through 2020.

U.S. Department of Education. (2023). Institute of Education Sciences, National Center for Education Statistics. Table 104.30. Number of persons age 18 and over, by highest level of educational attainment, sex, race/ethnicity, and age: 2022.

Wagner, M., Newman, L., Cameto, R., Garza, N., & Levine, P. (2005). After High School: A First Look at the Postschool Experiences of Youth with Disabilities. A Report from the National Longitudinal Transition Study-2 (NLTS2).

Watson, A. (2017). Employment trends by typical entry-level education requirement. Monthly Labor Review, U.S. Bureau of Labor Statistics. https://doi.org/10.21916/mlr.2017.22

Appendix B: Deviations from Pre-Analysis Plan

Deviations from Pre-Analysis Plan for High School Equivalency Credentialing and Post-Secondary Success: New Quasi-Experimental Evidence from the GED® Exam

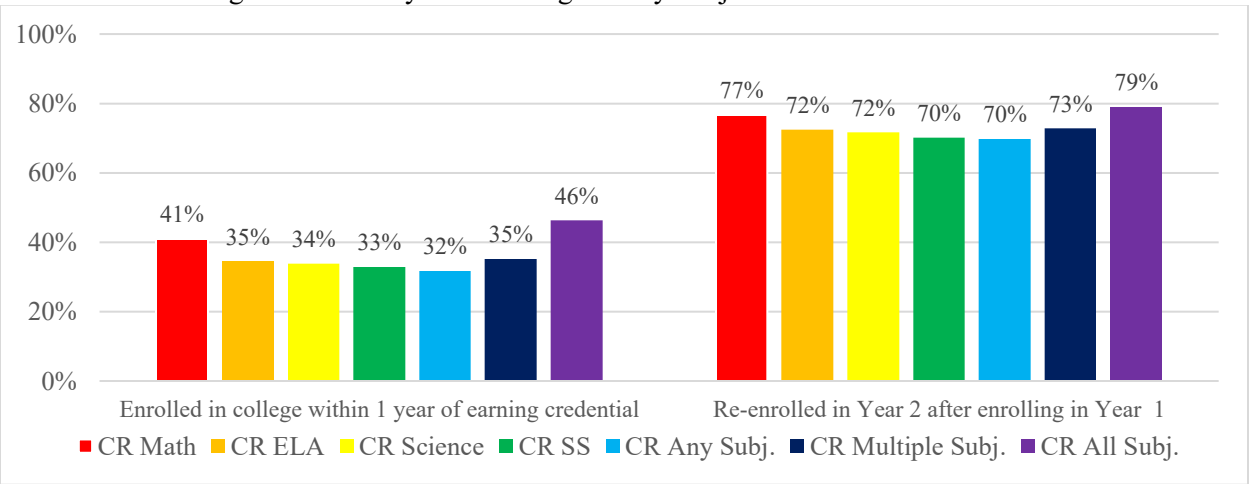
1. In the pre-analysis plan, I indicated that my main specifications would control for 5 missing data indicators. This was incorrect. In order to account for imputed values of missing variables, the main specification requires 6 missing data indicators.
2. In the pre-analysis plan, there was a typo in the description of the sampling process. The original text read (emphasis added): "I then stratified the sample by year of first GED® subject test attempt and first-recorded state of residence and randomly sampled 1-in-10 individuals (94,611 individuals total) within each state-by-year cell for all individuals whose first subject test attempt was on or **before** January 26, 2016."
    a. The corrected text reads (emphasis added): "I then stratified the sample by year of first GED subject test attempt and first-recorded state of residence and randomly sampled 1-in-10 individuals (94,611 individuals total) within each state-by-year cell for all individuals whose first subject test attempt was on or **after** January 26, 2016."
3. In my pre-analysis plan, I pre-specified that I would assess whether the subject-specific regression discontinuity estimates are more positive for testers with higher scores in other subjects. Upon reflection, I am convinced this is not a viable subgroup to include in the subgroup analyses. Since the order that individuals take subject tests is non-random and individuals' decision to complete the battery of subject tests is endogenously related to their scores on prior subject tests, splitting the sample in this way conditions on an outcome that could be related to whether an individual's score on a given subject test falls above or below a given threshold. Indeed, I find evidence (reported in Panel E of Table 3) that falling just above or below each subject test passing threshold predicts the total number of subject tests an individual completes. For this reason, I omit this subgroup from my final subgroup analysis.
4. There was a typo in my pre-analysis plan AND I received one more quarter of NSC data that anticipated. This has the effect of increasing my sample size for all college outcomes. In my pre-analysis plan, I intended to designate January 1, 2023 as the cutoff for 1-year college outcomes, but I wrote June 30, 2023 by mistake. The January 1, 2023 cutoff identifies the 87,403 testers who are described in the pre-analysis plan. However, the NSC college enrollment records for this project are well-populated through Q1 of 2024, so I am able to observe an additional quarter of data for all cohorts. This allows me to include the following cohorts in each set of college outcomes in my final sample (I have updated the manuscript to reflect this change):
    i. 1 quarter college outcomes for the full sample
    ii. 2 quarter college outcomes for the full sample
    iii. 1 year college outcomes for all testers whose first attempt during or before Q1 of 2023. This includes 96.1% of the analytic sample (90,925/94,611) and 96.4% of the descriptive sample (98,143/101,829).
    iv. 2-year college outcomes for all testers whose first attempt during or before Q1 of 2022. This includes 82.7% of the analytic sample (78,198/94,611) and 83.9% of the descriptive sample (85,416/101,829).

v. 4-year college outcomes for all testers whose first attempt during or before Q1 of 2020. This includes 64.3% of the analytic sample (60,826/94,611) and 66.8% of the descriptive sample (68,044/101,829).
vi. 6-year college outcomes for all testers whose first attempt during or before Q1 of 2018. This includes 36.0% of the analytic sample (34,072/94,611) and 40.5% of the descriptive sample (41,290/101,829).

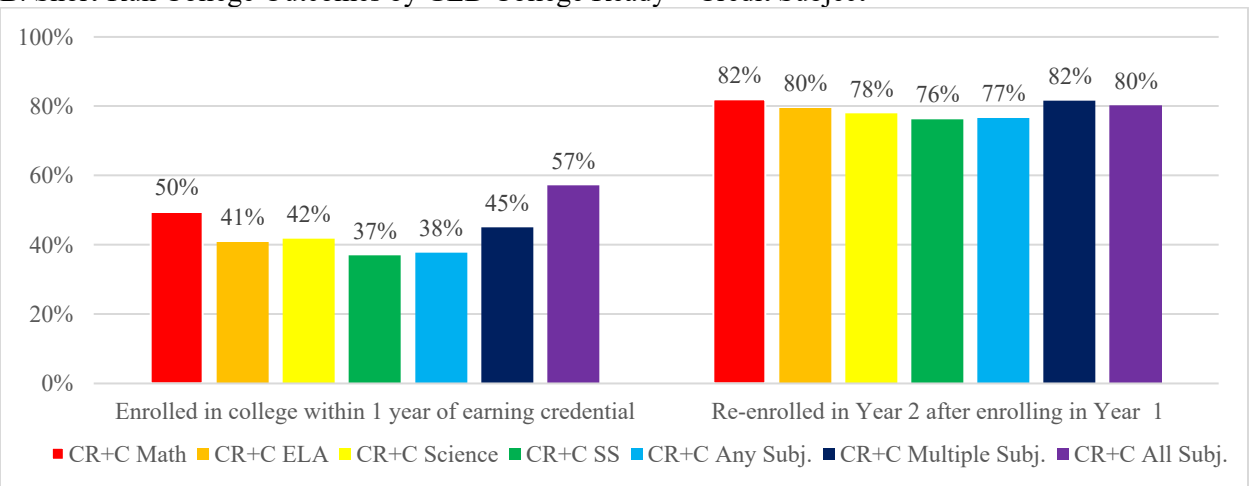
5. I omit robustness checks by covariates and kernel. These additional analyses would add several pages to an already bloated manuscript and appendix and do not reveal any new patterns in the data. In any published work, I will offer to provide these analyses by request.
6. I omit planned analyses related to institutional selectivity and instead focus on institutional sector, given that the majority of enrollments are in non-selective, two-year institutions.

Appendix Figure A1: College outcomes by GED college readiness subject and level

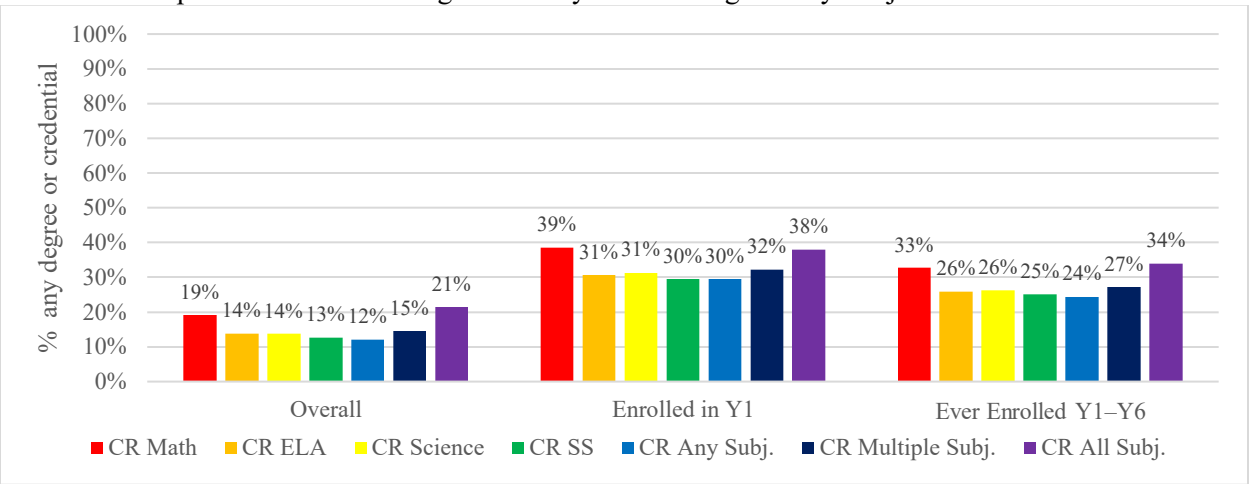
A. Short-Run College Outcomes by GED College Ready Subject



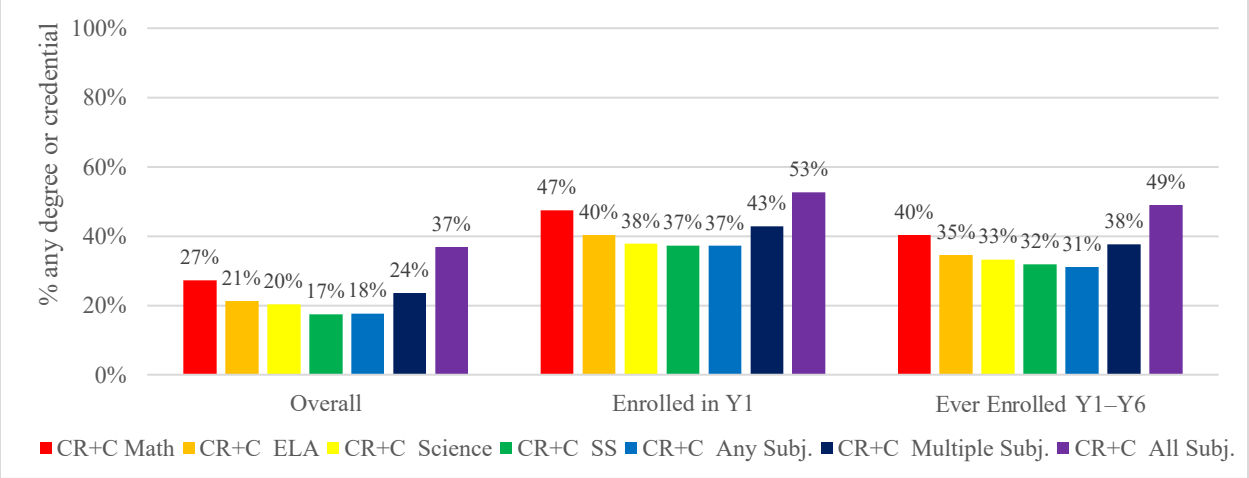
B. Short-Run College Outcomes by GED College Ready + Credit Subject



