

Differences in Student Outcomes Between School Districts with Appointed Superintendents Versus Districts with Elected Superintendents

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1 Introduction/Why This Is Important

One of the most consistently controversial education reform issues in Mississippi is the ongoing debate over appointed versus elected superintendents. Of the more than 14,500 school districts in the United States it is up to the local school board to select and appoint a qualified superintendent, but for 146 school districts in three states (Alabama, Florida, and Mississippi) the residents of the district elect their superintendent. Of Mississippi's 151 school districts, 63 of them have superintendent elections - the most of any state Waller (2011).

Supporters of appointed superintendents argue that elections narrow the pool of talent to choose from due to a restriction that candidates running for election must reside within the district they are running in. Meanwhile in school districts where superintendents are appointed, the school boards can recruit qualified candidates from different districts or even from different states. This is especially important in a state like Mississippi because in small school districts there may not be many qualified candidates, and those that are qualified may not be interested in campaigning.

According to the Mississippi Secretary of State's [website](#), during the 2011 elections there were 13 different districts out of a total of 63 that had had uncontested races for superintendent. In the previous elections of 2007, another 20 elections were uncontested, and in one district, no one ran at all.

In addition to a larger talent pool, supporters of appointment suggest that appointed superintendents can focus more on the job and less on the politics while elected superintendents must focus on the job while

simultaneously run for office. Lastly, supporters point to the technical possibility that a poor performing appointed superintendent can be removed quickly, however a poor performing elected superintendent couldn't be removed until the end of their four year term.

On the other hand, advocates of elected superintendents defend that a popular election requires the superintendent to answer to the voters and not a school board. Allowing voters to decide who should lead education locally enforces the idea that power should remain in the hands of the people. These supporters argue that a superintendent who answers to the people will create policies that coincide with the popular opinion of the district and would be less likely to act as a school board's "puppet" like an appointed superintendent might. Thus an elected official has a responsibility to create consumer-orientated policies in order to stay in office in the next election.

Supporters of election also point to events of the late 1980s, when the Mississippi Legislature allowed school districts to vote to change to appointed superintendents or keep their elections. Every single district voted to keep their superintendent elections Waller (2011).

The issue of appointed versus elected superintendents picked up statewide attention when a bill proposing to abolish superintendent elections was presented and passed during a State Senate legislative session in 2014 [SB2166](#). The bill proposed a transition of all superintendent elections to appointments by 2016. A short while later the bill died when introduced in a House of Representatives committee session [HB443](#). One reason why the bill never passed was that arguments from both sides of the debate were theoretical hypotheses and personal preferences. Updated and accurate empirical evidence surrounding the issue was thin, if not non-existent.

Of Mississippi's 151 school superintendents, 63 must face an election every four years, while the remaining superintendents are appointed to four-year terms. The only difference separating districts that appoint versus those that elect their superintendent are the way the school districts are defined. Elected superintendents come from districts shaped by county borders. While appointed superintendents are from districts that are either separate from county borders or have been consolidated from two separate districts to form one.

In this paper I intend to explore the relationship between student outcomes (state test scores, graduation rates, dropout rates, etc...) and whether a school district has an appointed or elected superintendent. By using multivariate regression analysis I will be able to capture the specific relationship between the appointment/election variable and student outcomes while controlling for relevant demographic and socioeconomic factors at the district level. The goal of this paper is to provide evidence of the existence of a significant relationship, and provide policy recommendations to address the method for selecting school district superintendents.

1.0.1 In Summary

My primary question is: Are there significant differences in student outcomes for school districts that have appointed or elected superintendents, controlling for demographic and socioeconomic variables at the district level? To answer this question I intend to utilize multiple regression analysis in order to properly compare school districts that have different demographic and socioeconomic characteristics.

2 Literature Review

Since the late nineteenth century most if not all of the larger cities in the United States appointed their superintendents Dykes (1965). Meanwhile the majority of county districts had elected superintendents Cubberly (1909). It wasn't until the 1930s that education administration writers began to publicly support appointment over election (Cubberly 1929; Jagers 1934) by citing the need to remove politics from school district leadership. Today there are only a combined 146 school districts in Mississippi, Alabama, and Florida that have elected superintendents.

The earliest analysis of the differences in elected and appointed superintendents is from Tink (1929). The author compared elected superintendents in Florida superintendents in Alabama, Maryland, and North Carolina and found that appointed superintendents had on average more experience and lasted longer in their position compared to their elected counterparts. One of Tink's most important conclusions was that appointment led to an increase in the likelihood that smaller districts could secure an exceptional superintendent.

