

An Analysis
of
Student Achievement
and
School District Spending

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Chapter 1

Introduction

Purpose of the Study

This study analyzed school district spending and budgetary decisions for a school district to support student achievement. School administrators are faced with the critical task of preparing graduates for college while school funding diminishes. Data Points(Hughes, 2010) research was analyzed as the data to evaluate educational spending. The following chapter includes four sections. The sections include: The Purpose of the Study, Statement of the Problem, Significance of the Study, and Definition of Terms. Information contained in this chapter offers a framework to the research and guiding principles for the analysis of four competing models of school governance. The following questions are the basis of the research:

1. What are likely indicators for school districts to predict higher percentages of advanced Regents Diploma recipients?
2. Is there a correlation between school district spending in the areas of teacher salaries?
3. For students who successfully complete three years of math, is there any pattern of success toward a third year of science?
4. How will data be analyzed to validate budgetary decisions and to inform future spending?

Statement of the Problem

School districts in New York State will be faced with difficult budgetary decisions. New legislation requires that school district spending budgets do not exceed a two per cent increase from the previous year. The Legislature approved the tax cap in late June, an effort to limit the

annual growth of local property taxes to 2 per cent or the rate of inflation. The law allows taxing jurisdictions to grant themselves waivers with the approval of 60 percent of the members of whatever body approves local spending—a town board, a county legislature or, in the case of most school districts, the residents themselves (Kaplan, 2011). To progress toward higher levels of student achievement, i.e. Advanced Regents Diplomas, as students transition from primary to secondary schools, the district needs to evaluate areas that can foster this type of success in the context of spending priorities and limitations.

Significance of the Study

This study is of importance for all administrators who collaborate to make difficult budgetary decisions. In eight Long Island school districts, overall student achievement and spending are two areas of focus to support a proposed budget. The need to analyze specific areas of the aforementioned topics can offer some answers.

Definitions

Collaboration- Baker, Curtis, Benenson, define collaboration as a social term that describes a special relationship between two or more persons (or agencies) who share a common agenda for concerted action. The term suggests that both sides of the social equation are freely disposed to work together as co-laborers.

Correlation: A measure of the strength and direction of association between two variables.

Discrepancies- Schein defines differences or aberrations that seemingly counter the themes and patterns seen.

Higher Levels of Student Achievement-

- a. Students who graduate with a N.Y.S. Advanced Regents diplomas;
- b. scored levels 3/4 on the N.Y.S. Eighth Grade Math Assessment Exam;
- c. the percentage of students who pass the N.Y.S. Math B Regents Exam;
- d. the percentage students who pass the N.Y.S. Chemistry Regents Exam

Mean: A measure of central tendency; the sum of a set of scores divided by the total number of scores in test.

Patterns- Schein defines trends that are specific to one or more tables, but not necessarily across all tables.

Regression Analysis: A statistical technique designed to predict values of dependent variable from knowledge of the values of one or more independent variables.

Significance: A measure of the rarity of a particular statistical outcome given that there is actually no effect

Stake Holders- Smith refers to stake holders as the following: “Research indicates that good schools have a community with a shared vision or sense of identity and character. With respect to mathematics, for example, in a high performing school, teachers, parents, students and others share a sense of what it means to know and to teach mathematics.”

Themes- Schein defines major trends or ideas similar across districts in all tables.

Chapter II

Literature Review

The following was considered as the basis of the research:

1. What are likely indicators for school districts to predict higher percentages of advanced Regents Diploma recipients?
2. Is there a correlation between school district spending in the areas of teacher salaries and per pupil expenditure?
3. For students who successfully complete three years of math, is there any pattern of success toward a third year of science?
4. How will data be analyzed to validate budgetary decisions and to inform future spending?

The conceptual framework used to analyze the data centers around Edgar Schein's Organizational Culture and Leadership (Schein, 1997). Schein studies noticeable themes patterns, and discrepancies to explain phenomena. The data for this study is analyzed for similar themes, patterns, and discrepancies to analyze statistical phenomena around relational variables.

Chapter III

Methodology

The researchers' purpose in this chapter is to examine the capacity of three suburban Long Island high schools ability to foster collaboration and initiate change for the school district.

