Student Transferring and Outcomes under the Texas Public Education Grant*

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Abstract

We evaluate the effects of the public education grant (PEG) program, a long-running school accountability initiative in Texas meant to encourage students at lower-performing schools to transfer. Using a regression discontinuity design, we find substantial effects of the program on long-term outcomes like attending a Texas four-year university and pursuing a STEM degree. However, there is little evidence that these effects are driven by increases in student transferring. In fact, we find consistently null effects across a wide range of potential types of student transferring. Instead, we find evidence that the positive effects of the PEG program may be coming through efforts to improve standardized testing results at schools placed on the PEG list.

1 Introduction

The Public Education Grant (PEG) program is a long-term initiative in Texas with wide eligibility that encourages students at low-performing schools to transfer to higher-performing schools. It has been running over 25 years, and in our sample an average of 9.3% of students were eligible to take advantage of the program each year. Despite this, there has been little academic research evaluating the effects of the PEG program on students. To our knowledge, this paper is the first to identify causal effects of the PEG program using a regression discontinuity design.

We find evidence of substantial effects on long-term outcomes. Elementary school students whose schools are placed on the PEG list become more likely to graduate high school, attend a four-year university in Texas, and pursue a degree in STEM at one of those universities.

Surprisingly, however, there is little evidence that student transferring is contributing to this effect. News reports have previously indicated that few students were taking advantage of the public education grants,[1] but this is just one of many ways that the PEG program could have encouraged transferring behavior. Under the PEG program, all the parents of students attending a school on the "PEG list" are legally required to be notified of this by their school district and provided with details on the PEG program. If parents reacted to this by moving their children before the next school year, pursued standard (non-PEG) transferring options, or waiting to move their children until they finished the highest grade at their school, none of these options would necessarily be associated with a PEG grant. We find consistently null effects of the PEG program on each of these additional transferring avenues, as well as others.

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[1] For example, see Smith (2013).

Part of the reason for this could be that districts receiving PEG transfer students are not required to provide transportation to those students. An alternative channel that could explain the positive long-term effects of the PEG program is that being placed on the PEG list encourages schools to provide students with higher-quality education. In support of this hypothesis, we find evidence that schools placed on the PEG list have lower failing rates on state standardized tests in the following year.

2 Institutional Setting

The Public Education Grant (PEG) program was started in 1995, and has continued until present day. It encourages students at low-performing schools to transfer to different districts by providing the receiving district with an extra 10% of the funding that they would normally receive for that student. The schools that students transfer to cannot be on the PEG list themselves, which helps to ensure that students are transferring to "higher-performing" schools. Other districts are not required to accept PEG transfers, but when deciding whether to accept or reject a student there are a number of student characteristics that are not allowed to weigh into that decision. These include academic achievement and socioeconomic status, which helps to ensure that schools do not reject transfers from other PEG schools because of lower perceived ability. If a student is accepted, they will not need to pay tuition, but the receiving district does not have to provide with transportation to their new school (31 TEX. EDUC. CODE § 29.201-205).

The general timing of the PEG program is as follows. Each year schools can be put on the "PEG" list, and students attending those schools are eligible to transfer under the program in the following year. For example, the 2011 PEG list was released in December of 2011, and allowed students to transfer for the 2012-2013 school year. By February 1, school districts with schools on the PEG list are required to notify the parents of students who attend those schools that they are eligible to receive a public education grant for the following school year. The criteria for being put on the PEG list change over time, but one of the consistent rules is that a school is placed on the PEG list if 50 percent or more of their students did not pass one of a list of state standardized tests in any two of the previous three years.[2] For the 2011 PEG list, this included standardized tests taken in 2009, 2010, and 2011.

Below, we will use this rule to help identify the effects of a school being placed on the PEG list. Specifically, we limit our sample to schools in which for one of the past two years, 50 percent or more of their students did not pass one of the state standardized tests.[3] Then, we construct a variable which is the maximum failing rate on a state standardized test in the present year. Among this sample of schools, there is a discontinuity in assignment to the PEG list along the maximum failing rate measure: All of the schools with a maximum failing rate above 50 percent will be placed on the PEG list. This is a fuzzy discontinuity because those with failing rates below 50 percent may still be placed on the PEG list for different reasons.

3 Data

The main data that we will use for this paper comes from the Texas Schools Project (TSP). This is a unique data set which links educational data from grades K-12 and colleges to labor force outcomes in Texas. To know which of these schools was on the PEG list, we merge this data with each year's PEG list from the Texas Education Agency's (TEA) Public Education Grant Archive. We also use standardized testing outcomes at the school level from the TEA's Academic Excellence Indicator System (AEIS) and Accountability Rating System.

[2] The list of standardized tests that is used for this rule does change over time. Over the time period that we are studying, TAAS, TAKS, and STAAR exams were all used. The subjects of the exams that counted toward the PEG list also changed over time.

[3] In other words, if the present year is t, we restrict our sample to schools where 50 percent or more of their students did not pass one of the state standardized tests in year $t-1$ or year $t-2$.

Table 1 shows some initial summary statistics weighted by students. One of the first things to notice is that schools on the PEG list tend to be there for multiple years. Among schools on the PEG list in a given year, 71.2% of them were on the PEG list in the previous year, compared with only 2.1% for schools not on the PEG list. The table provides initial evidence to support that transferring is more common at PEG list schools—students at PEG schools are 3.2 percentage points more like to transfer out of their school for the next full academic year, 2.0 percentage points more likely to be enrolled in multiple schools in a given year, and 1.1 percentage points more likely to exit the Texas Public School system.

