Educational Evaluation and Policy Analysis
March 2020, Vol. 42, No. 1, pp. 110–133
DOI: 10.3102/0162373719889051

Pledging to Do "Good": An Early Commitment Pledge Program, College Scholarships, and High School Outcomes in Washington State

Dan Goldhaber
American Institutes for Research
Mark C. Long
University of Washington
Trevor Gratz
Jordan Rooklyn
Center for Education Data & Research

Indiana, Oklahoma, and Washington each have programs designed to address college enrollment gaps by offering a promise of state-based college financial aid to low-income middle school students in exchange for making a pledge to do well in high school, be a good citizen, not be convicted of a felony, and apply for financial aid to college. Using a triple-difference specification, we estimate the effects of Washington's College Bound Scholarship program on students' high school grades, high school graduation, juvenile detention and rehabilitation, and incarceration in state prison during high school or early adulthood. We find insignificant and substantively small or negative effects on these outcomes. These results call into question the rationale for such early commitment programs.

Keywords: *at-risk students, educational policy, higher education, high schools, middle schools, student behavior/attitude, policy analysis, quasi-experimental analysis, regression analyses*

THE past eight decades have witnessed significant increases in the proportion of U.S. students enrolling and graduating from college (Ryan & Bauman, 2016). Despite this progress, substantial educational attainment gaps still exist between low- and high-income students (Duncan et al., 2017; Ziol-Guest & Lee, 2016). Aud et al. (2011), for instance, report a 29-percentage-point gap between students from low- and high-income families in the share attending either a 2- or 4-year college in the fall immediately after completing high school, and Kena et al. (2015) report a 45-percentage-point gap in graduation from college.

Empirical research has identified a variety of factors that contribute to the persistence of college enrollment gaps; one key issue is that disadvantaged students often lack the academic preparation necessary to succeed in college (Jacob & Linkow, 2011; Kirst et al., 2004; Rosenbaum, 2001).[1]

One way that states and localities are working to address college attainment gaps is by offering low-income students an early promise of funding for college in exchange for making a pledge.[2] And several states (described below) link state-based college aid programs to low-income students making an early (during seventh to ninth grades) promise to do well in high school, be a good citizen (e.g., by not committing a felony), and complete a Free Application for Federal Student Aid (FAFSA). These "early commitment pledge programs" are hypothesized to help students by making college more affordable and,

importantly, the early promise of funding is thought to set them on the right path by creating a strong incentive for them to do well in high school, avoid criminal activity, and fulfill pledge requirements. Understanding whether these types of programs increase student achievement and college readiness is immensely important, but much of the existing evidence of such programs is weak, primarily because prior studies have lacked data necessary to establish suitable control groups.

Washington State's "College Bound Scholarship Program" ("CBS") is an early commitment need-based scholarship program designed to encourage economically disadvantaged middle school students to "choose a path that will lead to educational success after high school." The goal of this article is to evaluate whether this policy has met the legislative intent to improve the antecedent conditions required for low-income youth to successfully enter college. We estimate the effects of eligibility for the CBS on high school grades, high school graduation, the probability that students remain enrolled in Washington state public high schools, whether students are in juvenile detention or rehabilitation centers in 10th and 12th grades, and the likelihood of incarceration during high school or early adulthood.

Using a difference-in-differences-in-differences (DnDnD) identification strategy—incorporating differences between eligible, nearly eligible, and ineligible students before and after the availability of the CBS program—we find substantively small and statistically insignificant and/or negative effects on the academic outcomes. There is some suggestive evidence that eligibility reduces the likelihood of incarceration, but the estimates are not consistently statistically significant and sensitive to model specification.

Conceptual Model Undergirding the CBS Program and Literature Review

Conceptual Model and the Washington CBS Program

Central to human capital theory is the idea that individuals are forward-looking and make decisions, including about schooling, that are thought to increase later career prospects and earnings (Altonji et al., 2012; Becker, 1993). Consistent with this, early commitment pledge programs are designed to impact college-going in several ways.[3] First, and most directly, students in need of funding for college are provided a scholarship. There is a large body of literature showing that college aid is a key to encouraging disadvantaged students to apply for and enroll in college (e.g., Deming & Dynarski, 2010), and that many of them, if they did enroll in college, would be successful (Hoxby & Avery, 2012).

Second, early commitment pledge programs seek to change the orientation of students toward college long before it is time for them to apply by providing an early signal that the financial resources to attend college are within a student's grasp. Changing students' perceptions about college affordability can be quite important as they are often misinformed about college costs (Hoxby & Turner, 2015; Avery & Kane, 2004).

Third, and most closely aligned with the work we present here, early commitment pledge programs provide clear guidance about academic and behavioral requirements for the receipt of a scholarship. The hope in doing so is that not only are expectations changed for forward-looking students, but their decisions in high school are therefore more likely to follow a college preparatory trajectory. This might entail taking high school courses, such as Advance Placement or calculus courses, that set them up for college success (Bound et al., 2009; Sadler & Tai, 2007), or performing better in classes, thus positively affecting students' grade point averages (GPAs).[4]

The Washington CBS was created by the Washington legislature in 2007 and was patterned on similar programs in Indiana (21st Century Scholars Program initiated in 1990) and Oklahoma (Oklahoma's Promise initiated in 1996), but as we describe below, the Washington program has some features that differentiate it from similar early commitment pledge programs.

A Washington State student is eligible to sign the CBS pledge if during seventh or eighth grade (or ninth grade for the first eligible cohort during 2008–2009) any of the following applied: The student was eligible for free or reduced-price lunch (FRPL), the student's family received Temporary Assistance for Needy Families (TANF), the student was a foster youth, or the student's family income was below 185% of the poverty line (which would also qualify the student for FRPL).

For the first cohort of students eligible to sign the pledge in 2008, 185% of the poverty line equaled US$39,220 for a family of four. Students are encouraged to sign up using a variety of tactics. For instance, Goldhaber et al. (2019) find that 80% of interviewed guidance counselors held individual meetings with students, 60% of counselors used parent–teacher conferences to encourage sign-ups, and 40% of counselors called students' parents at home.

The text of the pledge read as follows:

> Yes, I am college bound! I pledge that I will:
>
> - Do well in middle school and high school, and graduate with a cumulative high school grade point average of 2.0 or higher on a 4.0 scale.
> - Be a good citizen in my school and my community and not commit a felony.
> - Apply for financial aid by submitting the Free Application for Federal Student Aid (FAFSA) in a timely manner during my senior year of high school.[5]

When the student enters her senior year, to be eligible for the financial aid the student's family income during that year must be below 65% of the state's median family income.[6] The fact that the CBS is contingent on family income during a student's senior year somewhat weakens the clarity of what rewards will follow from signing and fulfilling the pledge. However, note that 65% of the state's median family income was US$53,000 for the first eligible cohort, which means that students in this cohort who were income-eligible to sign up in eighth grade (e.g., below US$39,220 for a family of four) were likely still income-eligible to receive the scholarship in 12th grade.

Should the student remain income-eligible in their senior year, the guaranteed aid is both generous and transparent, completely covering tuition and service/activity fees after other financial aid is applied.[7] For instance, CBS recipients received an annual average of US$2,033 across the first three cohorts of eligible CBS students (Washington Student Achievement Council [WSAC], 2017). Students attending private institutions of higher education in Washington receive an amount equal to what the average student receives attending a comparable public institution in the state (typically the average award given at the University of Washington and Washington State University). The CBS covers eight semesters (12 quarters) so long as the student maintains Satisfactory Academic Progress as determined by the college, must be used within 5 years of high school graduation, and cannot be used for graduate school.

Literature Review

Early commitment pledge programs, like the CBS, are similar to merit scholarship programs that are available in many states (Georgia's HOPE Scholarship Program is particularly well-known) in that they require students to earn a certain high school GPA to be eligible for receipt of the funds. They differ from merit scholarship programs in that they are income-contingent at the time of signing up (i.e., available only to low-income students) and require the signing of a pledge in the early high school grades.[8] For more information on the many different types of promise programs see LeGower and Walsh (2017) and Perna and Leigh (2018).[9]

The CBS program is most similar to programs in place in Indiana and Oklahoma. But there are two key programmatic differences between Washington's program and these programs. First, until recently, the programs in Indiana and Oklahoma had no income requirement at the time that the student attended college. Heller (2006) noted,

> [t]he distinguishing characteristic of these two programs from that of other publicly funded aid programs is that once students are accepted into the program while in middle school, they will not be removed even if their family's economic circumstances change. (p. 1276)

Second, the programs in Indiana and Oklahoma require students to take certain college-appropriate coursework while in high school to be eligible. The CBS, in contrast, has no specific coursework requirements and only a relatively weak 2.0 GPA standard. See Table 1 for a side-by-side comparison of these three programs.

Unlike the extensive literature on state merit aid scholarship programs, there is limited research on state-administered early commitment pledge programs likely due to the lack of data needed to form appropriate comparison groups for those

TABLE 1

Washington State's Program and Other State Programs

Program characteristics	Indiana 21st Century Scholars Program	Oklahoma promise	Washington College Bound Scholarship
Year started	1990	1992	2007
When the student signs the pledge			
Time of commitment	Sixth, seventh, or eighth grade	Eighth, ninth, and tenth grade	Seventh and eighth grade
Income requirement when the pledge is signed?	No (foster care); otherwise, yes (varies by household size, equivalent to eligibility for FRPL)	Yes (Family income of US$50,000 or less at commitment. Special income provisions apply to children adopted from certain court-ordered custody and children in the custody of court-appointed legal guardians)	No (identified by state as eligible for FRPL, family receives basic food/TANF benefits, or currently in foster care or a dependent of the state); otherwise, yes (varies by household size, equivalent to eligibility for FRPL)
When the student goes to college			
Income requirement to qualify for scholarship?	No (class of 2015 and earlier); yes (class of 2018 and later); depends on when enrolled in the program (class of 2016, 2017)	No (prior to 2012–2013); yes (starting in 2012–2013 and later), family income of US$100,000 or less at the time the student begins college	Yes, less than 65% of the state's median family income (US$53,000 for a family of four in 2012–2013)
GPA threshold	2.0 (class of 2014 and earlier); 2.5 (class of 2015 and later)	2.5	2
College-bound coursework requirement?	Yes	Yes	No
Requires the student to earn a specific type of diploma?	No (class of 2016 and earlier); yes, a "Core 40" diploma (class of 2017 and later)	No	No
Other curricular requirements	No (class of 2016 and earlier); yes—completion of "Scholar Success Program" (class of 2017 and later)	No	No
Guaranteed full tuition?	Yes (class of 2015 and earlier); no (class of 2018 and later); depends on when enrolled in the program (class of 2016, 2017)	Yes, full tuition at public institutions and a portion of tuition at private institutions	Yes, plus a book allowance
Prior Studies	Toutkoushian et al. (2015); St. John et al. (2003, 2004, 2005, 2008)	Mendoza & Mendez (2012); Mendoza et al. (2009)	Fumia et al. (2018); Goldhaber et al. (2019)

Source. Harnisch (2009), Heller (2006), Indiana Division of Student Financial Aid (2013a, 2013b, 2013c), Oklahoma State Regents for Higher Education (2013a, 2013b), and Washington Student Achievement Council (2013).
Note. FRPL = free or reduced-price lunch; TANF = Temporary Assistance for Needy Families; GPA = grade point average.

students who are eligible to participate in these programs (see also Table 1 for research on each of these programs). For instance, St. John et al. (2003, 2004, 2005, 2008) investigate the possible impact of Indiana's 21st Century Scholars Program on student-level outcomes. The 21st Century Scholars Program is the most analogous studied promise program to the CBS, in that it is state based and is an early commitment program. The studies find significant positive associations between completion of the pledge in Indiana, the likelihood that students completed an advanced high school curriculum, and enrollment in both 2- and 4-year colleges.

