An Analysis of the Effect a State's Special Education Funding Formula has on the Percent of a State's Students Enrolled in Special Education From 2000 – 2009

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EXECUTIVE SUMMARY

Introduction:
The recent recession has placed greater hardships on the states in financing special education. The three reasons states struggle to finance special needs students are: the higher per – student cost of special needs students, an increase in the number of students being identified as special needs, and an increased commitment on states and local governments for financing special needs students. One of the ways in which states approach this question is through their use of special education funding formulas. However, research in understanding the effects of state special education funding formulas is lacking.

Research Question:
While research has been conducted examining how special education is financed in the United States, few have looked at the effect state special education finance policies have on special education services. My research question asks what effect a state's special education funding formula has on the percent of a state's students enrolled in special education from 2000 - 2009.

Literature Review:
Research has examined both how states finance special education and what may influence special education enrollment rates within the states. However, few studies have attempted to control for all of these influences to examine the effect that state special education funding formulas have on the percent of a state's students enrolled in special education. My study will address that void.

Methodology:
My study looks at a sample of 500 observations of all 50 states over a ten year period between 2000 and 2009. It was constructed using a panel data set in which I included variables that I could use in the analysis to control for characteristics that impact the percent of a state's special education enrollment. Four multiple linear regression models were estimated using the percent of a state's special education enrollment as the dependent variable. This variable represents the percentage of special needs children in elementary and secondary school for a particular state and was chosen as the dependent variable because it measures the proportion of students in a particular state that have been enrolled as special needs. Each model examined the effect that different categories of state special education funding formulas had on the dependent variable. Independent variables pertained to both state economic and demographic characteristics, as well as other important variables which impact the percent of a state's students enrolled in special education.

Key Results:
- If the special education funding formula categories of 1 and 3 are implemented by a state it led to a .45 percent and .94 percent increase respectively in the level of the percent of students enrolled in special education, and if categories 2 and 4 are implemented it led to a .76 percent and .45 percent decrease respectively in the level of the percent of students enrolled in special education.

- A 1 percent increase in the level of the total number of disabled students resulted in, on average, a .65 percent increase in the level of the percent of students enrolled in special education for each funding category.
- A 1 percent increase in the level of a state's unemployment rate resulted in, on average, a .23 percent decrease in the level of the percent of students enrolled in special education for each funding category.
- A 1 percent increase in the level of the percent of special education students for both Hispanics and Blacks resulted in, on average, a .18 percent and .30 percent increase respectively in the level of the percent of students enrolled in special education for each funding category.

Conclusion:
- Government leaders should be cognizant of the impact policies concerning funding formulas have on enrollment rates and continue to research ways to fund state special education services more effectively and efficiently.
- Researchers and government leaders in all levels of government need to define appropriate levels for both the total enrollment of special needs students and level of funding.
- The appropriate level of government for financing special education services needs to be determined.

INTRODUCTION

The recent global recession and sequester cuts have caused all levels of government to struggle with providing equal educational services for special needs students under the Individuals with Disabilities Education Improvement Act (IDEA). Despite approximately $12.6 billion in funding from the federal government under IDEA for the 2011 – 2012 school year (www2.ed.gov), the states and their local governments remain committed to financing these services. These services have become financially challenging for the states for three reasons: a rise in the per – student cost of special needs students, an increase in the number of students being identified as special needs, an increased commitment on states and local governments for financing special needs students.

The rising cost per – student of special needs students has caused financial struggles for the states because the average cost per – student of special needs has continued to increase for

the last several decades. According to a study conducted by the Thomas Fordham Institute, between 1967 and 2005, the average real increase in special education spending per pupil rose 1,539 percent (Levenson 2012). This same study also found that "between 1996 and 2005, an estimated 40 percent of all new spending in education went to special education services" (Levenson 2012), and that in 2005 alone, special education spending, which totaled nearly $110 billion, was about 21 percent of all education spending in the United States (compared to 18 percent in 1996 and 17 percent in 1995) (Levenson 2012). Currently, for FY 2012, the U.S. Department of Education Budget lists 17 percent of total education spending as the amount the United States will appropriate for special education services (www2.ed.gov).

