

Supplemental Appendix

“Do Tuition Subsidies Raise Political Participation”

by Daniel Firoozi and Igor Geyn

A Summary and Descriptive Statistics Appendix

A.1 Descriptive Statistics

Table A.1 shows summary statistics for the full sample of all FAFSA filers from 2010-2011 to 2020-2021 in Column 1, likely Cal Grant eligible FAFSA filers from 2010-2011 to 2020-2021 in Column 2, likely Cal Grant eligible FAFSA filers from 2017-2018 to 2019-2020 in Column 3, near-threshold and likely eligible FAFSA filers from 2017-2018 to 2019-2020 in Column 4, and near-threshold and likely eligible FAFSA filers for the 2010-2011 to 2019-2020 cohorts in Column 5.

Beginning with Column 1, we note that the sample of FAFSA filers is likely to be majority Hispanic and Asian, has family income and asset levels of 53,000 dollars and 39,000 dollars, and overwhelmingly favors the Democratic Party relative to the Republican Party.³² This is similar to the subsample of likely Cal Grant eligible FAFSA filers in Column 2, except for higher political participation and much lower family asset levels due to the Cal Grant’s asset eligibility ceiling. In Column 3, we show that the characteristics of likely Cal Grant eligible FAFSA filers in the analysis sample does not change much in the time period after prior-year income assessment took effect, suggesting that restricting the sample to those less able to manipulate their income does not change the observable demographics of the sample.

Finally, in Columns 4 and 5, we note that our main and expanded samples of near threshold FAFSA filers who were likely to be Cal Grant eligible are more likely to be white, have higher incomes and lower family assets, and are more likely to be politically active at baseline than their peers in the full FAFSA filer sample. The intuition behind these differences is that we are focusing on students local to the maximum allowable income to remain eligible for financial aid, while excluding students who are ineligible based on other characteristics. We note that our main sample is a policy-relevant group because debates over the expansion of financial aid often center on extensions of eligibility to higher quantiles of the family income distribution.

³²Conditional on observing race, a majority of students are Hispanic or Asian American. We expect that consistent with general patterns in the American electorate, non-registered voters are more likely to be Hispanic and Asian American than registered voters. This suggests that our racial and ethnic composition descriptive statistics conditional on registration understate the share of FAFSA filers who are racial or ethnic minorities.

Table A.1: Descriptive Statistics for In-Sample FAFSA Filers

Sample	Full	Eligible	Analysis	Main	Expanded
Sample Size	16,393,526	8,563,732	3,318,159	258,329	738,046
<i>A. Race and Ethnicity (Missing if Not Registered to Vote)</i>					
Share Latino	0.225	0.280	0.307	0.277	0.243
Share White	0.161	0.166	0.174	0.240	0.224
Share Asian	0.068	0.067	0.065	0.060	0.060
Share Black	0.019	0.020	0.020	0.020	0.019
Share Other	0.028	0.029	0.031	0.031	0.029
<i>B. FAFSA Household Characteristics</i>					
Family Income	53,494	47,607	51,493	72,787	67,237
Family Assets	39,109	1,533	1,772	2,833	2,451
Family Size	3.184	3.442	3.444	2.839	2.904
FAFSA Year	2015.68	2015.31	2018.01	2018.00	2015.05
Share Married	0.085	0.086	0.083	0.064	0.067
<i>C. Political Characteristics</i>					
Democratic Party	0.294	0.327	0.348	0.355	0.326
Republican Party	0.069	0.077	0.081	0.102	0.093
Voted in 2020	0.413	0.460	0.494	0.555	0.502
Eligibility Limits	No	Yes	Yes	Yes	Yes
Earliest Year	2010	2010	2017	2017	2010
Latest Year	2020	2020	2019	2019	2019
Bandwidth Limit	None	None	None	\$10,000	\$10,000

Note: Each column shows the characteristics of a different sample of our FAFSA filer data. Labels for each of these samples are displayed in the first row of the table. Race and ethnicity are only available for registered voters and are missing for all people who are not registered to vote, because race and ethnicity data are only recorded through the voter file. Registered voters may choose to register as a Democrat, a Republican, a member of another political party, or as no party preference.

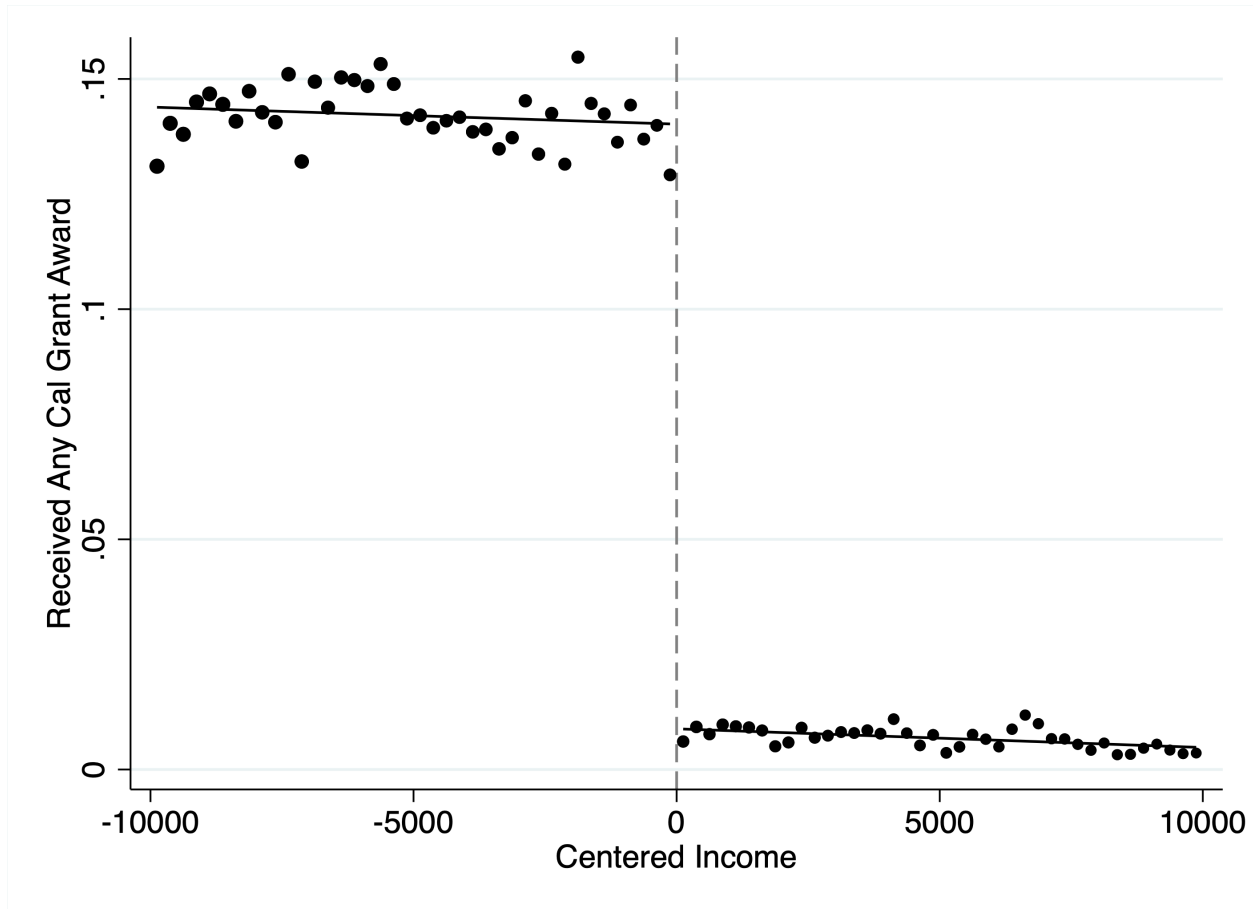


Figure A.1: Regression Discontinuity Plot of Cal Grant Receipt

Note: Centered income values are normalized to the income ceiling for Cal Grant A for a given individual. “Received Any Cal Grant Award” refers to an indicator for having received any Cal Grant award in the academic year following FAFSA filing. Observations includes all main sample 2017-2019 Cal Grant eligible students within a 10,000 dollar bandwidth of a Cal Grant income threshold.

A.2 Calculating Macro-level Outcomes

In Step 1 of Table A.2, we explicitly state the assumptions for each column. The lower bound assumes that the smallest point estimate for voter turnout in the 2020 general election is true, despite the fact that this point estimate relies on data that is susceptible to potential bias from manipulation of the running variable, students exiting the state, and legal name changes after marriage. The lower bound also relies on the lowest ratio of new center-left to new center-right voters across our specifications and assumes that 80 percent of center-left voters support Biden and 0 percent of registered Republicans support Biden.³³ Lastly, the lower bound estimate assumes that the number of Cal Grant recipients in 2011-2012 was the same as 2010-2011, despite the recipient totals monotonically increasing each year.

Our best estimate uses the results of our preferred specification for 2020 turnout and the partisan composition of new voters, making the same assumptions on vote by party as the lower bound column. It also assumes that the number of Cal Grant recipients in 2011-2012 was the average of the 2010-2011 and 2012-2013 cohorts. Finally, the upper bound uses the largest point estimate on the treatment effect for 2020 turnout, assumes the full net increase accrues to Democrats³⁴, and that the 2011-2012 Cal Grant awards were equal to the 2012-2013 total.

In Step 2, we multiply out the assumptions from Step 1 and compare them to the actual results of the 2020 presidential election in California across each column. In Step 3, we deduct the estimated impacts of 2010-2019 Cal Grants from the actual results and show the projected vote totals if the grants had not been awarded. In Step 4, we show the net impact of the 2010-2019 Cal Grants on the Biden-Trump margin of victory in the state of California and the aggregate voter turnout rate relative to the total citizen voting-eligible population (CVEP).

³³Based on actual election returns and surveys of California college students that matched party registration records to policy preferences, this is likely to be an underestimate. At both private and public 4-year college campus precincts in California and other states, between 80 and 95 percent of voters cast a ballot for Democratic candidates. Likewise, a survey of Californians who applied to college between 2007 and 2011 that was fielded in 2022 found that approximately 75 percent of registered third party and non-partisan voters, 94 percent of registered Democrats, and 23 percent of registered Republicans reported that they favored the Democratic Party over the Republican Party (Firoozi, 2023). Evidence from political contribution data suggest even higher rates of support for Democratic candidates.

³⁴This is mathematically feasible because some specifications find a net decrease in GOP turnout, with more than the whole of the net increase accruing to registered independents and Democrats.

Table A.2: Estimated Impact of 2010-2019 Cal Grants on the 2020 Election in California

	Lower Bound	Best Estimate	Upper Bound
<i>Step 1: Assumptions</i>			
1.a) Average Treatment Effect	+3.86 pp	+9.85 pp	+11.93 pp
1.b) Partisan Assignment	70% D 25% R 5% O	80% D 15% R 5% O	100% D 0% R 0% O
1.c) Total Grants Awarded	2,612,744	2,626,306	2,639,867
<i>Step 2: Actual 2020 Outcomes and Calculated Effects</i>			
2.a) Actual 2020 Biden Votes		11,110,250 (63.48 pp)	
Impact of Cal Grants	+70,596	+206,953	+314,936
2.b) Actual 2020 Trump Votes		6,006,429 (34.32 pp)	
Impact of Cal Grants	+25,213	+38,803	+0
2.c) Actual 2020 Other Votes		384,202 (2.20 pp)	
Impact of Cal Grants	+5,043	+12,935	+0
2.d) Actual 2020 Total Votes		17,500,881 (100.00 pp)	
Impact of Cal Grants	+100,852	+258,691	+314,936
<i>Step 3: Estimated Outcomes without 2010-2019 Cal Grants</i>			
3.a) Projected 2020 Biden Votes	11,039,654 (63.45 pp)	10,903,297 (63.24 pp)	10,795,314 (62.81 pp)
3.b) Projected 2020 Trump Votes	5,981,216 (34.37 pp)	5,967,626 (34.61 pp)	6,006,429 (34.95 pp)
3.c) Projected 2020 Other Votes	379,159 (2.18 pp)	371,267 (2.15 pp)	384,202 (2.24 pp)
3.d) Projected 2020 Total Votes	17,400,029 (100.00 pp)	17,242,190 (100.00 pp)	17,185,945 (100.00 pp)
<i>Step 4: Estimated Impacts of 2010-2019 Cal Grants</i>			
4.a) Impact on Biden-Trump Margin	+45,383 +0.08 pp	+168,150 +0.53 pp	+314,936 +1.30 pp
4.b) Impact on Voter Turnout Rate	+0.40 pp	+1.03 pp	+1.26 pp

Note: The citizen voting eligible population (CVEP) was 25,090,517 in California for the 2020 presidential general election.

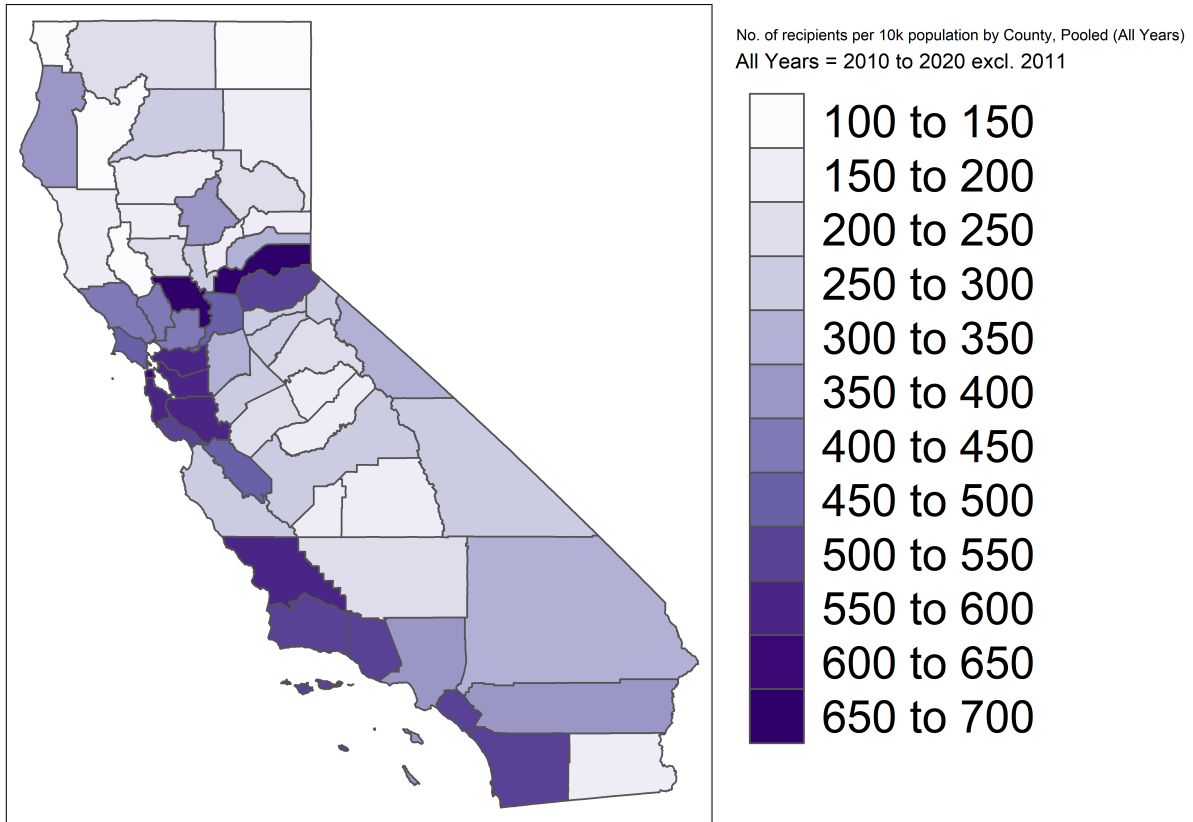


Figure A.2: Map of 2010-2020 Cal Grant Recipients in 2022

Note: The map above shows the number of Cal Grant recipients who were registered to vote per capita in each of California's counties. Locations are assessed based on the 2022 voter registration address of Cal Grant recipients. See Figure A.3 for a map of public university campuses.