Table 1: Descriptive Statistics

	All Students			Not On Peg List			On Peg List		
	Mean	SD	Tot. Stu	Mean	SD	Tot. Stu	Mean	SD	Tot. Stu
On the PEG List	0.093	0.291	84,123,283	0.000	0.000	76,295,113	1.000	0.000	7,828,170
On Last Year's PEG List	0.088	0.284	79,651,617	0.021	0.144	71,907,739	0.712	0.453	7,743,878
Transfer for Full Year	0.147	0.106	63,824,906	0.144	0.106	57,855,989	0.176	0.108	5,968,917
Transfer Within Year	0.000	0.001	63,824,906	0.000	0.001	57,855,989	0.000	0.001	5,968,917
Recorded as Transfer Student	0.019	0.041	84,123,283	0.019	0.041	76,295,113	0.014	0.034	7,828,170
Exit TX Public Schools	0.057	0.052	63,824,906	0.056	0.052	57,855,989	0.067	0.049	5,968,917
Enrolled in Multiple Schools	0.107	0.118	84,123,283	0.105	0.117	76,295,113	0.125	0.122	7,828,170
At Risk of Dropping Out	0.461	0.207	84,123,283	0.442	0.202	76,295,113	0.647	0.155	7,828,170
Male	0.513	0.033	84,123,283	0.513	0.033	76,295,113	0.515	0.028	7,828,170
Race: Asian	0.035	0.063	84,123,283	0.038	0.065	76,295,113	0.013	0.026	7,828,170
Race: Black	0.134	0.169	84,123,283	0.125	0.157	76,295,113	0.215	0.241	7,828,170
Race: Hispanic	0.472	0.308	84,123,283	0.456	0.306	76,295,113	0.622	0.286	7,828,170
Race: White	0.347	0.287	84,123,283	0.368	0.286	76,295,113	0.140	0.193	7,828,170
Economic Disadvantage Status	0.551	0.280	84,123,283	0.528	0.279	76,295,113	0.771	0.179	7,828,170
Limited English Proficiency	0.174	0.193	84,123,283	0.167	0.189	76,295,113	0.248	0.213	7,828,170
Math Test Score, Year PEG list Announced	0.001	0.284	41,093,682	0.026	0.276	37,336,631	-0.246	0.236	3,757,051
Min. Dist. to Other School	3.524	5.271	5,783,377	3.417	5.020	3,645,341	3.707	5.667	2,138,036
Min Dist to Closest School in Diff. District	6.849	5.990	5,833,445	6.805	5.837	3,673,168	6.924	6.241	2,160,277

Note: The "Tot. Stu" column shows the number of student and school year combinations in the sample, so a student could be included as a separate observation here for each year that they enroll in a Texas public school.

There is also evidence that schools on the PEG list tend to have students that are more socioeconomically disadvantaged and with lower levels of academic performance. Students at schools on the PEG list are substantially more likely to have limited english proficiency, be at risk of dropping out, and have some form of economic disadvantage. In terms of standardized math test scores, students at PEG list schools tend to be about a quarter of a standard deviation below the state average. This is not surprising given that one of the main ways to get onto the PEG list is to have low performance on standardized test scores.

The last two rows of the table give summary statistics on the distance in miles between a given school and the nearest other public school that student's from the first school could reasonably transfer to. We make three requirements for this other public school: it cannot be a charter or alternative school, it cannot be on the PEG list in this year,[4] and it has to offer at least half of the grade level range present at the first school. We separately calculate the minimum distance to another school in a different district, because the PEG program only provides the PEG grant to the district receiving a PEG transfer student if that student started out in a different district. Comparing schools on the PEG list with those that are not, this minimum distance tends to be nearly identical. One reason this is important is that schools receiving PEG transfer students are not required to provide those students with transportation to their new school. Even if they did provide transportation, though, another school is less likely to be an attractive option for transferring if the student needs to travel a long way each day to get there.

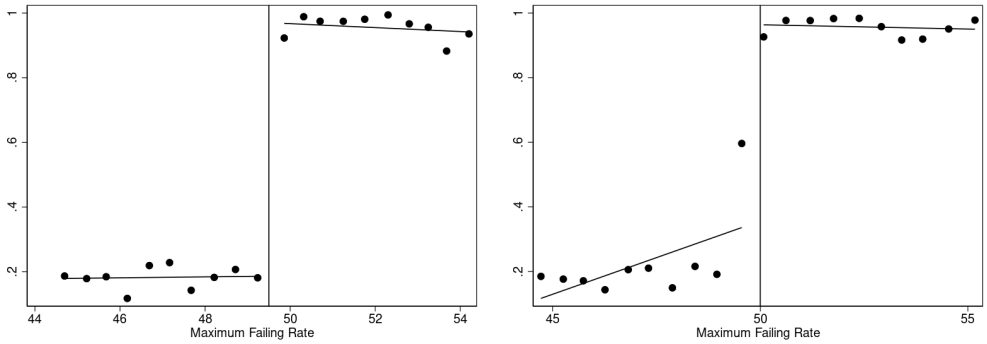
[4] A student at a school on the PEG list cannot use a PEG grant to transfer to another school on the PEG list. However, they could transfer to that other school without using the PEG program.

4 Estimation Strategy

In order to evaluate the effects of the PEG program on student transferring and long-term outcomes, we use a fuzzy regression discontinuity design. First, we restrict our sample to schools that had at least 50% of their students fail a standardized test in one of the last two years. In the current year t, let F_{jt}^{T} represent the percent of students that failed standardized test T at school j. Then F_{jt} represents a school's maximum failing rate among the standardized tests for that year. This percentage is rounded to the percentage point reported each year for all schools. We will focus on a subset of the years the PEG program was operating in which the specific number of students that failed each test was also reported. This allows us to recreate the un-rounded maximum failing rate for those years, which is preferable for our regression discontinuity design.