Although the St. John et al. studies may provide evidence about these state-sponsored early commitment programs, they are quite limited. Specifically, they do not rely on data about cohorts of students

before the introduction of the pledge program, and, importantly, lack information needed to identify if a student was eligible for the program. Thus, they were forced to compare students who signed the pledge, to a comparison group of students who may or may not have been eligible. St. John et al. (2004), for example, use students who attended high-poverty schools, but who did not sign the pledge, as the control group. By using students who did not sign the pledge as the comparison group, any estimated program effects are likely confounded by unobserved variables that are correlated both with the likelihood of a student signing the pledge and with the likelihood of a student attending college, as students who enroll in the program are probably more likely to attend college (holding observable student characteristics constant) given their unobserved motivation. Toutkoushian et al. (2015) attempt to address these identification issues using propensity score weighting and an instrumental variable strategy. Similar to the findings in the St. John et al. studies, they find positive effects of the 21st Century Scholars Program on college enrollment, albeit of reduced magnitude.

Most studies of state-sponsored early commitment programs focus on the effects of the programs on college-going, not whether the programs change high-school achievement or behavior. The few studies that do examine high school outcomes are on programs with substantial programmatic differences from the CBS.[10] But, the evidence we report here on high school achievement and behavior complements research by Fumia et al. (2018) that focuses primarily on college enrollment and attainment, but also replicates our analysis on high school outcomes. Fumia et al. (2018) use a difference-in-differences (DnD) estimator with propensity score weighting and find that the scholarship has no effect on on-time graduation, reduced cumulative 12th grade GPA, misdemeanors, and reduced felony convictions before the end of 12th grade. As we report below, our findings focus on a few additional outcomes, but are broadly consistent with these findings.[11]

Data and Analytic Approach

Data

The data we utilize for this research are collected by Washington State's Education Research and Data Center (ERDC).[12] ERDC maintains individual student-level K–12 records for all public-school students in the state. These data include the student's academic performance (GPA, performance on state assessments, etc.) while in middle and high school, and whether the student graduated from high school. These data also include records of whether the student was enrolled in a school associated with a juvenile detention or a juvenile rehabilitation facility.[13] ERDC links these data to data maintained by the WSAC on which students have signed the CBS pledge.

Unlike prior studies of early commitment financial aid programs, we have data on two cohorts of students who did not have the opportunity to sign the CBS pledge, that is, those who were in eighth grade in 2005–2006 ("Cohort 1") and 2006–2007 ("Cohort 2"). Cohorts 3 through 5 include those who had the possibility of being eligible to sign the CBS pledge.

In addition, through an agreement with the Department of Corrections (DOC), we have access to the census of all individuals who are incarcerated in Washington State prisons at any point between January 2009 and November 2014. This information was linked to the ERDC data through social security numbers, names, and dates of birth, and then de-identified. The overwhelming share of individuals in our sample incarcerated in state prisons are for more serious crimes, such as felonies, rather than misdemeanors. Indeed, 98.9% of students in our DOC data were convicted of at least one felony. Our outcome measure is whether the student was incarcerated in a Washington State prison within roughly 18 months after what would be anticipated as on-time high school graduation.[14] Due to the limited span of time included in our DOC data, we can only compute this outcome for our second and third cohorts (i.e., students in the cohorts immediately before and after the introduction of the CBS program).

We do not have access to data on county jails. Many misdemeanors and minor crimes are handled by county jails, rather than state prisons. Thus, our outcome measure of incarceration mainly reflects serious crimes of adults and those below 18 years of age who are tried as adults. In our sample, 0.15% experience incarceration, which is equal to the national incarceration rate

in state prisons for individuals between the ages of 18 and 19 in 2014 (Carson, 2015).[15]

Our data include 443,315 individual student records for the five cohorts, but we drop from these data foreign exchange students, observations with missing ID codes, observations with multiple IDs and irreconcilable birthdates, students enrolled part-time in public high school, and students who were not identified in a school in eighth grade. These restrictions reduce the number of observations to 415,384, including 169,887 in the pre-policy Cohorts 1 and 2, and 245,497 in the post-policy Cohorts 3, 4, and 5. Nearly half of the students in the post-policy cohorts, 114,612, were clearly eligible for the CBS program as a result of being enrolled in foster care or FRPL eligible in eighth or ninth grade (Cohort 3) or seventh or eighth grade (Cohorts 4 and 5). We will henceforth label these students as "CBS-Eligible" students. Similarly, nearly half of the students in the pre-policy cohorts, 75,146, were enrolled in foster care or were FRPL eligible in eighth or ninth grade—yet, these disadvantaged youth were ineligible for the CBS scholarship. As these students would have been eligible to apply for the CBS scholarship had the CBS been implemented 1 or 2 years earlier, we refer to them as "CBS Pseudo-Eligible" students. As a robustness check, we alternatively define students as CBS Pseudo-Eligible if they were in a pre-policy cohort and were enrolled in foster care or were FRPL eligible in seventh or eighth grade (i.e., consistent with Cohorts 4 and 5).[16]

In our triple-difference specification, described below, we contrast the experiences of CBS-Eligible students with students who were eligible for FRPL in a grade that is adjacent to the grades that would have made the student CBS Eligible (or CBS Pseudo-Eligible) to sign the CBS pledge. Hereafter, we refer to these students as "CBS Border-Eligible" students. For example, for the last cohort of students, Cohort 5, a CBS Border-Eligible student was eligible for FRPL in sixth grade, ninth grade, or both, but not in seventh or eighth grade. Had this student been eligible for FRPL in seventh or eighth grade, this would make them eligible to sign the CBS, that is, CBS Eligible. CBS Border-Eligible students are essentially disadvantaged at the wrong time.

The identifying assumption of this specification is that, conditional on controls, among CBS-Eligible/Pseudo-Eligible students and Border-Eligible students, the exact timing of FRPL status is assumed to be uncorrelated with high school outcomes across time, aside from the effect of CBS eligibility. In the appendix, we show these patterns for an alternative definition of Pseudo-Eligible and pre-policy Border-Eligible students that is based on the fact that, in the first year of the CBS program, students were eligible to sign the pledge in the eighth and ninth grades, rather than the seventh and eighth grades for later cohorts of students. Models from this alternative definition presented in Appendix Table A1 are qualitatively similar to our main models, suggesting that the identifying assumption is borne out by the data. Finally, "Ineligible" students are neither CBS Eligible, CBS Pseudo-Eligible, or CBS Border Eligible. Figure 1 graphically illustrates the definitions for CBS Eligible, Pseudo-Eligible, Border Eligible, and Ineligible students for our five cohorts.

Note that we define a student as "eligible" for the CBS program if the student is enrolled in foster care or is known to be eligible for FRPL. Unfortunately, this is an imperfect definition and it is not possible with existing administrative data to construct a perfect measure of whether the student is eligible to sign up for the CBS in middle school as we do not have information on students who may be income eligible despite not receiving FRPL, the Supplemental Nutrition Assistance Program (SNAP), the Food Distribution Program on Indian Reservations (FDPIR), or TANF.[17] We estimate that our definition of "eligible" will miss 13.4% of students who are actually eligible.[18] Given that these income-eligible-only students will also be missed in our control group, Border-Eligible students, their absence is unlikely to bias our estimates.[19]

Panel A of Table 2 provides descriptive statistics for student outcomes. Our first outcome is whether a student is enrolled in Washington State public schools by 10th grade. We find that 7.8% of our sample transferred to an out-of-state or private school or dropped out by 10th grade.[20] Among enrolled students, 2.0% (1.2%) were enrolled in juvenile detention or rehabilitation in 10th (12th) grade. However, there is a strong disparity in rates of such enrollment; in the pre-policy cohorts, 4.4% of CBS Pseudo-Eligible students were enrolled in juvenile detention or

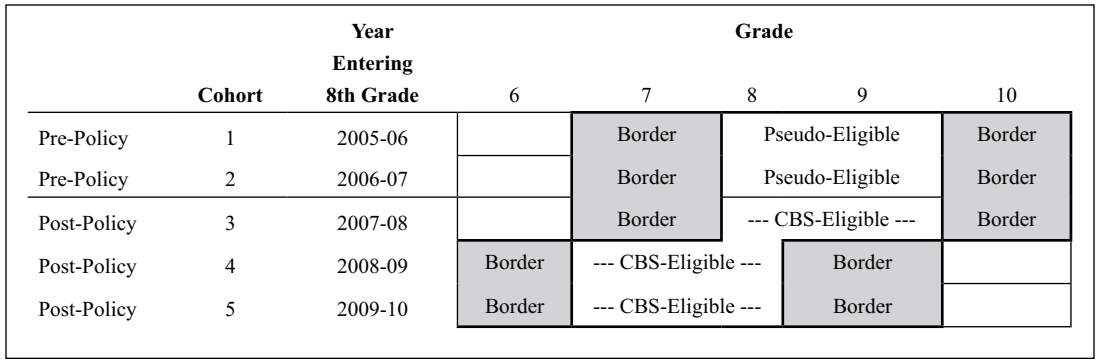

FIGURE 1. *Grade and cohort combinations used to define CBS-Eligible, Pseudo-Eligible, Border-Eligible, and Ineligible students.*

Note. "CBS-Eligible" includes post-policy cohort students who were enrolled in foster care or eligible for free or reduced-price lunch in a grade that would have made the student eligible to sign the CBS pledge. "Pseudo-Eligible" includes pre-policy cohort students who were enrolled in foster care or eligible for free or reduced-price lunch in eighth or ninth grade. "Border-Eligible" includes students who are ineligible but who were eligible for free or reduced-price lunch in a grade that is adjacent to the grades that would have made the student eligible (or Pseudo-Eligible) to sign the CBS pledge. For example, a Border-Eligible student from Cohort 1 may be eligible for free or reduced-price lunch in seventh or 10th grade, but not in eighth or ninth grade. "Ineligible students" are neither Border-Eligible or Eligible/Pseudo-Eligible. CBS = College Bound Scholarship.

rehabilitation in 10th grade (Column 2) compared with only 0.4% of students who were Ineligible (Column 6). We also find large pre-policy disparities in 12th-grade GPA (2.36 vs. 2.95), 12th-grade GPA above 2.0 (0.679 vs. 0.883), graduating high school on-time (0.547 vs. 0.834), and incarceration (0.0037 vs. 0.0006).