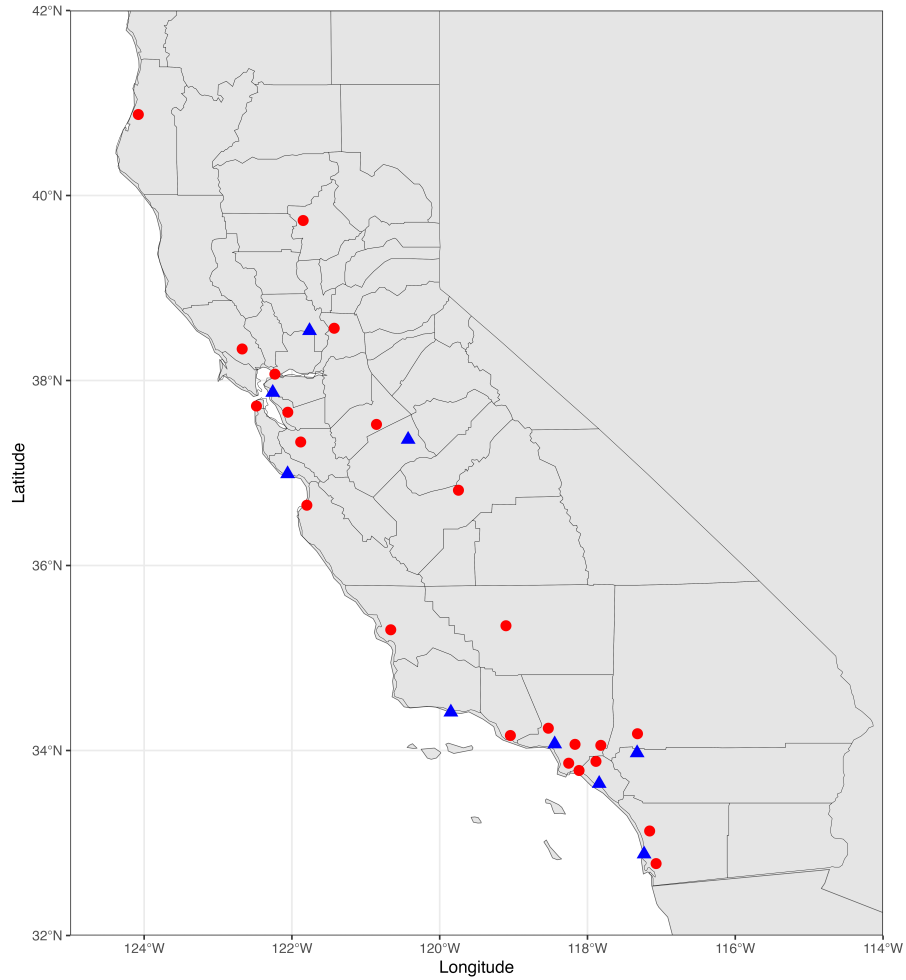


Figure A.3: Map of Public 4-Year Colleges in California

Note: California's public universities are plotted with symbols and county lines in the map above. Blue triangles represent the University of California's (UC) undergraduate campuses, which are highly selective research universities. Of the 9 UC campuses, 8 are categorized as R1 research universities. Red circles represent the California State University's (CSU) campuses, which are selective local comprehensive universities that primarily focus on teaching. See Figure A.2 for a heat map of the Cal Grant's political impact by county.

B RD Validation Appendix

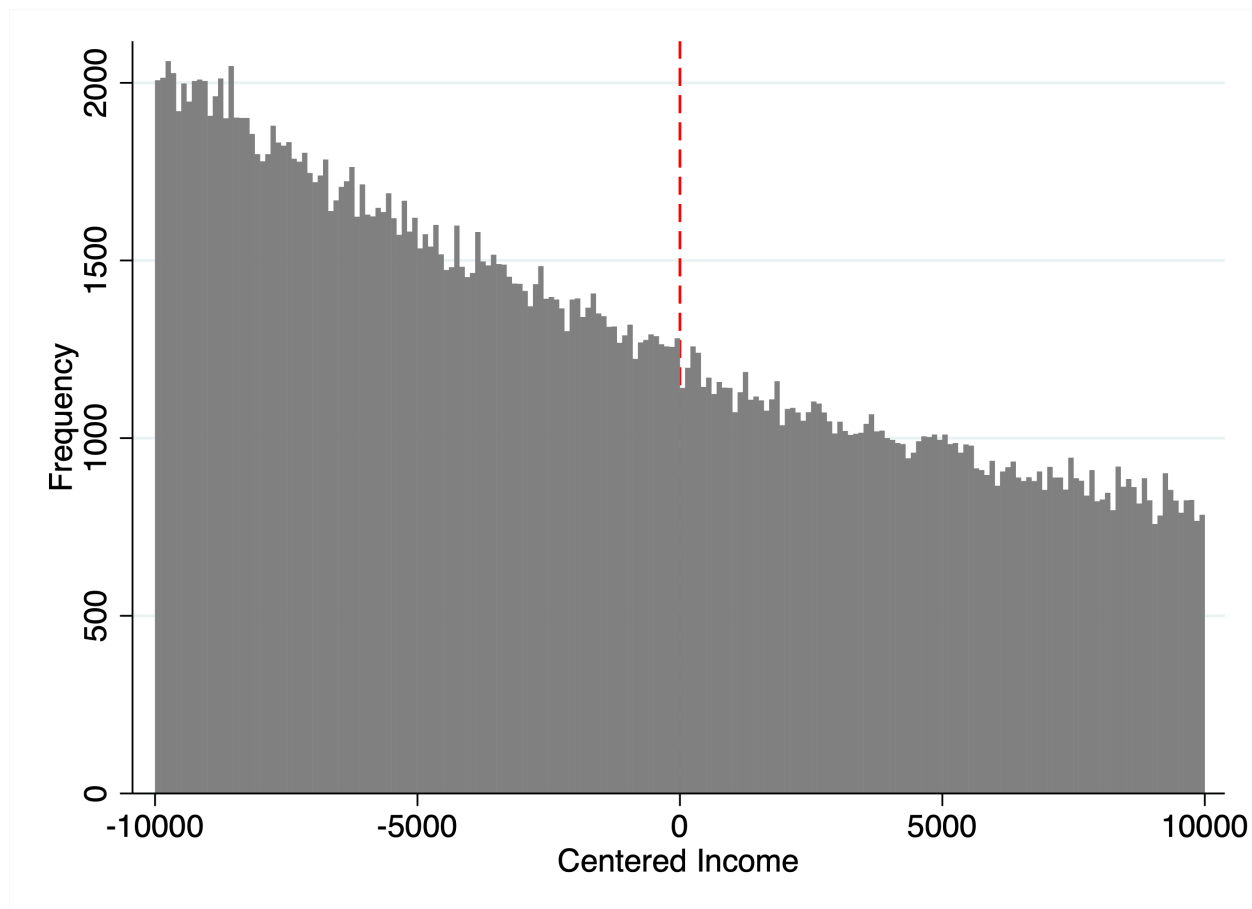


Figure B.1: McCrary Density Test

Note: Centered income values are normalized to the income ceiling for Cal Grant A for a given individual. Observations include all main sample 2017-2019 Cal Grant eligible students within a 10,000 dollar bandwidth of a Cal Grant income threshold.

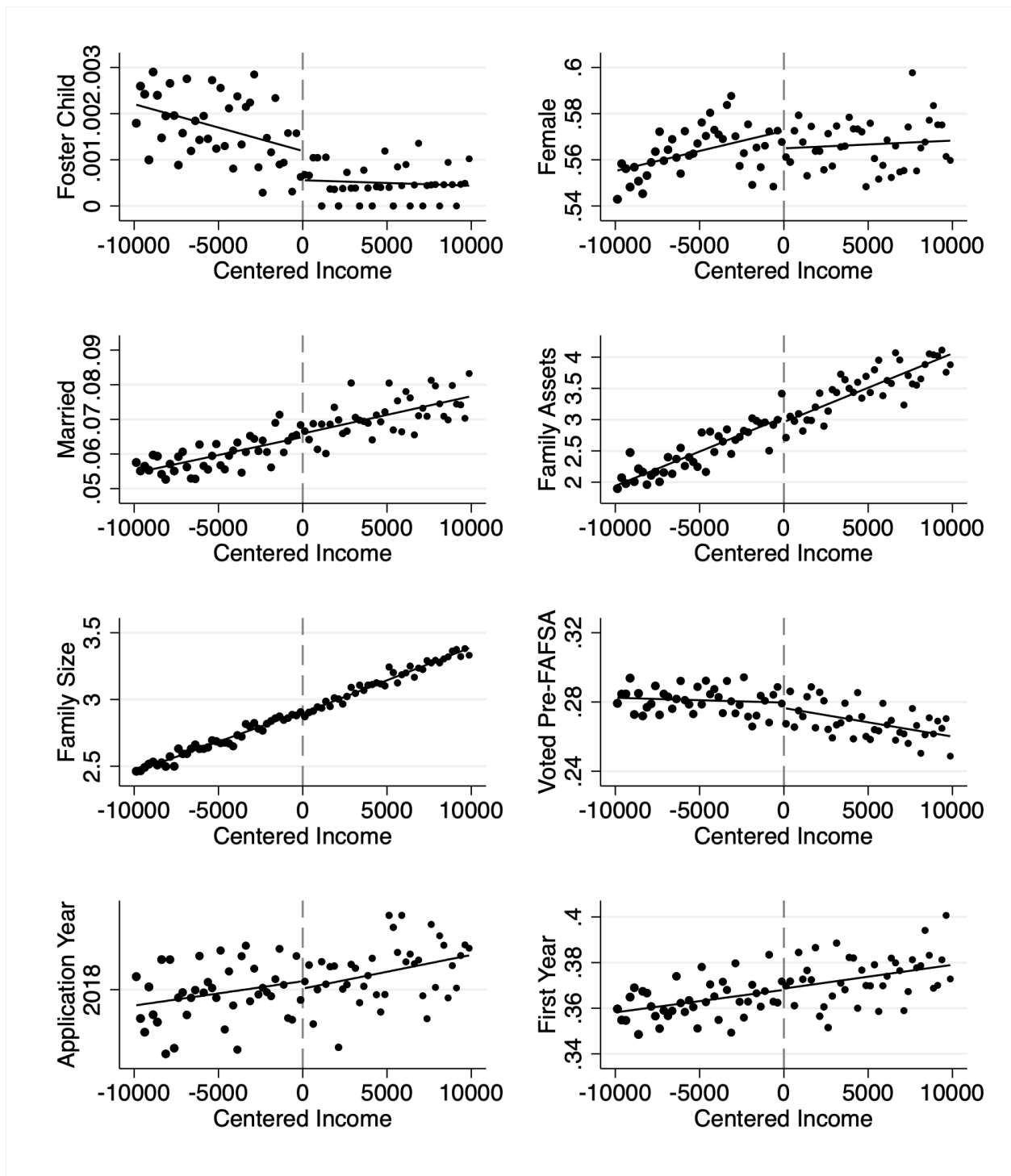


Figure B.2: Regression Discontinuity Plot for Covariates

Note: Centered income values are normalized to the income ceiling for Cal Grant A for a given individual. Observations include all main sample 2017-2019 Cal Grant eligible students within a 10,000 dollar bandwidth of a Cal Grant income threshold.

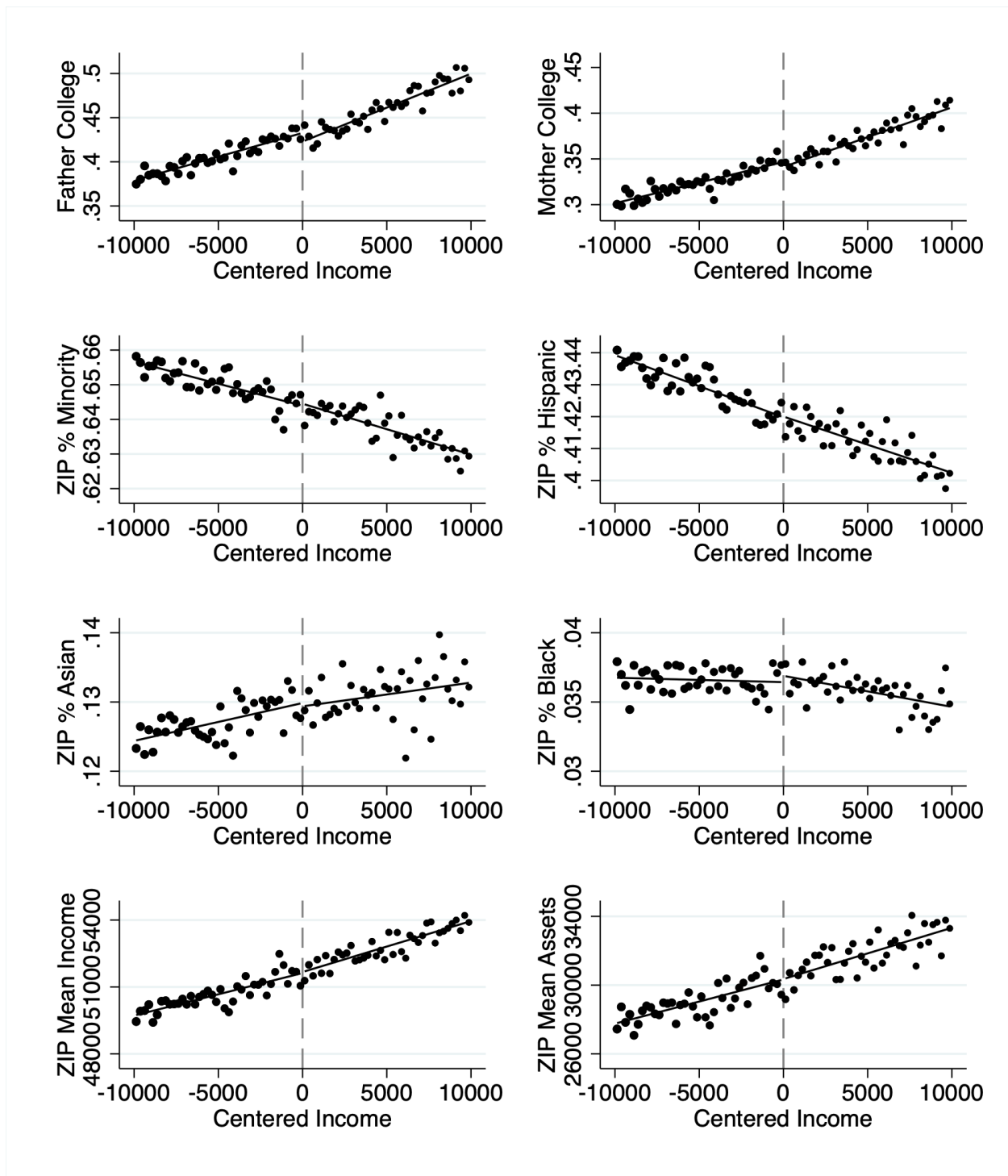


Figure B.3: Regression Discontinuity Plot for Covariates

Note: Centered income values are normalized to the income ceiling for Cal Grant A for a given individual. Observations include all main sample 2017-2019 Cal Grant eligible students within a 10,000 dollar bandwidth of a Cal Grant income threshold.

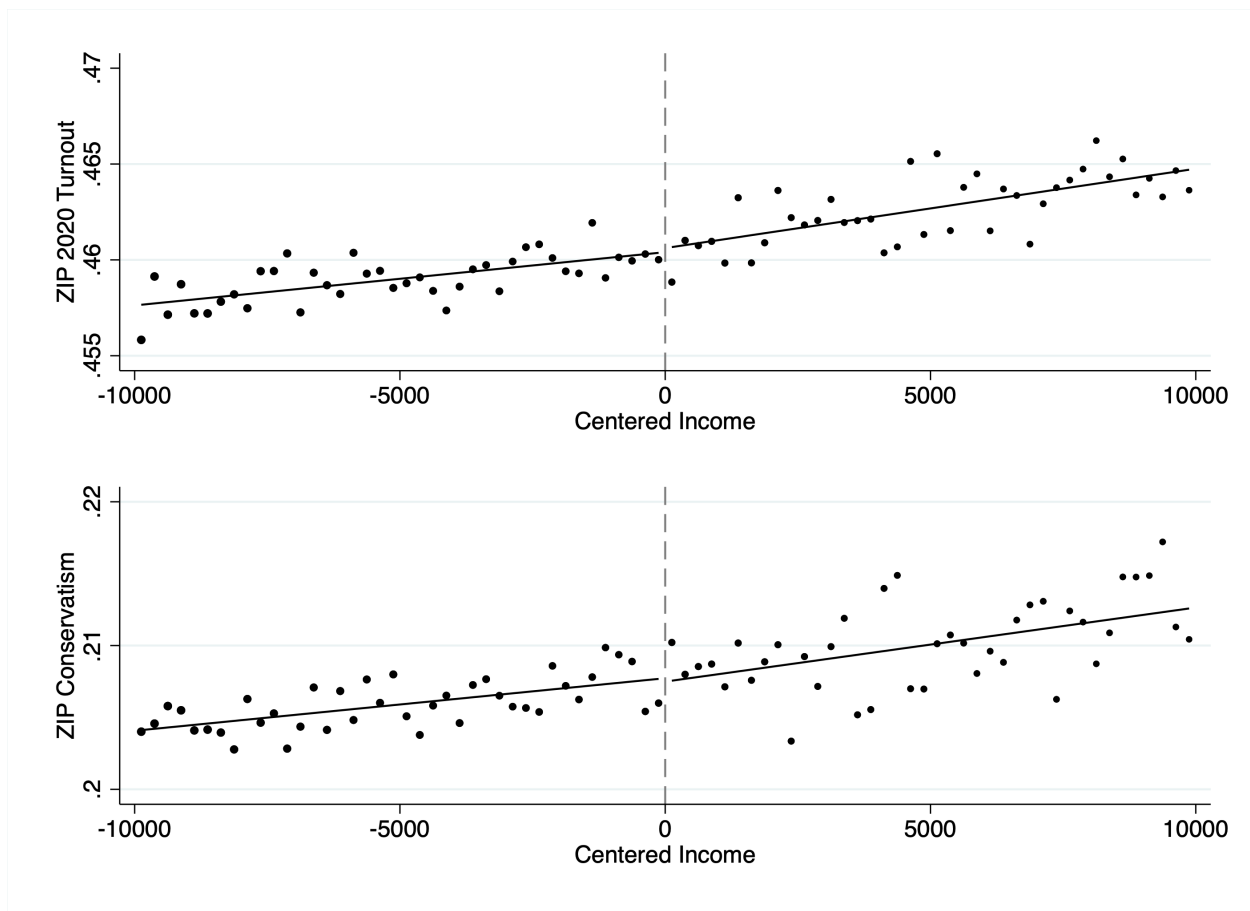


Figure B.4: Regression Discontinuity Plot for Covariates

Note: Centered income values are normalized to the income ceiling for Cal Grant A for a given individual. Observations include all main sample 2017-2019 Cal Grant eligible students within a 10,000 dollar bandwidth of a Cal Grant income threshold.