C. 6-Year Completion Rates of GED graduates by GED College Ready Subject

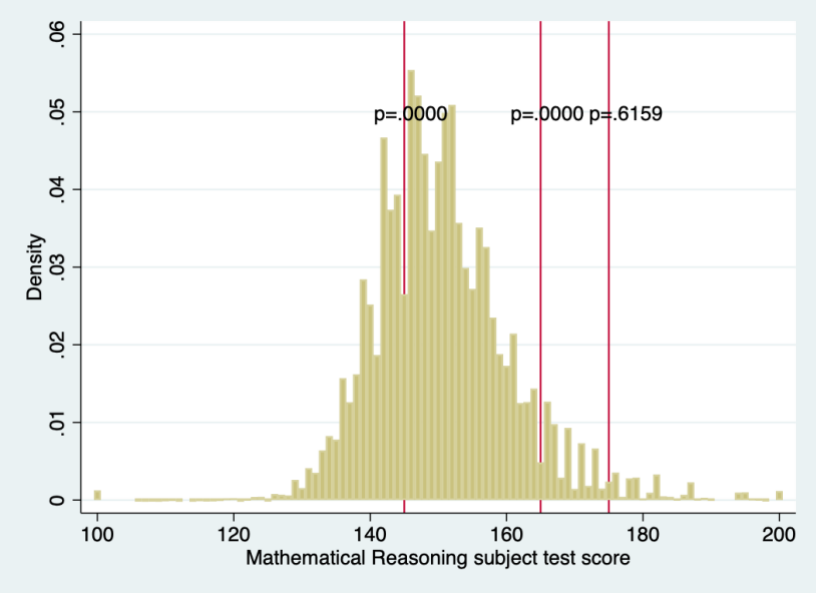


D. 6-Year Completion Rates of GED graduates by GED College Ready + Credit Subject

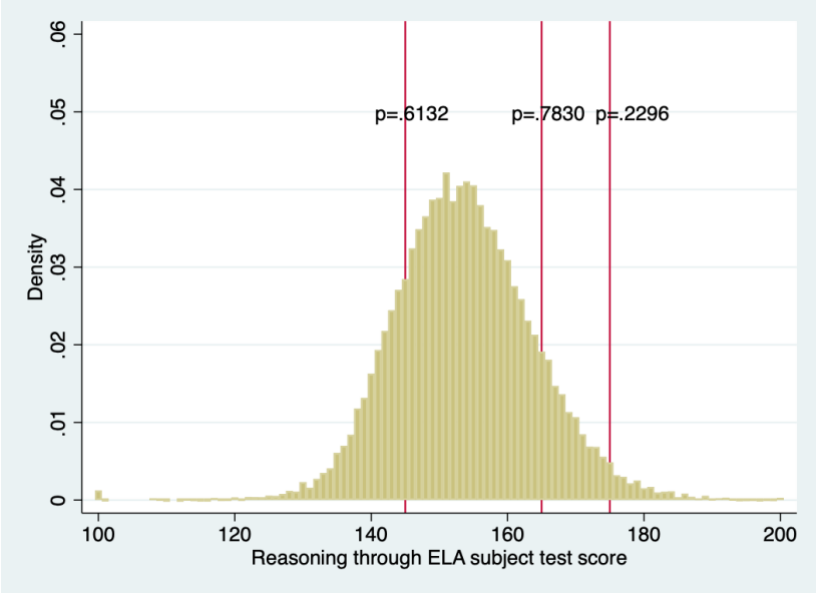


Appendix Figure A2: Subject test density plots and tests of smoothness

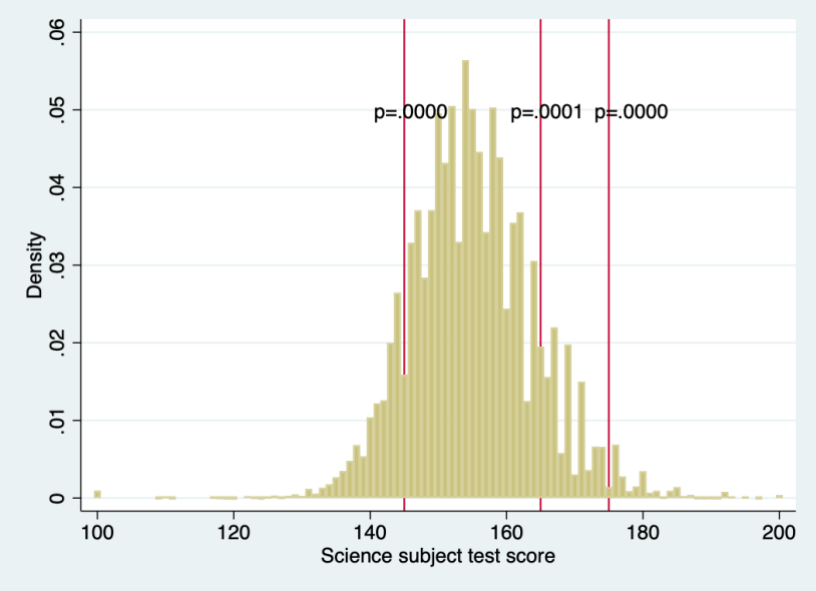
A. Mathematical Reasoning



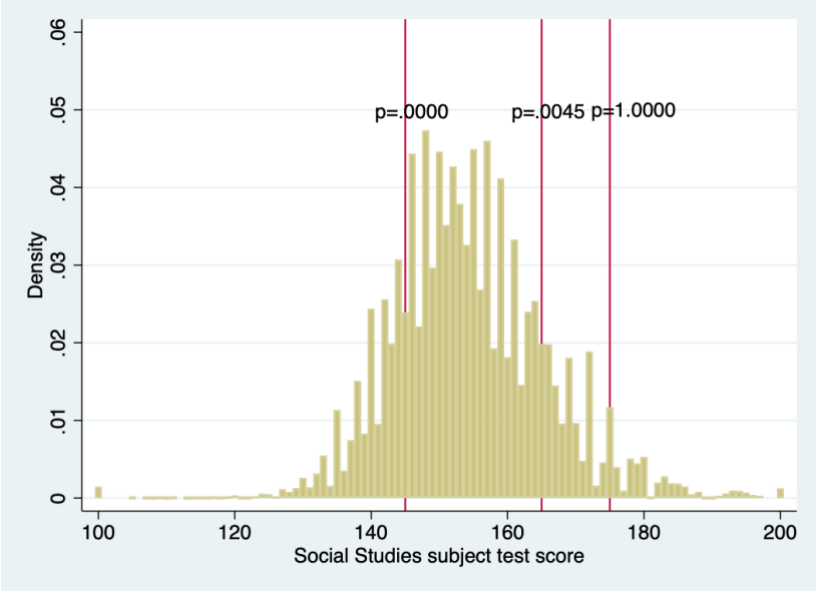
B. Reasoning Through ELA



C. Science

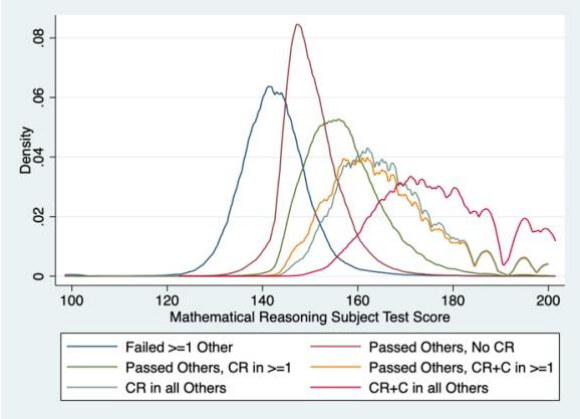


D. Social Studies

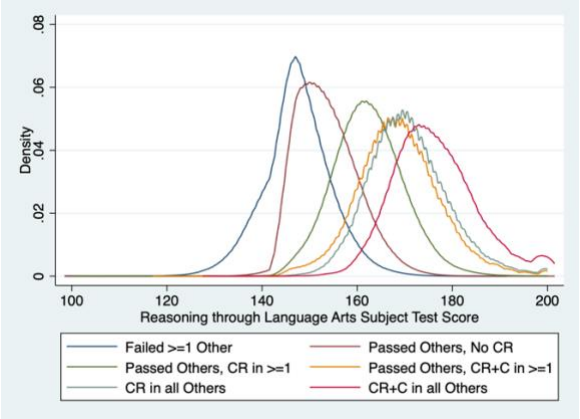


Appendix Figure A3: GED subject test score distributions by performance in other subjects

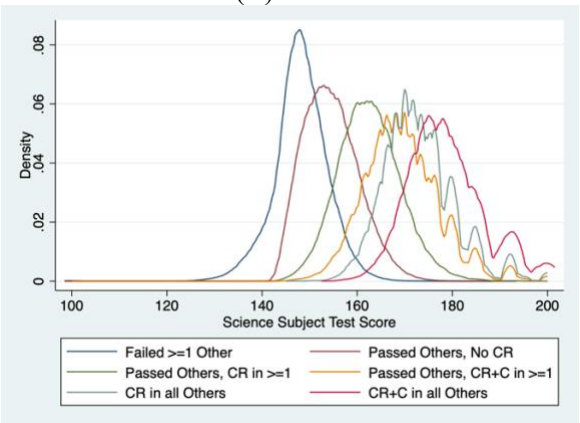
(A) Mathematical Reasoning



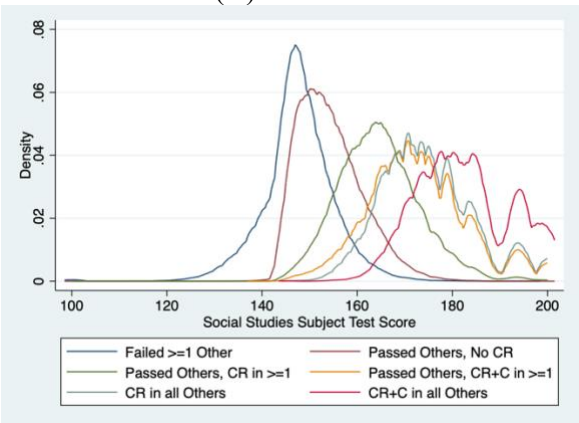
(B) Reasoning Through ELA



(C) Science



(D) Social Studies



Notes: Each graph plots the density of GED subject test scores by an individual's category of performance on all other subjects, as indicated in each graph's legend. Sample is restricted to individuals in the analytic sample who complete all four GED subject tests. N=688,227.

Table A1: Mean Outcome Measures of GED Graduates by College Readiness Designation

Outcome	All Passers (1)	Not CR (2)	CR (3)	CR + C (4)
A. All GED Graduates				
Enrolled within 1 year of passing GED Test	.263	.234	.318	.378
Enrolled within 2 years	.317	.287	.377	.444
Enrolled within 4 years	.371	.339	.439	.512
Enrolled within 6 years	.418	.384	.488	.564
Total quarters enrolled within 4 years	2.368	2.02	3.106	4.18
Total quarters enrolled within 6 years	3.224	2.737	4.205	5.683
Earned degree or credential within 4 years	.055	.046	.074	.108
Earned degree or credential within 6 years	.089	.073	.121	.177
B. Motivation = Educational Gain				
Enrolled within 1 year	.373	.332	.441	.506
Enrolled within 2 years	.436	.395	.507	.575
Enrolled within 4 years	.494	.450	.572	.641
Enrolled within 6 years	.539	.494	.616	.683
Total quarters enrolled within 4 years	3.450	2.920	4.385	5.614
Total quarters enrolled within 6 years	4.574	3.865	5.777	7.441
Earned degree or credential within 4 years	.078	.064	.102	.139
Earned degree or credential within 6 years	.124	.100	.165	.229
C. Motivation = Other (Work, Personal, Military, Special Req.)				
Enrolled within 1 year	.165	.158	.183	.200
Enrolled within 2 years	.210	.201	.233	.253
Enrolled within 4 years	.259	.249	.284	.318
Enrolled within 6 years	.303	.289	.335	.381
Total quarters enrolled within 4 years	1.389	1.297	1.621	2.028
Total quarters enrolled within 6 years	1.938	1.780	2.313	3.007
Earned degree or credential within 4 years	.034	.032	.041	.060
Earned degree or credential within 6 years	.056	.051	.067	.098

Notes: Each cell reports the mean value of the outcome listed each row for the sample indicated in each panel header and column. Sample includes all GED graduates from 2014-2023 who were observed during the full period in which the outcome is measured.