When $F_{jt} \geq .495$, school j goes on the PEG list for year t. We are using 49.5% as the cutoff here rather than than 50% because it appears that the maximum failing rate at each school was rounded to the percentage point before determining PEG list status. Figure 1 provides evidence of this by showing the discontinuity in PEG list assignment using both 49.5% and 50% as cutoffs. As can be clearly seen, the 49.5% cutoff does a better job of capturing the discontinuity. We will represent being on the peg list as $P_{jt} = 1$.

Figure 1: Percent of Schools on the PEG list, using Alternative Cutoffs



(a) Using 49.5% as the Cutoff

(b) Using 50% as the Cutoff

To evaluate the effects of being on the PEG list, we estimate the following equations:

$$Y_{jt} = \alpha_t + \alpha_\ell + \alpha_1 \hat{P}_{jt} + \alpha_2 F_{jt} + \alpha_3 F_{jt} \mathbb{1}\left\{F_{jt} \geq .495\right\} + \varepsilon_{jt} \tag{1}$$

$$P_{jt} = \beta_t + \beta_\ell + \beta_1 \mathbb{1}\left\{F_{jt} \geq .495\right\} + \beta_2 F_{jt} + \beta_3 F_{jt} \mathbb{1}\left\{F_{jt} \geq .495\right\} + \eta_{jt} \tag{2}$$

with a bandwidth of 5 percentage points. α_t and β_t are time fixed effects, and α_ℓ and β_ℓ are fixed effects for the school level which could be "elementary schools," "middle and transitional schools," or "high schools." For some results, we include each grade level g from a school as a separate observation, so Y_{jt} becomes Y_{jgt}.[5] In these regressions, we additionally include grade-level fixed effects α_g and β_g. α_1 is the main parameter of interest.

5 Results

Section A in the appendix provides tests of manipulation in the running variable and balance tests.

[5]This is useful for long-term outcomes where we will not observe the outcomes for all grade levels in all years. For example, our measure of graduating high school is whether you graduate high school within two years of what would be expected based on the natural grade progression of advancing a grade each year. In 2015, we will be able to measure this variable for current seniors, but not for first graders. For them, we won't know for sure if they have graduated high school under our definition until 2028.

5.1 Long-Term Effects of the PEG Program

Table 2 shows how placing an elementary school on the PEG list affects the long-term outcomes of its students. The coefficient estimate shown for each outcome is α_1 from equation (1), and the number below the standard errors is the number of school-and-grade level combinations that was included within the bandwidth around the cutoff.[6] All of the standard errors are nearest-neighbor clustered at the district level.

Table 2: Long-term Effects of PEG for Elementary Schools

	b/se/mat_obs	b/se/mat_obs	b/se/mat_obs
First Maj. in STEM, LB	0.0097**	0.0080	0.0103***
	(0.0036)	(0.0062)	(0.0029)
	1159	556	1778
First Maj. in STEM, UB	0.0097**	0.0080	0.0103***
	(0.0036)	(0.0062)	(0.0029)
	1159	556	1778
First Maj. in STEM, Public	0.0097**	0.0074	0.0101***
	(0.0035)	(0.0061)	(0.0028)
	1159	556	1778
Went to Pub./Priv. TX Uni.	0.0548***	0.0476*	0.0516***
	(0.0138)	(0.0219)	(0.0113)
	1159	556	1778
First Uni. TX Public Flagship	0.0034*	0.0055**	0.0026*
	(0.0014)	(0.0021)	(0.0011)
	1159	556	1778
Graduated HS	0.0414**	0.0284	0.0408***
	(0.0129)	(0.0192)	(0.0110)
	1159	556	1778
Transfer before Antic. 12th Gr. Yr.	-0.0156	-0.0019	-0.0115
	(0.0203)	(0.0245)	(0.0186)
	1416	672	2181
Transfer Districts before Antic. 12th Gr. Yr.	0.0084	0.0171	0.0152
	(0.0184)	(0.0239)	(0.0161)
	1416	672	2181
Changed Districts before Antic. 12th Gr. Yr.	-0.0249	-0.0113	-0.0134
	(0.0175)	(0.0205)	(0.0161)
	1416	672	2181
Rounded to Percent	No	No	No
Bandwidth	5	2	8
Kernel	Triangular	Triangular	Triangular

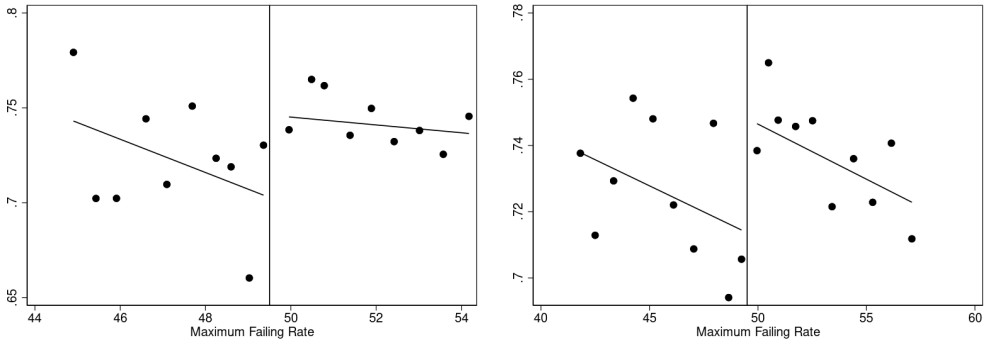
Beginning from the bottom of the table, there is no evidence that being placed on the PEG list induces students to transfer at any point in the future before their anticipated twelfth grade year. We will return to results on transferring below.