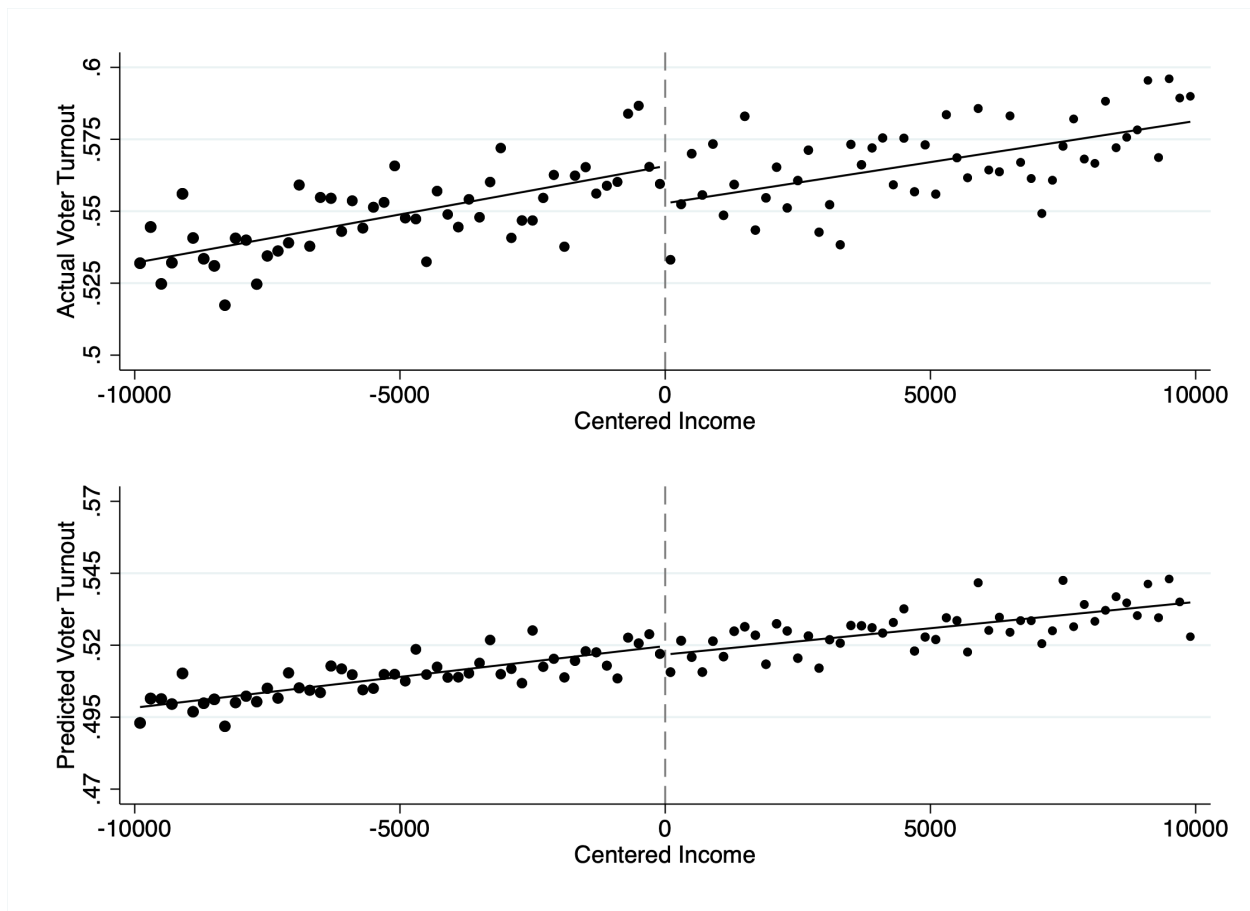


Figure B.5: Omnibus Covariate Balance Test

Note: Centered income values are normalized to the income ceiling for Cal Grant A for a given individual. Observations include all main sample 2017-2019 Cal Grant eligible students within a 10,000 dollar bandwidth of a Cal Grant income threshold.

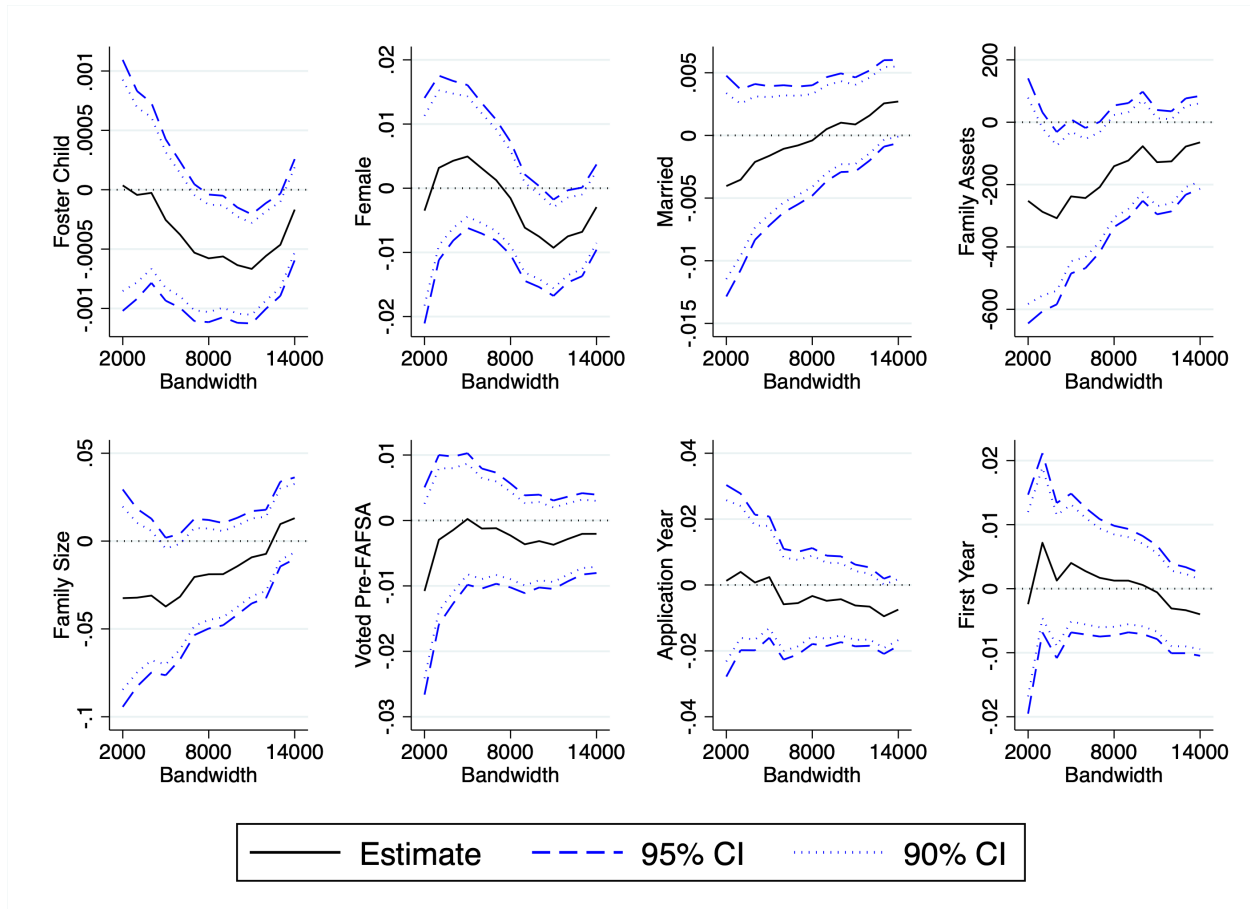


Figure B.6: Covariate Discontinuities by Bandwidth

Note: Each panel shows the reduced form discontinuity in a covariate across a range of potential bandwidths using a local linear specification and a uniform kernel without covariates. The graphs reflect the point estimate, 95 percent confidence interval, and 90 percent confidence interval. Observations include all main sample 2017-2019 Cal Grant eligible students within a given bandwidth of a Cal Grant income threshold.

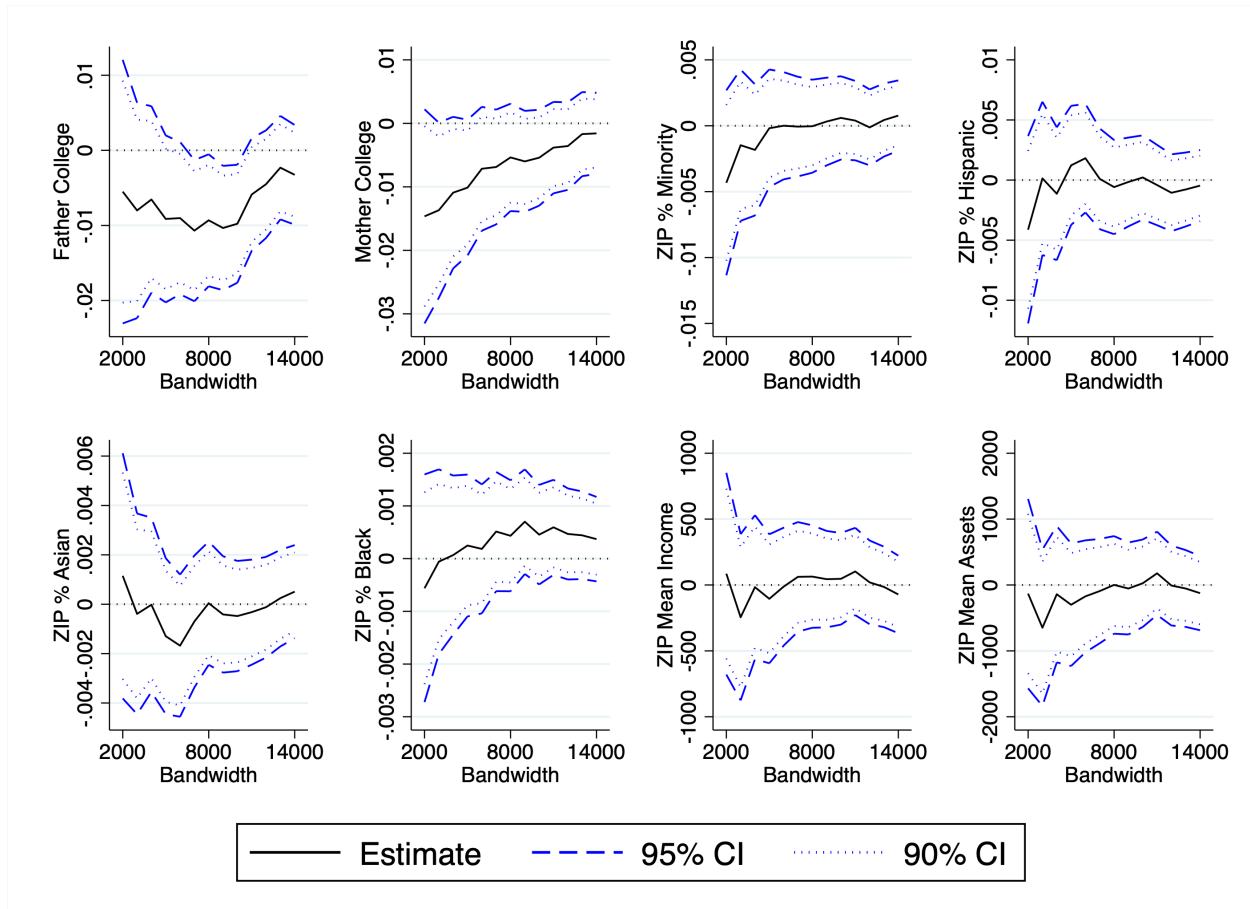


Figure B.7: Covariate Discontinuities by Bandwidth

Note: Each panel shows the reduced form discontinuity in a covariate across a range of potential bandwidths using a local linear specification and a uniform kernel without covariates. The graphs reflect the point estimate, 95 percent confidence interval, and 90 percent confidence interval. Observations include all main sample 2017-2019 Cal Grant eligible students within a given bandwidth of a Cal Grant income threshold.

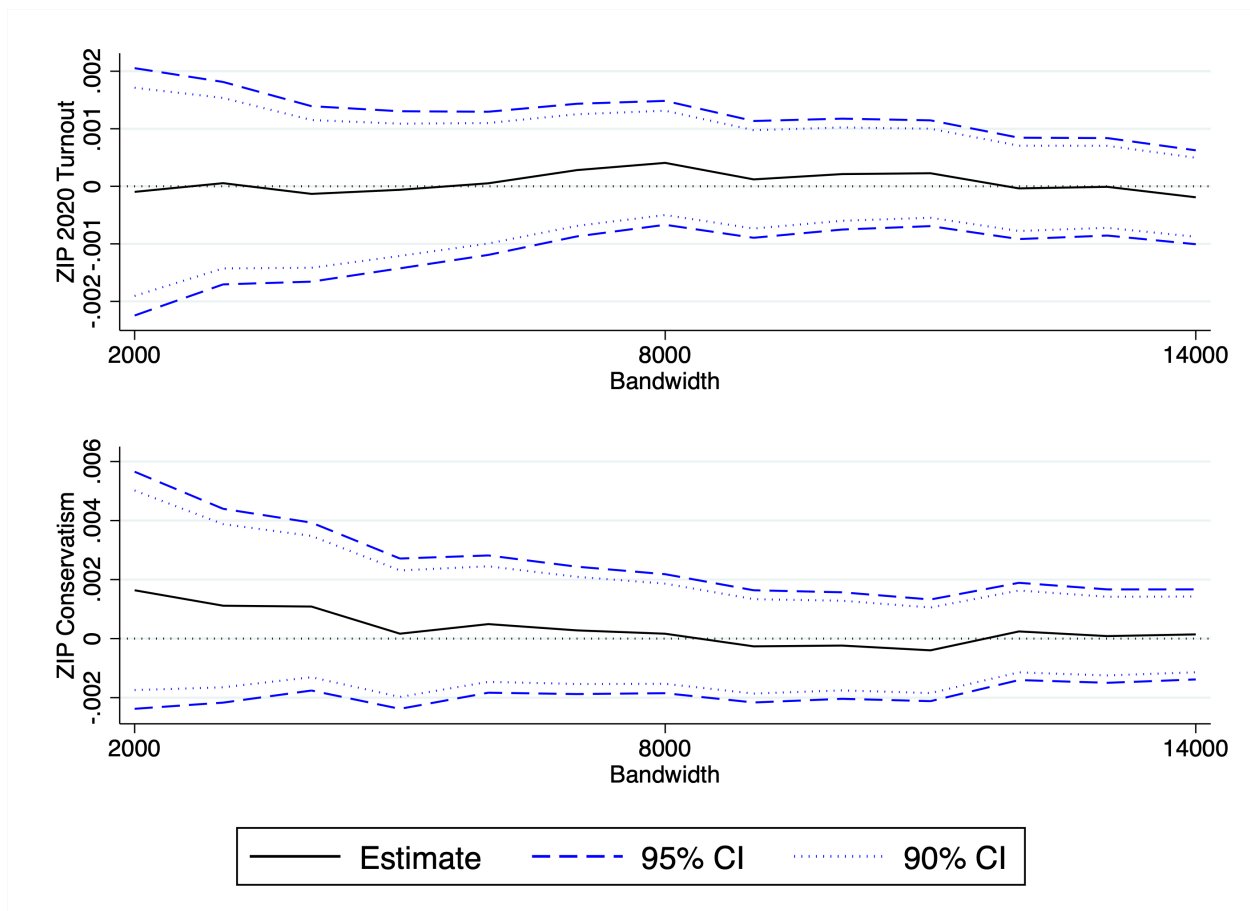


Figure B.8: Covariate Discontinuities by Bandwidth

Note: Each panel shows the reduced form discontinuity in a covariate across a range of potential bandwidths using a local linear specification and a uniform kernel without covariates. The graphs reflect the point estimate, 95 percent confidence interval, and 90 percent confidence interval. Observations include all main sample 2017-2019 Cal Grant eligible students within a given bandwidth of a Cal Grant income threshold.

B.1 Interstate Migration

We note that there is a match rate of 50 to 60 percent, depending on the particular sample used, between FAFSA files from CSAC and L2’s California voter file. Because the merged dataset is de-identified, it is not possible to know the precise registration rate for unique individuals within the dataset. Non-matches between these two datasets are attributable to students moving to another state/country, lack of interest in voting or registering to vote while living in California, or disenfranchisement (for example, due to incarceration or death). Based on the descriptive statistics we observe for the tables generated in this appendix, we estimate that approximately three quarters of the non-matches between datasets are attributable to Californian residents who simply lack interest in registration or voting, with the remaining quarter attributable to migration out of California.

We use four approaches to address the risk that out-of-state migration may bias our estimates.