As the chief executive of a school district, the superintendent is responsible for all policies carried out at the district level. Situated as a liaison between school leaders, parents, and administrators, the superintendent must be able to balance the concerns of stakeholders while simultaneously prescribing a coherent and cohesive plan to improve district performance.

The Mid-Continent Research for Education and Learning conducted a comprehensive meta-analysis Waters and Marzano (2006) on the role of the superintendent and its association with student achievement. Using observations from over 2,800 school district and achievement scores from over 3.4 million students the researchers concluded that there was a statistically significant Pearson correlation coefficient of 0.24 between district leadership and student achievement. These results support Hanks (2010) findings that effective superintendents provide leadership by, "creating an environment conducive to excellence which helps principals stay focused on academics." Effective superintendents can help focus school leaders in their district on specific goals (test scores, graduation rates, drop out rates, etc...).

A study by Mould (1975) compared the answers of a survey administered to school board members and school district officials about their experiences working with their appointed or elected superintendent. The results of the survey found that on average, officials and board members preferred working with an appointed rather than an elected superintendents; appointed superintendents were perceived to have had better job training and experience than elected superintendents; and that appointed superintendents were more capable of breaking from political ties compared to elected superintendents.

Barnett (1983) was the first researcher to look at the differences between appointed and elected superintendents in Mississippi specifically. The author compared the perceptions of school leaders on the differences between appointed and elected superintendents in the state. The author found that both elementary and secondary school principals perceived appointed superintendents to be more effective than elected superintendents on average. However, there were no significant differences in the perception of superintendents from the perspective of school board members.

Murphy and Hallinger (1986) further illustrated the differences in the perceptions of school leadership by surveying principals on the effectiveness of their superintendent. Despite a small sample (perceptions were only based off of 30 appointed and 30 elected superintendents), the results showed that on average appointed superintendents were perceived by their principals to be more effective than elected superintendents and better suited to lead the district towards improved performance.

During the 1980s many school districts in Florida transitioned from elected superintendents to appointed superintendents. McLendon (1990) found that school board members in districts that switched to appointment believed that having an appointed superintendent led to a more positive learning environment than compared to before under the leadership of an elected superintendent.

A survey Brand (1993) of Georgia's principal's perceptions of appointed and elected superintendents found that appointed superintendents were more experienced, older, and held higher degrees than their elected counterparts. The survey also showed that appointed superintendents were more likely to be concerned with school board relations while elected superintendents were more likely to pay more attention to school budgeting and finances. However, overall perceptions of the effectiveness of the superintendents were highest among appointed superintendents.

Dearman (1997) used district performance index scores to compare the effectiveness of appointed and elected superintendents. Gregory was the first to use regression analysis to explore the quantitative differences in superintendent selection method, however the author found no statistically significant difference in district performance index scores between the two selection methods when using just a bivariate regression. But after controlling for per pupil expenditure, race, socio-economic status, and school board type, there appeared

to be a small, but statistically significant negative association between appointing a superintendent and the district's performance index score. Specifically, a district that had an appointed superintendent and an elected school board had an associated district performance index score two-tenths of a point lower on average, holding demographic and socio-economic factors constant.

A similar analysis of Alabama superintendents Hoover (2008) argued that student achievement scores under an appointed superintendent would be higher than those under an elected superintendent because elected officials are more concerned with satisfying their constituents and are less likely to deviate from the norm in pursuit of improving student achievement. Hoover contended that appointed superintendents are more likely to consider unpopular, but perhaps more effective policies to impact student performance because appointed superintendents are protected by at least one level of bureaucracy (the school board). Despite Hoover's hypotheses, the results of a multiple regression analysis revealed that average test scores in districts under an appointed superintendent were not statistically significantly different than those under an elected superintendent after controlling for socioeconomic and demographic characteristics.

Various studies have linked the performance of superintendents with student achievement Waters and Marzano (2006) and others have attempted to examine the differences between elected versus appointed superintendents at the district level (Schuh and Herrington 1990; Dearman 1997). But most of the literature surrounding this topic is either outdated (the most recent analysis on Mississippi is from 1997) or of lesser quality. Thus, this paper intends to address those gaps by exploring the effects of superintendent selection method on student outcomes at the district level. This analysis will attempt to provide a more illustrative depiction of the impact of electing or appointing a superintendent in the state of Mississippi.