The rest of the outcomes show positive and substantial effects associated with the PEG program. Elementary students whose school gets placed on the PEG list are more likely to graduate high school, attend a four-year university in Texas, and to specifically attend one of the public flagship universities in Texas. Figures 2 and 3 show the corresponding regression discontinuity plots for these results. A caveat for the regression discontinuity plots here and elsewhere in the paper is that they are not currently done using exactly the same method as used in table 2. Instead, they are prepared using a binscatter and simple linear fit line on either side of the cutoff. We received a software update on the computer where we access this data that will

[6] Because each observation in these regressions is a school-and-grade level combination, we additionally include grade fixed effects in equations (1) and (2).

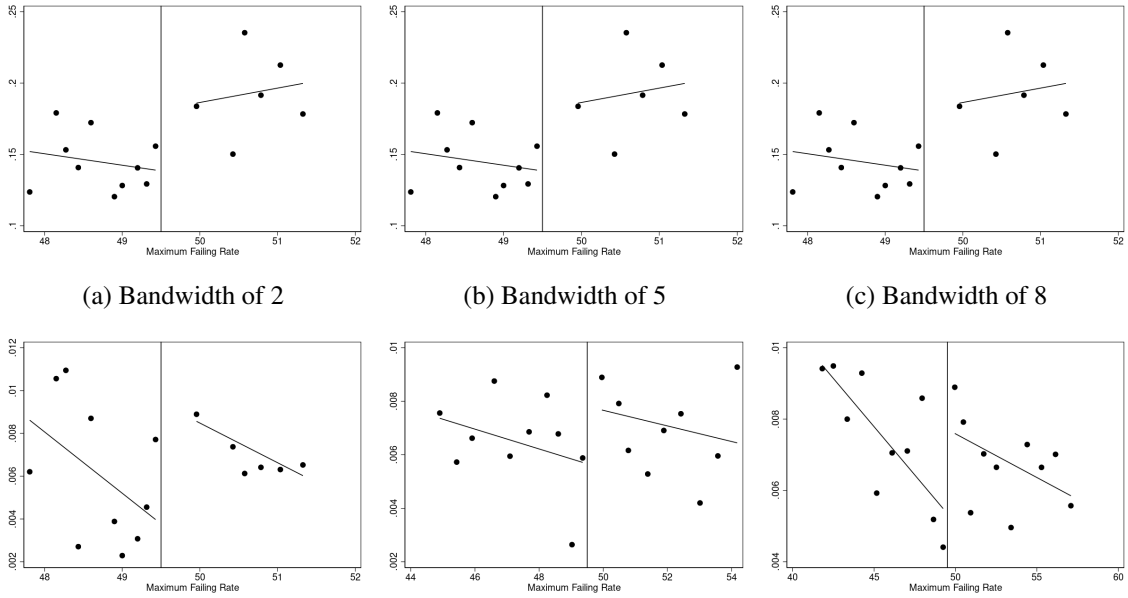
hopefully allow us to fix this discrepancy in the future. Nevertheless, the graphs give encouraging evidence that the regression discontinuity estimation is working as it is supposed to.

Figure 2: Share of Elementary Students who go on to graduate high school



(a) Bandwidth of 5 (b) Bandwidth of 8

Figure 3: Share of Elementary Students who go on to attend a four-year university in Texas



(a) Bandwidth of 2 (b) Bandwidth of 5 (c) Bandwidth of 8

(d) Only Flagship Universities, Bandwidth of 2 (e) Only Flagship Universities, Bandwidth of 5 (f) Only Flagship Universities, Bandwidth of 8

The next results show the effects of PEG on whether a student will declare a "STEM" major as their first major at a four year university.[7] One minor complication with the data is that we are unable to see the majors that students have while enrolled in private universities prior to 2010. To fix this, the "LB" row gives a lower bound on the effect in which we assume that none of the students who we observe attending private universities before 2010 majored in STEM, and the "UB" row gives the upper bound where we assume that all of those students majored in STEM. As can be seen, this has no noticeable effect on the estimates for

[7]Here we identify STEM majors as those in the primary two-digit CIP code categories the DHS labels as STEM: 14 (engineering), 26 (biological and biomedical sciences), 27, (mathematics and statistics), and 40 (physical sciences).

elementary school students here. This makes sense, because we begin tracking students in 2004, and so it is unlikely that very many students went from being in elementary school in 2004 to attending a private university before 2010. Another way of correcting this issue is just to look at STEM majors declared at public universities. For that row as well, the results are very similar. Figure 4 shows the corresponding plots.

5.2 Effects of the PEG Program on Transferring

Having shown that the PEG program does seem to have effects on the long-term outcomes of students, we now turn to investigating certain possible channels for how it could have this effect. The main channel that we investigate is transferring, because the PEG program is designed to encourage students to transfer away from "low-performing" schools. Surprisingly, we find little to no evidence that more students actually transfer under the PEG program.

Table 3 shows a wide variety of variables measuring different ways that students could respond to the PEG program by moving schools or enrolling in additional schools. All of these variables show null effects. For many of the variables, the standard errors are small, showing that we are able to find this null results with a substantial amount of precision.

5.3 Effects of the PEG Program on Standardized Test Scores

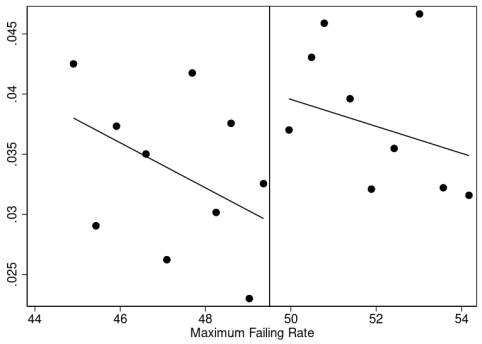
Another possible channel that the PEG program could influence students through is by inducing schools to better prepare students for state standardized tests. If schools are able to take actions that lower their maximum failing rates on state standardized tests, then they will be less likely to be placed on the PEG list in the future.