First, we note that National Student Clearinghouse data and IRS tax records have been used to track movers at the Cal Grant income ceiling, confirming the validity of our approach. Receiving a Cal Grant has insignificant effects on the share of students enrolling at in-state colleges in the short-run and null effects on IRS tax filings in California until 11 years after FAFSA filing. [Bettinger et al. \(2019\)](#) formally estimate an insignificant increase in *out-of-state* enrollment for each Cal Grant received. Because moving out of California makes a student’s political participation records unobservable in our dataset, a literal interpretation of the authors’ estimates would mean that our short run estimates are biased *toward zero* by roughly 2 percentage points (assuming a 50 percent turnout rate). The paper also uses IRS data to show null effects of the Cal Grant on California residence (<2 pp) followed by a significant increase in retention within the state of California of approximately 2 percentage points after 11 years have elapsed since FAFSA filing. Because the falling share of students who reside in California over time should partially offset the selective retention induced by the Cal Grant after 11 years, we expect relocation to be a minor source of upward bias of approximately 1 percentage point in estimates after 11 years have elapsed (again assuming a 50 percent turnout rate).

Second, we use the subsample of our dataset in which we can observe out-of-state migration to confirm that our results match those of earlier work on the Cal Grant. Specifically, we use the subset of students that overlap between our main dataset and the main dataset used by [Firoozi \(2023\)](#), which would be UC applicants filing a financial aid application in anticipation of the 2010 and 2011 academic years. We show that receiving a Cal Grant has no measured impact on out-of-state voter registration in Table B.1 for this sample and that, under most specifications, the point estimate is positive. Each specification reflects a result

that is both small in absolute magnitude and in economic terms. The observation that most specifications generate a positive point estimate suggests that out-of-state migration may very slightly bias our estimates toward zero, which is consistent with previous work on the Cal Grant’s impact on migration.

Third, we use a unique feature of our L2 dataset to illustrate that attrition has not made the sample unbalanced. In the L2 dataset, people who move out of the state of California will have no California voter record in either pre-treatment or post-treatment elections. This is because L2, which observes all state voter files, prunes historical voting records of interstate migrants from the dataset of the origin state. Therefore, if ambitious students with a high propensity to vote who are barely too rich to receive the Cal Grant attrit to other states, we should observe a discontinuity in pre-treatment voter turnout mirroring the results for post-treatment voter turnout. As we show in Table B.2, there are null effects of receiving a Cal Grant on pre-treatment turnout.

Fourth, we choose to be conservative in our approach to identifying causal effects. We begin our results section with a focus on the 2017-2018 to 2019-2020 sample, who filed a FAFSA less than 5 years prior to our voter file snapshot, minimizing the possibility of selection bias due to out-of-state migration. We also externally validate our results with a discontinuity in the generosity of the federal Pell Grant, showing that our findings generalize to policies that subsidize tuition at colleges outside of California. For our results to be explained by out-of-state migration, the Cal Grant’s effect on short-run out-of-state migration would need to have changed from a negative value in the early 2000s to a present day effect size of roughly 20 percentage points per grant awarded and the Pell Grant would need to induce selection into California at a similar per dollar rate.

Table B.1: Estimated Impacts of 2010-2011 Cal Grants on Out-of-State Registration

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
Non-CA Registered	-0.0136 (0.0154)	-0.0134 (0.0153)	0.0016 (0.0212)	0.0027 (0.0212)	0.0009 (0.0202)	0.0010 (0.0203)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	6,589	6,589	6,589	6,589	3,318	3,318

Note: ⁺ $p < 0.1$, ^{*} $p < 0.05$, ^{**} $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. “Non-CA Registered” refers to the proportion of students who were observed as registered to vote in a state other than California. Data is from a sample of UC applicants between the 2010-2011 and 2011-2012 academic years who filed a FAFSA ([Firoozi, 2023](#)).

Table B.2: Placebo Test of 2017-2019 Cal Grant Receipt on Pre-Treatment Voter Turnout

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
Voted Pre-FAFSA	0.0240 (0.0276)	0.0258 (0.0269)	0.0053 (0.0428)	0.0078 (0.0420)	-0.0017 (0.0392)	-0.0004 (0.0384)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	258,329	258,329	258,329	258,329	123,774	123,774

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. “Voted Pre-FAFSA” refers to having voted in the general election immediately prior to filing a FAFSA and potentially having received a Cal Grant.

C Robustness Check Appendix

C.1 Effects of 2017-2019 Cal Grants

We test our main outcomes formally in Table C.1. Each row of the table reflects the IV estimate of the effect of receiving a Cal Grant on the aforementioned outcomes and each column represents a different specification. Column 1 begins with our preferred specification, which uses local linear estimation with a uniform kernel at a 10,000 dollar bandwidth without covariates. Column 2 adds a set of pre-FAFSA covariate controls. Columns 3 and 4 increase the order of the polynomial control for the running variable to a quadratic functional form, with and without covariates. Columns 5 and 6 use local linear estimation at a much narrower 5,000 dollar bandwidth, again varying the inclusion of pre-FAFSA covariates.

Beginning with voter registration in Panel A, we find that the Cal Grant generates noisy, if any, increases in aggregate voter registration. Our preferred specification in Column 1 yields a point estimate of 6.34 percentage points per grant awarded. However, the estimates in Columns 2 through 6 are smaller and not significant, which suggests that the estimated impact of Cal Grant receipt on voter registration are sensitive to model specification and could be null or positive and small.

In Panel B, we present evidence that the rate at which students actually cast a ballot rises sharply as a result of California’s tuition-free college program. For each grant awarded by the state, a student’s odds of casting a ballot in the 2020 general election rose by 9.85 percentage points, which is significant at a 99 percent confidence interval. For all general elections held after the academic year in which students filed their FAFSA, we estimate a similar increase of 8.55 percentage points per grant awarded. These findings are consistent across each successive column and remain significant at a 90 percent confidence interval, suggesting that the effect of Cal Grants is robust to different specifications and definitions of turnout.

Panel C concludes by interacting voter turnout with measures of student partisanship. Row 4 begins with an indicator for Democratic or independent registration status interacted with a student’s general election turnout rate. We find that, for each grant awarded, the rate at which students turnout for elections as a Democrat or independent increases by 8.91 percentage points, which is significant at a 99 percent confidence interval. This result is much larger than the effect on Republican turnout in Row 5, which is estimated to be -0.36 percentage points per grant awarded. Taken together, these results suggest that the Cal Grant program substantially raises political participation, exclusively among left-leaning voters.

Table C.1: Estimated Impacts of 2017-2019 Cal Grant Receipt on Political Participation

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Voter Registration</i>						
Registered in 2022	0.0634* (0.0285)	0.0419+ (0.0249)	0.0358 (0.0443)	0.0214 (0.0388)	0.0329 (0.0405)	0.0197 (0.0355)
<i>B. Voter Turnout</i>						
Voted in 2020	0.0985** (0.0305)	0.0743** (0.0270)	0.0942* (0.0474)	0.0783+ (0.0421)	0.1193** (0.0434)	0.1047** (0.0385)
Voter Turnout	0.0855** (0.0277)	0.0639** (0.0235)	0.0824+ (0.0430)	0.0700+ (0.0367)	0.1004* (0.0394)	0.0927** (0.0336)
<i>C. Voter Turnout by Partisanship</i>						
Center-left Turnout	0.0891** (0.0277)	0.0698** (0.0245)	0.0765+ (0.0431)	0.0661+ (0.0383)	0.0966* (0.0394)	0.0914** (0.0351)
Center-right Turnout	-0.0036 (0.0150)	-0.0059 (0.0147)	0.0059 (0.0233)	0.0039 (0.0230)	0.0037 (0.0213)	0.0013 (0.0210)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	258,329	258,329	258,329	258,329	123,774	123,774

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. “Voter Turnout” refers to the share of all federal general elections between 2010 and 2020 in which a student voted after the academic year in which they filed a FAFSA, which includes up to two elections in 2018 and 2020 for these student cohorts. “Center-left Turnout” refers to the interaction between voter turnout and an indicator for whether the student was a registered Democrat or independent, following [Firoozi \(2023\)](#). “Center-right Turnout” refers to the interaction between voter turnout and an indicator for being registered with the Republican Party.

Table C.2: Impacts of 2017-2019 Cal Grants on Political Participation by Gender

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Non-Female</i>						
Registered in 2022	0.0765 ⁺ (0.0464)	0.0616 (0.0415)	0.0899 (0.0748)	0.0367 (0.0670)	0.0876 (0.0678)	0.0507 (0.0608)
Voted in 2020	0.1494** (0.0502)	0.1359** (0.0452)	0.2113** (0.0811)	0.1562* (0.0730)	0.2378** (0.0736)	0.2004** (0.0664)
Voter Turnout	0.1293** (0.0451)	0.1264** (0.0390)	0.1909** (0.0730)	0.1471* (0.0631)	0.2078** (0.0662)	0.1841** (0.0574)
Sample Size	112,527	112,527	112,527	112,527	53,478	53,478
<i>B. Female</i>						
Registered in 2022	0.0557 (0.0361)	0.0279 (0.0308)	0.0008 (0.0546)	0.0101 (0.0470)	-0.0029 (0.0503)	-0.0013 (0.0432)
Voted in 2020	0.0618 (0.0384)	0.0334 (0.0333)	0.0224 (0.0580)	0.0278 (0.0509)	0.0448 (0.0534)	0.0420 (0.0467)
Voter Turnout	0.0531 (0.0351)	0.0227 (0.0293)	0.0164 (0.0530)	0.0208 (0.0448)	0.0332 (0.0488)	0.0335 (0.0411)
Sample Size	145,802	145,802	145,802	145,802	70,296	70,296
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes

Note: ⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. “Voter Turnout” refers to the share of all federal general elections between 2010 and 2020 in which a student voted after the academic year in which they filed a FAFSA.

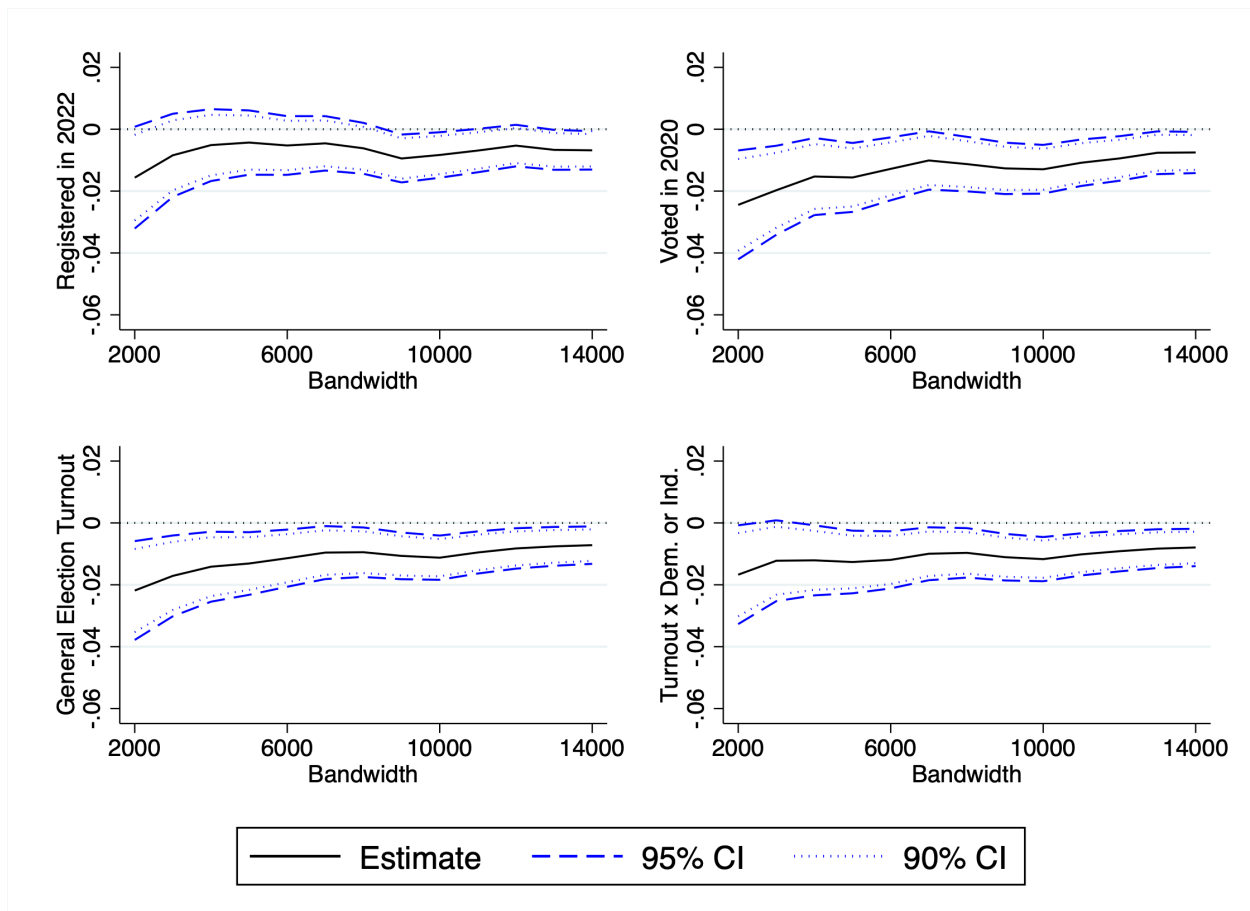


Figure C.1: Bandwidth Robustness Tests for Main Outcomes

Note: Each panel shows the reduced form discontinuity in an outcome variable across a range of potential bandwidths using a local linear specification and a uniform kernel without covariates. The graphs reflect the point estimate, 95 percent confidence interval, and 90 percent confidence interval of the reduced form discontinuity in the outcome of interest. Outcomes correspond directly to those in Table C.1.

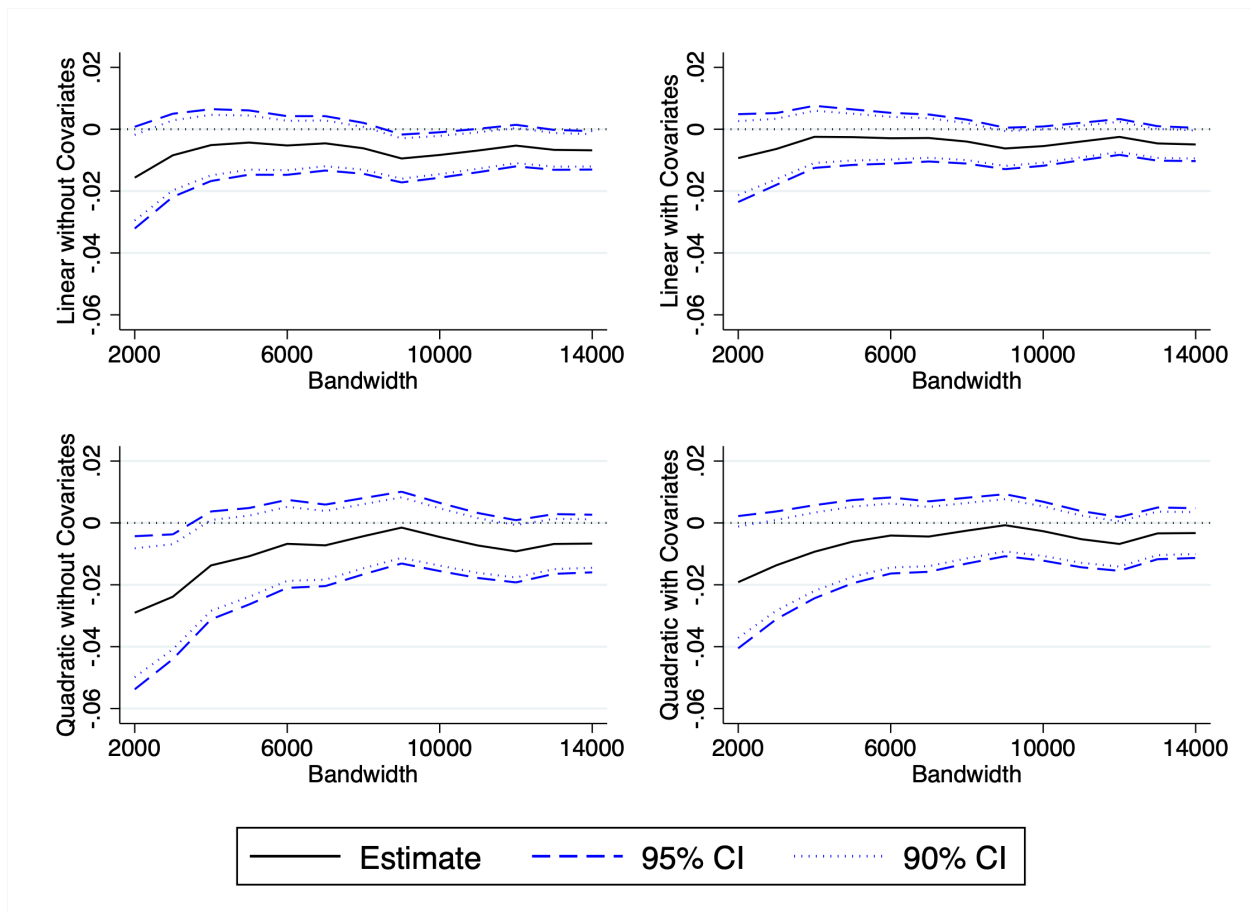


Figure C.2: Voter Registration in 2022 Bandwidth Robustness Tests

Note: The graphs reflect the point estimate, 95 percent confidence interval, and 90 percent confidence interval of the reduced form discontinuity in the outcome of interest. Each panel represents a different specification. Observations include all main sample 2017-2019 Cal Grant eligible students within a 14,000 dollar bandwidth of a Cal Grant income threshold.