Table A2: Mean Outcome Measures of College-going GED Graduates by College Readiness Level

Outcome	All Passers (1)	Not CR (2)	CR (3)	CR + C (4)
A. All GED Graduates who Enrolled in a Post-Secondary Institution				
Re-Enrolled in Y2 | Enrolling in Y1	.654	.626	.697	.767
Total quarters enrolled within 4 years of passing GED Test	6.387	5.963	7.073	8.142
Total quarters enrolled within 6 years	7.693	7.122	8.592	10.036
Earned degree or credential within 4 years	.145	.133	.165	.205
Earned degree or credential within 6 years	.210	.189	.244	.311
B. Enrolled + Motivation = Educational Gain				
Re-Enroll in Y2|Enrolling in Y1	.689	.658	.730	.791
Total quarters enrolled within 4 years	6.984	6.494	7.658	8.751
Total quarters enrolled within 6 years	8.472	7.808	9.374	10.875
Earned degree or credential within 4 years	.155	.140	.175	.213
Earned degree or credential within 6 years	.228	.201	.266	.333
C. Enrolled + Motivation = Other				
Re-Enroll in Y2|Enrolling in Y1	.585	.574	.606	.675
Total quarters enrolled within 4 years	5.355	5.192	5.714	6.334
Total quarters enrolled within 6 years	6.382	6.140	6.877	7.793
Earned degree or credential within 4 years	.128	.123	.139	.180
Earned degree or credential within 6 years	.179	.172	.194	.252
D. Enrolled in Y1 + Any Motivation				
Re-Enroll in Y2|Enrolling in Y1	.654	.626	.697	.767
Total quarters enrolled within 4 years	7.213	6.745	7.935	9.107
Total quarters enrolled within 6 years	8.802	8.165	9.739	11.348
Earned degree or credential within 4 years	.175	.159	.201	.250
Earned degree or credential within 6 years	.255	.228	.295	.370

Notes: Each cell reports the mean value of the outcome listed each row for the sample indicated in each panel header and column. For the re-enrollment outcome and all outcomes in Panel D, the sample is limited to GED graduates in the analytic sample who enrolled in a post-secondary institution within 4 quarters after passing the GED test. For total quarters and graduation outcomes, the sample is limited to individuals who enrolled in a post-secondary institution during the period in which the outcome is measured.

Table A3: Mean Outcome Measures of GED Graduates by College Readiness Level and Subject

Outcome	Math (1)	ELA (2)	Science (3)	Soc. Stud. (4)	Any (5)	Multiple (6)	All (7)
A. GED College Ready (165-174)							
Enrolled within 1 year of passing GED test	.409	.345	.338	.329	.318	.352	.463
Enrolled within 2 years	.474	.410	.398	.386	.377	.414	.527
Enrolled within 4 years	.546	.474	.459	.448	.439	.479	.598
Enrolled within 6 years	.579	.524	.511	.497	.488	.525	.625
Total quarters enrolled within 4 years	4.489	3.523	3.408	3.242	3.106	3.634	5.150
Total quarters enrolled within 6 years	5.898	4.803	4.609	4.377	4.205	4.876	6.736
Earned degree or credential within 4 years	.120	.083	.082	.076	.074	.088	.129
Earned degree or credential within 6 years	.191	.138	.137	.127	.121	.145	.214
B. GED College Ready + Credit (174-200)							
Enrolled within 1 year	.495	.409	.418	.370	.378	.450	.571
Enrolled within 2 years	.557	.473	.492	.435	.444	.515	.652
Enrolled within 4 years	.632	.544	.557	.502	.512	.597	.690
Enrolled within 6 years	.656	.625	.593	.554	.564	.632	.776
Total quarters enrolled within 4 years	5.831	4.657	4.734	4.075	4.180	5.334	6.674
Total quarters enrolled within 6 years	7.589	6.557	6.482	5.621	5.683	7.253	8.803
Earned degree or credential within 4 years	.173	.125	.109	.101	.108	.138	.202
Earned degree or credential within 6 years	.272	.212	.204	.174	.177	.236	.368

Notes: Each cell reports the mean value of the outcome listed each row for the subset of GED graduates who earned the college-readiness designation indicated by each panel header and column.

Table A4: Mean Outcome Measures of College-going GED Graduates by College Readiness Level and Subject

Outcome	Math (1)	ELA (2)	Science (3)	Soc. Stud. (4)	Any (5)	Multiple (6)	All (7)
A. Enrolled + GED College Ready (165-174)							
Re-Enrolled in Y2|Enrolling in Y1	.767	.724	.716	.702	.697	.728	.789
Total quarters enrolled within 4 years of passing GED Test	8.224	7.434	7.410	7.222	7.073	7.584	8.623
Total quarters enrolled within 6 years	10.156	9.145	9.002	8.771	8.592	9.271	10.739
Earned degree or credential within 4 years	.218	.171	.173	.165	.165	.179	.212
Earned degree or credential within 6 years	.327	.259	.263	.252	.244	.272	.340
B. Enrolled + GED College Ready + Credit (174-200)							
Re-Enrolled in Y2|Enrolling in Y1	.819	.795	.780	.763	.767	.816	.802
Total quarters enrolled within 4 years of passing GED Test	9.225	8.543	8.486	8.098	8.142	8.918	9.674
Total quarters enrolled within 6 years	11.512	10.449	10.872	10.083	10.036	11.412	11.339
Earned degree or credential within 4 years	.270	.223	.188	.192	.205	.224	.270
Earned degree or credential within 6 years	.410	.336	.340	.309	.311	.369	.458
C. Enrolled in Y1 + GED College Ready (165-174)							
Re-Enrolled in Y2|Enrolling in Y1	.767	.724	.716	.702	.697	.728	.789
Total quarters enrolled within 4 years of passing GED Test	9.160	8.326	8.310	8.069	7.935	8.493	9.531
Total quarters enrolled within 6 years	11.454	10.214	10.163	9.907	9.739	10.448	11.822
Earned degree or credential within 4 years	.262	.205	.212	.200	.201	.218	.252
Earned degree or credential within 6 years	.385	.307	.313	.295	.295	.322	.380
D. Enrolled in Y1 + GED College Ready + Credit (174-200)							
Re-Enrolled in Y2|Enrolling in Y1	.819	.795	.780	.763	.767	.816	.802
Total quarters enrolled within 4 years of passing GED Test	10.169	9.58	9.485	9.023	9.107	9.953	10.507
Total quarters enrolled within 6 years	12.803	11.816	12.159	11.262	11.348	12.724	11.705
Earned degree or credential within 4 years	.317	.263	.232	.233	.250	.265	.319
Earned degree or credential within 6 years	.476	.381	.386	.358	.370	.414	.477

Notes: Each cell reports the mean value of the outcome listed each row for the sample indicated in each panel header and column. For the re-enrollment outcome and all outcomes in Panels C and D, the sample is limited to GED graduates in the analytic sample who enrolled in a post-secondary institution within 4 quarters after passing the GED test. For total quarters and graduation outcomes, the sample is limited to individuals who enrolled in a post-secondary institution during the period in which the outcome is measured.

Table A5: Mean Outcome Measures of GED Graduates by College Sector

Outcome	All Passers (1)	Not CR (2)	CR (3)	CR + C (4)
A. Four-Year College Outcomes of All GED Graduates				
Enrolled within 1 year of passing GED Test	.107	.090	.140	.181
Enrolled within 2 years	.140	.119	.182	.237
Enrolled within 4 years	.183	.156	.240	.312
Enrolled within 6 years	.223	.193	.283	.366
Total quarters enrolled within 4 years	1.114	.883	1.602	2.391
Total quarters enrolled within 6 years	1.638	1.291	2.335	3.588
Earned degree or credential within 4 years	.025	.018	.040	.069
Earned degree or credential within 6 years	.041	.028	.070	.123
B. Two-Year College Outcomes of All GED Graduates				
Enrolled within 1 year	.158	.144	.185	.214
Enrolled within 2 years	.189	.175	.218	.245
Enrolled within 4 years	.221	.205	.255	.290
Enrolled within 6 years	.248	.231	.283	.313
Total quarters enrolled within 4 years	1.236	1.109	1.504	1.812
Total quarters enrolled within 6 years	1.568	1.413	1.879	2.143
Earned degree or credential within 4 years	.03	.026	.040	.052
Earned degree or credential within 6 years	.041	.035	.054	.067
C. Sub-Two-Year College Outcomes of All GED Graduates				
Enrolled within 1 year	.003	.003	.003	.003
Enrolled within 2 years	.004	.004	.004	.004
Enrolled within 4 years	.005	.005	.005	.004
Enrolled within 6 years	.005	.005	.005	.003
Total quarters enrolled within 4 years	.021	.020	.022	.022
Total quarters enrolled within 6 years	.024	.023	.025	.017
Earned degree or credential within 4 years	.002	.002	.002	.001
Earned degree or credential within 6 years	.002	.002	.002	.001

Notes: Each cell reports the mean value of the outcome listed each row for the college sector indicated in each panel header and column. Four-year; two-year; and sub-two-year post-secondary outcomes are defined as enrollments and graduations that occur in colleges and universities that were respectively designated as four-year, two-year, and "less than two-year" institutions by the U.S. Department of Education. Sample includes all GED graduates from 2014-2023 who were observed during the full period in which the outcome is measured.

Table A6A: Cumulative Impacts on Four-Year College Outcomes at GED Passing Thresholds

Outcome	Math (1)	ELA (2)	Science (3)	Soc. Stud. (4)	Pooled (5)
A. ITT Impacts of Passing GED Subject Test on First Attempt (145+) on Four-Year Outcomes					
Enrolled within 1 year	.019*	.005	.012	.011	.020**
	(.009)	(.007)	(.010)	(.008)	(.006)
	26050	25977	13147	25648	44285
Enrolled within 2 years	.013	.003	.026	.021*	.014
	(.010)	(.010)	(.014)	(.009)	(.008)
	27451	22824	11219	22368	31703
Enrolled within 4 years	.021	-.010	.008	.027	.014
	(.012)	(.017)	(.014)	(.015)	(.012)
	25993	15148	17386	14119	25086
Enrolled within 6 years	.020	-.020	.028	.07**	.016
	(.018)	(.023)	(.029)	(.027)	(.017)
	12909	8929	4925	8423	14156
Total quarters enrolled within 4 years	.033	-.107	.188	.064	.060
	(.088)	(.103)	(.134)	(.113)	(.070)
	22057	15148	8748	14119	30450
Total quarters enrolled within 6 years	.007	-.309	.392	.367	.067
	(.173)	(.221)	(.251)	(.255)	(.142)
	10396	6933	4925	8423	14156
Earned degree or credential within 4 years	.005	-.005	.003	.000	.004
	(.005)	(.005)	(.006)	(.006)	(.004)
	17984	15148	15037	14119	30450
Earned degree or credential within 6 years	.010	-.014	.011	.001	.007
	(.009)	(.009)	(.009)	(.016)	(.007)
Observations	10396	8929	8730	8423	14156
B. Impact of reaching a GED College Ready Threshold (165-174) on Four-Year Outcomes					
Enrolled within 1 year	.000	.007	.019	.029	.003
	(.029)	(.017)	(.017)	(.021)	(.016)
	5078	11042	10873	8190	12210
Enrolled within 2 years	-.008	.012	.020	-.006	-.005
	(.038)	(.022)	(.02)	(.025)	(.017)
	3469	9533	9403	9005	14246
Enrolled within 4 years	-.047	.067	.056	.041	.018
	(.051)	(.035)	(.031)	(.035)	(.026)
	2606	5065	5084	5433	8082
Enrolled within 6 years	-.052	.064	.036	.050	.030
	(.077)	(.047)	(.040)	(.100)	(.039)
	1357	2693	4176	3017	4429
Total quarters enrolled within 4 years	-.518	.314	.291	.226	.008
	(.49)	(.27)	(.215)	(.245)	(.158)
	2606	5065	7232	6988	10979
Total quarters enrolled within 6 years	-1.049	.682	.39	1.016	.282
	(.940)	(.488)	(.355)	(.807)	(.311)
	1357	2693	4176	3017	6025
Earned degree or credential within 4 years	-.019	-.009	.005	.002	-.009
	(.022)	(.012)	(.011)	(.014)	(.009)
	3288	7176	7232	6988	10979
Earned degree or credential within 6 years	-.054	.005	.022	-.007	-.010
	(.051)	(.022)	(.018)	(.056)	(.018)

Observations	1357	3820	4176	3017	4429
C. Impact of reaching a GED College Ready + Credit threshold (175+) on Four-Year Outcomes					
Enrolled within 1 year	-.068	-.065	-.001	.058	-.035
	(.107)	(.039)	(.044)	(.036)	(.029)
	1034	2595	2179	3685	5600
Enrolled within 2 years	-.067	-.059	.025	.078	-.024
	(.121)	(.045)	(.065)	(.041)	(.037)
	877	2212	1803	3130	4771
Enrolled within 4 years	.140	-.061	.065	.084	.030
	(.152)	(.06)	(.068)	(.048)	(.042)
	643	1628	1317	2254	3524
Enrolled within 6 years	.278	-.037	.087	.076	.073
	(.151)	(.082)	(.133)	(.06)	(.057)
	335	868	635	1263	1949
Total quarters enrolled within 4 years	1.552	-.304	-.074	1.096**	.484
	(1.579)	(.524)	(.606)	(.419)	(.353)
	643	1628	2173	2254	3524
Total quarters enrolled within 6 years	3.939*	.255	.812	.523	.988
	(1.931)	(.904)	(1.422)	(.686)	(.578)
	335	868	635	1263	1949
Earned degree or credential within 4 years	-.075	-.036	.019	.020	.028
	(.115)	(.034)	(.03)	(.021)	(.017)
	643	1628	2173	2254	3524
Earned degree or credential within 6 years	.203	.021	.096	.036	.080**
	(.110)	(.054)	(.063)	(.033)	(.028)
Observations	335	868	751	1263	1949