Table 4 shows results relating to standardized tests for elementary school students. The main row to look at is the top one, which shows the maximum failing rate in the school year that the PEG list was announced. Recall that the PEG list for 2011, for example, was released in December of 2011, and was based on standardized test scores from the 2008-2009, 2009-2010, and 2010-2011 school years. The top row of table 4 would show the maximum failing rate for the standardized tests taken in the 2011-2012 school year. The results show a substantial decline of around 5 percentage points in the maximum failing rate. Table 5 shows the corresponding discontinuity plot.

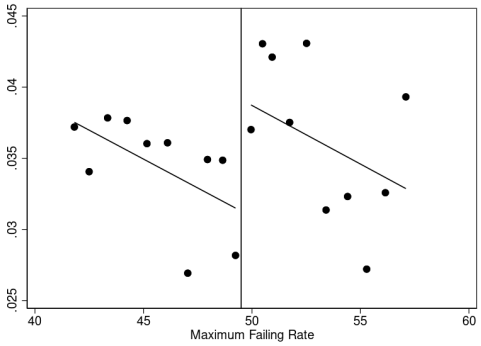
The next row of the table shows the effects of the PEG program on the maximum failing rate in the school year after the PEG list was announced. In the case of the 2011 PEG list, this would be the maximum failing rate from the 2012-2013 school year. Here the results are negative but statistically insignificant, suggesting that the actions school administrators take to improve test scores do not persist as strongly into the following year.

The rest of the rows show effects on the average standardized math test score at the school. The first four of these rows show the standardized test scores in the years before the PEG list was announced, which should not have been able to respond to the PEG list. Thus, these rows serve as balance tests. After that point, the results are for years that could have potentially been influenced by the PEG list. The fact that the results are null suggests that the actions school administrators take to raise test scores are mainly focused on lowering the failing rate, and not necessarily on raising the overall average test score. One possible story here is that efforts taken to raise the scores of the poorest-performing students come at the expense of efforts taken to help higher-performing students, and the net result on average test scores is null.

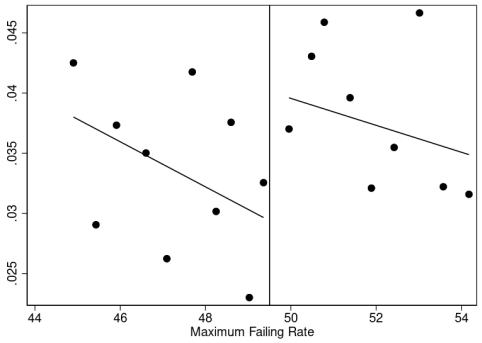
Figure 4: Share of Elementary Students who go on to attend a four-year university in Texas and declare their first major in STEM



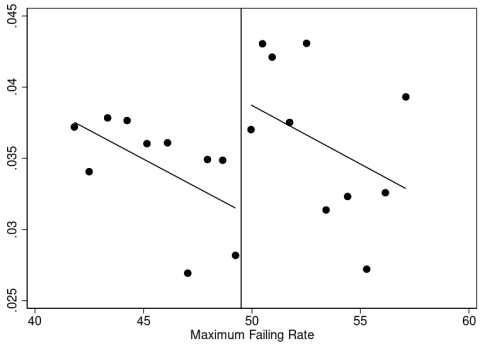
(a) Lower Bound, Bandwidth of 5



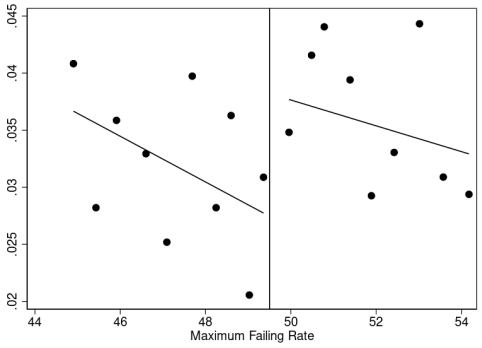
(b) Lower Bound, Bandwidth of 8



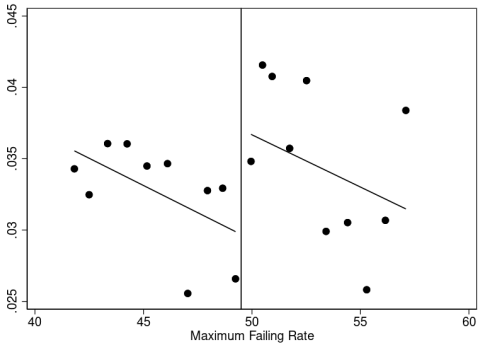
(c) Upper Bound, Bandwidth of 5



(d) Upper Bound, Bandwidth of 8



(e) Public Universities only, Bandwidth of 5



(f) Public Universities only, Bandwidth of 8

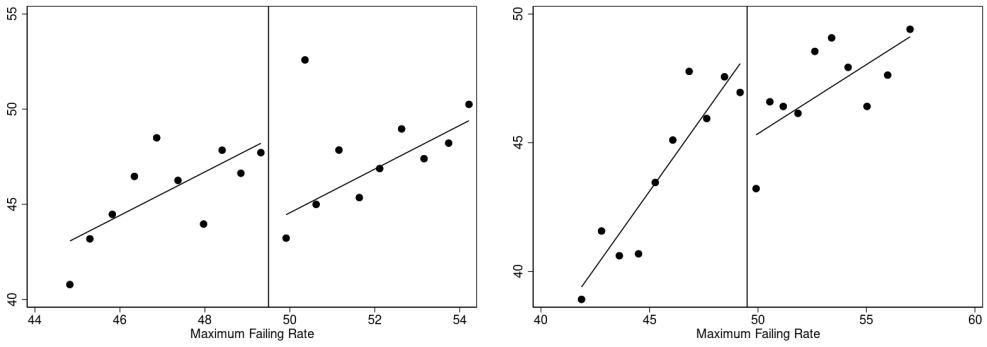
Table 3: Effects of PEG Program on Transferring for Elementary Schools