As shown in the Column 4, during the pre-policy period, CBS Border-Eligible students have higher rates of enrollment in juvenile detention or rehabilitation, lower GPAs, and lower rates of high school graduation than other pre-policy ineligible students. CBS Border-Eligible students are disadvantaged in the pre-policy period relative to Ineligible students and somewhat advantaged relative to CBS Pseudo-Eligible students. By definition, Border-Eligible students qualify for FRPL in one or two grades in middle school and early high school, and, importantly, not in another two grades. As such, their level of economic disadvantage is "transitory" relative to students who are chronically eligible for FRPL. In contrast, the Pseudo-Eligible/Eligible group of students includes both students who were economically disadvantaged in one or two of the "right" grades (right for CBS eligibility purposes) and all students who were chronically economically disadvantaged, that is, FRPL eligible for consistent and sequential years. Moreover, Michelmore and Dynarski (2017) shows that chronic economic disadvantaged, as measured by FRPL, has a cumulative effect on academic performance.

For both CBS-Eligible and CBS-Ineligible students, 12th-grade GPAs increased after the CBS policy was implemented. Figure 2 shows the shifts in these distributions. As we show below, there is no statistically significant evidence that the CBS policy caused an increase in eligible students' GPAs. Moreover, there is no evidence that CBS increased the likelihood of students being above the 2.0 GPA threshold, and no spike is visible in the distribution of eligible students' 12th-grade GPAs at 2.0.

We observe a considerable reduction in the on-time high school graduation gap between CBS-Eligible and CBS-Ineligible students (by 3-percentage points from −0.287 to −0.257). We also find a narrowing of the difference between Eligible and Ineligible students in their likelihood of being in juvenile detention or rehabilitation and incarcerations (with pre-policy disparities in these outcomes narrowing by 31%–45%). These changes in mean differences are suggestive of a policy effect, however, as we show below, we find evidence that suggests that these changes were not caused by the CBS policy.

Panel B of Table 2 shows descriptive statistics for student characteristics that are used as control variables in our subsequent regressions. Eligible

TABLE 2

Descriptive Statistics for Student Outcomes and Characteristics by Eligibility Status, and Pre- and Post-Policy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Eligible students		Border-Eligible		Ineligible students	
Student outcomes and student characteristics	All students	Pre-policy (Pseudo-Eligible)	Post-policy	Pre-policy, Border-Eligible	Post-policy, Border-Eligible	Post-policy	Pre-policy
Panel A: Student outcome							
10th grade, enrolled in Washington public schools	0.922	0.912	0.911	0.922	0.947	0.928	0.931
10th grade, involved with in juvenile justice[a]	0.020	0.044	0.033	0.033	0.025	0.004	0.003
10th grade, GPA[a] (*SD*)	2.62 (1.00)	2.22 (1.00)	2.24 (1.00)	2.45 (0.99)	2.47 (0.97)	2.94 (0.86)	2.98 (0.85)
10th grade, GPA > 2.0[a]	0.738	0.591	0.603	0.679	0.700	0.849	0.863
12th grade, enrolled in Washington public schools[a]	0.896	0.835	0.854	0.880	0.891	0.938	0.943
12th grade, involved with in juvenile justice[b]	0.012	0.029	0.020	0.017	0.013	0.004	0.002
12th grade, GPA[b] (*SD*)	2.73 (0.85)	2.36 (0.88)	2.41 (0.86)	2.57 (0.85)	2.60 (0.81)	2.95 (0.77)	3.02 (0.74)
12th grade, GPA > 2.0[c]	0.806	0.679	0.701	0.760	0.784	0.883	0.9018
Graduated from high school on time[a]	0.712	0.547	0.588	0.664	0.688	0.834	0.845
Incarcerated in state prison[d]	0.0015	0.0037	0.0020	0.0011	0.0006	0.0006	0.0003
Panel B: Student characteristic							
Age in eighth grade (*SD*)	14.4 (0.5)	14.4 (0.7)	14.4 (0.5)	14.4 (0.4)	14.4 (0.4)	14.3 (0.4)	14.3 (0.4)
Female	0.485	0.483	0.485	0.478	0.482	0.481	0.489
Migrant	0.039	0.077	0.087	0.007	0.013	0.001	0.002
Bilingual	0.097	0.149	0.211	0.046	0.071	0.012	0.022
Gifted	0.093	0.032	0.053	0.050	0.080	0.105	0.164
Homeless	0.062	0.096	0.131	0.054	0.072	0.010	0.012
Disabled	0.174	0.207	0.234	0.162	0.192	0.108	0.143
Home Language not English	0.158	0.245	0.299	0.093	0.129	0.037	0.062
White	0.622	0.479	0.438	0.672	0.646	0.793	0.757
Hispanic	0.169	0.272	0.313	0.110	0.132	0.048	0.062
African American	0.044	0.073	0.065	0.043	0.033	0.024	0.021

(continued)

TABLE 2 (CONTINUED)

Student outcomes and student characteristics	(1) All students	(2) Eligible students: Pre-policy (Pseudo-Eligible)	(3) Eligible students: Post-policy	(4) Border-Eligible: Pre-policy, Border-Eligible	(5) Border-Eligible: Post-policy, Border-Eligible	(6) Ineligible students: Post-policy	(7) Ineligible students: Pre-policy
Asian	0.065	0.058	0.055	0.062	0.065	0.07	0.074
Other race	0.101	0.119	0.129	0.113	0.125	0.065	0.086
Seventh grade math (WASL) test[b] (*SD*)	−0.04 (1.01)	−0.46 (0.95)	−0.41 (0.93)	−0.12 (0.92)	−0.11 (0.91)	0.31 (0.94)	0.33 (0.95)
Seventh grade reading (WASL) test[b] (*SD*)	−0.04 (1.01)	−0.43 (0.97)	−0.35 (0.99)	−0.10 (0.93)	−0.08 (0.94)	0.29 (0.94)	0.28 (0.93)
Took WASL out-of-grade-level	0.0007	0.0012	0.0009	0.0004	0.0007	0.0006	0.0003
Took a modified version of WASL	0.02	0.006	0.04	0.004	0.021	0.002	0.013
High school in Puget Sound Region[e]	0.643	0.614	0.604	0.646	0.624	0.674	0.676
High school in remainder of Western Washington[e]	0.160	0.152	0.157	0.157	0.188	0.165	0.162
High school in Eastern Washington[e]	0.197	0.234	0.239	0.197	0.188	0.161	0.162
County's unemployment rate in seventh grade	5.06	5.47	4.93	5.46	4.9	5.33	4.72
County's unemployment rate in eighth grade	5.90	5.13	6.59	5.06	6.67	4.95	6.39
County's unemployment rate in ninth grade	6.71	4.78	8.13	4.71	8.35	4.53	8.12
County's unemployment rate in 10th grade	7.52	4.98	9.31	5.05	9.55	4.73	9.36
County's unemployment rate in 11th grade	8.16	7.53	8.64	8.13	8.78	7.46	8.55
County's unemployment rate in 12th grade	8.47	9.54	7.82	9.68	7.86	9.65	7.58
Number of students	415,384	75,146	114,611	7,888	10,396	86,853	120,490

Note. CBS = College Bound Scholarship; GPA = grade point average.
[a]Conditional on 10th grade, enrolled in Washington public school = 1. [b]WASL = Washington Assessment of Student Learning, standardized within grade and cohort. When seventh grade math or reading scores are missing, we have imputed them using multiple imputations. The summary statistics provided here have been combined via Rubin's rule. [c]Conditional on 12th grade, enrolled in Washington public school = 1. [d]Available for two cohorts, just prior to and following implementation of CBS. [e]Puget Sound Region includes King, Pierce, Kitsap, Thurston, and Snohomish counties. Western and Eastern Washington divided by the Cascade Mountains.

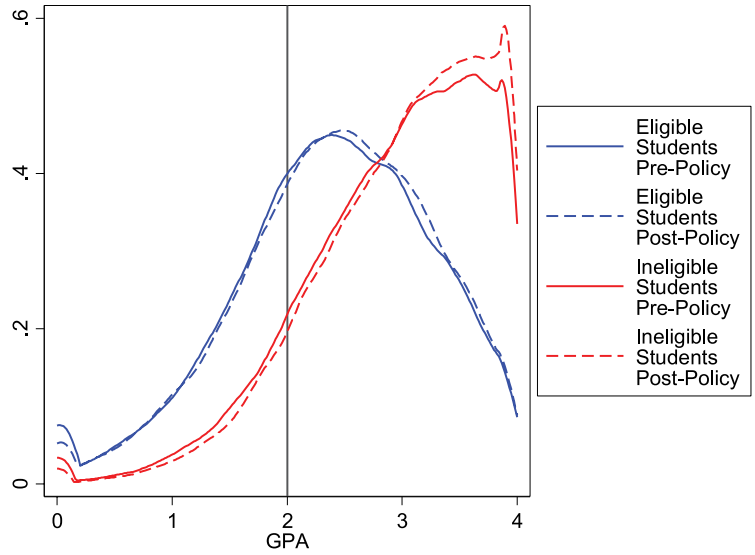

FIGURE 2. *Change in distributions of 12th-grade cumulative grade point averages for eligible and ineligible students.*

students are far more likely than Ineligible students to be migrants, homeless, from a household where English is not the primary language, Hispanic or African American, and from Eastern Washington. Eligible students have lower seventh-grade test scores, but these disparities narrowed somewhat, with the reading test score disparity narrowing from −0.71 *SD* pre-policy to −0.63 *SD* post-policy.

Analytic Approach

Our beginning analytic strategy is to utilize a DnD analysis to compare differences in outcomes of those who meet the CBS eligibility requirements in cohorts before (Cohorts 1 and 2, that is, Pseudo-Eligible students) and after (Cohorts 3, 4, and 5, that is, Eligible students) the introduction of the implementation of the CBS program (the first difference), and compare this to cross-cohort differences in outcomes for students who do not meet the eligibility requirements (the second difference), that is, Border-Eligible and Ineligible students. By comparing Eligible students to Border and Ineligible students in our DnD approach, rather than CBS pledge signers, our models are designed within an Intent-to-Treat (ITT) framework. This DnD analysis is expressed in Equation 1:

$$Y_{imt} = \beta_m + \beta_1 \text{CBS\_Eligible}_i \times \text{Post}_t + \beta_2 \text{CBS\_Eligible}_i + \beta_3 \text{Post}_t + \beta_4 \text{FRPL}_i + \beta_5 X_i + \varepsilon_{imt}, \quad (1)$$

where Y_{imt} is the outcome for student i attending middle school m in cohort t. β_m is middle school fixed effects based on the student's enrollment during the fall of eighth grade. Post_t is an indicator that equals 1 if the student is in post-policy Cohorts 3, 4, or 5. CBS_Eligible_i is an indicator for being Eligible (or Pseudo-Eligible) for the CBS program as described above. FRPL_i is a vector containing the full set of possible patterns of FRPL eligibility during Grades 6, 7, 8, 9, and 10 (i.e., just sixth, just seventh, just eighth, just ninth, just tenth, sixth and seventh, sixth and eighth, . . ., and eligibility in all five grades). X_i is a vector of individual student characteristics as listed in Table 2. ε_{imt} is the error term.[21]

We include eighth-grade middle school effects to account for unobserved middle school factors that might influence both the identification of student eligibility for the CBS program and a student's academic trajectory.[22] The inclusion of FRPL_i as a set of control variables will capture the pattern of the student's disadvantage which is likely to have strong effects on student outcomes (Michelmore & Dynarski, 2017).[23]

The key policy variable upon which we focus is $\text{CBS\_Eligible}_i \times \text{Post}_t$. As with all DnD analyses, the internal validity of the estimate as revealing the true causal effect of the policy relies on the parallel trends assumption. The identifying assumption for our DnD design is that changes in outcomes across cohorts for those who were ineligible for the CBS (including both Ineligible and Border-Eligible students), which is identified by the third term of Equation 1 ($\beta_3\text{Post}_t$), are a reasonable proxy for changes in outcomes that would have been observed for the CBS-Eligible population in the absence of the program. For this counterfactual assumption to be valid, there must be no factors that influence student outcomes that shift concurrently with the implementation of the CBS program and that differentially affect students who do or do not meet the eligibility requirements.