Notes: Each cell reports the predicted discontinuity in the four-year post-secondary outcome listed in each row at the GED subject test threshold described in each panel header and column, followed by its standard error in parentheses and effective sample size. Four-year post-secondary outcomes are defined as enrollments and graduations that occur in colleges and universities that were designated as four-year institutions by the U.S. Department of Education. Discontinuities are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear RD method, as described in equation (1). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of individual covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, and are determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A6B: Cumulative Impacts on Two-Year College Outcomes at GED Passing Thresholds

Outcome	Math (1)	ELA (2)	Science (3)	Soc. Stud. (4)	Pooled (5)
A. ITT Impacts of Passing GED Subject Test on First Attempt (145+) on Two-Year Outcomes					
Enrolled within 1 year	.007	.002	-.014	.005	.013
	(.013)	(.011)	(.015)	(.009)	(.009)
	22151	21467	13147	29066	36609
Enrolled within 2 years	.017	.004	-.009	.003	.018
	(.015)	(.012)	(.018)	(.012)	(.012)
	22703	22824	14898	25226	31703
Enrolled within 4 years	.021	-.008	.000	-.002	.019
	(.017)	(.015)	(.017)	(.015)	(.014)
	17984	18363	17386	19956	25086
Enrolled within 6 years	-.001	-.018	.032	.025	.003
	(.023)	(.021)	(.027)	(.042)	(.018)
	10396	10806	6703	6501	14156
Total quarters enrolled within 4 years	.212	-.126	.046	-.086	.174*
	(.113)	(.100)	(.111)	(.129)	(.084)
	17984	15148	15037	14119	25086
Total quarters enrolled within 6 years	.142	-.274	.362	.100	.113
	(.158)	(.17)	(.197)	(.233)	(.125)
	12909	10806	6703	9969	17192
Earned degree or credential within 4 years	.01	-.004	.000	.001	.010
	(.007)	(.006)	(.007)	(.006)	(.005)
	15418	18363	15037	17794	20693
Earned degree or credential within 6 years	.008	-.010	.003	.008	.003
	(.011)	(.009)	(.013)	(.011)	(.007)
Observations	10396	10806	6703	9969	19962
B. Impact of reaching a GED College Ready Threshold (165-174) on Two-Year Outcomes					
Enrolled within 1 year	-.097*	.024	.038	.051*	.015
	(.039)	(.026)	(.023)	(.023)	(.016)
	3969	7813	7616	8190	16377
Enrolled within 2 years	-.097*	.01	.042	.049	.016
	(.045)	(.026)	(.028)	(.027)	(.02)
	3469	9533	6631	9005	14246
Enrolled within 4 years	-.083	.018	.042	.079*	.024
	(.052)	(.032)	(.033)	(.036)	(.027)
	2606	7176	5084	5433	8082
Enrolled within 6 years	-.157*	.000	.006	.061*	-.005
	(.078)	(.053)	(.037)	(.028)	(.042)
	1357	2693	4176	1329	4429
Total quarters enrolled within 4 years	-.73	.068	.069	.534*	-.049
	(.405)	(.221)	(.191)	(.251)	(.164)
	2606	7176	7232	5433	10979
Total quarters enrolled within 6 years	-1.046	.163	-.212	.548**	-.134
	(.691)	(.364)	(.344)	(.208)	(.342)
	1357	3820	4176	1329	6025
Earned degree or credential within 4 years	-.031	.003	-.002	.019	-.006
	(.028)	(.015)	(.012)	(.015)	(.012)
	2606	5065	7232	5433	8082
Earned degree or credential within 6 years	-.087	.018	-.017	-.008	-.001
	(.054)	(.022)	(.022)	(.055)	(.022)

Observations	1357	3820	4176	3017	4429
C. Impact of reaching a GED College Ready + Credit threshold (175+) on Two-Year Outcomes					
Enrolled within 1 year	-.062	.026	.061	.054	.033
	(.097)	(.04)	(.049)	(.035)	(.029)
	1034	2595	2179	3685	5600
Enrolled within 2 years	-.010	-.029	.048	.042	.015
	(.107)	(.045)	(.052)	(.039)	(.034)
	877	2212	1803	3130	4771
Enrolled within 4 years	.186	-.100	.042	.040	.057
	(.135)	(.057)	(.063)	(.045)	(.048)
	643	1628	1317	2254	2373
Enrolled within 6 years	.225	.003	.094	.025	.060
	(.140)	(.078)	(.123)	(.056)	(.055)
	335	868	635	1263	1949
Total quarters enrolled within 4 years	1.904	-.063	.501	.738*	.654
	(.979)	(.434)	(.498)	(.343)	(.371)
	643	1628	1317	2254	2373
Total quarters enrolled within 6 years	3.563**	.582	2.042	.713	.503
	(1.202)	(.737)	(1.088)	(.515)	(.51)
	335	868	635	1263	1949
Earned degree or credential within 4 years	-.055	-.017	.046	-.009	.000
	(.067)	(.025)	(.031)	(.021)	(.018)
	643	1628	1317	2254	3524
Earned degree or credential within 6 years	.009	.025	.130	.044	-.003
	(.065)	(.042)	(.071)	(.03)	(.028)
Observations	335	868	635	1263	1949

Notes: Each cell reports the predicted discontinuity in the two-year post-secondary outcome listed in each row at the GED subject test threshold described in each panel header and column, followed by its standard error in parentheses and effective sample size. Two-year post-secondary outcomes are defined as enrollments and graduations that occur in colleges and universities that were designated as two-year institutions by the U.S. Department of Education. Discontinuities in Panel A are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear RD method, as described in equation (1); estimates in Panel B are rescaled by the first-stage relationship reported in Panel A of Table 3, and followed by its standard error in parentheses and effective sample size. Discontinuities in Panel B are estimated using Calonico and coauthors' (2015, 2017) robust, bias-corrected local-linear fuzzy regression discontinuity method, as described in equations (1)–(3). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of individual covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, and are determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A6C: Cumulative Impacts on Sub-Two-Year College Outcomes at GED Passing Thresholds

Outcome	Math (1)	ELA (2)	Science (3)	Soc. Stud. (4)	Pooled (5)
A. ITT Impacts of Passing GED Subject Test on First Attempt (145+) on Sub-Two-Year Outcomes					
Enrolled within 1 year	-.060	-.016	-.130*	-.009	-.053
	(.041)	(.036)	(.055)	(.031)	(.029)
	6906	5628	3244	7915	8860
Enrolled within 2 years	-.031	-.002	-.133*	-.016	-.053
	(.037)	(.04)	(.062)	(.038)	(.035)
	7338	5198	2957	6403	8076
Enrolled within 4 years	-.049	-.022	-.151*	-.108	-.079*
	(.04)	(.042)	(.062)	(.056)	(.036)
	6057	4350	2433	3400	6619
Enrolled within 6 years	-.031	-.006	-.021	-.050	-.062
	(.046)	(.052)	(.081)	(.072)	(.038)
	3654	2676	1424	2612	4688
Total quarters enrolled within 4 years	.159	-.141	-.005	-.071	.131
	(.097)	(.09)	(.1)	(.115)	(.074)
	17984	15148	15037	14119	25086
Total quarters enrolled within 6 years	.094	-.247	.314	.135	.099
	(.127)	(.145)	(.169)	(.208)	(.111)
	15212	8929	6703	8423	17192
Earned degree or credential within 4 years	-.002	-.001	-.007	.001	-.003
	(.002)	(.002)	(.004)	(.003)	(.002)
	22057	15148	8748	17794	30450
Earned degree or credential within 6 years	.008	-.010	.003	.008	.003
	(.011)	(.009)	(.013)	(.011)	(.007)
Observations	10396	10806	6703	9969	19962
B. Impact of reaching a GED College Ready Threshold (165-174) on Sub-Two-Year Outcomes					
Enrolled within 1 year	-.143*	.032	.026	.052	.045
	(.069)	(.048)	(.038)	(.051)	(.036)
	1902	3346	4556	3252	6177
Enrolled within 2 years	-.159*	.003	.027	.027	.005
	(.073)	(.047)	(.041)	(.055)	(.039)
	1705	4177	4096	2921	5593
Enrolled within 4 years	-.062	.029	.006	.016	-.009
	(.077)	(.053)	(.048)	(.066)	(.043)
	1314	3257	3250	2315	4469
Enrolled within 6 years	-.182	.021	.011	.048	-.009
	(.106)	(.073)	(.06)	(.047)	(.066)
	720	1790	1959	602	1922
Total quarters enrolled within 4 years	-.392	-.057	.018	.395	-.103
	(.334)	(.193)	(.17)	(.218)	(.143)
	2606	7176	7232	5433	10979
Total quarters enrolled within 6 years	-.585	-.009	-.221	.386*	-.139
	(.569)	(.314)	(.348)	(.177)	(.29)
	1357	3820	2926	1329	6025
Earned degree or credential within 4 years	.019**	-.002	-.003	-.005	.001
	(.007)	(.004)	(.003)	(.003)	(.002)
	2606	7176	7232	6988	10979
Earned degree or credential within 6 years	-.087	.018	-.017	-.008	-.001
	(.054)	(.022)	(.022)	(.055)	(.022)

Observations	1357	3820	4176	3017	4429
C. Impact of reaching a GED College Ready + Credit threshold (175+) on Sub-Two-Year Outcomes					
Enrolled within 1 year	-.015	.120	.101	.013	.108
	(.140)	(.064)	(.087)	(.064)	(.058)
	585	1324	978	1668	2536
Enrolled within 2 years	.067	.023	.165	-.020	.070
	(.142)	(.066)	(.095)	(.070)	(.059)
	518	1170	862	1462	2243
Enrolled within 4 years	.134	-.120	.176	-.038	.102
	(.143)	(.077)	(.100)	(.068)	(.074)
	388	889	649	1109	1745
Enrolled within 6 years	.212	.019	.087	-.057	.123
	(.165)	(.095)	(.158)	(.078)	(.081)
	201	494	372	638	993
Total quarters enrolled within 4 years	1.526	-.003	.357	.564	.424
	(.825)	(.374)	(.434)	(.292)	(.282)
	643	1628	1317	2254	3524
Total quarters enrolled within 6 years	2.887**	.452	1.735	.604	.322
	(1.008)	(.633)	(.918)	(.435)	(.423)
	335	868	635	1263	1949
Earned degree or credential within 4 years	-.010	.001	-.004	-.001	-.003
	(.014)	(.008)	(.003)	(.006)	(.007)
	301	1628	1317	2254	3524
Earned degree or credential within 6 years	.009	.025	.130	.044	-.003
	(.065)	(.042)	(.071)	(.030)	(.028)
Observations	335	868	635	1263	1949

Notes: Each cell reports the predicted discontinuity in the two-year post-secondary outcome listed in each row at the GED subject test threshold described in each panel header and column, followed by its standard error in parentheses and effective sample size. Sub-two-year post-secondary outcomes are defined as enrollments and graduations that occur in colleges and universities that were designated as "less than two-year" institutions by the U.S. Department of Education. Discontinuities in Panel A are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear RD method, as described in equation (1); estimates in Panel B are rescaled by the first-stage relationship reported in Panel A of Table 3, and followed by its standard error in parentheses and effective sample size. Discontinuities in Panel B are estimated using Calonico and coauthors' (2015, 2017) robust, bias-corrected local-linear fuzzy regression discontinuity method, as described in equations (1)–(3). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of individual covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, and are determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A7A: Impacts by Addt'l Subgroups (Mathematical Reasoning)