The second major reason states' struggle to finance special education is an increase in the number of students being identified as special needs. The total number of students with special needs peaked in 2004-05 with 6.72 million or 13.8% of the national student body (Scull and Winkler 2011). Since then, the number and proportion of students has decreased steadily, falling to 6.48 million special needs students or 13.1% of the total national student body in 2009- 2010 (Scull and Winkler 2011). This study found that much of the recent decrease in the overall special education population can be attributed to a decrease in the population being identified with specific learning disabilities (SLD) (Scull and Winkler 2011).

The final major reason for a state's struggle in financing special education is the increased commitment placed on states and their local governments for financing special needs students. The federal government does provide assistance to the states for financing special education through IDEA grants. However, it has lacked in its commitment of contributing 40 percent of funding per special education student by 2011, only contributing around 8 percent in 2001 (aim.cast.org) and 19 percent in 2005 (nasponline.org). Furthermore, the maintenance of

effort (MOE) requirement under IDEA, which requires the states to at least match the amount they spent on special education in the previous year, has only made it more difficult for states to provide services for special needs students[1].

RESEARCH QUESTION

The previous section illustrates some of the major problems states face in concerning the funding of special needs students. However, it is important to understand further how special education services in the United States are funded. According to the United States code, Title 29 1401 (3) (A) a special needs student is defined as:

> 3) The term 'child with a disability' means a child— (i) with mental retardation, hearing impairments (including deafness), speech or language impairments, visual impairments (including blindness), serious emotional disturbance (referred to in this chapter as "emotional disturbance"), orthopedic impairments, autism, traumatic brain injury, other health impairments, or specific learning disabilities; and (ii) Who, by reason thereof, needs special education and related services.

Under IDEA the federal government has mandated that any student that has been identified with any one or more of the 13 listed disabilities qualifies for special education services. To qualify for these services, the federal government requires that states submit plans for how federal funds are to be distributed to local agencies for direct instructional programs. Each state is required to construct an Individualized Educational Program (IEP) for each disabled student to assure that each student is receiving a Free Appropriate Public Education (FAPE) (lwv.org) and is placed in the least restrictive environment as possible. A FAPE is defined under section 504 of the Rehabilitation Act of 1973 as "any person who: (i) has a physical or mental impairment which substantially limits one or more major life activities, (ii) has a record of such an impairment, or

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[1] States are able to apply for waivers to suspend the MOE requirement. Currently, Alabama, Iowa, Kansas, New Jersey, South Carolina, and West Virginia have applied for this waiver since 2008. The federal government is able to either accept or reject this waiver. However, this is too new of a phenomenon for my analysis. As a result, as waivers grow I would expect this to be reflected in special education funding and should be considered for future research.

(iii) is regarded as having such an impairment" (ed.gov). Furthermore, to qualify to receive federal funds, state and local agencies are mandated to specify their identification procedures and the placement of students with special needs (lwv.org).

Funds for the delivery of special education services may be provided through either local education agencies (LEAs), states, or the federal government. How states distribute funds to their respective LEAs is based on a state's special education funding formula. As a result, my research question asks what effect a state's special education funding formula has on the percent of a state's students enrolled in special education. Only through an analysis of the effect of these funding formulas will we be able to understand whether they have direct impacts on special education.

LITERATURE REVIEW

All 50 states have provisions in their public education funding formulas that acknowledge the cost of educating special education students (Parrish and Chambers 125). Parrish (1996) points out that the reason for the difference in the bases of funding formulas within the states may be a result of "historical reasons because of varying local contexts and policy objectives, and perhaps because of the particular formula approach most in fashion or most used by neighboring states at the time of adoption" (Parrish 1996)[2]. For example, historical segregation practices for placement of children with disabilities, such as placing them in separate classrooms, and geographical indicators, such as state racial attitudes, may impact the type of special education policies adopted by certain states. "The influence of such factors as the organizational structure, program constraints and regulations, characteristics of advocacy groups, commitment

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[2] These funding formulas have been taken as given not considering endogeneity. It is possible that state special education funding formulas are not exogenous variables. This means that funding formulas may be correlated with one or more of the other explanatory variables in the data set which would create bias estimations. An instrumental variable should be used to test for the endogeneity of funding formulas.

and leadership of staff, legal requirements, and variation in amounts of funding available to states and school districts from other source[s]" (Mahitivanichcha and Parrish 2005) may also impact the type of special education policies adopted by the states.