Eight districts were selected for comparison. Each district was selected based on comparable enrollment size of 5360 students. There were several rationales for the chosen districts. All schools were compared based on enrollment size. The next comparison was geographic location in that they all reside in Nassau County. Districts were then selected based on total expenditure. Finally, the districts are dissimilar in that they don't have common demographic make-ups. Four indicators were selected that are functional variables influencing student performance outcomes. They are Advanced Regents Diploma Recipients; Per Cent of Students Passing the Math B Regents Exam; Per Cent of Students Passing the Chemistry Regents Exam; Grade 8 Students Who Master the Math Assessment(Level 3/4), Per Pupil Expenditure; and Total Teacher Salary. The following list represents the sample study of schools:

- Baldwin
- East Meadow
- Farmingdale

- Freeport
- Hempstead
- Oceanside
- Plainview- Old Bethpage
- Syosset

The research also sought to examine data and discover new information from the following phenomena:

- a. THEMES: Major trends or ideas similar across districts in ALL tables.
- b. PATTERNS: Defining trends in that are specific to one or more tables, but not necessarily across all tables.
- c. DISCREPANCIES: Differences or aberrations that seemingly counter the themes and patterns seen.

In that way, the research will seek to highlight specific Themes, Patterns, or Discrepancies that are noticed in the data tables to explain correlations between variables.

Chapter IV

Findings

When administrators engage in dialogue, and make sense of data, they develop a much deeper understanding of what is going on relative to student achievement. They develop ownership of budgetary and instructional decisions relative to student achievement. What elements need to be in place to ensure spending is appropriately prioritized, with balanced stakeholder support, and a school community partnership that is transparent and supports a proposed budget relative to school district goals? High levels of student achievement are indicated by a high percentage of students graduating with an advanced regents diploma.

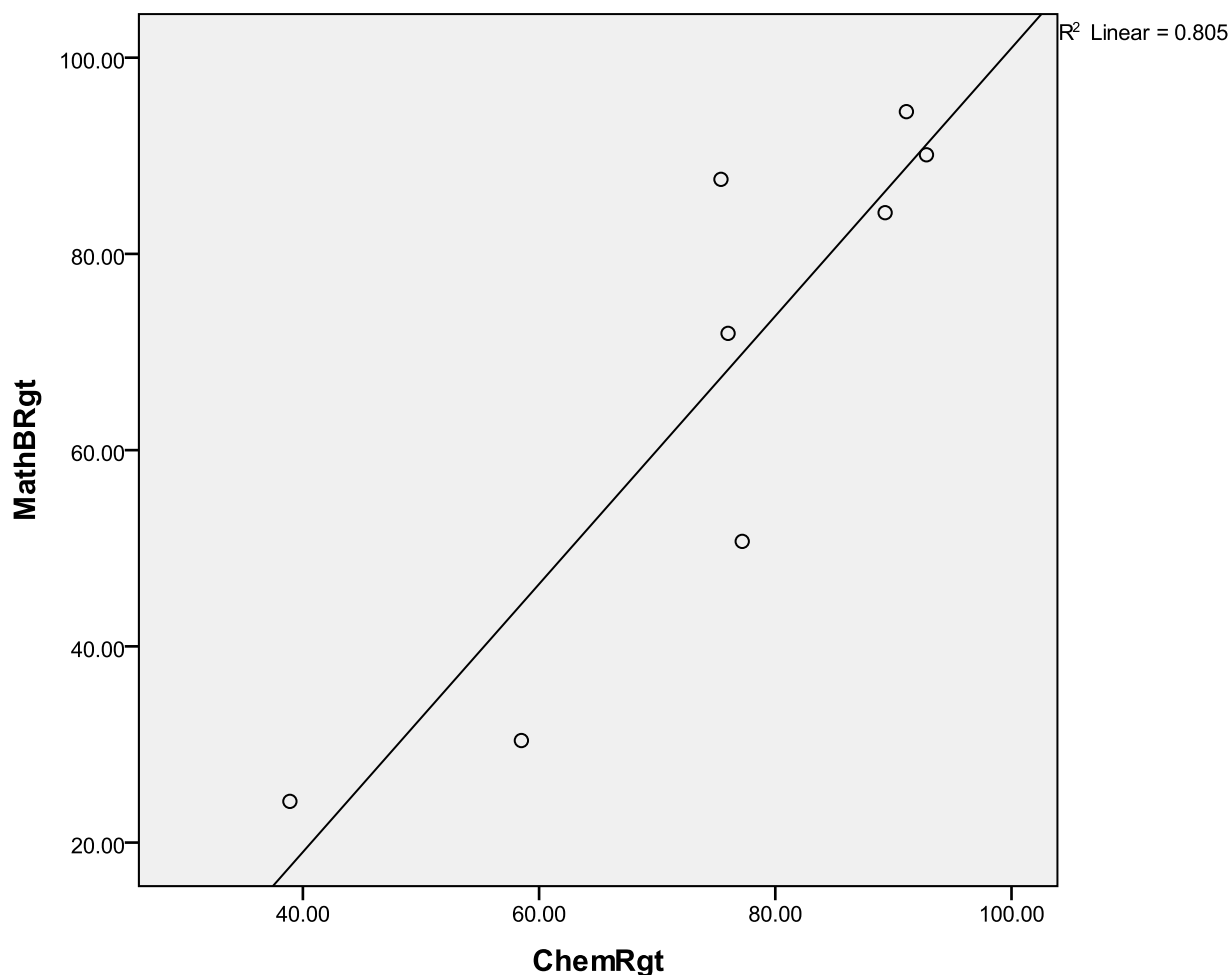
The theme that each of these districts has an expectation to be a high achieving school district is represented by the following chart:

		Report		
SchName		Adv.RgtDip	ChemRgt	MathBRgt
Baldwin	Mean	36.0000	77.2000	50.7000
EMeadow	Mean	55.0000	75.4000	87.6000
Farmingdale	Mean	44.0000	76.0000	71.9000
Freeport	Mean	21.0000	58.5000	30.4000
Hempstead	Mean	8.0000	38.9000	24.2000

Oceanside	Mean	59.0000	89.3000	84.2000
Plainview-OB	Mean	25.0000	92.8000	90.1000
Syosset	Mean	80.0000	91.1000	94.5000
Total	Mean	41.0000	74.9000	66.7000
		23.36053	18.36892	27.95517

It is widely represented from all school districts above that a percentage of students are taking both Math B and regents Chemistry, which are both required in order to earn an advanced regents diploma. Thus, each school has a number to represent its percentage of students in those classes, which then equates to the number representing the percentage of students representing advanced regents diploma recipients. If a school district was not supportive of high levels of achievement, then students would not be enrolled in the required courses. Or school districts would not offer the required courses due to low enrollment. This is not the case for the eight schools in this study.

An undeniable pattern for high success in the required courses for an advanced regents diploma is represented by the graph below.



This graph represents the percentage of students who achieve mastery on the Chemistry or the Math B regents exams. What is evident, is that as a high percentage of students master either exam there is a likely pattern for success on the other exam. Because of the relationship, it can be said that students who score mastery on Math B regents will likely score mastery on the Chemistry regents, and both exams are indicators toward advanced regents diplomas. In order to be considered a high achieving school district, high percentages of students should receive an advanced regents diploma. In fact, the two tables below mirror this pattern where, a correlation exists 89 percent of the time. If a student demonstrates mastery on either exam, this will lead to high percentage of mastery for students on the other exam:

Correlations

		ChemRgt	MathBRgt
ChemRgt	Pearson Correlation	1	.897**
	Sig. (2-tailed)		.002
	N	8	8
MathBRgt	Pearson Correlation	.897**	1
	Sig. (2-tailed)	.002	
	N	8	8

** . Correlation is significant at the 0.01 level (2-tailed).

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-35.598	21.061		-1.690	.142
	ChemRgt	1.366	.274	.897	4.983	.002

a. Dependent Variable: MathBRgt

A similar relationship exists between students who achieve mastery on the New York State Eighth Grade Math assessment. The table below shows a significant relationship between students who achieve mastery on the eighth grade exam and a high percentage of advanced regents diploma recipients. The pattern here is obvious; success on the eighth grade math exam is an indicator for successful completion of the required courses for an advanced regents diploma.