Outcome	Asian (1)	Black (2)	Hispanic (3)	NAAI (4)	White (5)	Multi-Racial (6)	RFND Academic (7)	RFND Homesch. (8)	RFND Int'l' (9)	RFND Personal (10)	Employed (11)	Not Employed (12)
A. Pass GED Mathematical Reasoning Subject Test (145+)												
Enrolled	.199*	.028	.001	-.181	.021	.010	.046	.082	-.003	.019	.052	.032
w/in 4 years	(.094)	(.052)	(.045)	(.149)	(.032)	(.096)	(.030)	(.083)	(.118)	(.027)	(.028)	(.029)
	478	2,736	3,514	278	7,934	803	7,269	1,032	462	10,409	10,090	9,629
Total qtrs. enrolled	.805	.421	-.034	-.351	.079	-.758	.338*	.658	-1.204	.154	.114	.276
w/in 4 years	(.796)	(.303)	(.290)	(.822)	(.224)	(.701)	(.171)	(.894)	(1.633)	(.176)	(.229)	(.188)
	396	3,826	4,980	278	7,934	803	10,401	703	298	12,152	8,187	9,629
Earned degree/cred.	.028	-.009	-.018	.024	.010	-.007	.018	.005	-.032	.001	.003	.008
w/in 4 years	(.035)	(.022)	(.016)	(.027)	(.011)	(.027)	(.012)	(.039)	(.085)	(.009)	(.012)	(.010)
	314	3,166	4,267	416	7,934	1151	6,246	604	298	12,152	8,187	9,629
B. GED College Ready in Mathematical Reasoning (165-174)												
Enrolled	.300	-.354	-.103	.564	-.019	-.131	.112	.067	.178	-.065	.023	.020
w/in 4 years	(.205)	(.215)	(.151)	(.131)	(.077)	(.201)	(.099)	(.184)	(.194)	(.076)	(.091)	(.082)
	160	125	309	28	1892	155	1195	206	129	1590	1,205	1,746
Total qtrs. enrolled	1.539	-4.082*	-1.903	.692	-2.141*	1.054	.394	-3.905	-1.652	-2.333**	-1.209	-1.310
w/in 4 years	(2.348)	(1.923)	(1.562)	(1.219)	(.833)	(1.764)	(.876)	(2.267)	(2.244)	(.773)	(.845)	(.874)
	197	125	309	28	1510	155	936	206	129	1590	1,205	1,378
Earned degree/cred.	-.144	-.060	.053	-1.019	-.027	.065	.052	-.366*	-.263*	-.022	.043	-.036
w/in 4 years	(.153)	(.149)	(.071)	(.189)	(.040)	(.092)	(.039)	(.176)	(.13)	(.033)	(.047)	(.044)
	197	125	413	28	1892	204	1195	206	129	2036	1,515	1,746
C. GED College Ready + Credit in Mathematical Reasoning (175+)												
Enrolled	—	1.489	-.635**	—	.048	2.661	.440	-2.258***	3.338***	-.088	-.349	.411
w/in 4 years		(.464)	(.201)		(.208)	(.100)	(.295)	(.221)	(.795)	(.276)	(.308)	(.223)
		31	72		368	40	200	72	60	339	277	365
Total qtrs. enrolled	—	15.443	—	—	3.247	26.747	2.686	13.562**	49.64***	3.631	.380	4.549*
w/in 4 years		(18.025)			(1.985)	(1.100)	(3.126)	(2.608)	(3.781)	(2.403)	(3.021)	(2.282)
		22			368	40	200	72	60	339	277	365
Earned degree/cred.	-.555*	—	-.563***	—	-.217	1.355	-.449**	.102	4.169***	-.080	-.122	-.195
w/in 4 years	(.265)		(.143)		(.127)	(.131)	(.154)	(.098)	(.302)	(.097)	(.160)	(.136)
Observations	67		72		368	40	200	72	60	339	277	365

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A7B: Impacts by Addt'l Subgroups (Reasoning Thru, ELA)	Asian	Black	Hispanic	NAAI	White	Multi-Racial	RFND Academic	RFND Homesch.	RFND Int'l'	RFND Personal	Employed	Not Employed
Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. Pass GED Mathematical Reasoning Subject Test (145+)												
Enrolled	-.221	-.025	.081	-.054	-.042	.118	-.032	-.069	-.149	.002	-.011	-.027
w/in 4 years	(.124)	(.044)	(.048)	(.099)	(.044)	(.108)	(.034)	(.125)	(.115)	(.022)	(.031)	(.033)
	414	3,488	3,112	323	4,346	410	6,091	427	494	11,981	6,767	6,407
Total qtrs. enrolled	-1.628	-.439	.367	-.069	-.277	.044	-.143	-.939	-1.037	-.192	-.247	-.274
w/in 4 years	(1.152)	(.349)	(.323)	(.512)	(.291)	(.730)	(.167)	(1.072)	(1.347)	(.175)	(.204)	(.201)
	414	3,488	3,112	323	4,346	522	7,405	427	378	9,875	6,767	8,215
Earned degree/cred.	-.089	-.003	.022	-.006	-.006	-.042	-.011	-.013	-.073	.000	-.015	-.002
w/in 4 years	(.076)	(.017)	(.021)	(.033)	(.013)	(.039)	(.010)	(.045)	(.101)	(.010)	(.014)	(.009)
	414	4,133	2,400	323	5,616	522	7,405	627	378	9,875	6,767	11,629
B. GED College Ready in Mathematical Reasoning (165-174)												
Enrolled	.590**	.265	.243*	3.207***	-.009	-.072	.044	-.106	.393	.109*	.095	.012
w/in 4 years	(.179)	(.161)	(.113)	(.336)	(.044)	(.145)	(.056)	(.119)	(.206)	(.047)	(.061)	(.058)
	172	260	675	49	4,367	288	2,696	561	117	3,420	2,479	2,554
Total qtrs. enrolled	5.944**	1.511	2.773**	53.73***	.111	-.526	.601	-.123	5.858*	.982*	.648	.224
w/in 4 years	(1.924)	(1.233)	(.956)	(3.165)	(.382)	(1.26)	(.468)	(1.322)	(2.335)	(.422)	(.533)	(.409)
	172	368	675	49	4,367	288	2,696	561	117	3,420	2,479	3,676
Earned degree/cred.	.501***	.036	-.046	3.65***	-.011	-.029	-.037	.078	.097	-.011	-.006	-.008
w/in 4 years	(.104)	(.056)	(.047)	(.267)	(.021)	(.070)	(.031)	(.089)	(.163)	(.018)	(.025)	(.023)
	172	368	938	49	4,367	288	1,889	561	160	4,828	3,454	3,676
C. GED College Ready + Credit in Mathematical Reasoning (175+)												
Enrolled	.455	-.239	.006	-.709	-.169	-1.293***	-.168	.305*	-1.560	-.207*	-.118	-.185*
w/in 4 years	(.110)	(.132)	(.194)	(.473)	(.095)	(.171)	(.100)	(.137)	(.451)	(.084)	(.107)	(.092)
	35	38	101	21	771	67	559	196	15	1,021	516	892
Total qtrs. enrolled	47.13***	17.196	-1.067	8.159	-.529	-7.483***	-1.715	4.002*	7.814	-.429	-.513	-.254
w/in 4 years	(4.457)	(1.450)	(1.608)	(3.413)	(.798)	(1.640)	(1.019)	(1.554)	(5.577)	(.725)	(.939)	(.901)
	47	38	152	21	1,044	67	559	196	15	1,021	733	892
Earned degree/cred.	-.261	-.524	-.066	8.159	-.101	-.131	-.084	.265*	-.198	-.013	.032	-.132*
w/in 4 years	(.093)	(.045)	(.106)	(3.413)	(.058)	(.104)	(.062)	(.110)	(.200)	(.042)	(.055)	(.064)
Observations	35	38	152	21	771	67	559	196	15	1,021	733	666

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A7C: Impacts by Additional Subgroups (Science)

Outcome	Asian (1)	Black (2)	Hispanic (3)	NAAI (4)	White (5)	Multi-Racial (6)	RFND Academic (7)	RFND Homesch. (8)	RFND Int'l' (9)	RFND Personal (10)	Employed (11)	Not Employed (12)
A. Pass GED Mathematical Reasoning Subject Test (145+)												
Enrolled	-.218	-.010	.029	.002	.009	.317*	.005	-.067	-.289	.006	.006	-.003
w/in 4 years	(.169)	(.047)	(.053)	(.163)	(.045)	(.159)	(.033)	(.201)	(.194)	(.036)	(.031)	(.037)
	289	3,137	2,525	194	3,982	287	6,004	242	217	5,813	6,777	4,764
Total qtrs. enrolled	-3.297*	.417	-.010	-.236	.338	1.865	.037	-1.548	-1.368	.074	.070	.142
w/in 4 years	(1.49)	(.434)	(.465)	(1.211)	(.228)	(1.09)	(.222)	(1.311)	(1.583)	(.198)	(.231)	(.192)
	228	2,336	2,525	194	5,184	287	4,710	242	285	7,881	6,777	8,101
Earned degree/cred.	.035	-.039	-.016	-.111	.027*	.144**	-.007	.011	-.103	.004	-.015	.005
w/in 4 years	(.105)	(.023)	(.025)	(.092)	(.014)	(.05)	(.013)	(.052)	(.097)	(.013)	(.021)	(.012)
	228	2,336	2,525	194	3,982	287	4,710	242	285	7,881	3,882	8,101
B. GED College Ready in Mathematical Reasoning (165-174)												
Enrolled	-.239	.252	.010	-.878**	.117*	.161	.172**	.005	.090	.082	.065	.096
w/in 4 years	(.171)	(.17)	(.086)	(.226)	(.049)	(.138)	(.067)	(.115)	(.179)	(.050)	(.059)	(.054)
	126	212	878	54	3,161	333	1,899	505	90	3,330	2,307	2,737
Total qtrs. enrolled	.076	.334	-.486	-60.38***	.528	-.206	.560	1.261	-.050	.381	.610	.128
w/in 4 years	(1.651)	(1.400)	(.771)	(2.660)	(.341)	(1.174)	(.503)	(1.16)	(2.215)	(.384)	(.491)	(.374)
	187	212	878	54	4,447	333	1,899	505	90	3,330	2,307	3,861
Earned degree/cred.	.252*	.022	-.067	-.135*	.004	-.051	.009	-.007	.563***	.006	.035	-.037
w/in 4 years	(.101)	(.061)	(.049)	(.054)	(.020)	(.057)	(.023)	(.084)	(.126)	(.017)	(.027)	(.023)
	187	339	878	83	4,447	450	2,718	505	90	4,756	2,307	3,861
C. GED College Ready + Credit in Mathematical Reasoning (175+)												
Enrolled	-3.25***	-.642	.794	—	-.089	.642***	.023	-.487**	2.835	-.070	.005	.058
w/in 4 years	(.277)	(.831)	(.064)		(.081)	(.128)	(.110)	(.165)	(.283)	(.087)	(.104)	(.089)
	44	37	41		1,412	75	467	118	37	1,277	968	737
Total qtrs. enrolled	-320.38***	-7.523	4.104**	—	-.488	18.16***	2.273	-.365	20.881	-.183	-.363	1.225
w/in 4 years	(12.006)	(9.544)	(1.371)		(.779)	(1.828)	(1.251)	(1.719)	(3.514)	(1.076)	(1.073)	(1.123)
	44	37	83		1,412	75	407	133	37	662	968	737
Earned degree/cred.	-10.653***	.143	-.360	—	.023	1.414***	.013	-.044	-.603	.020	.070	.018
w/in 4 years	(.367)	(.553)	(.068)		(.042)	(.082)	(.037)	(.149)	(.238)	(.045)	(.060)	(.063)
Observations	44	37	41		856	75	785	118	27	777	572	737

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A7D: Impacts by Additional Subgroups (Social Studies)

Outcome	Asian (1)	Black (2)	Hispanic (3)	NAAI (4)	White (5)	Multi-Racial (6)	RFND Academic (7)	RFND Homesch. (8)	RFND Int'l' (9)	RFND Personal (10)	Employed (11)	Not Employed (12)
A. Pass GED Mathematical Reasoning Subject Test (145+)												
Enrolled	.068	.038	.050	.039	-.022	-.187	.019	.015	-.146	.016	.042	.010
w/in 4 years	(.117)	(.053)	(.039)	(.127)	(.036)	(.139)	(.031)	(.122)	(.163)	(.028)	(.029)	(.029)
	481	3,021	4,223	316	6,856	433	7,160	525	361	11,777	7,901	9,703
Total qtrs. enrolled	-.520	-.104	.211	.393	-.273	.139	-.219	.908	-2.425	-.008	.164	-.184
w/in 4 years	(1.138)	(.364)	(.342)	(1.034)	(.283)	(.664)	(.303)	(1.118)	(1.631)	(.183)	(.215)	(.274)
	394	3,021	3,740	316	5,359	753	4,724	400	361	11,777	7,901	7,671
Earned degree/cred.	.101	-.005	-.003	.045	-.015	.030	-.010	-.059	-.133	.007	-.011	.010
w/in 4 years	(.076)	(.018)	(.020)	(.031)	(.016)	(.035)	(.014)	(.072)	(.095)	(.012)	(.017)	(.011)
	481	3,021	3,740	429	5,359	674	5,699	400	448	9,339	6,309	9,703
B. GED College Ready in Mathematical Reasoning (165-174)												
Enrolled	-.035	-.034	.393***	1.103***	-.018	-.144	.004	-.060	.258	.046	.013	.167**
w/in 4 years	(.203)	(.148)	(.116)	(.251)	(.051)	(.164)	(.064)	(.155)	(.203)	(.050)	(.055)	(.062)
	137	338	717	68	4,170	320	2,692	388	105	4,626	3,328	2,820
Total qtrs. enrolled	12.040***	-2.185	3.756***	-2.574	.061	-3.212*	.516	-2.887*	-5.152*	.588	.265	1.991***
w/in 4 years	(2.264)	(1.467)	(.948)	(2.338)	(.401)	(1.425)	(.552)	(1.374)	(2.508)	(.408)	(.536)	(.472)
	137	338	717	68	4,170	320	2,069	388	105	3,610	2,565	2,820
Earned degree/cred.	.129	-.127	.031	-.006	-.009	-.018	-.007	-.112	-.402*	-.007	.017	.017
w/in 4 years	(.120)	(.071)	(.043)	(.048)	(.027)	(.052)	(.028)	(.089)	(.190)	(.024)	(.031)	(.023)
	137	420	928	85	3,235	408	2,692	498	105	3,610	2,565	3,603
C. GED College Ready + Credit in Mathematical Reasoning (175+)												
Enrolled	.136	3.008*	.326*	—	.137*	-.367*	.273**	.491**	.761	.043	.000	.132
w/in 4 years	(.090)	(.166)	(.149)		(.068)	(.158)	(.090)	(.158)	(.098)	(.069)	(.118)	(.072)
	22	41	228		1,441	147	824	234	18	1,395	529	1,229
Total qtrs. enrolled	17.600***	25.339*	3.173*	—	1.847**	-2.079	2.74***	3.027	—	1.553**	2.05*	1.693*
w/in 4 years	(1.114)	(1.487)	(1.466)		(.632)	(1.565)	(.790)	(1.931)		(.600)	(.8071)	(.710)
	44	41	228		1,441	147	824	234		1,395	1,014	1,229
Earned degree/cred.	.783	.941	-.096	—	-.015	.088	.037	-.239*	-.331	.027	-.041	.032
w/in 4 years	(.076)	(.132)	(.073)		(.036)	(.080)	(.035)	(.116)	(.119)	(.028)	(.044)	(.039)
Observations	22	41	228		1,441	147	824	234	18	1,395	1,014	1,229