	b/se/mat_obs	b/se/mat_obs	b/se/mat_obs
Exit TX Public Schools	-0.0002	0.0078	-0.0025
	(0.0039)	(0.0057)	(0.0034)
	1027	432	1541
Transfer for Full Year	0.0028	0.0192	0.0028
	(0.0158)	(0.0227)	(0.0143)
	1027	432	1541
Transfer Districts for Full Year	-0.0003	0.0041	0.0025
	(0.0086)	(0.0128)	(0.0082)
	1027	432	1541
Transfer Within Year	-0.0001	-0.0001	-0.0000
	(0.0001)	(0.0001)	(0.0001)
	1027	432	1541
Transfer Districts Within Year	-0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)
	1027	432	1541
Enrolled in Multiple Schools	-0.0019	0.0029	-0.0035
	(0.0037)	(0.0050)	(0.0032)
	1035	434	1552
Enrolled in Multiple Districts	-0.0019	0.0029	-0.0035
	(0.0037)	(0.0050)	(0.0032)
	1035	434	1552
Recorded as Transfer Student	0.0023	0.0029	0.0005
	(0.0034)	(0.0042)	(0.0033)
	1035	434	1552
Recorded as Transfer in Diff District	0.0002	0.0002	0.0002
	(0.0008)	(0.0012)	(0.0007)
	1035	434	1552
Transfer Districts for Full Yr. to non-PEG	-0.0008	0.0019	0.0018
	(0.0078)	(0.0117)	(0.0071)
	1027	432	1541
Transfer for Full Yr. to non-PEG	0.0025	0.0186	0.0006
	(0.0136)	(0.0210)	(0.0121)
	1027	432	1541
Transfer Within Year, Year PEG list Announced	0.0000	-0.0000	-0.0000
	(0.0001)	(0.0001)	(0.0001)
	1033	434	1549
Transfer Districts Within Year, Year PEG list Announced	-0.0000	-0.0000	0.0000
	(0.0001)	(0.0001)	(0.0000)
	1033	434	1549
Enrolled in Multiple Schools Year PEG list Announced	0.0017	0.0053	0.0006
	(0.0034)	(0.0043)	(0.0030)
	1035	434	1552
Enrolled in Multiple Districts Year PEG list Announced	0.0017	0.0053	0.0006
	(0.0034)	(0.0043)	(0.0030)
	1035	434	1552
Percent Change in Entering Enrollment	0.0901	0.0077	0.1067
	(0.1216)	(0.0315)	(0.1110)
	1034	434	1551
Rounded to Percent	No	No	No
Bandwidth	5	2	8
Kernel	Triangular	Triangular	Triangular

Table 4: Effects of PEG Program on Test Scores at Elementary Schools

	b/se/mat_obs	b/se/mat_obs	b/se/mat_obs
Max Fail Rate, year PEG list Announced	-4.4926**	-5.4497	-4.6525***
	(1.6033)	(2.9490)	(1.3723)
	848	358	1276
Max Fail Rate, year after PEG list Announced	-2.1793	-5.7802	-1.9592
	(2.6861)	(4.2133)	(2.3828)
	663	284	1012
Math Test Score, Year PEG list Announced -4	-0.0299	-0.0611	-0.0124
	(0.0354)	(0.0479)	(0.0329)
	1011	424	1515
Math Test Score, Year PEG list Announced -3	-0.0422	-0.0846*	-0.0180
	(0.0301)	(0.0349)	(0.0276)
	1025	430	1536
Math Test Score, Year PEG list Announced -2	-0.0012	-0.0261	0.0086
	(0.0299)	(0.0400)	(0.0258)
	1024	430	1535
Math Test Score, Year PEG list Announced -1	-0.0207	-0.0042	-0.0152
	(0.0300)	(0.0433)	(0.0254)
	1025	431	1536
Math Test Score, Year PEG list Announced	0.0160	0.0392	0.0110
	(0.0359)	(0.0463)	(0.0328)
	844	356	1269
Math Test Score, Year PEG list Announced +1	0.0259	0.0753	0.0338
	(0.0486)	(0.0728)	(0.0418)
	661	283	1012
Math Test Score, Year PEG list Announced +2	0.0491	0.0721	0.0421
	(0.0532)	(0.0922)	(0.0440)
	494	218	765
Math Test Score, Year PEG list Announced +3	0.0107	0.0884	0.0109
	(0.0513)	(0.0721)	(0.0503)
	349	155	538
Math Test Score, Year PEG list Announced +4	-0.0291	0.0612	-0.0263
	(0.0590)	(0.0789)	(0.0498)
	286	132	448
Rounded to Percent	No	No	No
Bandwidth	5	2	8
Kernel	Triangular	Triangular	Triangular

Figure 5: Maximum Failing Rate at Elementary Schools the Year the PEG List is Announced



(a) Bandwidth of 5

(b) Bandwidth of 8

6 Conclusion

In this paper, we evaluate the effects of the public education grant (PEG) program, a long-running school accountability initiative in Texas meant to encourage students at lower-performing schools to transfer. We find substantial effects of the program on long-term outcomes like graduating high school, attending a Texas four-year university, and pursuing a STEM degree. However, there is little evidence that these effects are driven by increases in student transferring. Instead, we find evidence that the positive effects of the PEG program may be coming through efforts to improve standardized testing results at schools placed on the PEG list.