My attempt to uncover a relationship between superintendent selection method and student achievement is contingent upon the actual existence of the relationship between superintendent performance and student achievement itself. A recent paper from the Brookings Institution came to the conclusion that while district superintendents do have a statistically significant impact on student achievement, the effect is so small it's almost meaningless in comparison to the impact a teacher or principal has Chingos and Whitehurst (2014). Despite its minimal findings, the fact that there is a relationship shows that there also may be a relationship between superintendent selection method and student outcomes. Either way, this analysis will be a useful addition to the broader field of school superintendent research.

3 Data Gathering

This paper is a cross section analysis of data from the 2013-14 academic school year. The data used in this analysis is the most recently published by the Mississippi Department of Education (MDE). Most of the data collected come directly from the MDE Office of Research and Statistics [website](#). A small portion had to be obtained from the Office of Research and Statistics through [public records requests](#). Additionally, the [Mississippi Parents Campaign](#), the largest advocacy group supporting the abolishment of elected superintendents, provided the list of which districts have appointed or elected superintendents. Lastly, socioeconomic data was obtained via the [United States Census](#). Lastly, enrollment data and the student-to-teacher ratio was obtained from the [National Center for Education Statistics](#) website.

The way the data is formatted is rather straightforward. The common link across all data sources is name of the school district. Unfortunately, in some instances the names of school districts are spelled differently across datasets (i.e. Greenwood Municipal School District vs. Greenwood City School Dist.). However, examples of this are rare.

One of the challenges in working with this data is that it comes from multiple sources. Normally when each observation (school district) is unique and formatted the same across all datasets, merging should be simple. However, in this case a few of the unique identifiers vary across datasets. In order to overcome this challenge I merged data sets according to the first 8 characters of each district name. This avoided the problem of districts that were labeled differently (i.e. Greenwood Municipal School District vs. Greenwood City School Dist.). However, there were still two or three observations that required manual edits.

4 Defining the Data

Variables	Explanation	Year	Source
Enrolled100s	Total District Enrollment (k-12) in 100s	2014	NCES
Student-to-Teacher Ratio	Ratio of students to teachers in the district	2012	NCES
Poverty Percentage	Percent of 5-17 year olds in poverty in the district	2012	2012 Census
Graduation Rates	2014 Graduation rate of the 2009 cohort	2014	MSDE
Composite Score	Composite score of all SATP tests	2014	MSDE
Mean Algebra	Average Algebra II SATP Test Scores	2014	MSDE
Mean Biology	Average Biology SATP Test Scores	2014	MSDE
Mean History	Average History SATP Test Scores	2014	MSDE
Mean English	Average English Test Scores	2014	MSDE

The definitions of the variables used for this analysis are rather straightforward, regardless the following are formal definitions of the above variables and their justification for being included.

Enrolled100s: A continuous variable corresponding to the total number of students enrolled in grades K-12 in each district. Larger districts may be more difficult to manage from the superintendent's perspective. Meanwhile, smaller districts may have an especially small talent pool to choose a qualified superintendent from. Including this variable in the analysis may shed some light on these questions.

StudentTeacherRatio: The ratio of students to teachers in the district. Previous studies have shown that lowering the student-to-teacher ratio can improve student performance.

Poverty Percentage: A variable ranging from 0% to 100% that describes the percentage of 5-17 year olds in the district that live under the federal poverty line. It has been well documented that poverty is detrimental to student outcomes and thus PovertyPct will control for socioeconomic differences between districts.

Graduation Rates: The percentage of students that were freshmen in 2009 that graduated by 2014. This is effectively the 5-year graduation rate.

Composite Score: A composite scores of all SATP test scores. The average of the Algebra II, Biology, History, and English scores may be more insightful than any one particular test.

Mean Algebra: Average test scores on the Algebra II SATP state test.

Mean Biology: Average test scores on the Biology SATP state test.

Mean History: Average test scores on the History SATP state test.

Mean English: Average test scores on the English SATP state test.

5 Descriptive Statistics

A table (Figure (1)) of descriptive statistics for all school districts in Mississippi is presented below. Although there are 151 school districts in Mississippi, some were omitted from this analysis due to inconsistent data recording or missing data all together.

To begin, first examine the descriptive statistics for all school districts in Mississippi. Figure (1) shows that a typical school district in Mississippi has roughly 2,720 students enrolled, an average poverty percentage of about 35%, a 75% graduation rate, average scores on the SATP state test that vary between 647 (U.S. History) 655 (Algebra II), and on average approximately 15 students for every teacher in the district.