The different types of special education funding formulas that the states have adopted are multiple student weights, single student weights, census - based weights, no separate special education funding, resource - based, a combination of two or more of the funding formulas, percent reimbursement, or block grants (Ahearn 2010). Table 1 in the appendix lists the various categories of funding formulas used by the states as well as their descriptions in 2008 – 2009. It is important to note that these different funding categories represent the primary types of special education funding formulas. The formula used by a specific state may be more complex, and contain aspects of more than one type of funding formula (Ahearn 2010). For example, the funding formula category of no separate special education funding means that a respective state funds special education through its general education fund, but is still mandated to attach some form of financial allocation to special needs students under federal law. As a result, "many of the specifics of a state's special education fiscal policy are not reflected in such a simple typology" (Parrish 1996). For example, an important and independent fiscal policy decision confronting the states is the degree of freedom the LEAs have once they receive the categorical funds. Some states require that these funds be spent directly on special education programs, while others have no such requirement (Parrish 1996).

Recent research has focused on what effects state special education funding systems have on state special education services, particularly the rise in cost in total special education enrollment and services. However, disagreements on what is causing this phenomenon are apparent throughout the special education finance literature. Greene and Forester (2002) point

out that the three identified reasons for the increase are "greater real incidence of disabilities, the advent of high-stakes testing, and the financial incentives created by special education funding" (Greene and Forster 2002). Research conducted by Finn, Rotherham, and Hokasnson (2001) studying special education in Massachusetts argue that the growth of enrollment in special education reflects growth in the real incidence of disabilities in children because there are simply more disabled students who require more costly services (Finn et. Al 2001). They contend this is a result of "social forces over which schools have no control, pointing to three factors in particular: improvements in medical technology, deinstitutionalization of children with serious difficulties, and increases in childhood poverty" (Finn et. Al 2001). There are also some researchers, however, who suggest that medical improvements have resulted in children being misdiagnosed as special needs for reasons "unrelated to those students' genuine need for special education services" (Greene and Forster 2002) such as the advent of high stakes testing.

Many researchers now attribute high stakes testing as a possible cause in the increased enrollment of special needs students. Finn (2002) points out that "this would help explain not only the growth of special education enrollment, but also the recent increase in graduation rates for special education students—if more students who aren't truly disabled are being placed in special education, we would expect to see improvements in the academic performance of students in special education" (Finn 2002). These tests were introduced for the primary purpose of holding schools accountable for student improvement. However, because these tests can affect the potential cuts in funding, "these programs can also create a perverse incentive: an incentive to game the system by getting low-performing students out of the testing pool altogether" (Greene and Forster 2002). By labeling these students as special needs, schools are able to exempt them from mandatory state testing. Figlio and Getzler (2002) when examining high –

stakes testing in Florida found that "special education enrollment went up after the introduction of the test, that students in tested grades were more likely than students in untested grades to be placed in special education, that lower-scoring students were more likely to be placed in special education, and that severe disability categories did not rise after the introduction of the test" (Figlio and Getzler 2002). Furthermore, Jacobs (2002) when studying Chicago Schools found that "the percentage of students exempted from testing through special education rose faster after the introduction of high-stakes testing, and most quickly among lower-scoring students" (Jacobs 2002). However these studies are only confined to one state or city, and cannot confirm that the introduction of high stakes testing caused greater growth (Greene and Forster 2002).

Finally, some research has explored the possibility of a relationship between financial incentives and special education growth. Cullen (1999) studied the financial incentives of school districts in the state of Texas arising from court mandated restructuring of the education financial system. She found that "in districts where the amount of money provided for placing a student in special education went up, special education enrollment also went up [because of court orders]. Specifically, she found that a 10% increase in [the amount of money received] for placing a student in special education could be expected to produce a 1.4% increase in a district's special education enrollment rate" (Cullen 1999). Cohen (2007) has found that parental financial incentives also impact a parent's decision to have their child screened for a disability and placed into special education. Using annual state data on special education enrollment and disability category she found "that the cash benefits a disabled child can receive from the federal SSI program provide a strong incentive for parents to have their child screened for SE placement" (Cohen 2007).