In the future, we hope to further examine the effects of the PEG program on transferring among different subgroups of students that might be more likely to be effected.

References

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Appendix

A Testing the Validity of the Regression Discontinuity Design

In this section we do two things to test the validity of the regression discontinuity design. First, we do a manipulation test for the running variable using the package provided by Cattaneo et al. (2018). The idea of this test is that if schools were able to manipulate the running variable, then out of a desire to avoid being placed on the PEG list the schools with running variable values just above the cutoff may be able to lower themselves below the cutoff and escape being put on the PEG list. This would create a larger mass of observations to the left of the cutoff than to the right.

Before running the test, we have strong reason to believe that there is not manipulation in this running variable. The TEA has a group of "Performance-Based Monitoring" staff which develop methods of validating student assessment data.[8] While there are still reports of schools cheating on standardized exams, manipulating the maximum failing rate that we use as a running variable around the vicinity of the cutoff would involve figuring out that the failing rate on a certain test was near 50%, and then somehow correcting enough answers on enough tests to meaningfully change that failing rate.

The results of the test are shown in table 5, separated out for "High Schools," "Elementary Schools," and the combined category "All Schools" which also includes middle and transitional schools. The first number reported in each group of four is the p-value, then the school observations used within the chosen bandwidth, then the bandwidth, and finally the estimated difference in densities around the cutoff. The different columns change the size of the bandwidth used and the order of the polynomial used. With the notable exception of the results with the smallest bandwidth of two percentage points, the p-values for "All Schools" indicate that the null hypothesis of no manipulation cannot be rejected at the 5% level. The results associated with elementary schools are more mixed, and we intend to look more into this in the future.

Table 5: Running Variable Manipulation Tests

	p/obs/h/diff	p/obs/h/diff	p/obs/h/diff	p/obs/h/diff	p/obs/h/diff	p/obs/h/diff	p/obs/h/diff	p/obs/h/diff
High Schools	0.043	0.626	0.002	0.000	0.894	0.746	0.504	0.654
	278	1,714	225	225	620	620	953	953
	2.418	17.522	2.000	2.000	5.000	5.000	8.000	8.000
	0.018	0.002	0.032	0.076	-0.001	0.003	0.003	0.003
Elementary Schools	0.052	0.020	0.141	0.000	0.016	0.141	0.022	0.021
	1,913	1,568	434	434	1,035	1,035	1,554	1,554
	10.142	8.075	2.000	2.000	5.000	5.000	8.000	8.000
	-0.005	-0.011	0.010	0.045	-0.009	-0.009	-0.007	-0.011
All Schools	0.142	0.157	0.000	0.000	0.099	0.619	0.137	0.157
	2,348	3,731	1,023	1,023	2,526	2,526	3,860	3,860
	4.614	7.728	2.000	2.000	5.000	5.000	8.000	8.000
	-0.004	-0.005	0.021	0.058	-0.004	0.002	-0.003	-0.005
Order	1	2	1	2	1	2	1	2

The second thing that we do in this section to test the validity of the regression discontinuity design is to report balance tests for variables that should not be affected by assignment to the PEG list. Tables 6 through 8 show the results. As with our main results from section 5, standard errors are nearest-neighbor clustered at the district level. The coefficient estimates are not statistically significant for any of the variables or bandwidths we consider.

[8] For a list of manuals describing how this data validation is completed, see https://tea.texas.gov/student-assessment/monitoring-and-interventions/data-validation-monitoring/data-validation-manuals

Table 6: Balance Tests for All Schools

	b/se/mat_obs	b/se/mat_obs	b/se/mat_obs
At Risk of Dropping Out	-0.0133	-0.0247	-0.0065
	(0.0262)	(0.0348)	(0.0246)
	2526	1023	3853
(mean) gifted	0.0002	0.0021	0.0046
	(0.0084)	(0.0119)	(0.0077)
	2526	1023	3853
(mean) immig	-0.0020	0.0002	-0.0039
	(0.0063)	(0.0106)	(0.0059)
	2526	1023	3853
Male	-0.0032	-0.0038	-0.0029
	(0.0030)	(0.0047)	(0.0025)
	2526	1023	3853
(mean) speced	-0.0034	-0.0008	-0.0063
	(0.0061)	(0.0083)	(0.0052)
	2526	1023	3853
(mean) native_american	-0.0002	0.0007	-0.0005
	(0.0009)	(0.0011)	(0.0008)
	2526	1023	3853
Race: Asian	0.0069	0.0144	0.0042
	(0.0052)	(0.0095)	(0.0040)
	2526	1023	3853
Race: Black	0.0006	0.0088	0.0074
	(0.0447)	(0.0632)	(0.0405)
	2526	1023	3853
Race: Hispanic	-0.0186	-0.0600	-0.0120
	(0.0515)	(0.0719)	(0.0466)
	2526	1023	3853
Race: White	0.0089	0.0309	-0.0003
	(0.0352)	(0.0457)	(0.0324)
	2526	1023	3853
(mean) two_or_more_races	0.0023	0.0053	0.0013
	(0.0023)	(0.0036)	(0.0019)
	2526	1023	3853
(mean) biling_any	-0.0349	-0.0521	-0.0215
	(0.0254)	(0.0414)	(0.0213)
	2526	1023	3853
Economic Disadvantage Status	-0.0137	-0.0449	-0.0034
	(0.0294)	(0.0376)	(0.0262)
	2526	1023	3853
(mean) esl_any	0.0456*	0.0590	0.0333
	(0.0226)	(0.0320)	(0.0212)
	2526	1023	3853
Limited English Proficiency	0.0186	0.0231	0.0206
	(0.0411)	(0.0563)	(0.0400)
	2526	1023	3853
on_peg_list_lag	0.0710	0.0773	0.0574
	(0.0648)	(0.0936)	(0.0553)
	2526	1023	3853
Rounded to Percent	No	No	No
Bandwidth	5	2	8
Kernel	Triangular	Triangular	Triangular