Things become more interesting when the descriptive statistics are broken down by whether the school district appoints or elects their superintendent. Figures (2) and (3) show the same summary statistics as Figure (1), but for districts with appointed and elected superintendents respectively.

Table 2: Summary Statistics for All Districts

Statistic	N	Mean	St. Dev.	Min	Max
Enrolled100s	138	27.2	25.5	1.6	193.8
CompositeScore	138	654.7	3.7	646.0	665.0
PovertyPct	138	35.2	10.1	12	56
GradRate	138	73.4	9.4	48.5	94.0
StudentTeacherRatio	138	14.9	1.5	10.6	19.7
Algebra	138	654.7	3.8	646	665
Biology	138	651.3	4.7	638	662
History	138	647.4	3.7	638	656
English	138	649.6	3.6	641	658

Table 3: Summary Statistics for Appointed Districts

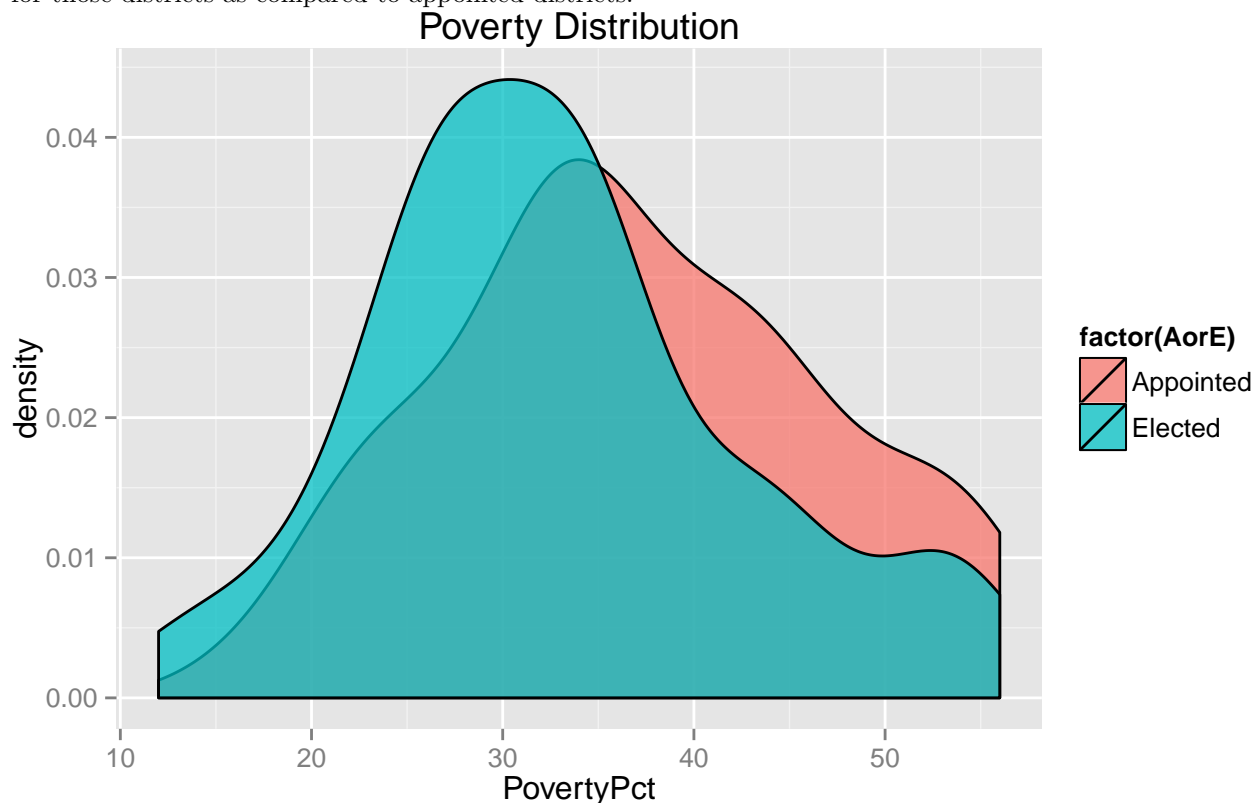
Statistic	N	Mean	St. Dev.	Min	Max
Enrolled100s	73	23.1	15.7	1.6	62.6
CompositeScore	73	654.6	4.1	646.0	665.0
PovertyPct	73	36.9	10.2	16	56
GradRate	73	73.3	10.4	48.5	94.0
StudentTeacherRatio	73	14.9	1.5	10.6	19.7
Algebra	73	654.6	4.0	646	665
Biology	73	651.3	5.2	638	662
History	73	647.4	3.8	639	656
English	73	649.4	3.5	643	657