Mahitivanichcha and Parrish (2005) show that the different type of funding formula implemented by a state creates incentives or disincentives to identify children as special needs. For example, they concluded that "under a weighted formula in which certain disabilities are tied to larger amounts of state aid, decision makers might be inclined to classify more students in these categories." This is because a weighted formula may tie dollars to placement categories, creating the incentive for districts to respond by placing more students in placements generating higher levels of revenue" (Mahitivanichcha and Parrish 2005). However, funding formulas not directly linked to children, such as census based formulas, create a disincentive to classify students as special needs so as to provide less costly services.

METHODOLOGY

My null and alternative hypothesis can be stated as such:

H_o: Different categories of state special education funding formulas will have no effect on the percent of a state's students enrolled in special education.

H_a: Different categories of state special education funding formulas will have distinct effects on the percent of a state's students enrolled in special education.

Prior to my research, I expected to reject my null hypothesis because the literature suggests that certain types of special education funding formulas can create either incentives or disincentives, such as financial, to identify students as special needs. Table 2 below lists the 4 constructed categories and the funding formulas that each one falls into along with their expected sign[3].

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[3] Research by Lankford and Wyckoff (1999) in their study titled, "The Allocation of Resources to Special Education and Regular Instruction" categorized funding formulas based upon four formula types: flat grant, pupil weighted, resource based, and cost based. My study categorized the different types of funding formulas based upon the expected sign these variables would have after running regressions.

Table 2. State Special Education Funding Formula Categories		Expected Sign
Category 1	Multiple Weights, Single Weights, Resource Based, Combination	Positive (+)
Category 2	Census Based and Percent Reimbursements	Negative (-)
Category 3	No Separate Special Education Fund	Negative (-)
Category 4	Block (Variable or Grant)	Negative (-)

Data Set

To analyze whether state special education funding formulas have an effect on the percent of a state's students enrolled in special education, I constructed a panel data set that consists of a sample size of 500 observations from all 50 states over a 10 year period from 2000 – 2009. Panel data observes the explanatory variables across time for a set of units, in my case states, more than once. Originally, the panel allowed me to run fixed effects model to observe whether changes in state special education funding formulas have an effect on changes on the percent of a state's students enrolled in special education. However, very few states made categorical changes during the observed time period which would have resulted in limited predictive power because all of the variation was cross – sectional through the states. As a result, a multiple linear regression model was used to explore whether a change in the level of a state's categorical special education funding formula effects a change in the level of the percent of a state's students enrolled in special education. The unit of analysis in this data set is the states. For the construction of the data set, I selected explanatory variables to control for state economic and social characteristics, as well as variables that past research has identified as potential predictors of total state special education enrollment. I estimated the following equation to determine

whether different categories of state special education funding formulas have an effect on the

percent of a state's students enrolled in special education:

$$Y_{ia} = \beta_0 + D_{La}X1 + \beta_1X_2 + \beta_2X_3 + \beta_3X_4 + \beta_4X_5 + \beta_5X_6 + \beta_6X_7 + \beta_7X_8 + D_iX_9 + \varepsilon_i$$

Where Y_{ia} donates state total enrollment for a particular state i for a particular year a; X_1 - X_9 represents the nine explanatory variables; D_{La} is an indicator variable for category of state special education funding formula which is coded with 1 if a state implemented that funding formula in a years and is coded 0 if a state does not implement that funding formula in a years ;D_i is an indicator variable for NCLB 2004 which is coded with 1 for years after NCLB 2004 and is coded 0 for years before NCLB 2004; and ε_i is an error term

Please see Table 3 in the appendix for a summary description of the data set and Table 4

in the appendix which lists the variable used as well as their expected signs. The remainder of

this section describes in detail the dependent variable and each explanatory variable used in my

data set.