Table 7: Balance Tests for Elementary Schools

	b/se/mat_obs	b/se/mat_obs	b/se/mat_obs
At Risk of Dropping Out	-0.0504	-0.0514	-0.0377
	(0.0340)	(0.0424)	(0.0316)
	1035	434	1552
(mean) gifted	-0.0060	-0.0014	-0.0034
	(0.0095)	(0.0117)	(0.0089)
	1035	434	1552
(mean) immig	0.0034	0.0148	-0.0007
	(0.0099)	(0.0203)	(0.0088)
	1035	434	1552
Male	-0.0057	-0.0069	-0.0033
	(0.0036)	(0.0051)	(0.0034)
	1035	434	1552
(mean) speced	0.0018	0.0003	0.0004
	(0.0057)	(0.0073)	(0.0052)
	1035	434	1552
(mean) native_american	0.0003	0.0006	-0.0008
	(0.0015)	(0.0017)	(0.0015)
	1035	434	1552
Race: Asian	0.0115	0.0197	0.0083
	(0.0076)	(0.0152)	(0.0063)
	1035	434	1552
Race: Black	0.0532	0.0837	0.0594
	(0.0516)	(0.0714)	(0.0475)
	1035	434	1552
Race: Hispanic	-0.0790	-0.1359	-0.0615
	(0.0540)	(0.0777)	(0.0494)
	1035	434	1552
Race: White	0.0121	0.0292	-0.0056
	(0.0233)	(0.0286)	(0.0230)
	1035	434	1552
(mean) two_or_more_races	0.0019	0.0028	0.0002
	(0.0031)	(0.0040)	(0.0027)
	1035	434	1552
(mean) biling_any	-0.0852	-0.1269*	-0.0683
	(0.0487)	(0.0633)	(0.0480)
	1035	434	1552
Economic Disadvantage Status	-0.0280	-0.0466	-0.0170
	(0.0211)	(0.0245)	(0.0200)
	1035	434	1552
(mean) esl_any	0.0241	0.0519	0.0116
	(0.0196)	(0.0330)	(0.0174)
	1035	434	1552
Limited English Proficiency	-0.0599	-0.0652	-0.0546
	(0.0513)	(0.0697)	(0.0499)
	1035	434	1552
on_peg_list_lag	0.0488	0.1350	0.0060
	(0.0847)	(0.1317)	(0.0765)
	1035	434	1552
Rounded to Percent	No	No	No
Bandwidth	5	2	8
Kernel	Triangular	Triangular	Triangular

Table 8: Balance Tests for High Schools

	b/se/mat_obs	b/se/mat_obs	b/se/mat_obs
At Risk of Dropping Out	0.0080	-0.0089	0.0099
	(0.0447)	(0.0728)	(0.0378)
	620	225	952
(mean) gifted	-0.0039	0.0096	0.0009
	(0.0160)	(0.0315)	(0.0119)
	620	225	952
(mean) immig	-0.0073	-0.0152	-0.0079
	(0.0080)	(0.0177)	(0.0065)
	620	225	952
Male	-0.0052	0.0005	-0.0048
	(0.0075)	(0.0119)	(0.0056)
	620	225	952
(mean) speced	-0.0143	-0.0108	-0.0144
	(0.0133)	(0.0265)	(0.0093)
	620	225	952
(mean) native_american	-0.0009	0.0014	-0.0007
	(0.0011)	(0.0020)	(0.0008)
	620	225	952
Race: Asian	0.0058	0.0143	0.0019
	(0.0125)	(0.0246)	(0.0083)
	620	225	952
Race: Black	-0.0655	-0.0886	-0.0499
	(0.0938)	(0.1745)	(0.0693)
	620	225	952
Race: Hispanic	0.0420	-0.0343	0.0473
	(0.1141)	(0.1907)	(0.0895)
	620	225	952
Race: White	0.0148	0.0954	-0.0011
	(0.0784)	(0.1840)	(0.0581)
	620	225	952
(mean) two_or_more_races	0.0038	0.0118	0.0025
	(0.0032)	(0.0064)	(0.0023)
	620	225	952
(mean) biling_any	0.0000	-0.0001	0.0004
	(0.0003)	(0.0001)	(0.0006)
	620	225	952
Economic Disadvantage Status	-0.0092	-0.1292	0.0080
	(0.0737)	(0.1597)	(0.0543)
	620	225	952
(mean) esl_any	0.0504	0.0481	0.0526
	(0.0413)	(0.0797)	(0.0333)
	620	225	952
Limited English Proficiency	0.0783	0.0964	0.0745
	(0.0489)	(0.0957)	(0.0401)
	620	225	952
on_peg_list_lag	0.1138	0.1900	0.1269
	(0.1462)	(0.2568)	(0.1073)
	620	225	952
Rounded to Percent	No	No	No
Bandwidth	5	2	8
Kernel	Triangular	Triangular	Triangular