Table 4: Summary Stats for Elected Districts

Statistic	N	Mean	St. Dev.	Min	Max
Enrolled100s	65	31.8	32.8	2.4	193.8
CompositeScore	65	654.8	3.3	648.0	665.0
PovertyPct	65	33.2	9.7	12	56
GradRate	65	73.5	8.4	51.5	90.5
StudentTeacherRatio	65	14.9	1.4	10.8	18.5
Algebra	65	654.8	3.5	647	665
Biology	65	651.4	4.1	642	659
History	65	647.4	3.6	638	654
English	65	649.9	3.7	641	658

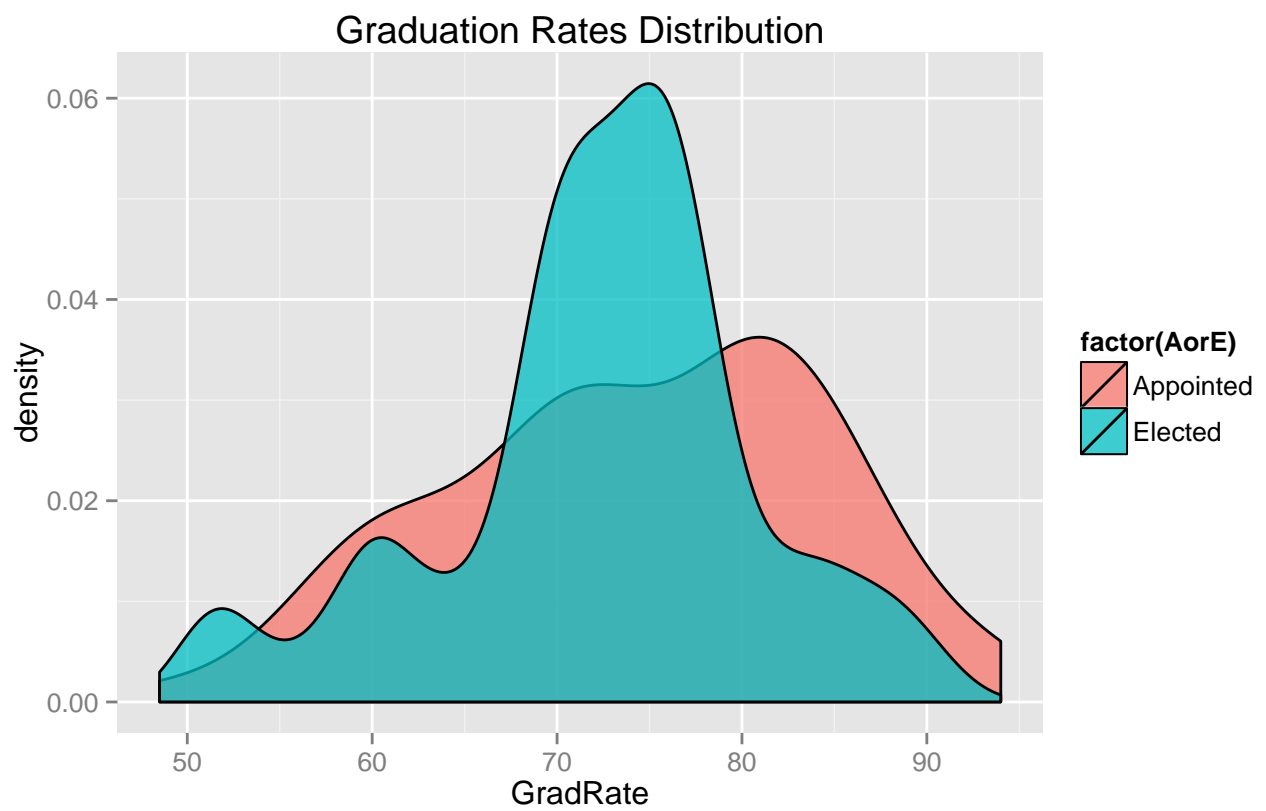
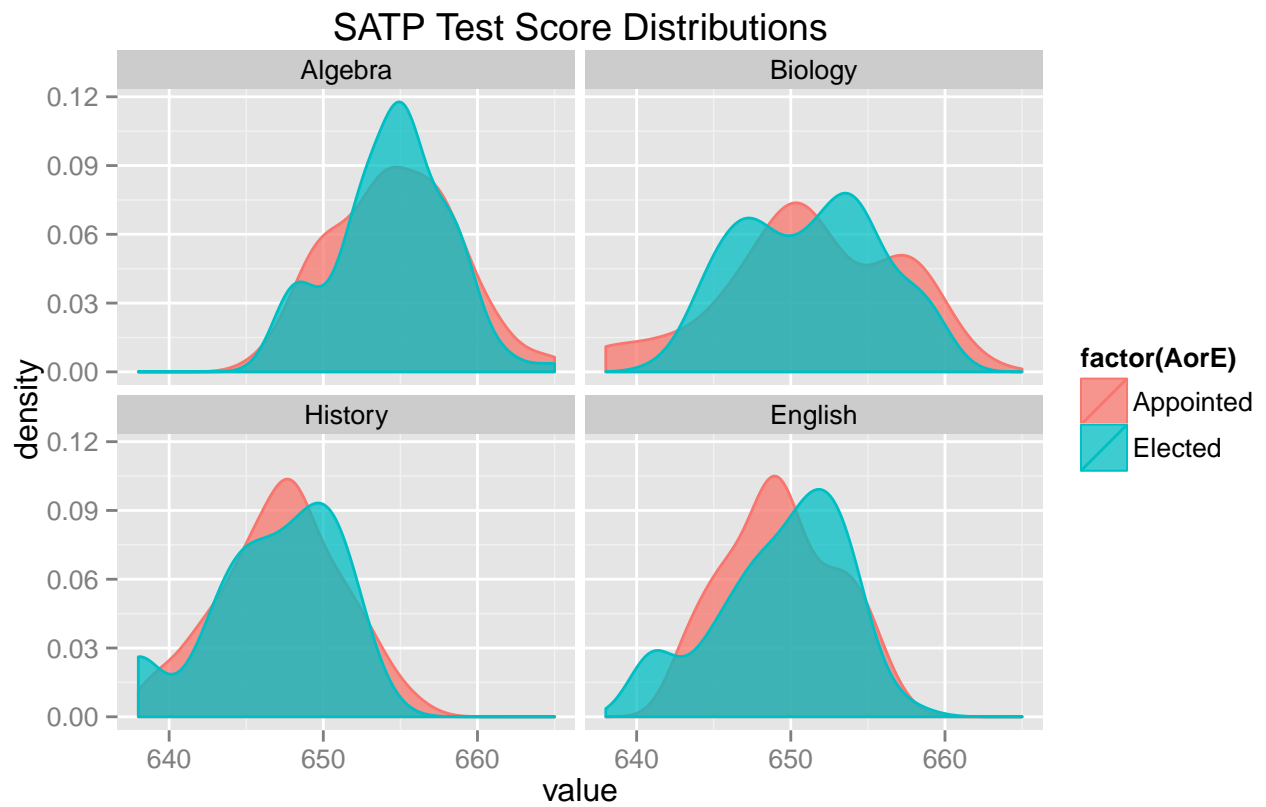
For the 78 appointed school districts, the average number of students enrolled is roughly 2,300 while the 67 elected school districts have an average nearly 900 higher. The difference in district enrollment can be explained by the fact that school districts with elected superintendents are shaped by county border. Meanwhile, school districts with appointed superintendents are shaped by municipal and city borders. Effectively were comparing the population in 67 municipalities versus 78 counties. Therefore it is not surprising that the average number of total enrolled students is substantially higher in elected school districts than in appointed school districts.

Similarly, the other noticeable difference between the two types of districts is the average percentage of 5-17 year-olds in poverty. In appointed districts, the average percentage of 5-17 year-olds in poverty is at 37%, meanwhile it is just below 33% in elected districts. However, this likely due to the fact that appointed districts are comprised of municipalities and urban areas where poverty is more prevalent. The differences in poverty levels can also be illustrated in a density plot of the distribution of poverty percentages by whether the district has an appointed or elected superintendent. In Figure (4), the distribution of poverty percentages are essentially normally distributed for both appointed and elected school districts, but appear to be more skewed leftward for districts with elected superintendents thus resulting in a lower average poverty percentage for those districts as compared to appointed districts.



In terms of student outcomes (graduation rates and SATP test scores), appointed and elected school districts are indistinguishable. Average graduation rates are within 0.6 percentage points of each other. Additionally, the biggest test score difference is in average English scores and that is only 0.6 points as well.