One concern with this DnD identification strategy is that the unemployment rate in Washington had been falling during the period when these students would be making college enrollment decisions (from 10.2% in September 2009, to 9.8% [2010], 9.2% [2011], 7.8% [2012], and 6.9% [2013]; U.S. Department of Labor & Bureau of Labor Statistics, 2019). Moreover, Federal Pell grants for low-income students were increased during the Great Recession, making it reasonable to believe that this improving labor market and shifting financial aid environment might differentially affect the college enrollment prospects of traditionally disadvantaged youth (Barr & Turner, 2013). Potentially offsetting any positive effect of the improving economy, state funding for higher education fell dramatically during this same period, falling 25.5% between the state's 2007–2009 and 2011–2013 biennium budgets, and these changes are likely to have disproportionate negative impacts on the enrollment decision of low-income students (Washington Higher Education Coordinating Board, 2012a).

Finally, we note that the first post-policy cohort entered eighth grade in 2007, in other words, at the beginning of the Great Recession. The concern here is that FRPL is relatively blunt measure of poverty, and that the Great Recession could have lowered family income in ways that are not well reflected by this poverty measure, therefore changing the composition of various comparison groups. For instance, some students might just slip below the income threshold to become CBS Eligible who, in the absence of the Great Recession, would not have been. We have no particular reason to believe that the Great Recession would cause differential compositional effects across the different comparison groups (see the DnDnD discussion below), but to address this concern, in some models, we include in X_i the county unemployment rate by cohort and grade as an additional control, as there is evidence that the impact of the Great Recession varied significantly across regions (e.g., counties with large populations of historically disadvantaged racial groups experienced disproportion increases in unemployment; Thiede & Monnat, 2016).[24]

To further capture these potential secular trends, we use a DnDnD specification. This specification tests whether students that are nearly as disadvantaged as CBS-Eligible students (i.e., Border-Eligible students) appear to have similar gains to those students who are eligible for the CBS program. This specification was motivated by the recent evidence (Michelmore & Dynarski, 2017) from Michigan which shows that there is considerable intertemporal volatility in students' FRPL status. We find this is also true in Washington State; for instance, 22% of students are FRPL eligible at least once between Grades 6 and 9 were also ineligible in at least one of these grades. Moreover, as described in the discussion of the descriptive statistics, this population of students is observably more similar to the CBS-Eligible/Pseudo-Eligible student populations.

In this DnDnD specification, we assess whether Border-Eligible students have better relative outcomes after the implementation of the CBS program, which would indicate a secular trend improving outcomes for disadvantaged youth. Specifically, we estimate a model that includes an indicator for Border-Eligible students interacted with the post-policy indicator as shown in Equation 2:

$$\begin{aligned} Y_{imt} = {} & \beta_m + \beta_1\text{CBS\_Eligible}_i \times \text{Post}_t + \\ & \beta_2\text{CBS\_Eligible}_i + \beta_3\text{Post}_t + \\ & \beta_4\text{FRPL}_i + \beta_5 X_i + \\ & \beta_6\text{Border\_Eligible}_i \times \text{Post}_t + \\ & \beta_7\text{Border\_Eligible}_i + \varepsilon_{imt}. \end{aligned} \tag{2}$$

If the estimated values of β_1 and β_6 in Equation 2 are similar, it would suggest a secular

time trend affecting disadvantaged youth rather than an effect of the CBS program per se. The effect of the CBS policy is captured by the difference between β_1 and β_6. The identifying assumption for our triple-difference design is that changes in outcomes across cohorts of Border-Eligible students, relative to the Ineligible students, are a reasonable proxy for changes in outcomes that would have been observed for the CBS-Eligible population in the absence of the program. Put differently, we assume that the differences in outcomes between the Eligible/Pseudo-Eligible and Ineligible students, as compared with the differences between Border-Eligible and Ineligible students are not correlated with confounding variables across the time period of CBS implementation.

The main threat to validity of the DnDnD specification is the possibility that Border-Eligible students respond differently to secular influences across time than CBS-Eligible students. As noted previously, by definition, students who are Border-Eligible are not chronically FRPL eligible (because we know they are not eligible in the CBS program-qualifying grades). Hence, the Border-Eligible students are slightly less disadvantaged than the CBS-Eligible/Pseudo-Eligible students. Thus, the threat to validity in using this DnDnD specification to capture the policy effect is that poorer students (again, likely CBS-qualifying) may respond differently to secular time trends than students who are slightly less poor.

Results

Table 3 reports estimates for the key parameters of Equations 1 and 2: being CBS Eligible when the program was in effect (β_1); being CBS Eligible, that is, low income (β_2); not being eligible in virtue of being low-income in the wrong grade when the program was in effect, that is, being a post-policy Border-Eligible student, β_6; and the difference between the estimated effects of being CBS Eligible and Border-Eligible, $\beta_1 - \beta_6$.[25] Panel A shows the results from Equation 1 (the DnD specification), while Panel B shows the results from Equation 2 (the DnDnD specification). The bolded text in each panel indicates the estimated effect of the CBS program on the various outcomes.

The interpretation of the magnitudes of the estimated effects in the table varies both because we are investigating outcomes that are on different scales and because of the nature of the research design. In particular, in terms of the research design, it is worth noting again that findings we present should be interpreted as ITT estimates. Unfortunately, it is not entirely clear how to scale up the ITT estimates to obtain estimates of the treatment-on-the-treated (TOT) impacts. Specifically, we might think of the intervention narrowly as signing the pledge and receiving the scholarship, in which case the ITT models would need to be scaled up by the uptake rate of the scholarship to get the effect of the scholarship on the treated group, that is, the TOT effects. Given that the uptake rate of the scholarship was 39% (Goldhaber et al., 2019), the coefficients here would need to be scaled up by a factor of 2.6 to get the TOT effects. But beyond the signing of the pledge and availability of college scholarship funds, the CBS program seeks to change the college going culture in middle and high schools (we discuss this in more detail in Goldhaber et al., 2019). To the degree that there are positive spillover effects on students that do not sign the pledge, the 2.6 scale up would overstate the estimate of the TOT impact.

Column 1 shows a surprising negative effect on the likelihood of CBS-Eligible students' 10th-grade enrollment in Washington State public schools. In Panel A, which shows the DnD results, this estimated policy effect is −1.2 percentage points, and in Panel B, which shows the DnDnD results, this estimated policy effect is −0.9 percentage points. However, conditional on 10th-grade enrollment CBS-Eligible students are more likely, by 0.5%, to be enrolled in 12th grade, as shown in Column 5. This positive effect on 12th-grade enrollment, conditional on 10th-grade enrollment, is not found to hold under the DnDnD specification.

There is also evidence (based on the DnD specification) that the CBS reduced eligible youth's likelihood of enrollment in juvenile detention and rehabilitation (Columns 2 and 6). Yet, here too it appears, based on the DnDnD specification, this decline in juvenile detention and rehabilitation enrollment is a secular trend for disadvantaged youth, and the differences between β_1 and β_6 are precisely estimated, small, and not statistically significant.

TABLE 3

Estimated Effects of Washington's College Bound Scholarship Program

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	10th grade				12th grade				High school and beyond	
Independent variable	Enrolled in Washington public schools	Enrolled in juvenile detention or rehabilitation[a]	GPA[a]	GPA > 2.0[a]	Enrolled in Washington public schools[a]	Enrolled in juvenile detention or rehabilitation[b]	GPA[b]	GPA > 2.0[b]	Graduation[a]	Incarceration
Panel A										
Post-policy	.008	−.016***	.055**	.027***	.045***	−.019***	−.015	−.009*	.022	.0019
	(.005)	(.003)	(.022)	(.009)	(.009)	(.003)	(.017)	(.008)	(.007)	(.0013)
Difference-in-differences										
CBS-Eligible × Post-Policy	**−.012*** (.002)**	**−.008*** (.001)**	**−.016** (.008)**	**.000 (.004)**	**.005** (.002)**	**−.007*** (.001)**	**−.005 (.006)**	**.007** (.003)**	**.025*** (.003)**	**−.0015*** (.0004)**
Panel B										
CBS-Eligible × Post-Policy	−.013*** (.002)	−.009*** (.001)	−.014* (.008)	.001 (.004)	.006** (.002)	−.008*** (.001)	−.005 (.007)	.008** (.003)	.027*** (.003)	−.0015*** (.0004)
Border-Eligible × Post-Policy	−.004 (.005)	−.012*** (.003)	.025 (.018)	.018** (.009)	.014** (.006)	−.004* (.002)	.007 (.015)	.024*** (.008)	.033*** (.009)	−.0003 (.0007)
Post-Policy	.008 (.005)	−.015*** (.003)	.053** (.022)	.025*** (.009)	.044*** (.009)	−.019*** (.003)	−.016 (.017)	−.010 (.008)	.019* (.011)	.0020 (.0013)
Difference-in-differences-in-differences										
(CBS-Eligible × Post-Policy) − (Border-Eligible × Post-Policy)	**−.009* (.005)**	**.003 (.003)**	**−.039** (.018)**	**−.017* (.009)**	**−.008 (.006)**	**−.003 (.002)**	**−.012 (.016)**	**−.016* (.009)**	**−.006 (.009)**	**−.0012 (.0008)**
Observations	415,383	383,155	352,253	352,253	383,155	347,354	320,293	320,293	383,155	164,517

Note. Additional controls include seventh grade reading and math scores, female, race/ethnicity indicators, age in eighth grade, high school region, county unemployment rate in Grades 7 through 12, modified test status, out-of-grade level test status, bilingualism, disability status, housing status, migrant status, English Language Learning status, highly capable/gifted program participation, full set of possible patterns of free or reduced-price lunch eligibility during Grades 6, 7, 8, 9, and 10 (i.e., just sixth, just seventh, just eighth, just ninth, just tenth, sixth and seventh, sixth and eighth, . . ., and eligibility in all five grades), CBS-Eligible, Border-Eligible (for Panel B), and middle school fixed effects. Full regression results are available from the authors. Standard errors are clustered at the middle school level. CBS = College Bound Scholarship; GPA = grade point average.

