

***An Empirical Analysis Comparing
Public Self-Selecting Elementary Schools to
Traditional Based Elementary Schools
Within the Anchorage School District***

by

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Sponsored by

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Introduction

- **Current Alaskan Elementary Achievement**
 - **Alaskan 4th Graders at or Above Basic Proficiency**
 - **Reading: 56%** (66% National Average)
 - Only five states are below Alaska (California, Louisiana, Mississippi, Alabama, and D.C.)
 - **Math: 78%** (82% National Average)

A Possible Solution

- **More Charter/Lottery (“Self-Selecting”)**
 - **High Achievement:** Five of the nine Anchorage School District (ASD) publically funded self-selecting schools are consistently in the top ten for highest achieving elementary schools in all subjects
 - **High Parental Demand:** The top three ASD public elementary schools are self-selecting schools with 400-600 students per school on waitlists

SBA: Percentage School Proficient

TerraNova Above Average Scores

My Question

What is most likely driving the differences in test scores between self-selecting K-6 elementary schools and traditional based schools?

Presentation Outline

- Related Literature
- Data Summary and Sources
- Econometric Framework
- Discussion of Results

Related Literature

- In Michigan self-selecting schools test scores were **lower** or average to traditional public schools (Eberts and Hollenbeck 2001)
- Milwaukee, Wisconsin self-selecting school's test score were **lower** or average to traditional public schools (Hiren Nisar 2010)
- In New York self-selecting schools had **higher** test scores compared to traditional public schools. (Hoxby et. al 2009)
 - Authors controlled for parent, student, and teacher characteristics such as income, educational attainment of parents, teacher quality, students who were limited in

My Research Methods

- Compare Self-Selecting Schools to Traditional Based Schools By:
 - Using least squares regression, random effects model, and a panel data set
 - Controlling for parental, teacher, and student characteristics

Data Summary and Sources

- **Anchorage School District Elementary School Data.**
 - “Profile of Performance”- School Years 2007-2010
 - Number of Students for Each School By Home Zip Code Including Self-Selecting Schools
- **2010 Census and American Community Survey (2006-2010)**
 - Average household income by census tract matched to zip code
 - Average household educational attainment by

Data Summary and Sources

- **2008-2009 ASD ranked 94th out of the 100 largest school districts**
 - ASD area covers 1,900 Square miles (Size of Delaware)
 - 42% of Alaska's population lives in Anchorage
 - 50,000 students
 - Diversity: 50.8 percent non-white, 49.2 white
 - Over 90 different languages are spoken within the ASD

Econometric Framework

- **Two Competing Hypotheses**
 - **H0:** The methods and teachers in self-selecting schools drive the differences in outcomes; therefore, replicating a self-selecting school and its methods would increase test scores across the district.
 - **H1:** A second hypothesis is that it is primarily the characteristics of parents or students that are driving differences in self-selecting school outcomes; that is, parents with a higher than average educational attainment, higher earnings,

Random Effects Model

$$Y_{it} = \alpha + \beta x_{it} + v_i + \varepsilon_{it}$$

- Random Effects Model

- $\gamma = \textit{Test Scores}$

- and subscript $i = \textit{schools}$ and
subscript $t = \textit{time}$

- $X_{it} = \textit{School Characteristics}$

- $v_i =$ that change over time

- fixed school effects that are constant over
time

Variables and Descriptions

- **Dependent Variables**
 - **SBA Subject (Reading, Writing, Math, and Science)**
 - **TerraNova Subject (Reading, Language, and Math)**
- **Independent Variables**
 - **(1) Parental Effects**
 - *Lnwkvolhrs*: Nat. log of parental volunteers hours
 - *Lnincome*: Nat. log of average household income by zip
 - *Pctbach*: Average household educational attainment by zip

Model 1: SBA Results

Dependent variable: SBA % School Proficient

Regressor	Model 1			
	<i>Reading</i>	<i>Writing</i>	<i>Math</i>	<i>Science</i>
<i>Self-selecting</i>	0.10*** (2.84)	0.11** (2.53)	0.09* (1.743)	0.237*** (4.556)
Time Effects				
<i>Year 2008</i>	-0.033*** (-6.28)	0.002 (0.487)	-0.03*** (-6.64)	-0.045*** (-2.898)
<i>Year 2009</i>	-0.004 (-0.901)	0.002 (0.394)	0.011** (2.107)	0.02 (1.469)
Constant	0.83*** (70.69)	0.78*** (54.44)	0.77*** (57.64)	0.47*** (19.836)