It may be easier to conceptualize the similarities between the two types of districts by examining density distributions of the aforementioned student outcomes. The following figures depict the density distributions for average Algebra II (Figure (5)), average Biology (Figure (6)), average English (Figure (7)), average History (Figure (8)), and average graduation rates (Figure (9)) for districts, delineated by whether they have an appointed or an elected superintendent. The distributions tell a fairly similar story to the descriptive statistics. At first glance, elected and appointed school districts are alike in regards to student outcomes. Considering the fact, it will be interesting to see whether this similarity holds after district characteristics (district enrollment, poverty, and student-to-teacher ratio) are controlled for.



6 Regression Model

To assess the difference in student outcomes for the two types of districts I employed the use of regression analysis in order to control for certain observable characteristics that also impact student outcomes. The basic regression model is as follows:

$$StudentOutcome_i = \beta_0 + \beta_1 Ei + \beta_2 Enrollment_i + \beta_3 PovertyPct_i + \beta_4 STR_i + \beta_5 E : Enrollment_i + \epsilon_i$$

Whereas **Student Outcome** is the student outcome in the (i)th district. Student outcomes include the average Algebra II, Biology, U.S. History, and English SATP Test Scores in each district, a composite score of all SATP test scores in each district, and the 2009 cohort graduation rate;

Whereas **E** is a dummy variable equal to 1 if the district has an elected superintendent;

Whereas **Enrollment** is a continuous variable corresponding to the total number of students enrolled in grades K-12 in the (i)th district in 100s;

Whereas **PovertyPct** is a variable ranging from 0 to 100 that describes the percentage of 5-17 year olds in the (i)th district that live under the federal poverty line;

Whereas **STR** is a continuous variable corresponding to the ratio of students to teachers in the (i)th district;

And whereas **E:Enrollment** is an interaction variable that allows the effect of having an elected superintendent to vary alongside the total enrollment in the (i)th district.

7 Regression Results

Regression results are presented in Figure (10). The different models, or rather the different dependent variables used, are displayed in separate columns.

Table 5: Regression Results

	<i>Dependent variable:</i>					
	GradRate (1)	CompositeScore (2)	Algebra (3)	Biology (4)	English (5)	History (6)
Elected Superintendent	-4.30* (2.32)	-0.38 (0.86)	-0.41 (0.88)	-0.97 (1.07)	-0.39 (0.69)	-0.62 (0.80)
Number of Students Enrolled (in 100s)	-0.42*** (0.08)	-0.21*** (0.03)	-0.21*** (0.03)	-0.25*** (0.04)	-0.25*** (0.02)	-0.20*** (0.03)
Percentage of Students in Poverty	1.44*** (0.53)	0.43** (0.20)	0.40** (0.20)	0.67*** (0.24)	0.54*** (0.16)	0.36* (0.18)
Student-to-Teacher Ratio	-0.13* (0.07)	-0.003 (0.03)	-0.002 (0.03)	-0.001 (0.03)	0.0003 (0.02)	0.03 (0.02)
Elected: Number of Students Enrolled (in 100s)	0.12* (0.07)	-0.01 (0.03)	-0.01 (0.03)	0.004 (0.03)	-0.004 (0.02)	-0.01 (0.02)
Constant	70.62*** (8.06)	656.01*** (2.99)	656.54*** (3.04)	650.38*** (3.71)	650.61*** (2.40)	648.80*** (2.79)
Observations	138	138	138	138	138	138
Adjusted R ²	0.20	0.30	0.29	0.31	0.51	0.37

Note:

* p<0.1; ** p<0.05; *** p<0.01

The only model that found evidence of an effect of a district electing their superintendent is presented in Column (1), which used the 2009 cohort graduation rate as the dependent variable. According to the regression results, districts with elected superintendents are associated with graduation rates 4.3 percentage points lower than districts with appointed superintendents even after controlling for district enrollment, poverty levels, and the student-to-teacher ratio. This p-value on this coefficient is 0.06, meaning that there is a less than a 6% probability that this result is due to chance. However, with the positive (albeit, very small)

coefficient on “Elected:Total Number of Students Enrolled” the negative association of having an elected superintendent on graduation rates diminishes as district enrollment increases.

None of the other models, which use test scores as the student outcome/dependent variable, show significant results for the effect of electing a superintendent as opposed to appointing one. Similarly, the interaction term between district size and the election dummy variable is insignificant in all other models except the first one.