[a]Conditional on 10th grade, enrolled in Washington public school = 1. [b]Conditional on 12th grade, enrolled in Washington public school = 1. [c]Available for two cohorts, just prior to and following implementation of CBS.

*$p < .10$. **$p < .05$. ***$p < .01$. (The p values from two-sided t test.)

The next set of results regarding the student's GPA are shown in Columns 3 and 4 for 10th grade and Columns 7 and 8 for 12th grade. Again, the results are surprising as they show negative impacts of CBS program eligibility on GPA. Focusing on the DnDnD results, we find that the CBS lowered GPA by 0.039 (0.012) in 10th (12th) grade and lowered the likelihood of 10th (12th)-grade GPA being above 2.0 by 1.7 (1.2) percentage points.[26]

Column 9 of Table 3 shows the estimated effects on graduating from high school on time. The DnD results seem to suggest a large positive effect on graduation of 2.5 percentage points.[27] Yet, in the DnDnD results, this apparent effect appears to reflect a secular improvement in the high school graduation rates of Washington's disadvantaged students, as reflected by the near equality of β_1 and β_6 (i.e., 2.7 and 3.3 percentage points, respectively).

Column 10 of Table 3 assesses whether the CBS's requirement that the youth not commit a felony had an effect on incarceration in state prison. The DnD results suggest that the CBS significantly lowered the likelihood of incarceration by 0.15 percentage points. If true, this would reflect a cut of nearly half from the baseline (i.e., the pre-policy rate of incarceration among Pseudo-Eligible youth, which was 0.37%). Using this estimate and the number of CBS-Eligible youth, we compute that the CBS policy would lower the number of incarcerated youths in the state by 57 persons per cohort. This finding is roughly in line with Doleac and Gibbs (2016), who find that the announcement of promise-style type college scholarship programs reduce juvenile arrests in affected counties. The DnDnD results, however, reduce our confidence in this finding. Although the difference in β_1 and β_6, −0.12 percentage points, is close to significant at the .10 level,[28] this marginally significant result is sensitive to our robustness check shown in Appendix Table A1, which uses the alternate definition of Pseudo-Eligible grades (shown in Appendix Figure A1).[29]

In summary, we do not find much in the way of persuasive evidence that the CBS improved outcomes for eligible youth during high school nor significantly reduced their likelihood of incarceration as young adults.[30]

Discussion and Conclusion

Substantial high school achievement gaps between advantaged and disadvantaged students are a significant factor in explaining their disparities in college access and success. Legislators in Washington State attempted to close these achievement gaps via an early commitment need-based scholarship pledge, the CBS. The operating assumption of this policy is that an early promise of aid coupled with the student signing the pledge should encourage low-income students to fulfill pledge requirements to stay out of trouble and academically prepare for college while in high school. Unfortunately, our results do not show beneficial effects on measures of college preparation.

In fact, some of our findings are puzzling in that they suggest the implementation of the CBS program led to worse high school outcomes. In particular, the DnDnD findings show negative effects on GPA and the likelihood of students having their 12th-grade GPA be above the 2.0 threshold requirement to receive the scholarship.

Why did we not observe more positive results for a program that would seem to strongly incentivize students to get onto a college-going track in high school? It is possible that Fryer's (2011) findings may shed light on the null findings for the CBS program. That is, Fryer (2011) finds that monetary incentives targeting achievement outputs, for example, higher test scores, do not contribute to students' achievement because students do not systematically possess the knowledge of how to turn their motivation into achievement gains. Similarly, financial incentives for college may motivate students to try to get onto a college-going track, but students may lack the knowledge of how to achieve this objective. The CBS program does seek to provide students with help preparing for college. Guidance counselors, for instance, are seen by the program as a key lever in this endeavor (Hurwitz & Howell, 2014). However, interviews with CBS program administrators suggest that guidance counselors have heavy workloads, which prevent them from prioritizing the program (Goldhaber et al., 2019).

Relatedly, a possible explanation for the unanticipated findings is a discouragement effect. In particular, a substantial share of students who are

eligible to sign the pledge in middle school fail to do so. As noted earlier, Goldhaber et al. (2019) estimate that only 39% of clearly eligible students signed the pledge during the first three post-policy cohorts. It is merely speculation, but failing to sign the pledge may create a discouragement effect for these students during high school as they may become aware of their ineligibility to receive this source of need-based financial aid.[31] Discouraged students who were eligible to sign-up, but did not do so, would contribute to the estimate of the treatment effect in this ITT model. We have no evidence at hand with which to assess this hypothesis and leave it for future work. If such a discouragement effect exists, it could explain our null and negative findings. It also might suggest that effects of the CBS program could be different for future cohorts of students as the proportion of eligible students who signed up for the program increased rapidly over time.

The seemingly negative findings may also be related to changes in students' course-taking patterns induced by the CBS program. Students could be taking more rigorous high school courses to prepare for college. This explanation is consistent with findings by St. John et al. (2008). Indeed, we find eligible students who signed the pledge compared to eligible students who did not sign the pledge are taking more rigorous high school math courses. Following the taxonomy developed by Burkam and Lee (2003), Gottfried (2015), and Goldhaber et al. (2017), we find that 34% of pledge signing students take advanced high school math courses,[32] compared with 22% of eligible non-pledge signing students, and the grades in advance courses may be lower (Attewell, 2001). We strongly caution against a causal interpretation from this analysis as we are examining the difference between CBS pledge signers and eligible non-signers and these groups are quite likely to differ in unobservable ways.[33]

Interestingly, the State of Washington's most important source of state funding for low-income students is the "State Need Grant." Students who are eligible for the CBS first receive their maximum allowable State Need Grant funding, as well as Federal Pell Grants, and then supplement these funds with support from the CBS program (WSAC, 2015). Thus, most of the state funds received by CBS recipients likely represents funding that they would have received under the State Need Grant even in the absence of the CBS program.[34] If students who failed to sign-up are being discouraged, it would be quite unfortunate as CBS funding is a minority of the funding they are likely to receive from the state.

Furthermore, there is a question about the horizontal equity as a result of the CBS program. Funding for this pledge program may siphon off other state-based financial aid that would otherwise go to low-income students who failed to sign-up for the program in middle school, were poor in the wrong year (e.g., income-eligible in sixth or ninth grade, but not in seventh or eighth grade when the pledge can be signed), or moved into the state during high school and thus were not able to sign the pledge in middle school. As these pledge programs are, in effect, a promise made by the state, it is hard to not fully fund such promises. Yet, in contrast, Washington State's older mechanism for providing funding for low-income college students, the State Need Grant, has been underfunded. "Every year since 2009, at least a quarter of eligible students have not received grants due to lack of state funding" (Cauce et al., 2017). Given that there is the potential for tradeoffs in terms of which students receive college aid under Washington's different programs, it is worthwhile to investigate the extent to which the early commitment element of the CBS program may influence whether other needy, but non-CBS qualifying students, fail to receive state aid when it comes time to enroll in college.

Of course, the main impetus for the CBS program is to encourage college-going. Our findings are generally supportive of the notion that students are on a better college-going trajectory in high school, but, importantly, not because of the CBS. The primary mechanism through which we might expect the program to affect college going is through the provision of financial aid. Thus, in future work, we plan to assess the degree to which the CBS affects college matriculation and persistence.

Appendix

TABLE A1

Estimated Effects of Washington's College Bound Scholarship Program Using Alternate Definition of Pseudo-Eligible in Pre-Policy Era

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	10th grade				12th grade				High school and beyond	
Independent variable	Enrolled in Washington public schools	Enrolled in juvenile detention or rehabilitation[a]	GPA[a]	GPA > 2.0[a]	Enrolled in Washington public schools[a]	Enrolled in juvenile detention or rehabilitation[b]	GPA[b]	GPA > 2.0[b]	Graduation[a]	Incarceration
Panel A										
Post-policy	.007	−.017***	.057**	.028**	.045***	−.020***	−.013	−.008	.022**	.0019
	(.005)	(.003)	(.022)	(.009)	(.009)	(.003)	(.017)	(.008)	(.010)	(.0013)
Difference-in-differences										
CBS-Eligible × Post-Policy	**−.012*** **	**−.007*** **	**−.022*** **	**−.003**	**.005***	**−.007*** **	**−.010**	**.005***	**.023*** **	**−.0015*** **
	(.002)	**(.001)**	**(.008)**	**(.004)**	**(.002)**	**(.001)**	**(.006)**	**(.003)**	**(.003)**	**(.0004)**
Panel B										
CBS-Eligible × Post-Policy	−.012***	−.008***	−.022***	.002	.005**	−.007***	−.011*	.007**	.026***	−.0015***
	(.002)	(.001)	(.008)	(.004)	(.002)	(.001)	(.006)	(.003)	(.003)	(.0004)
Border-Eligible × Post-Policy	−.006	−.010***	−.007	.012	.013**	−.004	−.018	.023***	.033***	−.0015
	(.005)	(.003)	(.017)	(.008)	(.006)	(.002)	(.015)	(.008)	(.008)	(.0013)
Post-Policy	.008	−.016***	.058**	.027***	.044***	−.019***	−.012	−.009	.020*	.0020
	(.005)	(.003)	(.022)	(.009)	(.009)	(.003)	(.017)	(.008)	(.010)	(.0013)
Difference-in-differences-in-differences										
(CBS-Eligible × Post-Policy) − (Border-Eligible × Post-Policy)	**−.006**	**.003**	**−.015**	**−.014**	**−.008**	**−.003**	**0.007**	**−.016****	**−.007**	**−.0000**
	(.005)	**(.003)**	**(.018)**	**(.009)**	**(.006)**	**(.002)**	**(.016)**	**(.008)**	**(.009)**	**(.0014)**
Observations	415,383	383,155	352,253	352,253	383,155	347,354	320,293	320,293	383,155	164,517

Note. Additional controls include seventh grade reading and math scores, female, race/ethnicity indicators, age in eighth grade, high school region, county unemployment rate in Grades 7 through 12, modified test status, out-of-grade level test status, bilingualism, disability status, housing status, migrant status, English Language Learning status, highly capable/gifted program participation, full set of possible patterns of free or reduced-price lunch eligibility during Grades 6, 7, 8, 9, and 10 (i.e., just sixth, just seventh, just eighth, just ninth, just tenth, sixth and seventh, sixth and eighth, . . . and eligibility in all five grades), CBS-Eligible, Border-Eligible (for Panel B), and middle school fixed effects. Full regression results are available from the authors. Standard errors are clustered at the middle school level. CBS = College Bound Scholarship; GPA = grade point average.

[a]Conditional on 10th grade, enrolled in Washington public school = 1. [b]Conditional on 12th grade, enrolled in Washington public school = 1. [c]Available for two cohorts, just prior to and following implementation of CBS.

*$p < .10$. **$p < .05$. ***$p < .01$. (The p values from two-sided t test.)