Model 2 Results: Parental Effects

Dependent variable: SBA % School Proficient

Regressor	Model 2			
	Reading	Writing	Math	Science
<i>Self-selecting</i>	0.10*** (3.318)	0.11*** (2.855)	0.09* (1.93)	0.24*** (4.375)
(1) Parental Effects*				
<i>Ln Parental Volunteer Hrs</i>	0.002 (0.343)	0.006 (1.101)	0.004 (0.926)	0.006 (0.558)
<i>Ln Avg. Household Income</i>	0.12*** (2.783)	0.139*** (2.808)	0.122** (2.554)	0.20*** (2.739)
<i>Pct. Edu Attainment by Zip</i>	-0.036 (-0.354)	-0.077 (-0.675)	-0.001 (-0.007)	0.087 (0.476)

* Also includes time effects

Model 2 Results: Teacher Effects

Dependent variable: SBA % School Proficient

Regressor	Model 2			
	<i>Reading</i>	<i>Writing</i>	<i>Math</i>	<i>Science</i>
<i>Self-selecting</i>	0.10*** (3.332)	0.11*** (2.764)	0.09* (1.87)	0.24*** (4.492)
(2) Teacher Quality Effects*				
<i>Pct. Advance Degree</i>	-0.018 (-0.27)	0.04 (0.57)	0.05 (0.756)	-0.09 (-0.74)
<i>National Board Cert</i>	-0.003 (-0.567)	0.00 (0.046)	0.003 (0.478)	-0.003 (-0.145)

**Also includes time and parental effects*

Model 2 Results: Student Effects

Dependent variable: SBA % School Proficient

Model 2

Regressor	Reading	Writing	Math	Science
<i>Self-selecting</i>	0.0104 (0.358)	0.003 (0.0822)	0.00166 (0.0345)	0.0709 (1.432)
(3) Student Effects*				
<i>Student to Teacher Ratio</i>	0.0004 (0.258)	0.002 (1.287)	0.0006 (0.383)	0.00046 (0.113)
<i>Percentage of LEP</i>	-0.175** (-2.367)	-0.0259 (-0.310)	-0.108 (-1.514)	-0.419*** (-4.762)
<i>Percentage of EDS</i>	-0.214*** (-5.378)	-0.328*** (-7.384)	-0.236*** (-6.370)	-0.393*** (-7.340)

**Also includes time, parental, and teacher effects*

Interact: Self-Selecting and EDS

Dependent variable: SBA % School Proficient

Model 2*

Regressor	<i>Reading</i>	<i>Writing</i>	<i>Math</i>	<i>Science</i>
<i>Self-selecting</i>	0.005 (0.11)	-0.01 (-0.22)	0.01 (0.21)	0.02 (0.21)
Econ Disadvantaged	-0.214*** (-5.40)	-0.33*** (-7.56)	-0.23*** (-6.19)	-0.40*** (-7.62)
<i>Interact (EDS*SS)</i>	0.03 (0.18)	0.13 (0.60)	-0.11 (-0.39)	0.37 (0.94)