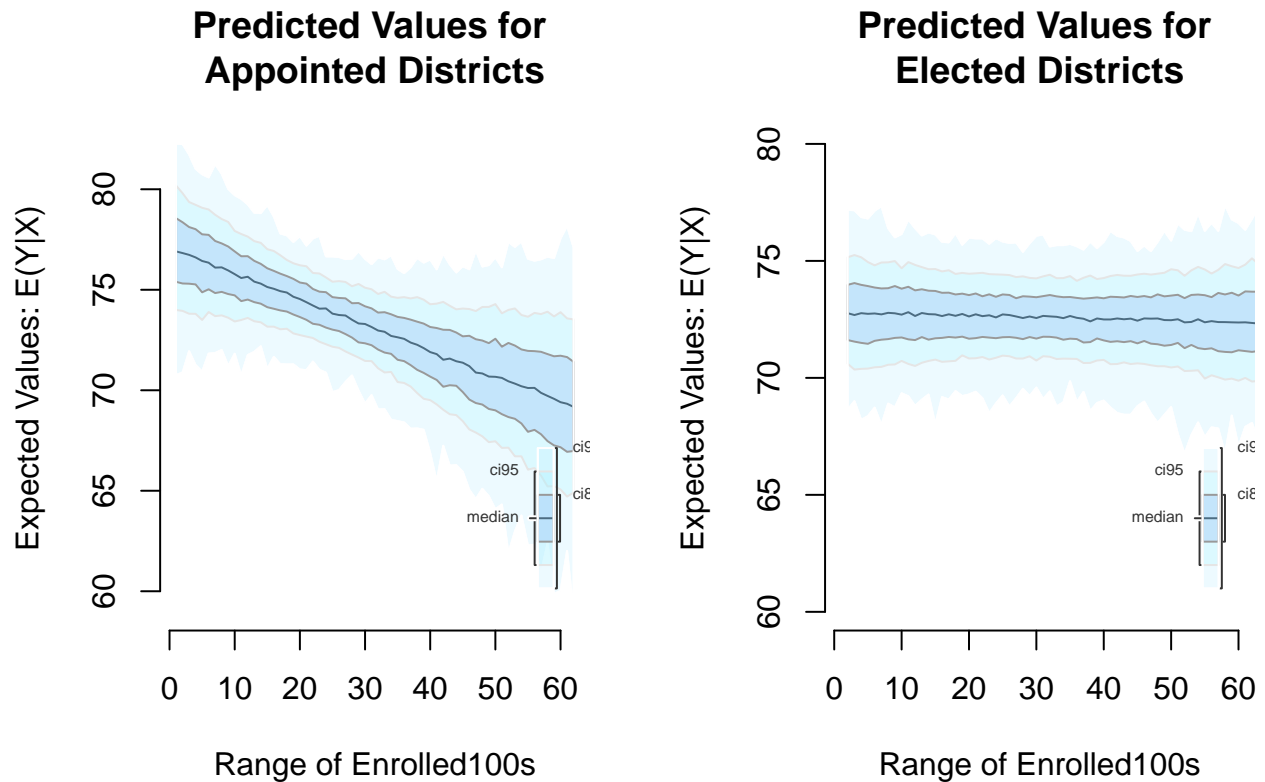
In order to explore what is driving the association between districts with elected superintendents and graduation rates, it may be helpful to start with a basic bivariate model and then add control variables one at a time. Table 6 presents the results of such a model.

Table 6: Regression Results Continued

	<i>Dependent variable:</i>				
	GradRate				
	(1)	(2)	(3)	(4)	(5)
Elected Superintendent	0.12 (1.62)	-1.40 (1.49)	-1.43 (1.47)	-1.28 (1.48)	-4.30* (2.32)
Pct Students in Poverty		-0.40*** (0.07)	-0.40*** (0.07)	-0.42*** (0.08)	-0.42*** (0.08)
Student-to-Teacher Ratio			1.13** (0.50)	1.28** (0.53)	1.44*** (0.53)
Enrollment				-0.03 (0.03)	-0.13* (0.07)
Elected:Enrollment					0.12* (0.07)
Constant	73.34*** (1.11)	88.26*** (2.91)	71.10*** (8.08)	70.50*** (8.11)	70.62*** (8.06)
Observations	138	138	138	138	138
Adjusted R ²	-0.01	0.17	0.19	0.19	0.20

Note:

*p<0.1; **p<0.05; ***p<0.01



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