	Cohort	Year Entering 8th Grade	Grade 6	7	8	9	10
Pre-Policy	1	2005-06	Border	Pseudo-Eligible		Border	
Pre-Policy	2	2006-07	Border	Pseudo-Eligible		Border	
Post-Policy	3	2007-08		Border	--- CBS-Eligible ---		Border
Post-Policy	4	2008-09	Border	--- CBS-Eligible ---		Border	
Post-Policy	5	2009-10	Border	--- CBS-Eligible ---		Border	

FIGURE A1. *Alternate grade and cohort combinations used to define CBS-Eligible, Pseudo-Eligible, Border-Eligible, and Ineligible students.*
Note. "CBS-Eligible" includes post-policy cohort students who were enrolled in foster care or eligible for free or reduced-price lunch in a grade that would have made the student eligible to sign the CBS pledge. "Pseudo-Eligible" includes pre-policy cohort students who were enrolled in foster care or eligible for free or reduced-price lunch in eighth or ninth grade. "Border-Eligible" includes students who are ineligible but who were eligible for free or reduced-price lunch in a grade that is adjacent to the grades that would have made the student eligible (or Pseudo-Eligible) to sign the CBS pledge. For example, a Border-Eligible student from Cohort 1 may be eligible for free or reduced-price lunch in seventh or tenth grade, but not in eighth or ninth grade. "Ineligible students" are neither Border-Eligible or Eligible/Pseudo-Eligible. CBS = College Bound Scholarship.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education through Grant R305A140697. The findings and opinions expressed in this paper do not necessarily reflect those of the authors' institutions, funding organization, or the data providers. All errors are our own.

Notes

1. There are also disparities in the probability of involvement in criminal activity, which has been found to have clear negative effects on the probability of college enrollment (Apel & Sweeten, 2009; Kirk & Sampson, 2013) and completion (Tanner et al., 1999). Fumia et al. (2018) find that incarceration by age 18 reduces the probability of high school degree receipt by 22-percentage points and bachelor's degree receipt by 4-percentage points.

2. States engage in a variety of other initiatives targeting low-income students. California, for instance, has mandated increases in college preparatory course offerings at schools with higher numbers of low-income students (SB-1050, 2016). See also the Southern Regional Education Board's description of efforts to improve college readiness among students who are struggling academically (Barger et al., 2011).

3. Indiana's 21st Century Scholars Program, the first statewide early promise program, was inspired by Eugene M. Lang's philanthropy. Nearly four decades ago, in 1981, as part of a commencement address to a group of 61 sixth graders, Lang committed to pay for their college tuition if they graduated from high school and were accepted into college (Indiana's 21st Century Scholars Program, 2019). The Indiana program itself was conceived by Stan Jones, Indiana's former commissioner for the Commission for Higher Education.

4. Note, however, that changes in course-taking patterns could also negatively affect some students' grade point averages (GPAs) if grading standards in college preparatory courses are more rigorous (Attewell, 2001).

5. This was the pledge for the cohorts in our sample. The current pledge (as of 2018) reads, "Graduate from a Washington high school or home school program with a cumulative grade point average of 2.0 or higher. Have no felony convictions. Apply for financial aid by completing the FAFSA or WASFA beginning my senior year." In 2017, the pledge also included "(b)e a good member of my community."

6. Like all need-based government policies, this feature of the program gives an incentive for families to stay low-income. If parents respond to this adverse incentive, it could have long-term negative effects on students.

7. Specifically, the College Bound Scholarship (CBS) documentation states, "The scholarship amount will be based on tuition rates at Washington public colleges and universities. It will cover the tuition and fees (plus a small book allowance) that are not covered by other state financial aid awards such as the State Need Grant. You will receive your scholarship through your college or university as part of your financial aid award" (Washington Higher Education Coordinating Board, 2012b).

8. The outcomes of nonearly commitment (i.e., different from the one we focus on here) scholarship programs have been investigated widely. These programs tend to have positive impacts on in-state college matriculation and an increase in credit attainment (e.g., Bartik et al., 2017; Carruthers & Özek, 2016; Cornwell et al., 2006; Page et al., 2019; Perna & Leigh, 2018; Scott-Clayton, 2011; Sjoquist & Winters, 2014).

9. For more information on place-based promise programs, please see Bartik et al. (2017), Carruthers and Fox (2016), and Harris et al. (2018). The findings from these studies are mixed in regard to the programs' impact on college enrollment. Regardless, these programs may be considered distinct from the CBS in that, for instance, some of them applied to a single cohort of students and had little focus on culture change. The CBS program, by contrast, can be considered a contractual obligation to students and the intent of the program is to create a stronger college-going culture (Goldhaber et al., 2019).

10. For instances, evidence from the aforementioned Knox Achieves suggests this program may have increased high school graduation (Carruthers & Fox, 2016). Still Harris et al. (2018) find that "[The Degree Project] had no measurable effect on students' academic preparation during high school." The Degree Project is similar to the Knox Achieves in that the scholarship is sufficient to cover 2-year college costs and partially cover 4-year costs and available to students in high school. Other research by Bartik and Lachowska (2014) and Gonzalez and colleagues (2014) find mixed results for high school outcomes. Both studies find no impact on graduation, but that the promise programs decrease suspensions (Bartik & Lachowska, 2014) and increased test scores (Gonzalez et al., 2014).

11. In a companion study to this one (Goldhaber et al., 2019), we estimate the factors that predict whether students sign the CBS pledge and how these change over time. We find evidence of significant increases in sign-up rates over time, which might be indicative of increased college-going expectations in general, increased effort by program administrators, or reflect greater awareness of the program. However, we also find that the factors predicting which students sign the pledge are closely aligned to those factors that predict (prior to the CBS program intervention) whether students matriculate into college.

12. Education Research and Data Center requires us to note that the research presented here utilizes confidential data from the Education Research and Data Center, located within the Washington Office of Financial Management (OFM). The views expressed here are those of the author(s) and do not necessarily represent those of the OFM or other data contributors.

13. Juvenile detention facilities are operated by counties and juvenile rehabilitation facilities are run by the state. These programs are described by the following quotes: "King County uses detention sparingly and only for the most serious or violent crimes and high-risk offenders. While in detention, youth attend school and have access to a wide range of programs and services" (King County Juvenile Division, 2017). "All detention facilities in the state are used for the custody of accused or adjudicated juvenile delinquent offenders; some of these facilities also hold remanded juveniles awaiting sentencing. These facilities also hold status offenders pursuant to the federal valid court order exception. Other juveniles are held in those facilities under limited conditions" (Washington State Department of Social and Health Services [WSDSHS], 2014a). "The county juvenile courts commit the most serious offenders to [Juvenile Rehabilitation]. With rare exception, youth committed to [Juvenile Rehabilitation] have been adjudicated for at least one violent offense, or have a history of a large number of felony offenses" (WSDSHS, 2014b).

14. Specifically, the felony indicator equals 1 if a student is observed to have committed a crime that leads to incarceration between January 1 of their sophomore year in high school and October 24 four years later.

15. Outside of criminal justice concerns, this population of students also faces significant economic, academic, and health challenges. We find that 20.5% pre-policy and 18.3% of post-policy students who were eventually incarcerated experienced homelessness. Similarly, this group of students scored −0.867 standard deviations below the mean on their seventh grade math test (pre-policy) and −0.665 standard deviations below the mean (post-policy). Finally, in the pre-policy era 35.4% of this population was disabled compared with 34.8% of this population in the post-policy era.

16. We lack data on sixth-grade enrollment and student characteristics for the first cohort. Using our difference-in-differences-in-differences (DnDnD) strategy described below requires this sixth-grade data. We are able to impute the needed data for the first cohort.

17. Washington State began direct certification of children in Temporary Assistance for Needy Families (TANF) households as eligible for free meals in 2003–2004 (Neuberger, 2006) and, as of 2007–2008, 76% of Washington's children in SNAP households were

directly certified for free school meals (Ranalli et al., 2008). By 2008–2009, all school districts in the United States were required by the 2004 Child Nutrition and WIC Reauthorization Act to directly certify recipients of Supplemental Nutrition Assistance Program (SNAP) and Food Distribution Program on Indian Reservations (FDPIR) as eligible for free meals under the National School Lunch Program. Thus, all TANF and nearly all SNAP and FDPIR recipients should be coded as a free or reduced-price lunch (FRPL)-eligible in our administrative data.

18. This calculation is based on our analysis of 3,245 youth aged 12 to 14 in families included in the first three waves of the 2008 Survey of Income and Program Participation (SIPP). If we restrict the analysis to Washington youth (only 93 observations), we find a comparable rate of youth eligible for CBS based solely on family income (17.7%), which is not significantly different than the full sample given the small sample size. (Recipients of the FDPIR are directly certified as eligible for free lunches, but SIPP does not collect data on FDPIR participation. Since we capture these youth as FRPL-eligible from school administrative data, our estimate of the fraction that we miss, 13.4%, is an upper bound estimate. Using data in Usher et al., 1990; U.S. Department of Agriculture, 2012; and Snyder & Dillow, 2011, we estimate that 0.05% [0.10%] of U.S. [Washington] eighth-grade students participate in FDPIR.)

19. Bias could be introduced if the high school outcomes of income only eligible students in either the Eligible or Border-Eligible group changed across the period of CBS implementation, but only if one group changed and not the other.

20. Enrollment in 10th grade, 12th grade, and graduating can theoretically be censored to exclude students who leave Washington public schools, but who do not drop out, that is, transfer out of state or to private schools. This is accomplished using the school level withdrawal codes. Nonetheless, transfers must be confirmed and we are unable to discern if students with "unknown" withdrawal codes transferred or dropped out. For these reasons, we do not censor transfers from our enrollment or graduation results. Results may be interpreted as enrollment or graduation from Washington public schools. Nevertheless, as a sensitivity analysis, we run our models censoring known transfers and find qualitatively similar results. Results are available upon request.

21. When the outcome is dichotomous, we use a linear probability model. Using a linear probability model is preferred in this context (over a logit or probit specification) given the fact that the central part of Equation 1, reflected in the first four terms, is essentially a comparison of conditional means. Furthermore, given the complexities of interpreting interaction terms in nonlinear models (Ai & Norton, 2003), we prefer a linear probability model for its ease of interpretation. For statistical inference, we use robust standard errors that are clustered at the middle school level.

22. See Goldhaber et al. (2019) for more on the factors that might influence whether students sign-up for the CBS program. School culture is important in influencing student outcomes. A number of studies, for instance, find that the high schools play an important role in influencing graduation (Dobbie & Fryer, 2009), and in explaining both the quality of the college in which postsecondary students enroll (Darolia & Koedel, 2017) and performance in college (Black et al., 2015; Fletcher & Tienda, 2010; Long et al., 2009).

23. Given the inclusion of the FRPL_i vector, the coefficient on CBS_Eligible_i is barely identified and is based on the shift in grades during which students in Cohorts 3, 4, and 5 were able to sign-up for CBS (see Figure 1). As such, the coefficient on CBS_Eligible_i is not particularly interesting and is omitted in the subsequent Table 3, which focuses on key variables.

24. Regression results that do not control for county unemployment are available from the authors upon request. We note here that the addition of county unemployment has little impact on the other coefficient estimates.