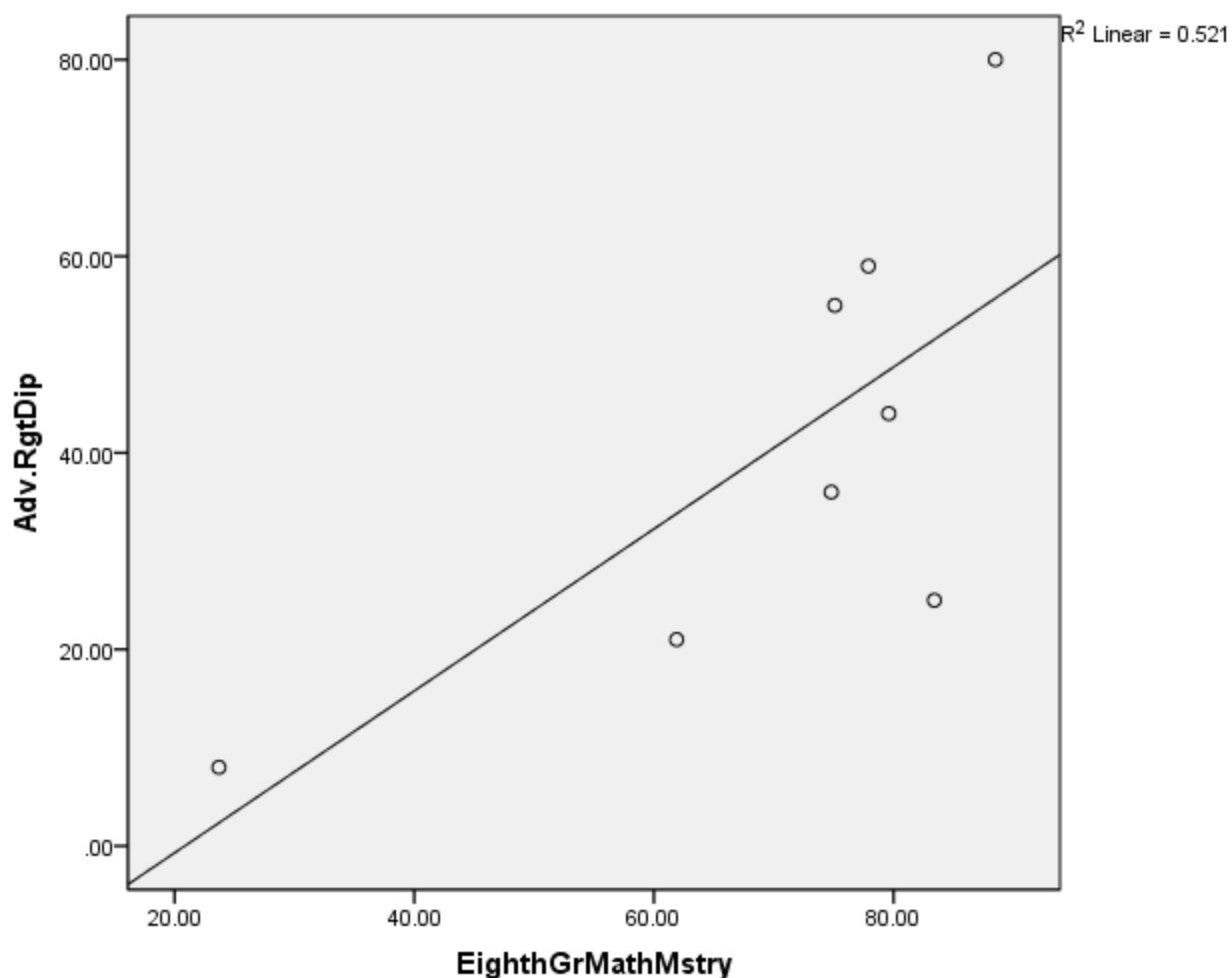
Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-17.176	23.598		-.728	.494
	EighthGrMathMstry	.824	.323	.722	2.554	.043

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.
		B	Std. Error	Beta			
1	(Constant)	-17.176	23.598			-.728	.494
	EighthGrMathMstry	.824	.323	.722		2.554	.043

a. Dependent Variable: Adv.RgtDip



An important discrepancy exists in the data. Some may argue that increasing teacher salaries as an incentive for attracting the best instructors would lead to greater student success. However the chart below illustrates the contrary:

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-41.231	37.567		-1.098	.314
	TchSalExp	1.644E-6	.000	.672	2.224	.068

a. Dependent Variable: Adv.RgtDip

Teacher salary increases as an incentive will not lead to higher rates of advanced regents diploma recipients. The significance of this relationship is that .0000016 change will occur from increasing teacher salaries, hardly enough for that to be the focus of discussions around student achievement.

Chapter V

Conclusions and Recommendations

There are several structures that should be in place in order to make difficult budgetary decisions while still supporting higher levels of student achievement. Utilizing data to foster collaboration in the school community is a difficult task. First, teachers need to see the validity of using the data to inform instruction and not be afraid the data will be used to penalize them. Second, administrators need to be open about their goal. If the goal is to increase student achievement towards advanced regents diplomas, the data from standardized tests, must be shared in an open format with the teachers. Transparency in data collection and utilization will foster collaboration amongst all stakeholders.

The research indicates predictors for a characteristically high achieving school district. It should be expected that schools where a third year of math and science is encouraged increases regents test takers in the relative courses. In addition, schools where students master Math B, and/or Chemistry regents exams are likely to have higher percentages of students receiving an advanced regents diploma.

It is not recommended that salary increases and similar incentives be implemented for students to achieve at high levels. In fact, there is little or no correlation between the two. Districts should instead focus on early intervention and support for math instruction to increase the likelihood students will be successful in Math B and Chemistry regents courses.

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