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A7E: Impacts by Additional Subgroups (Pooled Subjects)						Multi-	RFND	RFND	RFND	RFND		Not
	Asian	Black	Hispanic	NAAI	White	Racial	Academic	Homesch.	Int'l'	Personal	Employed	Employed
Outcome	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. Pass GED Mathematical Reasoning Subject Test (145+)												
Enrolled	.002	.032	.070	.006	.014	.027	.011	.024	-.029	.040*	.039	.030
w/in 4 years	(.092)	(.037)	(.036)	(.079)	(.026)	(.067)	(.027)	(.067)	(.084)	(.020)	(.022)	(.023)
	578	4,210	4,921	702	11,045	1,305	8,266	1,309	761	16,883	13,866	13,421
Total qtrs. enrolled	-.846	.064	.273	1.136*	.105	-.350	.074	.258	-1.289	.142	.098	.228
w/in 4 years	(.760)	(.272)	(.210)	(.559)	(.184)	(.599)	(.173)	(.726)	(.943)	(.148)	(.184)	(.139)
	578	4,210	6,803	611	11,045	1,102	10,038	917	616	16,883	11,417	16,282
Earned degree/cred.	.031	-.008	-.006	.048	.007	.006	-.003	.041	-.037	.007	-.005	.015
w/in 4 years	(.048)	(.016)	(.012)	(.028)	(.009)	(.025)	(.008)	(.033)	(.053)	(.007)	(.010)	(.008)
	802	4,210	6,803	500	13,479	1,102	14,021	917	875	16,883	11,417	13,421
B. GED College Ready in Mathematical Reasoning (165-174)												
Enrolled	-.021	-.083	.078	89.494**	-.014	.197	.064	-.017	-.317	.005	.043	.028
w/in 4 years	(.164)	(.109)	(.084)	(27.622)	(.037)	(.112)	(.053)	(.111)	(.197)	(.042)	(.051)	(.044)
	230	744	1,210	63	6,296	618	3,131	646	191	5,427	3,827	4,177
Total qtrs. enrolled	2.540	-1.485	.120	5.493***	-.493	2.126*	.068	-1.084	-3.175	-.108	.034	-.038
w/in 4 years	(1.578)	(1.169)	(.555)	(1.580)	(.312)	(.848)	(.318)	(1.138)	(2.224)	(.265)	(.371)	(.303)
	298	548	1,638	115	6,296	457	4,270	646	191	7,360	5,165	5,710
Earned degree/cred.	.256*	-.080	.006	-.047	-.039*	.080*	-.023	-.041	.221	-.017	.003	-.032
w/in 4 years	(.107)	(.059)	(.030)	(.025)	(.020)	(.035)	(.022)	(.074)	(.137)	(.016)	(.019)	(.021)
	298	744	1,638	154	4,643	457	3,131	646	191	7,360	5,165	4,177
C. GED College Ready + Credit in Mathematical Reasoning (175+)												
Enrolled	.971***	.512**	.225	1.393	.026	-.202	.108	.326*	-2.101***	-.023	-.005	.114
w/in 4 years	(.246)	(.157)	(.134)	(.280)	(.062)	(.192)	(.092)	(.151)	(.155)	(.063)	(.074)	(.077)
	95	92	264	15	2,207	135	848	246	75	2,208	1,609	1,904
Total qtrs. enrolled	1.950	6.748***	1.766	13.108	.871	-.196	.958	3.660*	-33.779***	.725	1.231	.678
w/in 4 years	(3.292)	(1.842)	(1.167)	(3.064)	(.542)	(1.735)	(.753)	(1.726)	(2.061)	(.544)	(.687)	(.619)
	95	92	383	15	2,207	135	1,299	246	75	2,208	1,609	1,904
Earned degree/cred.	-.179	.086	-.008	.022	-.007	.131	.035	.204	-1.841***	.025	.105*	-.058
w/in 4 years	(.225)	(.070)	(.062)	(.057)	(.031)	(.070)	(.033)	(.107)	(.140)	(.026)	(.043)	(.038)
Observations	95	92	383	15	2,207	212	1,299	340	75	2,208	1,053	1,904

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row for the subgroup listed in each column at the subject test threshold described in each panel header, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A8A: Alternative Bandwidth Impact Estimates (Mathematical Reasoning)

Outcome	BW=3 (1)	BW=4 (2)	BW=5 (3)	BW=6 (4)	BW=7 (5)	BW=8 (6)	BW=9 (7)	BW=Optimal (8)
A. Pass GED Mathematical Reasoning Subject Test (145+)								
Enrolled w/in 4 years	.053**	.036	.042	.031	.035	.042*	.044*	.037
	(.017)	(.044)	(.030)	(.024)	(.021)	(.019)	(.018)	(.020)
	10,811	15,418	17,984	22,057	25,993	29,382	31,635	17,984
Total qtrs. enrolled w/in 4 years	.272*	.174	.171	.134	.195	.247	.260*	.211
	(.124)	(.324)	(.218)	(.173)	(.151)	(.140)	(.129)	(.147)
	10,811	15,418	17,984	22,057	25,993	29,382	31,635	17,984
Earned degree/cred. w/in 4 years	.004	.022	.013	.006	.007	.008	.007	.006
	(.006)	(.018)	(.011)	(.009)	(.008)	(.007)	(.007)	(.008)
	10,811	15,418	17,984	22,057	25,993	29,382	31,635	17,984
B. GED College Ready in Mathematical Reasoning (165-174)								
Enrolled w/in 4 years	.037	.016	.011	.039	.049	.043	.035	.024
	(.044)	(.085)	(.062)	(.052)	(.043)	(.039)	(.035)	(.058)
	2,606	3,288	4,698	5,615	6,990	8,107	9,976	3,288
Total qtrs. enrolled w/in 4 years	-0.562	-0.816	-.934	-.694	-.367	-.231	-.086	-1.160
	(.422)	(.809)	(.595)	(.498)	(.415)	(.378)	(.339)	(.634)
	2,606	3,288	4,698	5,615	6,990	8,107	9,976	2,606
Earned degree/cred. w/in 4 years	.005	.006	.010	.012	.007	-.001	-.002	.005
	(.025)	(.047)	(.034)	(.029)	(.024)	(.022)	(.020)	(.032)
	2,606	3,288	4,698	5,615	6,990	8,107	9,976	3,288
C. GED College Ready + Credit in Mathematical Reasoning (175+)								
Enrolled w/in 4 years	.082	.062	.124	.087	.091	.071	.046	.126
	(.098)	(.234)	(.183)	(.159)	(.095)	(.085)	(.071)	(.180)
	643	840	1,287	1,340	1,799	2,088	2,510	643
Total qtrs. enrolled w/in 4 years	1.693	3.597	2.268	1.536	.419	.320	.115	3.178
	(1.001)	(2.342)	(1.807)	(1.569)	(.960)	(.864)	(.732)	(1.842)
	643	840	1,287	1,340	1,799	2,088	2,510	643
Earned degree/cred. w/in 4 years	-.081	-.133	-.056	-.070	-.051	-.041	-.034	-.144
	(.067)	(.157)	(.123)	(.107)	(.064)	(.057)	(.048)	(.124)
Observations	643	840	1,287	1,340	1,799	2,088	2,510	643

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row at the subject test threshold described in each panel header, estimated in the bandwidth listed in each column, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A8B: Alternative Bandwidth Impact Estimates (Reasoning Through ELA)

Outcome	BW=3 (1)	BW=4 (2)	BW=5 (3)	BW=6 (4)	BW=7 (5)	BW=8 (6)	BW=9 (7)	BW=Optimal (8)
A. Pass GED Reasoning Through ELA Subject Test (145+)								
Enrolled w/in 4 years	.023	.046	.015	-.012	-.016	-.017	-.019	-.016
	(.017)	(.047)	(.031)	(.025)	(.022)	(.020)	(.018)	(.022)
	8,431	11,765	15,148	18,363	21,536	24,372	27,150	15,148
Total qtrs. enrolled w/in 4 years	.061	.296	-.007	-.229	-.244	-.218	-.215	-.229
	(.123)	(.332)	(.223)	(.179)	(.155)	(.139)	(.129)	(.151)
	8,431	11,765	15,148	18,363	21,536	24,372	27,150	15,148
Earned degree/cred. w/in 4 years	-.001	.030	.005	-.006	-.008	-.007	-.007	-.009
	(.007)	(.020)	(.013)	(.010)	(.009)	(.008)	(.007)	(.008)
	8,431	11,765	15,148	18,363	21,536	24,372	27,150	15,148
B. GED College Ready in Reasoning Through ELA (165-174)								
Enrolled w/in 4 years	.013	.056	.037	.022	.004	-.009	-.008	.033
	(.023)	(.059)	(.040)	(.032)	(.027)	(.025)	(.023)	(.036)
	5,065	7,176	9,319	11,530	13,757	16,026	18,334	7,176
Total qtrs. enrolled w/in 4 years	.123	.418	.390	.190	.057	-.068	-.088	.345
	(.199)	(.509)	(.340)	(.272)	(.234)	(.210)	(.193)	(.341)
	5,065	7,176	9,319	11,530	13,757	16,026	18,334	5,065
Earned degree/cred. w/in 4 years	-.002	.007	-.010	-.011	-.009	-.005	-.002	-.006
	(.011)	(.028)	(.019)	(.015)	(.013)	(.012)	(.011)	(.021)
	5,065	7,176	9,319	11,530	13,757	16,026	18,334	5,065
C. GED College Ready + Credit in Reasoning Through ELA (175+)								
Enrolled w/in 4 years	-.094*	-.200	-.196*	-.132*	-.102	-.091	-.092*	-.164*
	(.047)	(.118)	(.081)	(.065)	(.056)	(.050)	(.046)	(.077)
	1,185	1,628	2,184	2,799	3,479	4,266	5,095	1,628
Total qtrs. enrolled w/in 4 years	-.014	-.360	-.919	-.304	-.023	.103	.096	-.429
	(.478)	(1.179)	(.804)	(.644)	(.558)	(.503)	(.466)	(.632)
	1185	1,628	2,184	2,799	3,479	4,266	5,095	1,628
Earned degree/cred. w/in 4 years	-.046	-.063	-.085	-.046	-.027	-.029	-.028	-.060
	(.028)	(.072)	(.049)	(.039)	(.034)	(.030)	(.028)	(.041)
Observations	1,185	1,628	2,184	2,799	3,479	4,266	5,095	1,628

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row at the subject test threshold described in each panel header, estimated in the bandwidth listed in each column, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A8C: Alternative Bandwidth Impact Estimates (Science)