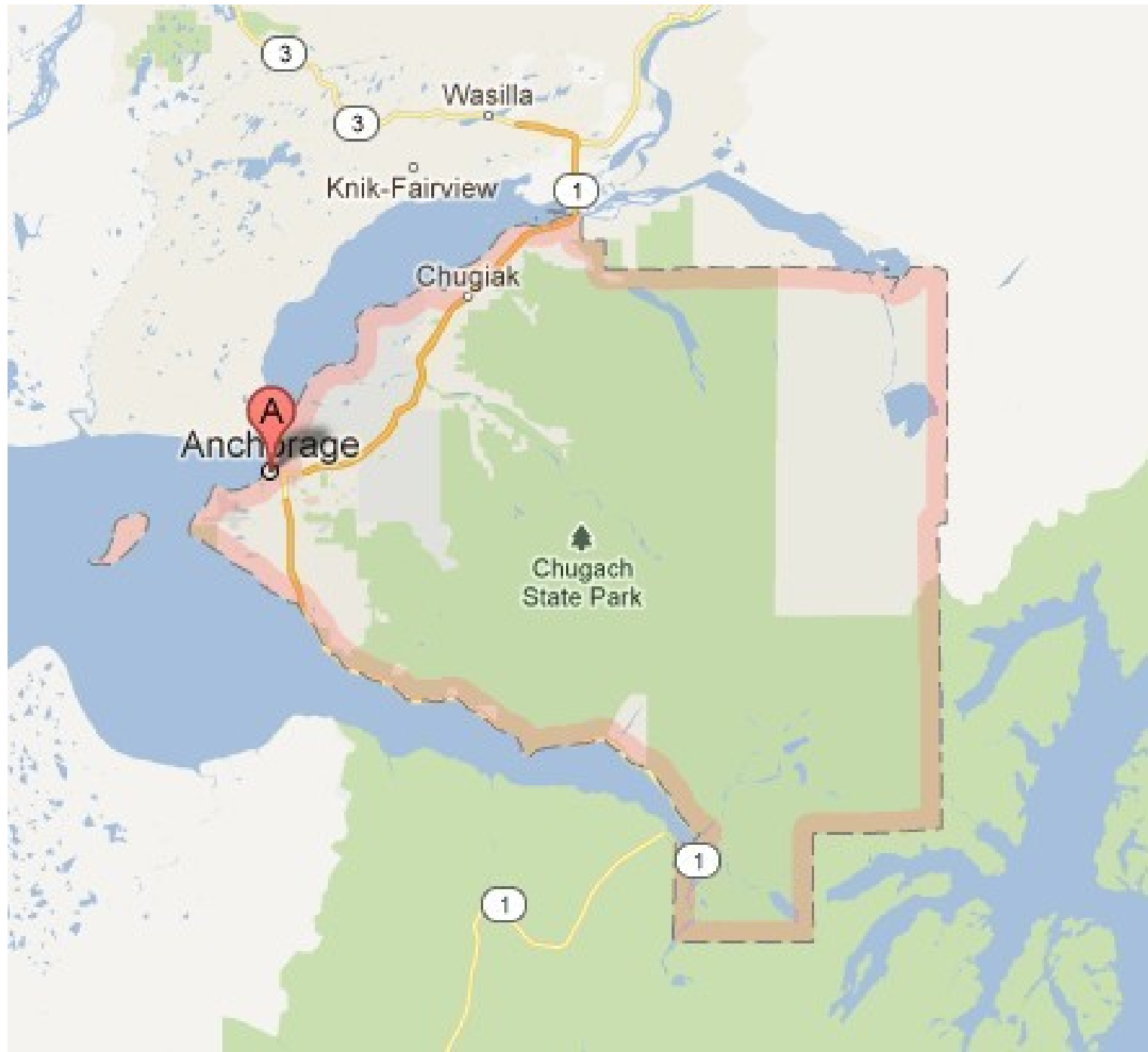
*Also includes all control groups

Conclusion

- **Two Competing Hypotheses**
 - **H0:** The methods and teachers in self-selecting schools drive the differences in outcomes; therefore, replicating a self-selecting school and its methods would increase test scores across the district.
 - **H1:** A second hypothesis is that it is primarily the characteristics of parents or students that are driving differences in self-selecting school outcomes; that is, parents with a higher than average educational attainment, higher earnings,

Questions?

Top Five Self-Selecting Schools



Overview/Definitions

- All Anchorage publically funded K-6 schools
 - 66 elementary schools for school years 2007-2010
 - No private schools were included in this study.
- “Self-Selecting School” - A school in which a parent chooses (self-selects) to enroll his/her child into.
 - Nine K-6 self-selecting schools TABLE HERE (Charter, Waldorf, ABC, and Optional)
 - Parents must provide transportation
- “Traditional Based School” - All other schools

Table Self-selecting schools type

- Category name
- Number of Kids
- Waitlist

Summary and Sources

Zip	Total Elementary Kids	Total S.S. Kids	Percentage of S.S. Kids	% of Households Bachelors or Higher	Average Household Income	Overall SBA
99517	3,595	668	18.6%	41%	\$65,918	70%
99501	2,704	496	18.3%	28%	\$86,297	66%
99516	4,644	670	14.4%	64%	\$157,980	82%
99507	9,635	1,080	11.2%	33%	\$99,781	70%
99515	6,004	661	11.0%	36%	\$118,279	74%
99518	2,006	215	10.7%	31%	\$82,557	65%
99503	2,947	281	9.5%	23%	\$43,757	53%
99502	6,179	524	8.5%	29%	\$83,558	73%
99577	7,405	579	7.8%	41%	\$99,312	82%
99504	9,522	736	7.7%	26%	\$75,371	64%
99567	1,866	130	7.0%	32%	\$105,667	83%
99508	9,272	613	6.6%	40%	\$58,204	60%
99506	3,333	99	3.0%	24%	\$38,865	80%
99505	1,855	53	2.9%	18%	\$89,377	77%
99587	346	0	0.0%	47%	\$74,868	88%