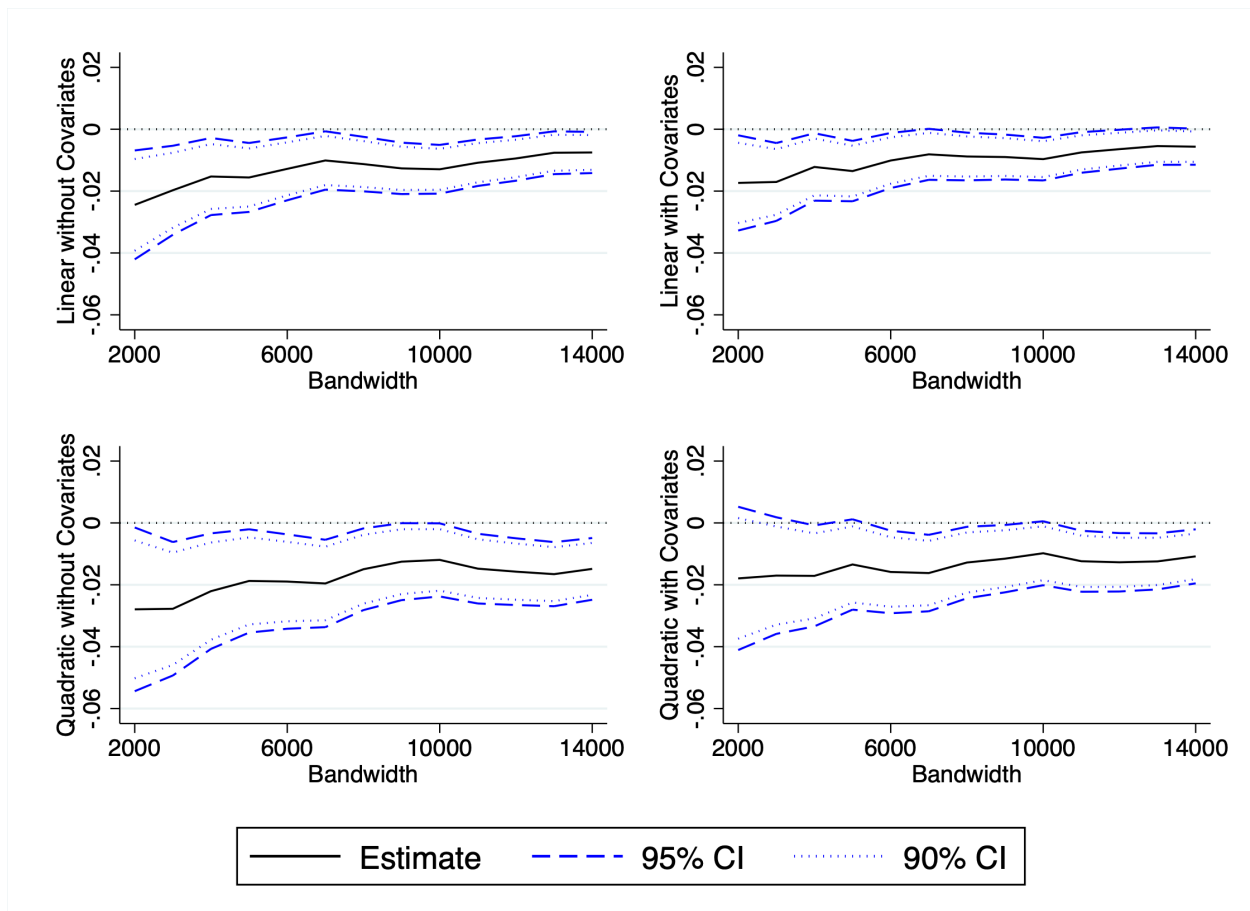


Figure C.3: 2020 General Election Turnout Bandwidth Robustness Tests

Note: The graphs reflect the point estimate, 95 percent confidence interval, and 90 percent confidence interval of the reduced form discontinuity in the outcome of interest. Each panel represents a different specification. Observations include all main sample 2017-2019 Cal Grant eligible students within a 14,000 dollar bandwidth of a Cal Grant income threshold.

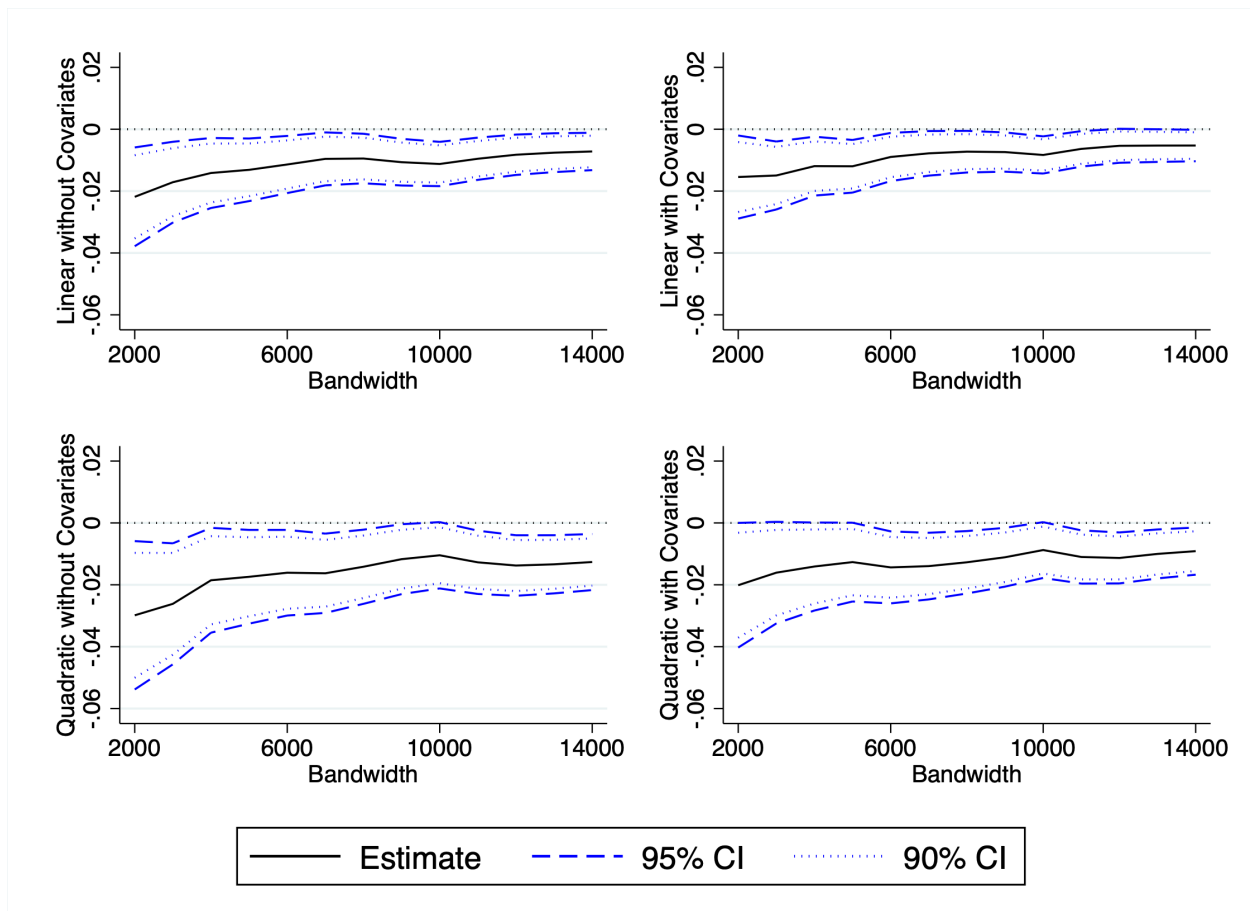


Figure C.4: General Election Turnout Bandwidth Robustness Tests

Note: The graphs reflect the point estimate, 95 percent confidence interval, and 90 percent confidence interval of the reduced form discontinuity in the outcome of interest. Each panel represents a different specification. Observations include all main sample 2017-2019 Cal Grant eligible students within a 14,000 dollar bandwidth of a Cal Grant income threshold.

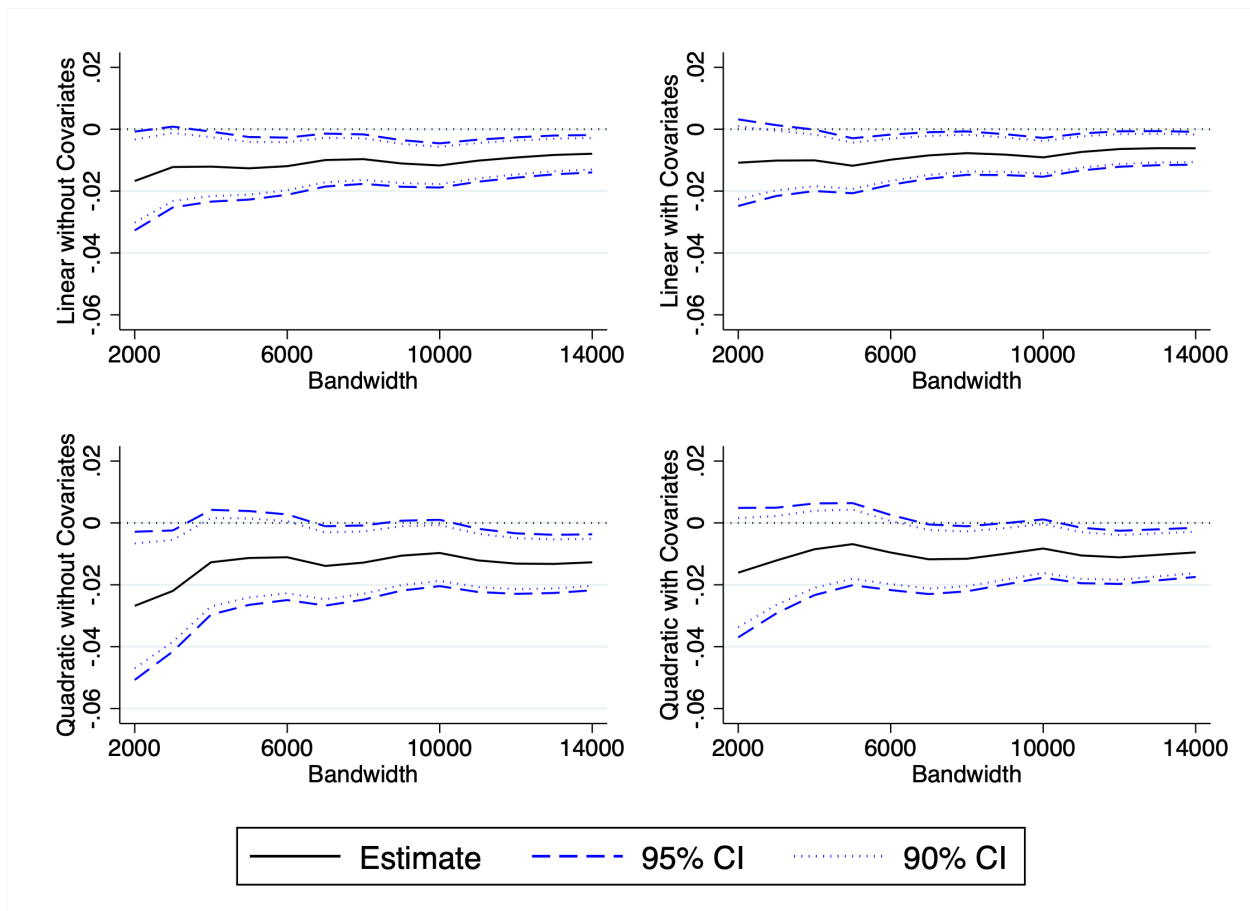


Figure C.5: Democratic or Independent Turnout Bandwidth Robustness Tests

Note: The graphs reflect the point estimate, 95 percent confidence interval, and 90 percent confidence interval of the reduced form discontinuity in the outcome of interest. Each panel represents a different specification. Observations include all main sample 2017-2019 Cal Grant eligible students within a 14,000 dollar bandwidth of a Cal Grant income threshold.

Table C.3: Main Results for 2017-2019 with CCT Bias-Aware Confidence Intervals

Outcome	(1)	(2)
<i>Voter Registration</i>		
RD_Estimate	0.0525 ⁺ (0.0316)	0.0531 (0.0446)
Robust 95% CI	[-.05 ; .131]	[-.006 ; .251]
Robust p-value	0.386	0.061
<i>Voted in 2020</i>		
RD_Estimate	0.0968** (0.0338)	0.1299** (0.0477)
Robust 95% CI	[.023 ; .216]	[.045 ; .319]
Robust p-value	0.016	0.009
<i>Voter Turnout</i>		
RD_Estimate	0.0843** (0.0307)	0.1144** (0.0433)
Robust 95% CI	[.019 ; .195]	[.042 ; .291]
Robust p-value	0.017	0.009
<i>Center-Left Turnout</i>		
RD_Estimate	0.0842** (0.0307)	0.0933* (0.0435)
Robust 95% CI	[.003 ; .18]	[0 ; .25]
Robust p-value	0.042	0.049
<i>Center-Right Turnout</i>		
RD_Estimate	0.0001 (0.0166)	0.0211 (0.0235)
Robust 95% CI	[-.032 ; .063]	[-.025 ; .108]
Robust p-value	0.522	0.223
Polynomial	1	1
Kernel	Triangular	Triangular
Bandwidth	\$10,000	\$5,000

Note: ⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Each row titled “RD Estimate” shows the conventional point estimate and standard errors in parentheses for a given outcome variable. These are calculated using a triangular kernel for a local linear specification without covariates. The rows “Robust 95% CI” and “Robust p-value” show the bias-corrected confidence interval and the bias-corrected p-value for the same outcome variable (Calonico et al., 2014). These outcomes correspond to those in Table C.1.

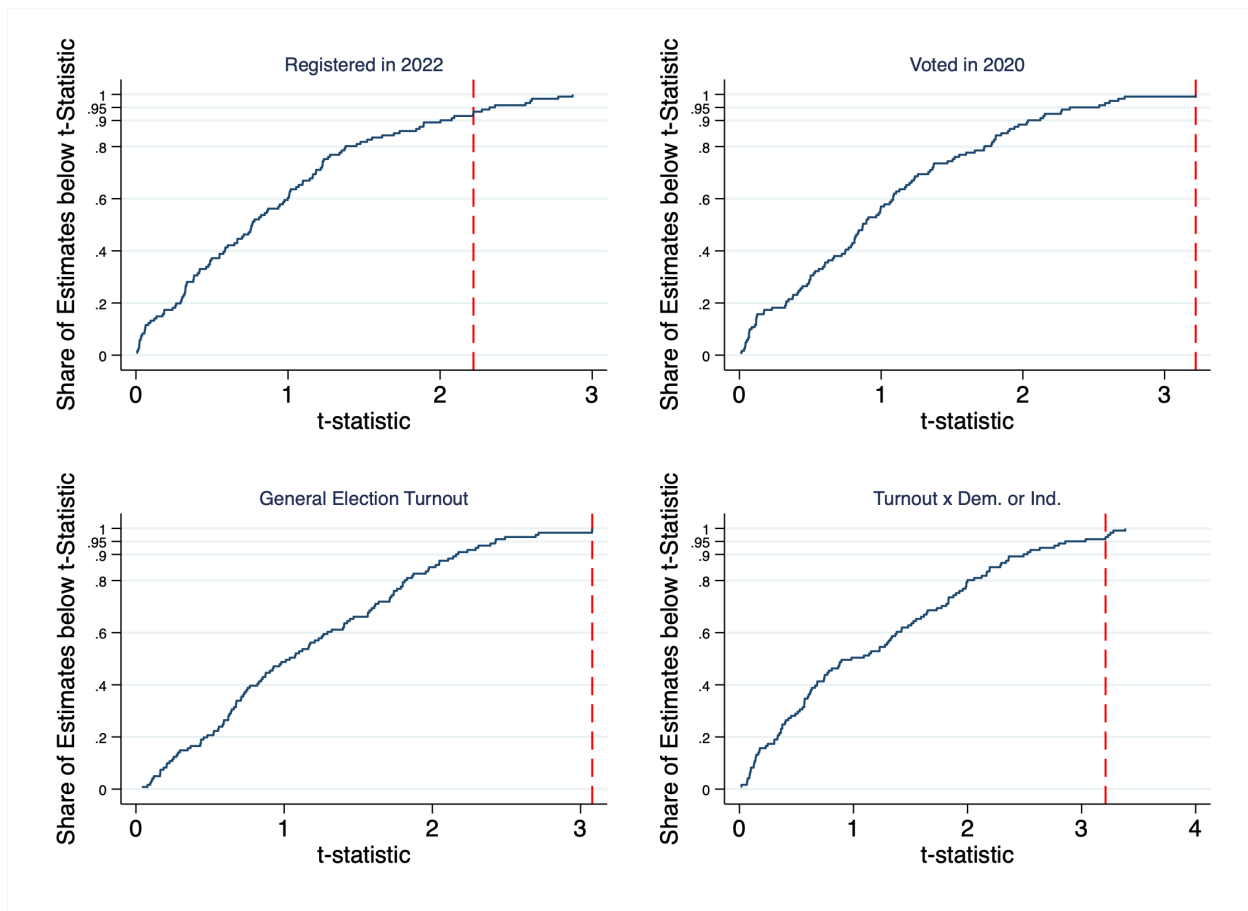


Figure C.6: Placebo Falsification Tests for Main Outcomes

Note: Each panel shows the cumulative distribution of t-statistics estimated at placebo thresholds for an outcome of interest with a red dashed line indicating the estimated t-statistic at the true policy threshold. We generate a “placebo threshold” at each 500 dollar increment along centered family income, and compare the estimated reduced form impact of these synthetic policies relative to the true policy. Placebo thresholds are bounded between -20,000 and +60,000 dollars relative to the true income ceiling, because this avoids false positives from capturing discontinuities taking place at family incomes of zero at the lower bound and this spans up to the 98th percentile of centered income on the upper bound. A 10,000 dollar bandwidth is used to remain consistent with our preferred specification. We exclude discontinuities within a 10,000 dollar bandwidth of the true cutoff to avoid generating false positives by including the actual policy discontinuity in our placebo estimates. Observations include all main sample 2017-2019 Cal Grant eligible students.