Outcome	BW=3 (1)	BW=4 (2)	BW=5 (3)	BW=6 (4)	BW=7 (5)	BW=8 (6)	BW=9 (7)	BW=Optimal (8)
A. Pass GED Science Subject Test (145+)								
Enrolled w/in 4 years	.020	.020	.016	.006	.004	.010	.012	.005
	(.020)	(.053)	(.036)	(.030)	(.026)	(.023)	(.021)	(.025)
	6,907	8,748	11,917	15,037	17,386	20,271	22,691	11,917
Total qtrs. enrolled w/in 4 years	.136	.436	.250	.155	.139	.157	.157	.129
	(.136)	(.381)	(.259)	(.21)	(.181)	(.160)	(.150)	(.164)
	6,907	8,748	11,917	15,037	17,386	20,271	22,691	11,917
Earned degree/cred. w/in 4 years	-.006	.003	-.009	-.009	-.005	-.004	-.004	-.007
	(.008)	(.022)	(.015)	(.012)	(.011)	(.009)	(.009)	(.011)
	6,907	8,748	11,917	15,037	17,386	20,271	22,691	11,917
B. GED College Ready in Science (165-174)								
Enrolled w/in 4 years	.040	.108	.066	.049	.029	.020	.015	.076
	(.022)	(.067)	(.036)	(.029)	(.025)	(.023)	(.022)	(.041)
	5,084	7,232	10,199	11,500	14,590	17,234	19,952	5,084
Total qtrs. enrolled w/in 4 years	.189	.295	.396	.331	.216	.182	.165	.313
	(.191)	(.553)	(.306)	(.253)	(.217)	(.201)	(.187)	(.271)
	5,084	7,232	10,199	11,500	14,590	17,234	19,952	7,232
Earned degree/cred. w/in 4 years	-.004	-.028	.002	-.001	-.005	-.005	-.003	-.002
	(.011)	(.031)	(.018)	(.015)	(.013)	(.012)	(.011)	(.016)
	5,084	7,232	10,199	11,500	14,590	17,234	19,952	7,232
C. GED College Ready + Credit in Science (175+)								
Enrolled w/in 4 years	.010	.009	.025	-.014	-.013	-.021	-.033	-.002
	(.059)	(.128)	(.092)	(.079)	(.061)	(.057)	(.052)	(.065)
	1,124	1,317	2,173	2,472	3,460	3,751	4,937	2,173
Total qtrs. enrolled w/in 4 years	.142	-.432	-.024	-.338	-.201	-.333	-.418	.215
	(.618)	(1.297)	(.950)	(.809)	(.633)	(.594)	(.535)	(.791)
	1,124	1,317	2,173	2,472	3,460	3,751	4,937	1,317
Earned degree/cred. w/in 4 years	.017	.075	.052	.039	.022	.015	.009	.039
	(.036)	(.075)	(.053)	(.045)	(.036)	(.033)	(.030)	(.044)
Observations	1,124	1,317	2,173	2,472	3,460	3,751	4,937	1,317

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row at the subject test threshold described in each panel header, estimated in the bandwidth listed in each column, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A8D: Alternative Bandwidth Impact Estimates (Social Studies)

Outcome	BW=3 (1)	BW=4 (2)	BW=5 (3)	BW=6 (4)	BW=7 (5)	BW=8 (6)	BW=9 (7)	BW=Optimal (8)
A. Pass GED Social Studies Subject Test (145+)								
Enrolled w/in 4 years	.014	-.035	-.021	.003	.015	.017	.021	.025
	(.019)	(.049)	(.036)	(.028)	(.025)	(.022)	(.020)	(.020)
	8,235	11,648	14,119	17,794	19,956	23,672	25,730	17,794
Total qtrs. enrolled w/in 4 years	-.023	-.454	-.357	-.183	-.071	-.046	.008	-.095
	(.140)	(.351)	(.262)	(.212)	(.186)	(.163)	(.147)	(.192)
	8,235	11,648	14,119	17,794	19,956	23,672	25,730	14,119
Earned degree/cred. w/in 4 years	-.007	-.030	-.018	-.008	-.002	-.001	.002	-.001
	(.008)	(.019)	(.015)	(.012)	(.011)	(.009)	(.008)	(.010)
	8,235	11,648	14,119	17,794	19,956	23,672	25,730	14,119
B. GED College Ready in Social Studies (165-174)								
Enrolled w/in 4 years	.065**	.075	.021	.025	.030	.031	.030	.099*
	(.023)	(.058)	(.042)	(.034)	(.028)	(.025)	(.022)	(.044)
	5,433	6,988	9,258	11,292	13,380	15,661	17,669	5,433
Total qtrs. enrolled w/in 4 years	.571**	.798	.140	.151	.121	.099	.111	.971**
	(.192)	(.485)	(.344)	(.274)	(.229)	(.203)	(.186)	(.367)
	5,433	6,988	9,258	11,292	13,380	15,661	17,669	5,433
Earned degree/cred. w/in 4 years	.012	.016	.001	.007	.006	.006	.008	.009
	(.011)	(.028)	(.020)	(.016)	(.013)	(.012)	(.011)	(.019)
	5,433	6,988	9,258	11,292	13,380	15,661	17,669	6,988
C. GED College Ready + Credit in Social Studies (175+)								
Enrolled w/in 4 years	.069	-.028	.123	.096	.076	.063	.079*	.130*
	(.040)	(.154)	(.068)	(.053)	(.047)	(.043)	(.040)	(.055)
	1,213	2,254	2,930	3,584	4,297	5,193	6,112	2,254
Total qtrs. enrolled w/in 4 years	1.087**	.413	1.610*	1.172*	.918*	.740	.838*	1.887***
	(.385)	(1.490)	(.643)	(.504)	(.448)	(.409)	(.379)	(.530)
	1,213	2,254	2,930	3,584	4,297	5,193	6,112	2,254
Earned degree/cred. w/in 4 years	.005	.019	.010	-.007	-.003	-.005	-.002	.001
	(.021)	(.077)	(.035)	(.028)	(.025)	(.023)	(.021)	(.029)
Observations	1,213	2,254	2,930	3,584	4,297	5,193	6,112	2,254

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row at the subject test threshold described in each panel header, estimated in the bandwidth listed in each column, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A8E: Alternative Bandwidth Impact Estimates (Pooled Subjects)

Outcome	BW=3 (1)	BW=4 (2)	BW=5 (3)	BW=6 (4)	BW=7 (5)	BW=8 (6)	BW=9 (7)	BW=Optimal (8)
A. Pass GED Subject Test in Lowest-Scoring Subject (145+)								
Enrolled w/in 4 years	.055***	.041	.035	.032	.033*	.037*	.038**	.034*
	(.013)	(.034)	(.023)	(.019)	(.016)	(.015)	(.014)	(.017)
	14,764	20,693	25,086	30,450	35,007	39,270	42,338	25,086
Total qtrs. enrolled w/in 4 years	.289**	.212	.111	.112	.165	.211	.226*	.192
	(.099)	(.245)	(.170)	(.137)	(.120)	(.109)	(.101)	(.114)
	14,764	20,693	25,086	30,450	35,007	39,270	42,338	25,086
Earned degree/cred. w/in 4 years	.007	.016	.007	.006	.007	.007	.007	.007
	(.005)	(.014)	(.009)	(.007)	(.007)	(.006)	(.005)	(.007)
	14,764	20,693	25,086	30,450	35,007	39,270	42,338	25,086
B. GED College Ready in Highest-Scoring Subject (165-174)								
Enrolled w/in 4 years	.027	.032	.032	.036	.030	.024	.020	.027
	(.018)	(.047)	(.032)	(.025)	(.022)	(.020)	(.018)	(.035)
	8,082	10,979	14,634	17,227	20,676	23,913	27,001	8,082
Total qtrs. enrolled w/in 4 years	.025	-.100	-.127	-.031	-.027	-.037	-.036	-.060
	(.147)	(.379)	(.253)	(.205)	(.174)	(.157)	(.145)	(.228)
	8,082	10,979	14,634	17,227	20,676	23,913	27,001	10,979
Earned degree/cred. w/in 4 years	-.002	-.022	-.015	-.008	-.004	-.004	-.001	-.016
	(.008)	(.021)	(.014)	(.012)	(.010)	(.009)	(.008)	(.015)
	8,082	10,979	14,634	17,227	20,676	23,913	27,001	8,082
C. GED College Ready + Credit in Highest-Scoring Subject (175+)								
Enrolled w/in 4 years	.041	.056	.051	.041	.033	.016	.016	.057
	(.033)	(.088)	(.058)	(.047)	(.039)	(.036)	(.032)	(.051)
	2,373	3,524	4,852	5,726	7,109	8,337	9,981	3,524
Total qtrs. enrolled w/in 4 years	.750*	1.242	.834	.660	.550	.372	.361	1.059*
	(.302)	(.825)	(.527)	(.423)	(.355)	(.324)	(.295)	(.474)
	2,373	3,524	4,852	5,726	7,109	8,337	9,981	3,524
Earned degree/cred. w/in 4 years	.006	.020	.009	.004	.013	.011	.007	.009
	(.017)	(.047)	(.029)	(.023)	(.020)	(.018)	(.016)	(.025)
Observations	2,373	3,524	4,852	5,726	7,109	8,337	9,981	3,524

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row at the subject test threshold described in each panel header, estimated in the bandwidth listed in each column, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using the robust, bias-corrected methods described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A9: Cumulative Post-Secondary Impacts (Quadratic Model)

Outcome	Math (1)	ELA (2)	Science (3)	Soc. Stud. (4)	Pooled (5)
A. Pass GED Subject Test (145+)					
Enrolled within 2 quarters after first attempt	-.034	.013	-.005	-.012	.009
	(.028)	(.016)	(.019)	(.017)	(.014)
	26,816	31,383	26,060	26,408	45,910
Enrolled within 1 year	-.044	.020	-.010	.022	.021
	(.033)	(.022)	(.022)	(.016)	(.015)
	22,151	25,977	25,285	33,706	44,285
Enrolled within 2 years	.003	.032	.023	.025	.030
	(.031)	(.027)	(.034)	(.021)	(.016)
	22,703	22,824	18,839	29,496	49,615
Enrolled within 4 years	.033	-.006	.002	-.006	.027
	(.036)	(.032)	(.033)	(.034)	(.021)
	17,984	18,363	17,386	19,956	35,007
Enrolled within 6 years	-.031	.011	.047	.133*	.013
	(.052)	(.046)	(.045)	(.056)	(.027)
	10,396	10,806	10,042	11,779	22,185
Total quarters enrolled within 2 years	-.082	-.028	-.031	-.063	-.047
	(.176)	(.101)	(.116)	(.119)	(.110)
	22,703	26,783	21,985	22,368	31,703
Total quarters enrolled within 4 years	.082	-.284	.180	-.513	.041
	(.267)	(.184)	(.279)	(.313)	(.176)
	17,984	24,372	15,037	14,119	30,450
Total quarters enrolled within 6 years	-.163	-.674*	.761	.334	-.115
	(.468)	(.342)	(.409)	(.628)	(.321)
	10,396	12,621	10,042	9,969	17,192
Earned degree or credential within 4 years	.009	-.004	-.008	-.016	.008
	(.011)	(.013)	(.013)	(.015)	(.008)
	22,057	18,363	17,386	17,794	39,270
Earned degree or credential within 6 years	.018	-.024	.016	.037	.014
	(.017)	(.017)	(.022)	(.029)	(.013)
Observations	15,212	14,311	10,042	9,969	22,185
B. GED College Ready (165-174)					
Enrolled within 2 quarters after first attempt	-.176*	.085	.135*	.168***	.075
	(.073)	(.052)	(.060)	(.048)	(.039)
	5,248	11,392	11,235	10,463	16,926
Enrolled within 1 year	-.096	.094	.132*	.116*	.024
	(.081)	(.059)	(.067)	(.054)	(.045)
	5,078	11,042	10,873	10,169	16,377
Enrolled within 2 years	-.036	.073	.135	.128*	.005
	(.090)	(.070)	(.076)	(.062)	(.052)
	4,400	9,533	9,403	9,005	14,246
Enrolled within 4 years	-.008	.006	.155	.214**	.032
	(.106)	(.023)	(.088)	(.076)	(.061)
	3,288	5,065	7,232	6,988	10,979
Enrolled within 6 years	-.118	.003	.019	.146	.024
	(.156)	(.108)	(.127)	(.179)	(.088)
	1,914	3,820	4,176	3,696	6,025
Total quarters enrolled within 2 years	-.788	.293	.342	1.027**	-.047
	(.491)	(.341)	(.377)	(.320)	(.259)