25. Full regression results are available from the authors, and these results are as expected based on prior research. For instance, we find that students who perform better on seventh-grade math and reading tests are predicted to have significantly higher high school grades (Kobrin, Camara, & Milewski, 2002) and are much more likely to graduate on time (Neild et al., 2008). Asian students have higher grades than White students, whereas Hispanic students have lower grades (Nord et al., 2011); similar patterns exist for female relative to male students (Fortin et al., 2015). We observe that Hispanic and African American students are more likely to be incarcerated, while female students and students with higher baseline test scores are less likely to be incarcerated (Chesney-Lind & Shelden, 2013; Zahn et al., 2010).

26. The estimated DnDnD effect on 12th-grade GPA is not statistically significant.

27. For reference, the graduation rate for all students is 71.2%, and for all CBS-Eligible/Pseudo-Eligible students, it is 57%. A 2.5% increase is 4.6% of the pre-policy Eligible group's, that is, CBS Pseudo-Eligible students, graduation rate, 54.7%.

28. Given our models make use of the FRPL patterns in eligibility and middle school fixed effects, logistic regressions including these variables fail to converge. As a robustness check, we estimated the DnDnD model of incarceration as a logistic regression without middle school fixed effects. We find no statistically significant effect of CBS eligibility on

incarceration relative to the Border-Eligible student population. Results are available upon request.

29. Specifically, see Column 10 of Appendix Table A1, which shows that we find identical incarceration effects (−0.15 percentage points) for CBS-Eligible and Border-Eligible students. We also find that the 10th-grade GPA and enrollment results are not statistically significant under this definition. We conduct a number of additional robustness checks to add strength to our findings. We estimate Equation 1 restricted to Eligible/Pseudo-Eligible students and Border-Eligible students. In another check, we estimate Equations 1 and 2, but replace the "Post" dummy main effect with cohort dummies. In both cases, results are quantitatively similar and are available upon request.

30. Our results are broadly consistent with the results in Fumia et al. (2018) of the Washington State Institute of Public Policy (WSIPP). WSIPP was commissioned by the state's legislature to conduct "an evaluation of the college bound scholarship program" (p. 2) that would "complement studies on the college bound scholarship program conducted at the University of Washington" (i.e., the research contained in our paper). The WSIPP report, which uses a different methodology, concludes that "signing the pledge in middle school, on average, reduces students' 12th grade GPAs by 0.091 grade points" and "students who sign the pledge are no more likely to complete high school on time" (p. 21).

31. Conger et al. (2019) find a paradoxical effect of offering more Advance Placement (AP) courses on some high school students' confidence. In some instances, increasing access to AP courses may set underprepared students up for failure and, therefore, lower students' confidence resulting in academic discouragement.

32. Advanced math courses are defined in Goldhaber et al. (2017) and "include trigonometry, statistics, pre-calculus, and higher courses."

33. Unfortunately, we cannot accurately compare the course-taking patterns of students before and after the implementation of the CBS program. Specifically, the student schedule file that has information on course-taking became available starting in 2010. There is information on course-taking for students prior to 2010, but these data are based on historical transcripts and has been judged to be inaccurate (Chen et al., 2018).

34. In 2015–2016, for instance, CBS recipients, on average, received US$7,085 from the state of Washington to pay for college, but only US$1,343 came from the funding designated for the CBS; the remaining 81% (US$5,742) was State Need Grant funds (Washington Student Achievement Council, 2017).

References

Ai, C., & Norton, E. C. (2003). Interaction terms in logit and probit models. *Economics Letters*, *80*(1), 123–129.

Altonji, J. G., Blom, E., & Meghir, C. (2012). Heterogeneity in human capital investments: High school curriculum, college major, and careers. *Annual Review of Economics*, *4*(1), 185–223.

Apel, R. J., & Sweeten, G. A. (2009). *The effect of criminal justice involvement in the transition to adulthood*. U.S. Department of Justice, National Institute of Justice.

Attewell, P. (2001). The winner-take-all high school: Organizational adaptations to educational stratification. *Sociology of Education*, *74*(4), 267–295.

Aud, S., Hussar, W., Kena, G., Bianco, K., Frohlich, L., Kemp, J., & Tahan, K. (2011). *The condition of education 2011*. U.S. Government Printing Office.

Avery, C., & Kane, T. J. (2004). Student perceptions of college opportunities. The Boston COACH program. In National Bureau of Economic Research (Ed.), *College choices: The economics of where to go, when to go, and how to pay for it* (pp. 355–394). University of Chicago Press.

Barger, K., Murray, R., & Smith, J. (2011). *State college and career readiness initiative: Statewide transitional courses for college readiness*. Southern Regional Education Board.

Barr, A., & Turner, S. E. (2013). Expanding enrollments and contracting state budgets: The effect of the Great Recession on higher education. *The ANNALS of the American Academy of Political and Social Science*, *650*(1), 168–193.

Bartik, T. J., Hershbein, B., & Lachowska, M. (2017). *The effects of the Kalamazoo Promise Scholarship on college enrollment, persistence, and completion* (W.E. Upjohn Institute for Employment Research, Working Paper 15-229). https://research.upjohn.org/up_workingpapers/229/

Bartik, T. J., & Lachowska, M. (2014). The short-term effects of the Kalamazoo Promise scholarship on student outcomes. In S. Polachek & K. Tatsiramos (Eds.), *New analyses of worker well-being* (pp. 37–76). Emerald Group.

Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Black, S. E., Lincove, J., Cullinane, J., & Veron, R. (2015). Can you leave high school behind? *Economics of Education Review*, *46*, 52–63.

Bound, J., Hershbein, B., & Long, B. T. (2009). Playing the admissions game: Student reactions to increasing college competition. *Journal of Economic Perspectives*, *23*(4), 119–146.

Burkam, D. T., & Lee, V. E. (2003). *Mathematics, foreign language, and science coursetaking and the NELS:88 transcript data* (Working Paper No. 2003-01). National Center for Education Statistics.

Carruthers, C. K., & Fox, W. F. (2016). Aid for all: College coaching, financial aid, and post-secondary persistence in Tennessee. *Economics of Education Review*, *51*, 97–112.

Carruthers, C. K., & Özek, U. (2016). Losing HOPE: Financial aid and the line between college and work. *Economics of Education Review*, *53*, 1–15.

Carson, E. A. (2015). *Prisoners in 2014* (NCJ 248955). Bureau of Justice Statistics.

Cauce, A. M., Sundborg, S. V., & Pan, S. (2017, April 17). Fund state need grant, the backbone of college financial aid. *Seattle Times*. http://www.seattletimes.com/opinion/fund-state-need-grant-the-backbone-of-state-financial-aid/

Chen, V., Pyle, K., & Weller, A. (2018). *A data quality evaluation of administrative data using CEDARS student grade history data as a case study (Tech.)*. Education Research and Data Center.

Chesney-Lind, M., & Shelden, R. G. (2013). *Girls, delinquency, and juvenile justice*. John Wiley.

Conger, D., Kennedy, A. I., Long, M. C., & McGhee, R., Jr. (2019). The effect of advanced placement science on students' skills, confidence and stress. *The Journal of Human Resources*. Advance online publication. https://doi.org/10.3368/jhr.56.1.0118-9298R3

Cornwell, C., Mustard, D. B., & Sridhar, D. J. (2006). The enrollment effects of merit-based financial aid: Evidence from Georgia's HOPE Program. *Journal of Labor Economics*, *24*(4), 761–786.

Darolia, R., & Koedel, C. (2017). *How high schools explain students' initial colleges and majors* (Institute of Education Sciences Working Paper No. 165). https://economics.missouri.edu/sites/default/files/wp-files/mo_hs_u_wp1_0.pdf

Deming, D., & Dynarski, S. (2010). College aid. In P. B. Levine & D. J. Zimmerman (Eds.), *Targeting investments in children: Fighting poverty when resources are limited* (pp. 283–302). University of Chicago Press.

Dobbie, W., & Fryer, R. G., Jr. (2009). *Are high quality schools enough to close the achievement gap? Evidence from a social experiment in Harlem* (NBER Working Paper No. w15473). National Bureau of Economic Research.

Doleac, J., & Gibbs, C. (2016). *A promising alternative: How making college free affects teens' risky behaviors* (Working paper). http://jenniferdoleac.com/wp-content/uploads/2015/03/Doleac_Gibbs_PromiseRiskyBehaviors.pdf

Duncan, G. J., Kalil, A., & Ziol-Guest, K. M. (2017). Increasing inequality in parent incomes and children's schooling. *Demography*, *54*(5), 1603–1626.

Fletcher, J., & Tienda, M. (2010). Race and ethnic differences in college achievement: Does high school attended matter? *The ANNALS of the American Academy of Political and Social Science*, *627*(1), 144–166.

Fortin, N. M., Oreopoulos, P., & Phipps, S. (2015). Leaving boys behind: Gender disparities in high academic achievement. *Journal of Human Resources*, *50*(3), 549–579.

Fryer, R. G., Jr. (2011). Financial incentives and student achievement: Evidence from randomized trials. *The Quarterly Journal of Economics*, *126*(4), 1755–1798.

Fumia, D. (2013). *Compounding inequality: Criminal sanctions and racial gaps in educational attainment* [Doctoral dissertation]. University of Washington.

Fumia, D., Bitney, K., & Hirsch, M. (2018). *The effectiveness of Washington's college bound scholarship program* (Document Number 18-12-2301). Washington State Institute for Public Policy.

Goldhaber, D., Gratz, T., & Theobald, R. (2017). What's in a teacher test? Assessing the relationship between teacher licensure test scores and student STEM achievement and course-taking. *Economics of Education Review*, *61*, 112–129.

Goldhaber, D., Long, M. C., Person, A. E., Rooklyn, J., & Gratz, T. (2019). Sign me up: The factors predicting students' enrollment in an early-commitment scholarship program. *AERA Open*, *5*(2). https://doi.org/10.1177/2332858419857703

Gonzalez, G. C., Bozick, R., Daugherty, L., Scherer, E., Singh, R., Suárez, M. J., & Ryan, S. (2014). *Transforming an urban school system: Progress of New Haven school change and New Haven promise education reforms (2010-2013)* (Research report). RAND Corporation.

Gottfried, M. A. (2015). The influence of applied STEM coursetaking on advanced mathematics and science coursetaking. *The Journal of Educational Research*, *108*(5), 382–399.

Harnisch, T. L. (2009). *State early commitment programs: A contract for college success? Policy matters: A higher education policy brief*. American Association of State Colleges and Universities.

Harris, D. N., Farmer-Hinton, R., Kim, D., Diamond, J., Reavis, T. B., Rifelj, K. K., Lustick, H., & Carl, B. (2018). *The promise of free college (and its potential pitfalls)*. Brown Center on Education Policy at Brookings.

Heller, D. E. (2006). Early commitment of financial aid eligibility. *American Behavioral Scientist*, *49*(12), 1719–1738.

Hoxby, C. M., & Avery, C. (2012). *The missing "one-offs": The hidden supply of high-achieving, low income students* (Working Paper No. 18586). National Bureau of Economic Research

Hoxby, C. M., & Turner, S. (2015). What high-achieving low-income students know about college. *American Economic Review*, *105*(5), 514–17.

Hurwitz, M., & Howell, J. (2014). Estimating causal impacts of school counselors with regression discontinuity designs. *Journal of Counseling & Development*, *92*(3), 316–327.