C.2 External Validity and the Pell Grant

We externally validate our findings from the Cal Grant using a notch in the generosity of the United States’ largest tuition subsidy, the Pell Grant. The Pell Grant is a federal need-based tuition subsidy awarded to between 6 and 10 million students per year with identical eligibility and selection criteria in all American states.³⁵ The Pell Grant is less generous than the Cal Grant, covering at most half the cost of tuition and fees at University of California campuses as opposed to full tuition and fees. Students submit a FAFSA to apply for a Pell Grant and eligibility is determined by a mix of characteristics including family income, household size, family assets, and a college’s cost of attendance. The program targets a much poorer subset of students than the Cal Grant, with few families with incomes over 60,000 dollars per year receiving a Pell Grant award as opposed to the upper bound of roughly 120,000 dollars per year for the richest Cal Grant students. The Pell Grant also subsidizes a much wider subset of post-secondary institutions with close to half of recipients attending 2-year colleges or vocational programs that are essentially excluded from tuition subsidies under the Cal Grant. We view the Pell Grant as an effective context to assess the generalizability of our findings because, relative to the Cal Grant, it is less generous, it subsidizes a wider and much less selective set of post-secondary institutions, and its eligibility criteria are both broader than state aid and consistent throughout the United States.

To identify the impact of the Pell Grant, we exploit a notch in the intensive margin of subsidy generosity rather than the extensive margin of subsidy receipt. When a students’ family income falls below a certain level, they are automatically assigned an expected family contribution (EFC) level of zero dollars toward their cost of college attendance. This means that the generosity of the federal Pell Grant as measured through the size of the financial aid grant awarded to the student rises sharply below the zero EFC income threshold (Denning et al., 2019). Our estimate of the change in political participation at the Pell Grant income threshold will compare students who receive marginally more financial aid dollars to people who receive marginally fewer dollars from the same tuition subsidy.³⁶

We test the external validity of our findings formally with data on 2.5 million FAFSA filers from our eligible sample (see Column 2 of Table A.1) who are local to the income notch used to determine Pell Grant generosity. Following the strategy in Denning et al. (2019), we center students’ adjusted gross family income (AGI) relative to the level that automatically

³⁵The Pell Grant does not have a strict 3.0 GPA cutoff like the Cal Grant. Roughly 1 out of 6 Pell Grant recipients are located in the state of California in any given year.

³⁶It is worth bearing in mind that RD designs estimate the average treatment effects for compliers near some eligibility threshold. The notch at the zero EFC threshold we study takes place for family incomes in roughly the 20,000 to 30,000 dollar per year range whereas our Cal Grant thresholds are usually in the 40,000 to 120,000 dollar per year range for most students.

qualifies a student for zero EFC and increases Pell Grant generosity by 700 dollars.³⁷ Because we do not directly observe total financial aid awarded, we assume a discontinuity of 1,000 dollars to be conservative.³⁸

We begin by plotting our main outcomes of interest against a student’s centered AGI in Figure 2. Mirroring the results in Figure 1, the four panels of Figure 2 display the share of students who were registered to vote in 2022, the share of students who voted in the 2020 general election, the total voter turnout rate across all post-treatment general elections between 2010 and 2020, and the interaction between the voter turnout rate across post-treatment general elections and an indicator for being registered as a member of the Democratic Party or an independent. There is clear evidence of a discontinuity in each outcome and the results are identical to those of the Cal Grant. Receiving more generous tuition subsidies from America’s largest financial aid program, the federal Pell Grant, increases voter registration and turnout, largely among left-leaning students. We take this figure to provide strong evidence that the civic externalities of the Cal Grant and Pell Grant generalize to tuition subsidies that cover different types of post-secondary institutions, target different populations of students, and have different levels and margins of generosity.

In Table C.4, we formally estimate the intent to treat (ITT) effects of this notch in Pell Grant generosity. We replicate our outcomes and specifications from Table D.1’s estimates of the Cal Grant and find similar results. Our preferred specification suggests that raising Pell Grant generosity by 1,000 dollars at this notch increases voter turnout in the 2020 election by 0.52 percentage points, with around four fifths of the effect occurring among left-of-center voters. These estimates are robust to alternative definitions of political participation and a number of RD implementation choices like changing the bandwidth used for inference, including pre-treatment covariates, and changing the order of a polynomial control for the running variable. Each point estimate is just under one tenth of the corresponding effect size in Table D.1, meaning that our results across the Pell Grant and Cal Grant imply similar per-dollar estimates of the civic externalities of tuition subsidies. We find the similarity especially notable given the programs target different populations, subsidize different postsecondary institutions, and represent differences in the extensive versus intensive margins of treatment

³⁷A small part of this increase in generosity is due to crowding-in of state-level financial aid. While we find that the zero EFC threshold crowds in Cal Grant awards at a 0.3 percentage point rate, we know from Section 4 of our paper that this crowd-in is unable to explain more than a 0.03 percentage point increase in voter turnout at the notch for Pell Grant generosity.

³⁸The size of this discontinuity was generally decreasing over time, so this is likely to be an overestimate (Denning et al., 2019). Assuming a larger first-stage discontinuity deflates the estimated effect per dollar awarded. For perspective, a typical Cal Grant recipient receives around ten times as many dollars over our sample timeframe. Hence, a quick point of comparison to our results for the Cal Grant in Table D.1 entails multiplying estimates in this section by 10, which we discuss in greater detail in Section 5.2.

with tuition subsidies.

These estimates suggest that Pell Grants *issued during the 2010s alone*, which disbursed 349.8 billion dollars, increased voter turnout in the 2020 American elections by 1,819,000 votes and were responsible for the turnout of 1 out of every 87 American voters.³⁹ Using conservative assumptions about the partisan composition of treated students⁴⁰, the Pell Grant increased the Democratic Party’s lead in the national popular vote by 1,182,000 votes (0.74 percentage points of total 2020 ballots) in the 2020 presidential election, with large enough effects to change the 2020 winner in Arizona, Georgia, Wisconsin, and the overall Electoral College.

³⁹This is calculated by dividing 349.8 billion by 1,000 dollars and then multiplying by the effect size of 0.0052 votes per 1,000 dollars awarded.

⁴⁰See the middle column of Table A.2 and Section 5.2 for a detailed explanation behind assumptions on partisanship. We note that we find similar results when using ANES 2020 survey data for the types of voters who are likely to receive financial aid and are similar to recipients of the Pell and Cal Grants. Specifically, we limit the sample to young voters aged 18 to 28 in 2020, who have family incomes below 100,000 dollars per year, and report tertiary education or postgraduate education. Approximately 77 percent of these voters nationwide report supporting Biden, compared to 17 percent who report supporting Trump and the remainder supporting minor party candidates. For voters in states outside of California, the comparable figures are 76 percent for Biden and 18 percent for Trump. In each case, the results are similar to our imputation of 80 percent of our sample favoring Biden and 15 percent favoring Trump, which we estimated using survey data from Firoozi (2023) and the partisan registration of in-sample students.

Table C.4: Estimated Impacts of 2010-2019 Pell Grant Generosity on Political Participation

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Voter Registration</i>						
Registered in 2022	0.0034** (0.0012)	0.0025* (0.0011)	0.0038* (0.0018)	0.0022 (0.0017)	0.0034* (0.0017)	0.0017 (0.0016)
<i>B. Voter Turnout</i>						
Voted in 2020	0.0052** (0.0012)	0.0049** (0.0011)	0.0051** (0.0019)	0.0041* (0.0017)	0.0051** (0.0017)	0.0040* (0.0016)
Ever Voted	0.0042** (0.0013)	0.0042** (0.0011)	0.0052** (0.0019)	0.0041* (0.0017)	0.0048** (0.0018)	0.0036* (0.0016)
Voter Turnout	0.0039** (0.0010)	0.0031** (0.0008)	0.0036* (0.0015)	0.0024+ (0.0013)	0.0035* (0.0014)	0.0023+ (0.0012)
<i>C. Voter Turnout by Partisanship</i>						
Center-left Turnout	0.0033** (0.0010)	0.0025** (0.0008)	0.0028* (0.0014)	0.0016 (0.0013)	0.0026+ (0.0013)	0.0013 (0.0012)
Center-right Turnout	0.0006 (0.0004)	0.0006 (0.0004)	0.0008 (0.0006)	0.0008 (0.0006)	0.0009 (0.0006)	0.0009+ (0.0006)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	2,561,537	2,561,537	2,561,537	2,561,537	1,279,637	1,279,637

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Sample excludes 2011-2012 FAFSA filers, because the data for that cohort was not available. “Ever Voted” refers to the extensive margin of ever having participated in a general election in the academic year after a student filed a FAFSA. “Voter Turnout” refers to the share of all federal general elections between 2010 and 2020 in which a student voted after the academic year in which they filed a FAFSA. “Center-left Turnout” refers to the interaction between voter turnout and an indicator for whether the student was a registered Democrat or independent, following [Firoozi \(2023\)](#). “Center-right Turnout” refers to the interaction between voter turnout and an indicator for being registered with the Republican Party. Outcomes correspond to those in Table D.1.

D Heterogeneity and Time Variation Appendix

D.1 Time Variation

In Table D.2, we examine the longitudinal impact of the Cal Grant on voter turnout, standardizing election outcomes relative to the year in which a student would have received a Cal Grant. In Row 1, we show the impact on voter turnout in the first general election that takes place after a student would have started receiving a Cal Grant. Row 2 shows the same outcome for the next general election, taking place after another 2 years. Row 3 shows results for the extensive margin of casting a ballot in any federal general election taking place 4 or more years after the first general election after Cal Grant receipt.

Our preferred specification in Column 1 shows that receiving a Cal Grant increases voter turnout by 4.96 percentage points in the first general election after Cal Grant receipt. This result is between 2 and 6 percentage points and significant at a 95 percent confidence interval across most RD implementation choices. While there are positive point estimates of meaningfully large magnitudes for elections taking place later on, we lack the precision to detect them and can reject neither the null hypothesis that there is no impact, nor the null hypothesis that the effects are the same as in the first election after Cal Grant receipt.

To make further use of time variation, we display results for the 2020-2021 cohort, whose instruction was fully online due to the COVID-19 pandemic in the year of their Cal Grant receipt, and compare them to earlier cohorts in Table D.3. Panel A shows results for the earlier 2017-2018 to 2019-2020 cohorts, while Panel B shows results for the 2020-2021 COVID-19 cohort. We find that there are not obvious differences in the impact on voter registration in 2022, but there are large gaps in the impact on voter turnout in the 2020 general election. Students whose schooling took place in person in the year in which they received their Cal Grant have significant positive effects on 2020 election turnout between 7 and 12 percentage points, whereas the COVID-19 cohort has null effects between -4 and 3 percentage points. Although we lack the statistical power under most specifications to reject the null hypothesis that the results are the same, we nonetheless view this as suggestive evidence consistent with on-campus residence and other campus-based socialization activities as a key mechanism in increasing student political participation.

Finally, in Table D.4 we estimate the impact of the Cal Grant and Pell Grant across the four different elections in which we have sufficiently large sample sizes to match that of our main specification from Table 1 Panel A Column 2, using all students within the four most recent entering cohorts. Table D.4 Row 1 Column 4 uses the exact same specification and, therefore, has the exact same sample size. Table D.4 Row 1 Columns 1 through 3 do the same for the elections in 2014, 2016, and 2018, again restricting the sample to students who

have had the same amount of time elapsed (within the 4 most recent years) since treatment: 2011 to 2014 students, 2013 to 2016 students, and 2015 to 2018 students, respectively. This leads to different sample sizes across years because cohorts have different numbers of students. Table D.4 Row 2 Columns 1 through 4 repeat the same exercise with the Pell Grant, including only students treated within the most recent 4 years of any given election shown in the respective columns.

We find larger point estimates on the effect of subsidies in the 2020 election than previous elections, growing point estimates over time for the California-based Cal Grant, and a pattern of larger effects in presidential cycles for the federal Pell Grant. However, it is worth cautioning against reading too much into heterogeneous point estimates over different election cycles because our confidence intervals remain too wide in many cases to reject the null hypothesis that these effects are consistent over time. We formally test for heterogeneity in treatment effects over time by comparing student cohorts whose first presidential elections were 2016 and 2020 to remain consistent with the samples used in Columns 2 and 4 of Table D.4.

We test the heterogeneity of the Pell Grant’s effects on voter turnout over time by estimating the causal effect of being **below** the income ceiling for the Zero EFC Pell Bonus (being just poor enough to qualify for bonus grant funding) and test the significance on the interaction term between the excluded instrument (being below the threshold) and being in one of the more recent cohorts whose outcome is turnout in the 2020 election. We also fully interact the indicator for the 2020 election cohorts with all other parts of the RD specification and vary the bandwidth used for inference, the order of a polynomial control for the running variable, and the inclusion of pretreatment covariate controls to mirror Table D.1. Results are shown in Table D.5 for the Pell Grant. A positive coefficient on “Below Pell Limit” in this case reflects positive impacts of grant funding on voter turnout. A positive coefficient on the interaction term likewise indicates stronger effects on the 2020 election.

In Table D.6, we show that the ITT approach for testing the time-varying effects of the Cal Grant is valid because the first stage results are consistent over time, falling between 12.5 and 13.8 percentage points.⁴¹ Unfortunately we cannot repeat this for the Pell Grant because we do not observe the first stage of a Zero EFC rating for the Pell Grant over time.

Next, we test the heterogeneity of the Cal Grant’s effects on voter turnout over time by estimating the causal effect of being **above** the income ceiling for Cal Grant eligibility (being too rich to qualify for grants) and test the significance on the interaction term between the excluded instrument (being above the threshold) and being in one of the more recent

⁴¹Although the point estimates are significant in two out of six specification the differences are small (less than a percentage point) in economic terms.

cohorts whose outcome is turnout in the 2020 election. We also fully interact the indicator for the 2020 election cohorts with all other parts of the RD specification and vary the bandwidth used for inference, the order of a polynomial control for the running variable, and the inclusion of pretreatment covariate controls to mirror Table C.1. Results are shown in Table D.7 for the Cal Grant. A negative coefficient on “Above CG limi” in this case reflects positive impacts of grants on voter turnout. A negative coefficient on the interaction term indicates stronger positive effects on the 2020 election.

As the results across each table illustrate there is no consistent evidence that the Pell Grant has stronger treatment effects in the more recent 2020 election. In three of the six specifications there is evidence that the Cal Grant has stronger effects in more recent elections and in the other three the coefficient on the interaction term is not significant at the 10 percent level. On balance the results suggest that the Pell Grants effects are consistent over time with mixed evidence on the suggestion that the Cal Grants impact has grown.

To the extent that estimated effect sizes are growing over time, for the Cal Grant in particular, we offer the following hypotheses in order of our assessment of their plausibility:

- A) Before the 2017 cohort, the California Student Aid Commission advertised income thresholds ex ante.

As we discuss in response to Point 4, CSAC previously disclosed and advertised the Cal Grants’ thresholds for eligibility. This may have caused unobservable selection into sample in the earlier years, drawing in students into the treatment group who are less likely to engage in pro-social behavior with small personal returns like voting. This is consistent with our results for the Cal Grant being biased toward zero in the pre-2017 cohorts and is also consistent with the fact that we find no time heterogeneity in the Pell Grant estimates.

- B) The intensive margin of aid generosity has risen for the Cal Grant, but less so for the Pell Grant.

The maximum award sizes for the Cal Grant have risen as the UC and CSU systems’ tuition hike moratoria expired in the mid-2010s and the sticker price of tuition rose. The maximum award size for the Pell Grant, which is offered to students below the Zero EFC threshold, last experienced a significant increase in 2009, which is at the very beginning of our sample time period.

Given that we find consistent per-dollar estimates of treatment effects across the programs, it is plausible that some of the rise in the point estimates of the Cal Grant’s treatment effect over time is attributable to rising generosity. The fact that the Pell

Grant's maximum award size has not changed whereas the Cal Grants has is also consistent with the pattern of results we show in response to Point 2 and in Table D.4. Still, we point to one cause for skepticism in this explanation; The generosity of the Cal Grant has risen by a smaller magnitude than the point estimate in the Cal Grants treatment effect in Table D.4. That said, we cannot observe net tuition at the threshold and it is possible that net tuition at the threshold has risen more quickly, matching the point estimates.

- C) The extensive margin of income thresholds for Cal Grant eligibility have risen over time, but the Pell Grant has not.

A family of four had a Cal Grant A income threshold of 80,200 dollars in 2010 and 102,500 dollars in 2019. The Zero EFC threshold for the Pell Grant has gone from 30,000 dollars in 2010 to 26,000 dollars in 2019. These changes mean that the sample of near threshold students has changed as the policies bind to different percentiles within the income distribution over time.