	4,400	9,533	9,403	9,005	14,246
Total quarters enrolled within 4 years	-1.047	.607	.352	2.192***	-.169
	(.999)	(.693)	(.719)	(.621)	(.493)
	3,288	7,176	7,232	6,988	10,979
Total quarters enrolled within 6 years	-2.246	.281	-.447	3.108	-.157
	(1.922)	(1.164)	(1.255)	(1.611)	(.875)
	1,914	3,820	4,176	3,696	6,025
Earned degree or credential within 4 years	.004	.012	-.030	.034	-.033
	(.058)	(.036)	(.039)	(.036)	(.027)
	3,288	7,176	7,232	6,988	10,979
Earned degree or credential within 6 years	-.023	.017	-.096	.015	-.032
	(.108)	(.063)	(.066)	(.099)	(.047)
Observations	1,914	3,820	4,176	3,696	6,025
C. GED College Ready + Credit (175+)					
Enrolled within 2 quarters after first attempt	.053	-.009	.027	.077	.036
	(.157)	(.076)	(.084)	(.097)	(.054)
	1,430	3,642	3,562	4,587	7,761
Enrolled within 1 year	-.286	-.108	.090	-.031	-.031
	(.172)	(.093)	(.090)	(.145)	(.062)
	1,362	3,483	3,431	3,685	7,459
Enrolled within 2 years	-.181	-.135	.151	-.133	-.007
	(.194)	(.116)	(.103)	(.161)	(.069)
	1,147	2,212	2,944	3,130	6,470
Enrolled within 4 years	.131	-.242	.083	.056	.069
	(.262)	(.134)	(.119)	(.124)	(.081)
	840	1,628	2,173	2,930	4,852
Enrolled within 6 years	.303	-.184	.162	-.177	.044
	(.250)	(.170)	(.182)	(.313)	(.105)
	679	1,137	1,270	1,263	2,611
Total quarters enrolled within 2 years	-.094	-.425	.499	.828	.279
	(1.171)	(.751)	(.606)	(.614)	(.387)
	1,147	2,212	2,944	3,854	6,470
Total quarters enrolled within 4 years	5.488*	-1.150	.552	1.790	1.263
	(2.644)	(1.133)	(1.217)	(1.085)	(.757)
	840	2,184	2,173	2,930	4,852
Total quarters enrolled within 6 years	9.996**	.230	3.806	3.591	1.339
	(3.438)	(1.999)	(2.29)	(4.013)	(1.229)
	429	1,137	1,270	1,263	2,611
Earned degree or credential within 4 years	-.199	-.085	.102	.019	.013
	(.177)	(.082)	(.085)	(.052)	(.045)
	840	1,628	1,317	2,930	4,852
Earned degree or credential within 6 years	.255	.040	.212	.328	.093
	(.194)	(.111)	(.130)	(.179)	(.086)
Observations	429	1,137	1,270	1,263	1,949

Notes: Each cell reports the predicted discontinuity in the post-secondary outcome listed in each row at the GED subject test threshold described in each panel header and column, followed by its standard error in parentheses and effective sample size. Discontinuities are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-quadratic regression discontinuity method, as described in equation (1) and Table 4. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.

Table A10: Impacts on College Enrollment by Quarter Since First Attempt

Quarter	Math (1)	ELA (2)	Science (3)	Soc. Stud. (4)	Pooled (5)
A. Pass GED Subject Test (145+)					
-4	-0.004	-.005	-.015*	.003	-.004
	(.004)	(.005)	(.007)	(.005)	(.003)
-3	-.003	-.007	-.012	.003	-.001
	(.005)	(.005)	(.008)	(.005)	(.004)
-2	-.002	-.004	-.009	.007	-.003
	(.005)	(.006)	(.009)	(.005)	(.004)
-1	-.007	.004	-.011	.014*	.001
	(.006)	(.006)	(.010)	(.007)	(.004)
0	.001	-.005	-.006	.010	.007
	(.008)	(.008)	(.008)	(.007)	(.005)
1	.001	-.004	.001	.008	.008
	(.011)	(.009)	(.010)	(.008)	(.007)
2	.001	.008	-.005	.010	.016*
	(.013)	(.010)	(.013)	(.010)	(.008)
3	.004	.012	-.017	.014	.017
	(.015)	(.010)	(.015)	(.009)	(.009)
4	.014	.008	-.015	.012	.021*
	(.014)	(.009)	(.014)	(.010)	(.009)
5	.030**	-.004	-.003	.015	.028**
	(.011)	(.011)	(.013)	(.011)	(.009)
6	.019	-.003	.012	.012	.020*
	(.011)	(.011)	(.012)	(.011)	(.010)
7	.018	.003	.014	.016	.021**
	(.011)	(.010)	(.012)	(.012)	(.007)
8	.007	-.009	.014	-.002	-.002
	(.011)	(.010)	(.013)	(.013)	(.010)
9	.011	-.005	.016	.007	.014
	(.01)	(.010)	(.013)	(.012)	(.008)
10	.019	-.012	.015	.014	.017*
	(.012)	(.011)	(.013)	(.012)	(.008)
11	.015	-.012	.016	.018	.017*
	(.011)	(.012)	(.013)	(.010)	(.007)
12	.012	-.019	.018	.007	.007
	(.011)	(.014)	(.013)	(.012)	(.009)
13	.013	-.015	.017	-.004	.010
	(.010)	(.015)	(.015)	(.013)	(.008)
14	.009	-.020	.019	-.002	.011
	(.010)	(.013)	(.018)	(.014)	(.007)
15	.008	-.014	.011	-.013	.008
	(.011)	(.012)	(.014)	(.015)	(.009)
16	.008	-.025	.020	-.019	.014
	(.012)	(.015)	(.013)	(.017)	(.008)
17	.011	-.018	.019	-.006	.018*
	(.011)	(.012)	(.013)	(.014)	(.009)
18	.010	-.013	.011	.015	.014
	(.012)	(.011)	(.015)	(.013)	(.010)
19	.002	-.021	.027	.010	.007
	(.013)	(.012)	(.015)	(.012)	(.010)

20	.010	-.020	.036*	.020	.014
	(.012)	(.015)	(.017)	(.016)	(.009)
21	.017	-.019	.028	.011	.015
	(.012)	(.015)	(.016)	(.015)	(.011)
22	.018	-.021	.049*	.027	.017
	(.012)	(.017)	(.019)	(.018)	(.010)
23	.011	-.011	.042*	.018	.013
	(.012)	(.012)	(.017)	(.023)	(.010)
24	.015	-.012	.032	.018	.012
	(.013)	(.013)	(.018)	(.017)	(.010)
B. GED College Ready (165-174)					
4	.007	.028**	.005	.010	.019**
	(.018)	(.011)	(.008)	(.010)	(.007)
-3	.019	.032*	.004	.025*	.027***
	(.017)	(.012)	(.008)	(.011)	(.008)
-2	.020	.021	.006	.026*	.024**
	(.017)	(.012)	(.009)	(.012)	(.008)
-1	.013	.025*	.020*	.031*	.033**
	(.019)	(.012)	(.010)	(.013)	(.010)
0	.001	.046**	.007	.063***	.052***
	(.025)	(.017)	(.012)	(.017)	(.013)
1	-.065	.019	.049*	.053*	.039*
	(.037)	(.020)	(.022)	(.022)	(.018)
2	-.111**	.008	.051*	.055*	.032
	(.041)	(.022)	(.026)	(.026)	(.020)
3	-.104*	.010	.028	.021	.017
	(.042)	(.022)	(.021)	(.025)	(.018)
4	-.047	.000	.027	.016	.012
	(.041)	(.024)	(.020)	(.025)	(.018)
5	-.080	-.011	.012	.011	-.008
	(.044)	(.023)	(.021)	(.024)	(.018)
6	-.117**	-.020	.010	.048	-.029
	(.044)	(.024)	(.021)	(.025)	(.022)
7	-.125**	-.004	.012	.028	-.039
	(.044)	(.023)	(.021)	(.025)	(.021)
8	-.135**	.014	.012	.011	-.039
	(.046)	(.023)	(.021)	(.024)	(.021)
9	-.064	.026	.008	-.003	-.016
	(.045)	(.024)	(.021)	(.025)	(.018)
10	-.064	.027	-.001	.010	-.011
	(.045)	(.027)	(.021)	(.028)	(.018)
11	-.029	-.011	-.007	.011	-.007
	(.044)	(.024)	(.022)	(.027)	(.018)
12	-.023	.003	-.004	.024	-.008
	(.044)	(.024)	(.021)	(.027)	(.018)
13	.032	.010	-.014	.037	-.004
	(.041)	(.028)	(.021)	(.028)	(.018)
14	-.003	.052	.002	.055	.003
	(.043)	(.031)	(.022)	(.030)	(.022)
15	.004	.028	.022	.005	-.008
	(.043)	(.031)	(.022)	(.026)	(.019)
16	-.011	.013	.027	.054	-.009

	(.045)	(.031)	(.022)	(.028)	(.018)
17	-.078	.037	.052*	.034	.011
	(.049)	(.030)	(.026)	(.028)	(.021)
18	-.024	.023	.016	.030	-.001
	(.047)	(.031)	(.021)	(.032)	(.023)
19	-.042	.054	.012	-.021	-.003
	(.051)	(.030)	(.022)	(.034)	(.020)
20	-.042	.010	.033	.035	.020
	(.051)	(.026)	(.022)	(.035)	(.020)
21	-.067	-.019	.041	.007	.013
	(.055)	(.028)	(.022)	(.045)	(.021)
22	-.069	-.010	.038	.077	.051*
	(.053)	(.028)	(.022)	(.048)	(.024)
23	-.033	.006	.025	.029*	.068**
	(.052)	(.028)	(.023)	(.015)	(.026)
24	-.018	.046	.042	.047**	.079**
	(.054)	(.034)	(.029)	(.015)	(.027)
C. GED College Ready + Credit (175+)					
4	-.087	-.065*	.024	.011	-.022
	(.066)	(.028)	(.029)	(.022)	(.017)
-3	.043	-.038	.030	-.016	-.022
	(.051)	(.025)	(.032)	(.022)	(.017)
-2	.030	-.018	-.008	-.019	-.013
	(.053)	(.023)	(.026)	(.023)	(.016)
-1	.064	-.005	.010	.000	.009
	(.054)	(.025)	(.029)	(.025)	(.016)
0	.059	.032	.104*	.028	.060*
	(.071)	(.030)	(.041)	(.027)	(.024)
1	.122	-.012	.072	.085*	.063*
	(.091)	(.039)	(.053)	(.036)	(.029)
2	.041	.021	.008	.127**	.045
	(.102)	(.043)	(.059)	(.039)	(.031)
3	.025	-.044	.043	.141***	.004
	(.104)	(.047)	(.060)	(.041)	(.033)
4	-.154	-.023	.087	.143***	-.004
	(.115)	(.049)	(.060)	(.041)	(.033)
5	-.091	-.023	.059	.161***	.003
	(.116)	(.046)	(.064)	(.040)	(.033)
6	-.074	-.051	.077	.092*	-.023
	(.120)	(.049)	(.065)	(.043)	(.035)
7	-.042	-.010	.033	.090*	-.009
	(.12)	(.047)	(.054)	(.042)	(.034)
8	.030	.021	.028	.16***	.035
	(.115)	(.048)	(.059)	(.042)	(.034)
9	.130	-.038	.141*	.169***	.038
	(.124)	(.047)	(.071)	(.042)	(.034)
10	-.067	-.055	.089	.138***	.026
	(.129)	(.049)	(.071)	(.042)	(.034)
11	-.155	-.035	.017	.107*	.022
	(.130)	(.050)	(.065)	(.042)	(.034)
12	.010	-.060	-.021	.083	.024
	(.128)	(.054)	(.055)	(.043)	(.035)

13	-.047	-.029	-.025	.111*	.061
	(.147)	(.054)	(.068)	(.043)	(.036)
14	.123	.001	.002	.076	.049
	(.142)	(.050)	(.060)	(.042)	(.037)
15	.249	-.013	.006	.055	.063
	(.147)	(.054)	(.062)	(.042)	(.037)
16	.157	.019	.012	.086*	.073
	(.141)	(.050)	(.061)	(.042)	(.04)
17	.207	.034	-.039	.183**	.078
	(.130)	(.052)	(.061)	(.061)	(.044)
18	.257*	.039	-.029	.134***	.050
	(.121)	(.053)	(.065)	(.039)	(.037)
19	.369***	.026	-.032	.084*	.006
	(.103)	(.055)	(.079)	(.040)	(.038)
20	.422***	.047	.012	.047	.045
	(.096)	(.056)	(.081)	(.041)	(.039)
21	.459***	.003	.198*	.061	.132**
	(.092)	(.060)	(.080)	(.042)	(.047)
22	.220*	.041	.104	.052	.087
	(.100)	(.059)	(.085)	(.040)	(.045)
23	.347**	.042	.086	.024	.037
	(.106)	(.062)	(.082)	(.042)	(.041)
24	.221*	.124*	.015	-.063	.015
	(.106)	(.061)	(.087)	(.046)	(.040)

Notes: Each cell reports the predicted discontinuity in post-secondary enrollment during the quarter listed in each row (relative to an individual's first GED subject test attempt) at the GED subject test threshold described in each panel header and column, followed by its standard error in parentheses. Discontinuities are estimated using Calonico and coauthors' (2017) robust, bias-corrected local-linear regression discontinuity method, as described in equation (1). All regressions are weighted using a triangular kernel, and control for state of residence, quarter of first GED subject test attempt, and the set of individual covariates described in section III.B. Bandwidth and effective sample size vary by outcome and threshold, and are determined using the optimal bandwidth calculations described by Calonico and coauthors (2019). To conserve space, I do not report effective sample size for each estimate. Total sample N varies by Q, with $N \in [34072, 94611]$; effective sample N varies by estimate, with $N \in [335, 45910]$. *= $p < 0.05$, **= $p < 0.01$, ***= $p < 0.001$.