Indiana Division of Student Financial Aid. (2013a). *How to apply*. http://www.in.gov/ssaci/2380.htm

Indiana Division of Student Financial Aid. (2013b). *21st century scholars eligible Indiana colleges*. http://www.in.gov/ssaci/2469.htm

Indiana Division of Student Financial Aid. (2013c). *21st century scholars requirements by grade level, 2012-2013 academic year*. http://www.in.gov/ssaci/files/21st_Century_Scholars_Requirements_by_Grade_Level.pdf

Indiana's 21st Century Scholars Program. (2019). *Our history*. https://21centuryscholars.indiana.edu/about/history.html

Jacob, B. A., & Linkow, T. W. (2011). Educational expectations and attainment. In G. J. Duncan & R. J. Murnane (Eds.), *Whither opportunity? Rising inequality, schools, and children's life chances* (pp. 133–164). Russell Sage Foundation.

Kena, G., Musu-Gillette, L., Robinson, J., Wang, X., Rathbuun, A., Zhang, J., & Velez, E. (2015). *The condition of education 2015* (NCES 2015-144). U.S. Department of Education, National Center for Education Statistics.

King County Juvenile Division. (2017). http://www.kingcounty.gov/depts/jails/juvenile-detention.aspx

Kirk, D. S., & Sampson, R. J. (2013). Juvenile arrest and collateral educational damage in the transition to adulthood. *Sociology of Education*, *86*(1), 36–62.

Kirst, M. W., Venezia, A., & Antonio, A. L. (2004). What have we learned, and where do we go next? In M. W. Kirst, A. Venezia, & A. L. Antonio (Eds.), *From high school to college: Improving opportunities for success in postsecondary education* (pp. 285–319). Jossey-Bass.

Kobrin, J. L., Camara, W. J., & Milewski, G. B. (2002). *Students with discrepant high school GPA and SAT I scores* (Research Note RN-15). College Board, Office of Research and Development.

LeGower, M., & Walsh, R. (2017). Promise scholarship programs as place-making policy: Evidence from school enrollment and housing prices. *Journal of Urban Economics*, *101*, 74–89.

Long, M. C., Iatarola, P., & Conger, D. (2009). Explaining gaps in readiness for college-level math: The role of high school courses. *Education Finance and Policy*, *4*(1), 1–33.

Mendoza, P., & Mendez, J. P. (2012). The Oklahoma's promise program: A national model to promote college persistence. *Journal of College Student Retention: Research, Theory & Practice*, *14*(3), 397–421.

Mendoza, P., Mendez, J. P., & Malcolm, Z. (2009). Financial aid and persistence in community colleges: Assessing the effectiveness of federal and state financial aid programs in Oklahoma. *Community College Review*, *37*(2), 112–135.

Michelmore, K., & Dynarski, S. (2017). The gap within the gap: Using longitudinal data to understand income differences in educational outcomes. *AERA Open*, *3*(1). https://doi.org/10.1177/2332858417692958

Neild, R. C., Stoner-Eby, S., & Furstenberg, F. (2008). Connecting entrance and departure: The transition to ninth grade and high school dropout. *Education and Urban Society*, *40*(5), 543–569.

Neuberger, Z. (2006). *Implementing direct certification: States and school districts can help low-income children get the free school meals for which they are eligible*. Center on Budget and Policy Priorities. http://www.cbpp.org/files/8-11-06fa.pdf

Nord, C., Roey, S., Perkins, R., Lyons, M., Lemanski, N., Grown, J., & Schuknecht, J. (2011). *The Nation's report card [TM]: America's high school graduates. Results of the 2009 NAEP high school transcript study* (NCES 2011-462). National Center for Education Statistics.

Oklahoma State Regents for Higher Education. (2013a). *College Students—Frequently asked questions*. http://www.okhighered.org/okpromise/college-faq.shtml#8

Oklahoma State Regents for Higher Education. (2013b). *2013-2014 year end report*. https://www.okhighered.org/okpromise/pdf/okp-report-13-14.pdf

Page, L. C., Iriti, J. E., Lowry, D. J., & Anthony, A. M. (2019). The promise of place-based investment in postsecondary access and success: Investigating the impact of the Pittsburgh Promise. *Education Finance and Policy*, *14*, 572–600. https://doi.org/10.1162/edfp_a_00257

Perna, L. W., & Leigh, E. W. (2018). Understanding the promise: A typology of state and local college promise programs. *Educational Researcher*, *47*(3), 155–180.

Ranalli, D., Harper, E., O'Connell, R., Hirschman, J., Cole, N., Moore, Q., & Coffee-Borden, B. (2008). *Direct certification in the national school lunch program: State implementation progress* (No. 583c6a2ecb-4943d2a8790a7017c1d075). Mathematica Policy Research.

Rosenbaum, J. E. (2001). *Beyond college for all: Career paths for the forgotten half*. Russell Sage Foundation.

Ryan, C. L., & Bauman, K. (2016). *Educational Attainment in the United States: 2015*. U.S. Census Bureau. https://www.census.gov/content/dam/Census/library/publications/2016/demo/p20-578.pdf

Sadler, P. M., & Tai, R. H. (2007). Accounting for advanced high school coursework in college admission decisions. *College and University*, *82*(4), 7.

St. John, E. P. S., Fisher, A. S., Lee, M., Daun-Barnett, N., & Williams, K. (2008). *Educational opportunity in Indiana: Studies of the Twenty-first Century Scholars Program using state student unit record data systems*. University of Michigan.

St. John, E. P. S., Gross, J. P., Musoba, G. D., & Chung, A. S. (2005). *A step toward college success: Assessing attainment among Indiana's Twenty-first Century Scholars*. Lumina Foundation for Education.

St. John, E. P. S., Musoba, G. D., & Simmons, A. B. (2003). Keeping the promise: The impact of Indiana's Twenty-first Century Scholars Program. *The Review of Higher Education*, *27*(1), 103–123.

St. John, E. P. S., Musoba, G. D., Simmons, A. B., Chung, C. G., Schmit, J., & Peng, C. Y. J. (2004). Meeting the access challenge: An examination of Indiana's Twenty-first Century Scholars Program. *Research in Higher Education*, *45*(8), 829–871.

SB-1050, Assemb. Reg. Sess. 2015-2016 (CA. 2016)

Scott-Clayton, J. (2011). On money and motivation: A quasi-experimental analysis of financial incentives for college achievement. *Journal of Human Resources*, *46*(3), 614–646.

Sjoquist, D. L., & Winters, J. V. (2014). Merit aid and post-college retention in the State. *Journal of Urban Economics*, *80*, 39–50.

Snyder, T. D., & Dillow, S. A. (2011). *Digest of education statistics 2010* (NCES 2011-015). National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

Snyder, T. D., & Dillow, S. A. (2012). *Digest of education statistics 2011* (NCES Publication 2012-001). National Center for Education Statistics.

Tanner, J., Davies, S., & O'Grady, B. (1999). Whatever happened to yesterday's rebels? Longitudinal effects of youth delinquency on education and employment. *Social Problems*, *46*(2), 250–274.

Thiede, B. C., & Monnat, S. M. (2016). The Great Recession and America's geography of unemployment. *Demographic Research*, *35*, 891–928.

Toutkoushian, R. K., Hossler, D., DesJardins, S. L., McCall, B., & Canche, M. G. (2015). The effect of participating in Indiana's Twenty-first Century Scholars Program on college enrollments. *The Review of Higher Education*, *39*(1), 59–95.

U.S. Department of Agriculture. (2012). *Food Distribution Program on Indian Reservations: Persons participating*. https://web.archive.org/web/20120519054245/www.fns.usda.gov/pd/21irpart.htm

U.S. Department of Labor & Bureau of Labor Statistics. (2019). *Local Area Unemployment Statistics: Washington* [Data file]. https://data.bls.gov/timeseries/LASST530000000000003

Usher, C., Shanklin, D., & Wildfire, J. (1990). *Evaluation of the Food Distribution Program on Indian Reservations*. U.S. Department of Agriculture, Food and Nutrition Service. http://ddr.nal.usda.gov/dspace/bitstream/10113/46399/1/CAT93996877.pdf

Washington Higher Education Coordinating Board. (2012a). *Key facts about higher education in Washington*. https://wsac.wa.gov/sites/default/files/KeyFacts2012.pdf

Washington Higher Education Coordinating Board. (2012b). *Questions and answers*. https://www.wsac.wa.gov/sites/default/files/2011-12_Q&A.pdf

Washington State Department of Social and Health Services. (2014a). *Juvenile Justice and Delinquency Prevention Act*. https://www.dshs.wa.gov/sites/default/files/JJRA/pcjj/documents/Attachment%20II%20-%20Compliance%20Monitoring%20Policies%20%20Procedures%20Manual%20WA%20State.pdf

Washington State Department of Social and Health Services. (2014b). *Juvenile population in juvenile rehabilitation (JR)*. https://www.dshs.wa.gov/sites/default/files/JJRA/pcjj/documents/annual-report2014/Sect-7l-Juvenile.Rehabilitation.pdf

Washington Student Achievement Council. (2013). *Frequently asked questions for college bound seniors*. http://www.wsac.wa.gov/sites/default/files/CBS-FAQsForSeniors-2013.pdf

Washington Student Achievement Council. (2015). *State need grant and college bound scholarship: Program manual 2015-16*. http://www.wsac.wa.gov/sites/default/files/2015-16.SNG.CBS.Program.Manual.REV11-15.pdf

Washington Student Achievement Council. (2017). *College bound scholarship report*. http://www.wsac.wa.gov/sites/default/files/2017.CBS.Report.pdf

Zahn, M. A., Agnew, R., Fishbein, D., Miller, S., Winn, D., Dakoff, G., & Chesney-Lind, M. (2010). *Girls study group: Understanding and responding to girls' delinquency*. U.S. Department of Justice, Office of Justice Programs, Office of Juvenile Justice and Delinquency Prevention.

Ziol-Guest, K., & Lee, K. T. H. (2016). Parent income-based gaps in schooling: Cross-cohort trends in the NLSYs and the PSID. *AERA Open*, *2*(2), 233–285.

Authors

DAN GOLDHABER is vice president at the American Institutes for Research, director of the Center for Education Data & Research, and affiliate professor at the University of Washington. His research interests include interventions targeting postsecondary attainment, K–12 education reform, educational productivity, human capital investments, and the level and distribution of teacher quality.

MARK C. LONG is professor of public policy and governance and adjunct professor of economics at the University of Washington. His research interests include the impact of public policy on social mobility and economic opportunity. In particular, his work focuses on the influence of financial aid on college entry, course-taking behavior and college quality, affirmative action, and gender disparities in educational outcomes.

TREVOR GRATZ is a research consultant at the Center for Education and Data Research at the University of Washington. His research interests include the design of postsecondary policies, special education, high school career and technical education, and interventions targeting prospective preservice teachers.

JORDAN ROOKLYN is research coordinator at the Center for Education and Data Research at the University of Washington. Her research interests include methodological designs related to regression discontinuities, postsecondary attainment, and student motivation and expectations.

Manuscript received February 18, 2019
First revision received June 11, 2019
Second revision received September 3, 2019
Accepted October 17, 2019