Since Cal Grant students are increasingly upper income over time, part of the growth in the point estimate of the Cal Grant's treatment effects may be explained if richer students have larger treatment effects. The change in the point estimate of the Cal Grants effects and the Pell Grant's constant effects across presidential and midterm elections may be consistent with this explanation. However, we repeatedly test for and do not find heterogeneity by various measures of socioeconomic status in Appendix D, contradicting this explanation.

- D) Random noise will cause some estimates to be larger than others.

Testing for heterogeneity by election involves splitting a larger sample into subsamples, which will have some above average and some below average effect sizes by construction. There is some risk of false positives when testing the null hypothesis of equality across groups. The risk of a false positive is higher when the groups that we are testing heterogeneity for are not pre-specified or we do not have ex ante reasons to believe there is heterogeneity. There is some risk that this is going on with the Cal Grant and that the effect sizes are actually constant over time, given that we can only reject the null hypothesis of equality at a 10 percent level in 3 out of 6 specifications.

- E) The types of students who are compliers at the threshold may have changed over time. It is possible that the types of students who choose to apply for and accept a Cal Grant have changed over time in such a way that the students who accept Cal Grants in later

time periods have larger treatment effects. The reason why we are skeptical of this explanation is that we found little evidence of heterogeneity based on individual-level characteristics in Appendix D and there is not an obvious explanation for why the types of students who choose to apply for and accept the Cal Grant would change in such a way that would not be replicated at the Pell Grant Zero EFC notch.

Table D.1: Estimated Impacts of 2010-2019 Cal Grant Receipt on Political Participation

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Voter Registration</i>						
Registered in 2022	0.0522** (0.0175)	0.0268+ (0.0155)	0.0618* (0.0273)	0.0208 (0.0243)	0.0497+ (0.0253)	0.0163 (0.0225)
<i>B. Voter Turnout</i>						
Voted in 2020	0.0615** (0.0180)	0.0386* (0.0164)	0.0849** (0.0281)	0.0456+ (0.0257)	0.0827** (0.0262)	0.0514* (0.0238)
Ever Voted	0.0611** (0.0180)	0.0359* (0.0161)	0.0838** (0.0280)	0.0420+ (0.0253)	0.0764** (0.0261)	0.0427+ (0.0234)
Voter Turnout	0.0443** (0.0146)	0.0270* (0.0125)	0.0597** (0.0228)	0.0301 (0.0197)	0.0566** (0.0211)	0.0345+ (0.0182)
<i>C. Voter Turnout by Partisanship</i>						
Center-left Turnout	0.0388** (0.0143)	0.0244+ (0.0128)	0.0542* (0.0224)	0.0272 (0.0202)	0.0540** (0.0208)	0.0350+ (0.0186)
Center-right Turnout	0.0055 (0.0073)	0.0025 (0.0073)	0.0055 (0.0115)	0.0029 (0.0114)	0.0026 (0.0107)	-0.0005 (0.0106)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	738,046	738,046	738,046	738,046	354,091	354,091

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Sample excludes 2011-2012 FAFSA filers, because the data for that cohort was not available. “Ever Voted” refers to the extensive margin of ever having participated in a general election in the academic year after a student filed a FAFSA. “Voter Turnout” refers to the share of all federal general elections between 2010 and 2020 in which a student voted after the academic year in which they filed a FAFSA. “Center-left Turnout” refers to the interaction between voter turnout and an indicator for whether the student was a registered Democrat or independent, following [Firoozi \(2023\)](#). “Center-right Turnout” refers to the interaction between voter turnout and an indicator for being registered with the Republican Party.

Table D.2: Estimated Impacts of 2010-2019 Cal Grant Receipt on Voter Turnout

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
Voted 1st Chance	0.0496** (0.0163) [738,046]	0.0303* (0.0143) [738,046]	0.0513* (0.0256) [738,046]	0.0248 (0.0226) [738,046]	0.0485* (0.0237) [354,091]	0.0270 (0.0209) [354,091]
Voted 2nd Chance	0.0202 (0.0185) [651,212]	0.0120 (0.0162) [651,212]	0.0414 (0.0289) [651,212]	0.0151 (0.0255) [651,212]	0.0388 (0.0269) [312,477]	0.0198 (0.0236) [312,477]
Voted 3rd+ Chance	0.0337 (0.0223) [479,717]	0.0092 (0.0205) [479,717]	0.0652+ (0.0349) [479,717]	0.0121 (0.0323) [479,717]	0.0484 (0.0327) [230,317]	0.0065 (0.0300) [230,317]
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes

Note: ⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Sample size in brackets. Estimates exclude 2011-2012 FAFSA filers, because the data for that cohort was not available. “Voted 1st Chance” refers to an indicator for participating in the first general election taking place after a student filed their FAFSA, between one and two years later. “Voted 2nd Chance” refers to an indicator for participating in the second general election taking place after a student filed their FAFSA, between three and four years later. “Voted 3rd+ Chance” refers to an indicator for ever participating in any general election taking place subsequent to the second general election after a student filed their FAFSA.

Table D.3: Estimated Impacts of Recent Cal Grant Receipt on Political Participation

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Sample: Academic Years 2017-2018 to 2019-2020</i>						
Registered in 2022	0.0634* (0.0285) [258,329]	0.0419+ (0.0249) [258,329]	0.0358 (0.0443) [258,329]	0.0214 (0.0388) [258,329]	0.0329 (0.0405) [123,744]	0.0197 (0.0355) [123,744]
Voted in 2020	0.0985** (0.0305) [258,329]	0.0743** (0.0270) [258,329]	0.0942* (0.0474) [258,329]	0.0783+ (0.0421) [258,329]	0.1193** (0.0434) [123,744]	0.1047** (0.0385) [123,744]
<i>B. Sample: Academic Year 2020-2021 (COVID-19 Cohort)</i>						
Registered in 2022	-0.0377 (0.0530) [83,664]	-0.0333 (0.0479) [83,664]	0.0410 (0.0771) [83,664]	0.0320 (0.0714) [83,664]	0.0156 (0.0730) [40,290]	0.0091 (0.0673) [40,290]
Voted in 2020	-0.0350 (0.0579) [83,664]	-0.0383 (0.0518) [83,664]	0.0160 (0.0843) [83,664]	0.0066 (0.0771) [83,664]	0.0234 (0.0797) [40,290]	0.0127 (0.0727) [40,290]
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Sample size in brackets.

Table D.4: Impacts of Cal Grants and Pell Grants by Election

	(1)	(2)	(3)	(4)
Election Year	2014	2016	2018	2020
Cal Grant Receipt	0.0062 (0.0168)	0.0149 (0.0249)	0.0343 (0.0244)	0.0985** (0.0305)
Sample Size	253,196	330,899	337,420	258,329
Pell Grant Notch	0.0010 (0.0011)	0.0040* (0.0017)	-0.0004 (0.0015)	0.0049* (0.0020)
Sample Size	828,132	1,181,103	1,261,717	1,003,200
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000
Kernel	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	1	1
Controls	No	No	No	No

Note: ⁺ $p < 0.1$, ^{*} $p < 0.05$, ^{**} $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Each column reflects the results for students entering in the respective calendar year or any of the three preceding years, excluding missing data and sample restrictions. Each of these specifications is meant to mimic that of Table 1 Panel A Column 2, which includes cohorts within four most recent years of treatment to any given election. This is intended to make results across elections more directly comparable without capturing differences between short-run and longer-run treatment effects.

Table D.5: Pell Grant Time Heterogeneity in Treatment Effects Test

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Presidential Voter Turnout (2016 if pre-2017, 2020 if post-2017)</i>						
Below Pell Limit	0.0040* (0.0017)	0.0046** (0.0016)	0.0037 (0.0025)	0.0047* (0.0023)	0.0035 (0.0024)	0.0043* (0.0022)
Below Limit x 2020	0.0009 (0.0026)	-0.0007 (0.0024)	0.0000 (0.0039)	-0.0044 (0.0035)	-0.0006 (0.0037)	-0.0049 (0.0033)
2020 Election Cohorts	0.1486** (0.0019)	0.1536** (0.0024)	0.1520** (0.0028)	0.1644** (0.0049)	0.1503** (0.0027)	0.1597** (0.0041)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	2,184,303	2,184,303	2,184,303	2,184,303	2,184,303	2,184,303

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. “Presidential Voter Turnout” refers to a student’s participation in the first post-treatment presidential election, which is the 2016 election for the 2013 to 2016 cohorts and 2020 election for the 2017 and later cohorts.

Table D.6: Cal Grant Time Heterogeneity in First Stage Test

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. First Stage: Share of Students who Received a Cal Grant</i>						
Above CG Limit	-0.1381** (0.0017)	-0.1356** (0.0017)	-0.1318** (0.0026)	-0.1283** (0.0026)	-0.1329** (0.0025)	-0.1304** (0.0025)
Above Limit x 2020	0.0068** (0.0026)	0.0055* (0.0025)	0.0050 (0.0039)	0.0032 (0.0039)	0.0022 (0.0038)	0.0013 (0.0037)
2020 Election Cohorts	-0.0058* (0.0025)	-0.0281** (0.0031)	-0.0055 (0.0038)	-0.0273** (0.0041)	-0.0019 (0.0036)	-0.0240** (0.0042)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	589,228	589,228	589,228	589,228	589,228	589,228

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses.

Table D.7: Cal Grant Time Heterogeneity in Treatment Effects Test

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Presidential Voter Turnout (2016 if pre-2017, 2020 if post-2017)</i>						
Above CG Limit	-0.0021 (0.0034)	0.0012 (0.0032)	-0.0067 (0.0052)	-0.0001 (0.0047)	-0.0044 (0.0049)	0.0008 (0.0045)
Above Limit x 2020	-0.0109* (0.0053)	-0.0110* (0.0047)	-0.0053 (0.0079)	-0.0095 (0.0071)	-0.0112 (0.0075)	-0.0143* (0.0067)
2020 Election Cohorts	0.2050** (0.0035)	0.1131** (0.0053)	0.2052** (0.0053)	0.1163** (0.0064)	0.2068** (0.0051)	0.1151** (0.0077)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	589,228	589,228	589,228	589,228	589,228	589,228

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. “Presidential Voter Turnout” refers to a student’s participation in the first post-treatment presidential election, which is the 2016 election for the 2013 to 2016 cohorts and 2020 election for the 2017 and later cohorts.

D.2 Heterogeneity

Having demonstrated the Cal Grant’s strong overall impact on political participation, we pivot to heterogeneous treatment effects and intermediate outcomes. The estimated results of our heterogeneity analysis are displayed in Table D.8, which includes four panels that show heterogeneity by the racial or ethnic composition of a student’s home ZIP code in Panel A, the socioeconomic composition of their ZIP code in Panel B, the political composition of their ZIP code in Panel C, and the high school GPA of GPA-eligible students for whom this data is available in Panel D. Each column of the table represents the results for one quartile of the distribution of the respective variable for which we are assessing heterogeneity. We use total general election voter turnout in all post-treatment elections between 2010 and 2020 as our outcome of interest and repeat our preferred specification from Row 3, Column 1 of Table C.1 to provide a common point of comparison.

We start with heterogeneity by race and ethnicity in Panel A, using the racial and ethnic composition of a student’s home region to proxy for these characteristics. Specifically, we use L2 voter file data to calculate the racial and ethnic shares of registered California voters who filed a FAFSA between 2010-2011 to 2020-2021 and collapse this data on ZIP code of origin. Rows 1 through 4 show the estimated impact of the Cal Grant on 2017-2018 to 2019-2020 FAFSA filers by the probability of being of a non-European ethnicity, Hispanic, Asian, and Black, respectively. We see little heterogeneity in the treatment effects of Cal Grants across these dimensions and are unable to detect significant differences by quartile of racial or ethnic composition. This suggests that the impact of higher education spending on political participation is unlikely to be driven by a single racial or ethnic group.

In terms of heterogeneity by socioeconomic composition in Panel B, we do not identify any significant differences in the treatment effects of Cal Grants on political participation. We repeat our methods from Panel A and find that there are no obvious patterns across quartiles of mean ZIP code income or mean ZIP code asset levels. We acknowledge that two limits to this analysis are the reality that Cal Grant recipients must themselves have low assets and that we are examining impacts for students local to an income eligibility ceiling. Our interpretation is that the absence of a clear pattern by neighborhood SES nonetheless provides suggestive evidence that there is unlikely to be large SES heterogeneity at the individual level.

Panel C repeats these methods again to examine whether effects are concentrated among students who originate from politically different households or neighborhoods, using the political composition of a FAFSA filer’s ZIP code of origin as a proxy. Specifically, we collapse the 2020 voter turnout rate and Republican to Democratic ratio at the ZIP code of origin level, defining these as ZIP Code Voter Turnout and ZIP Code Conservatism, respectively.

We find no detectable heterogeneity along either of these dimensions, suggesting that the political climate of one's upbringing is relatively unimportant in determining the magnitude of Cal Grants' impact on future political participation.

Finally, we examine heterogeneity in the Cal Grant's impact on voter turnout by a student's high school GPA, restricting to the subset of students for whom this data is available. We note that Cal Grant receipt increases the share of students reporting a GPA across the policy threshold, as GPA verification is required to determine the eligibility of high school students who are first-time college applicants. Because of potential issues with selection into reporting GPA, mixed listing of high school and community college GPAs, and the minimum 3.0 GPA eligibility limit for Cal Grants, we restrict our sample in this row to students with GPAs above 3.0 for whom we can identify a high school of origin. Our findings suggest that Cal Grants have a stronger impact on political participation among students with the highest high school GPAs, with the largest effects observed among students with GPAs above 3.41 (roughly a B+ average).

Table D.8: Estimated Impacts of 2017-2019 Cal Grant Receipt on General Election Turnout

Dimension of Heterogeneity	(1)	(2)	(3)	(4)
<i>A. Heterogeneity by Racial and Ethnic Composition of Home ZIP Code</i>				
ZIP Code Share Minority	0.0557 (0.0487)	0.0756 (0.0500)	0.1323* (0.0592)	0.0967 (0.0712)
ZIP Code Share Hispanic	-0.0018 (0.0497)	0.1193* (0.0501)	0.1670** (0.0600)	0.0736 (0.0676)
ZIP Code Share Asian	0.0212 (0.0689)	0.1085* (0.0547)	0.1700** (0.0505)	0.0192 (0.0522)
ZIP Code Share Black	0.0289 (0.0543)	0.1606** (0.0499)	0.0444 (0.0534)	0.0962 (0.0674)
<i>B. Heterogeneity by Socioeconomic Composition of Home ZIP Code</i>				
ZIP Code Mean Income	0.0788 (0.0914)	0.2002** (0.0668)	0.0037 (0.0509)	0.0953* (0.0405)
ZIP Code Mean Assets	0.1294 (0.0815)	0.1291* (0.0646)	0.0399 (0.0489)	0.0857+ (0.0442)
<i>C. Heterogeneity by Political Composition of Home ZIP Code</i>				
ZIP Code 2020 Turnout	0.1440+ (0.0752)	0.0052 (0.0621)	0.0802 (0.0516)	0.1197** (0.0436)
ZIP Code Conservatism	0.1122+ (0.0653)	0.1266* (0.0580)	0.0551 (0.0534)	0.0658 (0.0485)
<i>D. Heterogeneity by High School GPA (Subset of Full Sample)</i>				
High School GPA	-0.0442 (0.0825)	0.0171 (0.0648)	0.1060* (0.0526)	0.0936* (0.0371)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000
Kernel	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	1	1
Controls	No	No	No	No
Quartile	1	2	3	4

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. The outcome for all regressions in this table is “General Election Turnout”, which refers to the share of all federal general elections between 2010 and 2020 in which a student voted after the academic year in which they filed a FAFSA. “ZIP Code Voter Turnout” refers to the 2020 voter turnout rate in a student’s home ZIP code among FAFSA filers who originated from their home ZIP code. “ZIP Code Conservatism” refers to the share of FAFSA filers originating from a student’s home ZIP code that registered with a major political party and joined the Republican Party.

E Mechanisms

Table E.1: Turnout Effects of 2017-2019 Cal Grants Conditional on Voter Registration

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
Voter Turnout	0.0501* (0.0234)	0.0424+ (0.0218)	0.0704+ (0.0367)	0.0710* (0.0343)	0.0937** (0.0333)	0.0945** (0.0312)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	177,356	177,356	177,356	177,356	85,147	85,147

Note: ⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. “Voter Turnout” refers to the share of all federal general elections in which a student voted after the academic year in which they filed a FAFSA. Outcomes directly correspond to those in Table C.1.

E.1 External Validity Across States and Peer Socialization

In our view, the peer socialization mechanism has more to do with time spent living with other students and discussing politics on campus in casual settings rather than short-lived but intense direct action like protests. In essence, financial aid increases time spent on campus with peers who come from relatively more educated families than a students' counterfactual time spent in the low-wage labor force, living off-campus, or with their parents/guardians. We think that this type of socialization is likely to generalize to other states (albeit with different magnitudes) based on the descriptive fact that voters with higher levels of educational attainment are more likely to vote than their less educated counterparts in every American state. We also view this as the most probable form of socialization, because protests tend to be concentrated at elite private colleges with wealthy students, which does not match the low income students and primarily less-selective institutions attended by the types of students in our sample.⁴²

That said, we implement an exercise using publicly available data from Harvard's Crowd Counting Consortium, which maintains records on public protests taking place in the United States.⁴³ We limit the sample to protests taking place since October of 2023 at locations including the words college or university and restrict to protests that are flagged as focusing on foreign affairs issues related to Israel, the IDF, Gaza, Palestine, Hamas, etc.. There are a total of 4,824 protest events in the sample.

We find that 14.2 percent of college and university campuses with such protests (88 out of 620) were located in the state of California, which is roughly in line with the 12 to 18 percent of American college students who study at Californian colleges in any given year. A higher fraction of total arrests, 20.5 percent (730 out of 3,567), and total protest events, 22.7 percent (1,094 out of 4,024), took place in California but in both cases results are driven by a single elite college. UCLA alone accounts for 253 (35 percent of) arrests and Stanford alone accounts for 292 (27 percent of) protest events. These elite colleges sum to less than 2 percent of statewide college enrollment and are far more selective, with admissions rates of 11 percent or less, than the typical 4-year university or 2-year community college that near threshold in-sample students attend.

Californian colleges may be especially effective at socialization, but we caution against over-interpreting the results of this exercise. The political culture of a college that the typical in-sample students attend is distantly removed from the elite colleges that give California its reputation for activism. Typical Pell and Cal Grant students attend post-secondary

⁴²See "Are Gaza Protests Happening Mostly at Elite Colleges?" in *The Washington Monthly*, which employs the same dataset we use in this Appendix.

⁴³The data are available at <https://github.com/nonviolent-action-lab/crowd-counting-consortium>.

institutions that are indistinguishable from similarly selective institutions in Republican-leaning states, which is why we expect our results to generalize (see Table E.2).⁴⁴ Two thirds of California 4-year public university enrollment, for example, is in the California State University system at campuses like CSU Fullerton, SDSU, and CSU Northridge, which closely match the partisanship and degree of activism of the modal college campuses in other states. Close to half of Pell Grant students attend open-access 2-year community college programs in California, which have even less protest activity than CSU campuses.

⁴⁴Precinct level data for college election results are retrieved manually from <https://www.nytimes.com/interactive/2021/upshot/2020-election-map.html>. College admission rates are retrieved manually from <https://www.nytimes.com/interactive/2023/07/03/opinion/for-most-college-students-affirmative-action-was-not-enough.html>.

Table E.2: Characteristics of Colleges in California, Texas, Florida, and North Carolina

College	Admit %	State	Biden 2020	Trump 2020	Protests	Arrests
Stanford	4%	CA	94%	4%	292	13
Duke	6%	NC	90%	8%	9	0
UCLA	11%	CA	93%	6%	59	253
UC Berkeley	14%	CA	92%	5%	57	13
UNC	20%	NC	86%	12%	26	6
UT Austin	29%	TX	83%	14%	17	136
Univ. Florida	30%	FL	74%	24%	16	9
UCF	36%	FL	74%	24%	21	0
SDSU	38%	CA	75%	23%	7	0
NCSU Raleigh	48%	NC	79%	19%	3	0
CSUF	59%	CA	65%	32%	6	0
Texas A&M	64%	TX	66%	31%	9	0
FIU	64%	FL	69%	29%	14	0
UT Dallas	87%	TX	63%	35%	15	22
CSUN	88%	CA	71%	26%	4	0

Note: Each column shows different characteristics of colleges. Admission rates and voting totals from precinct results are pulled manually from the New York Times. Gaza protests and arrest totals are recorded manually and totaled from Harvards Crowd Counting Consortium.

Table E.3: Effects of 2017-2019 Cal Grants on Partisanship and Vote Choice

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Total Registration</i>						
Registered in 2022	0.0634* (0.0285)	0.0419+ (0.0249)	0.0358 (0.0443)	0.0214 (0.0388)	0.0329 (0.0405)	0.0197 (0.0355)
<i>B. Registration by Partisanship in 2022</i>						
Republican	-0.0056 (0.0189)	-0.0076 (0.0186)	-0.0060 (0.0293)	-0.0080 (0.0290)	-0.0108 (0.0268)	-0.0143 (0.0265)
% of New Registrants	[-9%]	[-18%]	[-17%]	[-37%]	[-33%]	[-73%]
Democrat/Independent	0.0690* (0.0303)	0.0496+ (0.0277)	0.0418 (0.0471)	0.0294 (0.0432)	0.0437 (0.0431)	0.0341 (0.0395)
% of New Registrants	[109%]	[118%]	[117%]	[137%]	[133%]	[173%]
<i>C. Imputed 2020 Vote Probabilities</i>						
Biden Vote 2020	0.0855** (0.0262)	0.0652** (0.0234)	0.0746+ (0.0408)	0.0620+ (0.0366)	0.0971** (0.0373)	0.0867** (0.0335)
Trump Vote 2020	0.0130 (0.0131)	0.0091 (0.0128)	0.0196 (0.0204)	0.0163 (0.0199)	0.0221 (0.0187)	0.0180 (0.0182)
No Vote 2020	-0.0985** (0.0305)	-0.0743** (0.0270)	-0.0942* (0.0474)	-0.0783+ (0.0421)	-0.1193** (0.0434)	-0.1047** (0.0385)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	258,329	258,329	258,329	258,329	123,744	123,744

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Outcomes directly correspond to those in Table C.1. “Biden Vote 2020” and “Trump Vote 2020” refer to the probability that a person cast a ballot for the respective candidate in the 2020 general election using actual data on whether or not they voted and Cal Grant voters’ probabilities of favoring Democrats and Republicans match those of a sample of young, college-educated independents in recent survey data of California college applicants that were linked to voter registration records (Firoozi, 2023).

Table E.4: Effects of 2010-2019 Pell Grant Generosity on Partisanship and Vote Choice

Outcome	(1)	(2)	(3)	(4)	(5)	(6)
<i>A. Total Registration</i>						
Registered in 2022	0.0034** (0.0012)	0.0025* (0.0011)	0.0038* (0.0018)	0.0022 (0.0017)	0.0034* (0.0017)	0.0017 (0.0016)
<i>B. Registration by Partisanship in 2022</i>						
Republican	-0.0002 (0.0006)	-0.0001 (0.0006)	0.0004 (0.0009)	0.0005 (0.0009)	0.0001 (0.0009)	0.0002 (0.0009)
% of New Registrants	[-6%]	[-4%]	[11%]	[23%]	[3%]	[12%]
Democrat/Independent	0.0036** (0.0013)	0.0026* (0.0012)	0.0034+ (0.0019)	0.0017 (0.0017)	0.0033+ (0.0018)	0.0015 (0.0016)
% of New Registrants	[106%]	[104%]	[89%]	[77%]	[97%]	[88%]
<i>C. Imputed 2020 Vote Probabilities</i>						
Biden Vote 2020	0.0041** (0.0011)	0.0037** (0.0010)	0.0039* (0.0016)	0.0029* (0.0015)	0.0038* (0.0015)	0.0027+ (0.0014)
Trump Vote 2020	0.0011* (0.0004)	0.0012** (0.0004)	0.0012+ (0.0007)	0.0012+ (0.0006)	0.0013* (0.0006)	0.0013* (0.0006)
No Vote 2020	-0.0052** (0.0012)	-0.0049** (0.0011)	-0.0051** (0.0019)	-0.0041* (0.0017)	-0.0051** (0.0017)	-0.0040* (0.0016)
Bandwidth	\$10,000	\$10,000	\$10,000	\$10,000	\$5,000	\$5,000
Kernel	Uniform	Uniform	Uniform	Uniform	Uniform	Uniform
Polynomial	1	1	2	2	1	1
Controls	No	Yes	No	Yes	No	Yes
Sample Size	258,329	258,329	258,329	258,329	123,744	123,744

Note: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$. Heteroskedasticity robust standard errors in parentheses. Outcomes directly correspond to those in Table C.1. “Biden Vote 2020” and “Trump Vote 2020” refer to the probability that a person cast a ballot for the respective candidate in the 2020 general election using actual data on whether or not they voted and Pell Grant voters’ probabilities of favoring Democrats and Republicans match those of a sample of young, college-educated independents in recent survey data of California college applicants that were linked to voter registration records (Firoozi, 2023).

E.2 Income Effects and Per-Dollar Estimates

The terminology we use with income effects is somewhat imprecise. In a technical sense, higher effective incomes afforded by increasing the intensive or extensive margin of financial aid receipt may be expended in the form of greater consumption of on-campus housing. Financial aid is also relatively easy from an administrative standpoint to apply toward on-campus housing when students receive aid from multiple sources that already partly cover tuition and fees.

Although this may be thought of as income effects because it reflects that students have a high marginal propensity to consume financial aid income through housing, we refer to this in our manuscript as peer socialization because the impact of the aid is coming through the channel of consumption of a good/service (on-campus housing) that is inducing peer socialization.

There are two major reasons why we think that similar per-dollar effects between the Cal Grant and Pell Grant are inconsistent with a direct “income effect” mechanism. The first is that there should be a diminishing marginal return of income to political participation if income effects are a core mechanism. The second is that income effects should make students more Republican whereas socialization effects should make students more Democratic.

We show in Figures [E.1](#) and [E.2](#) that income is positively associated with voter registration and turnout, but the gradient is largest toward the bottom of the income distribution and becomes flat around the middle of the distribution. While changes to family income could plausibly impact students voter turnout and registration, we do not believe that our results are explained by that mechanism. This is because we find similar per-dollar effects at the middle of the income distribution with a change to the extensive margin of financial aid (with our marginal Cal Grant students) as we do at the bottom of the income distribution with a change to the intensive margin of the generosity of financial aid (with our marginal Pell Grant students).

Similarly, our results on partisanship align with peer socialization rather than income effects. Students from higher income families are more likely to be Republicans later in life and theoretical work suggests income effects should shift students rightward ([Romer, 1975](#); [Meltzer and Richard, 1981](#)). However, to the extent that we find any changes in partisanship, the policies we study shift students toward the left. This is consistent with both Pell and Cal Grant marginal students consuming this financial aid through greater leisure time and in-person time with other left-leaning peers rather than counterfactual time spent with their (on average) more conservative guardians.

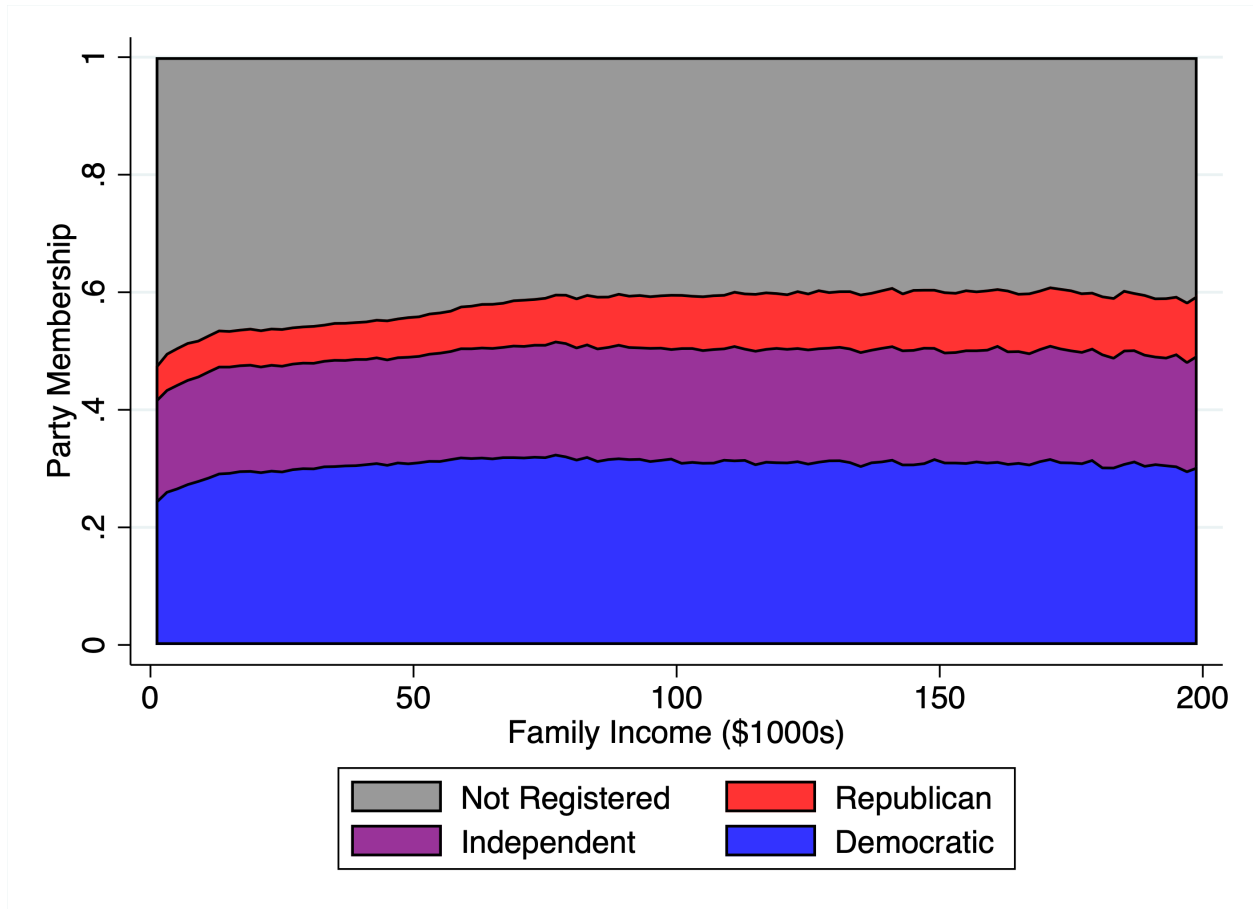


Figure E.1: Party Registration by Family Income

Note: This figure shows the share of students at each level of family income with different party registration statuses.

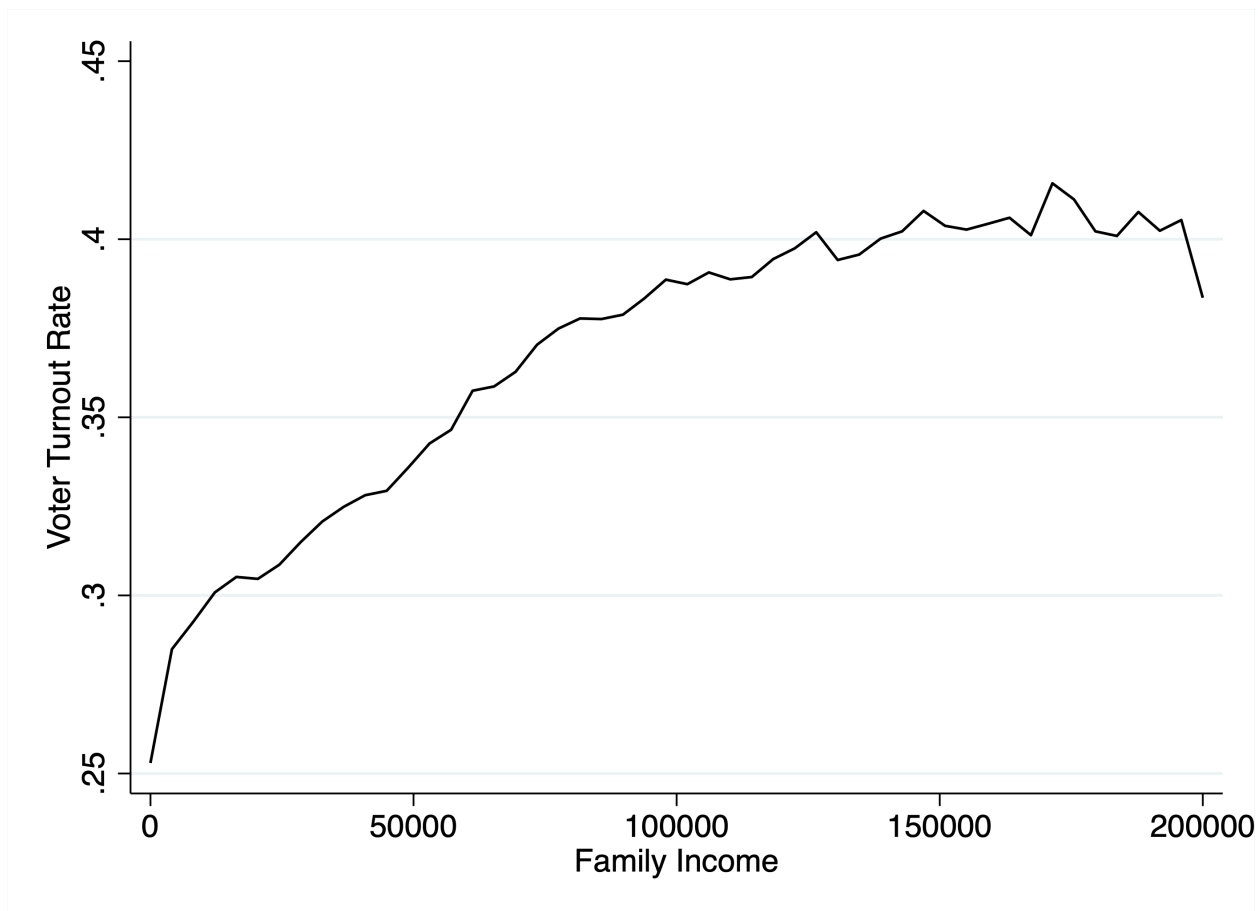


Figure E.2: Voter Turnout Rate by Family Income

Note: This figure shows the average voter turnout rate in post-treatment general elections at each level of family income.