Dependent Variable

The dependent variable used in this analysis is the annual percent of a state's students

enrolled in special education. This variable was defined as the total number of special needs

students under IDEA Part B in a state divided by the total number of traditional students enrolled

in elementary and secondary school in a state for each year in the data set. This variable was

found from the Common Core Data (CCD) released by the National Center for Educational

Statistics (NCES). I chose this as my dependent variable for a number of reasons. First, the

enrollment rate is a good indicator of the proportion of children receiving state special education

services. Second, state financial data is questionable and not federally mandated to be collected

by the states which results in little available financial data concerning state special education

finances. Finally, numerous researchers use the percent of a state's students enrolled in special

education as their dependent variable and my doing the same in this study will be consistent with

academic literature.

Explanatory Variables

The explanatory variables used in this study are defined below along with its data source. Time factors were also controlled for in the model using 1999 – 2000 as the base year. A basic correlation matrix of my major variables was also run to double check for highly correlated variables. Please see Table 5 in the Appendix for this correlation table.

State Special Education Funding Formulas (Indicator Variables)

I included indicator variables for the different categories of state special education funding formulas. I placed the special education funding formulas into 4 categories based upon similarities. A state was given a 1 if it used this category and a 0 if it did not use this category for all 4 categories. The special education funding formulas were found by using state responses from two different surveys, the 1999 – 2000 Survey on State Special Education Funding Systems (Parrish et. al 2003) and the 2008 -09 Survey on State Special Education Funding Systems (Ahearn 2010). Changes in state responses of their state special education funding formulas between the surveys were also documented in the data set. The years of these changes were found through exploration of state education department websites and verification by state education departments[4]. Please see Table 6 in the Appendix demonstrating both the state special education funding formula implemented in both '99 – '00 and the years in which changes occurred for some states. Previous research has shown that different state special education funding formulas will have different effects on the percent of a state's students enrolled in special education. As a result, I predict that category one will have a positive correlation, category two will have a negative correlation, category three will have a negative correlation,

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[4] The following are the states, names, and emails for which individuals were contacted concerning changes in a state's special education funding formulas: Alaska – David Enoch Jr., donald.enoch@alaska.gov, Connecticut – Kevin Chambers, Kevin.Chambers@ct.gov, Colorado – Vicki Graham, Graham_V@cde.state.co.us, Minnesota – Mike Landers, mike.landers@state.mn.us, North Dakota – Jerry Coleman, jcoleman@nd.gov, Washington – Mary Parrish, MaryEllen.Parrish@k12.wa.us, Maine – Suzan Beaudoin, Suzan.Beaudoin@maine.gov, New Hampshire – Santina Thibedeau, Santina.Thibedeau@doe.nh.gov, New Mexico – Patricia Hawkins, Patricia.Hawkins@state.nm.us, North Carolina – Sherry Thomas, sherry.thomas@dpi.nc.gov, West Virginia – Patricia Homberg, phomberg@access.k12.wv.us, New York – Darlene Tegza, DTEGZA@mail.nysed.gov, Arkansas - spedsupport@arkansas.gov, New Jersey – Office of Special Education Programs: (609)292-0147, Missouri – Angie Nickell, Angie.Nickell@dese.mo.gov

and category four will have a negative correlation with the percent of state's students enrolled in special education. Table 7 below shows the frequency and percent for each category.

Table 7. Frequency of Category of State Special Education Funding Formula		
Funding Formula Category	Frequency	Percent
1	292	58.4
2	131	26.2
3	40	8
4	37	7.4
Total	500	100

Total Disability Rate (%)

Total disability rate was found by using the total number of disabled students aged $6 - 21$ years old divided by the total state population aged $5 - 24$ years old. The age group $6 - 21$ years old was used for disabled students because those are the children covered under Part B of IDEA. The age group of $5 - 24$ years old was used as the total state population because that is how the Census Bureau collects and reports its data. The data for the total number of students disabled was found from multiple sources. The primary source used was the CCD from the NCES. Missing data was replaced with data from the Data Accountability Center which collects Federal IDEA statistics and a study titled *Shifting Trends in Special Education* (2011) by Scull and Winkler. The total state population aged $5 - 24$ years old was from historical population tables conducted by the United States Census Bureau. This variable was used because previous research has posited that increases in the disability rate within a state will have a positive effect

on the percent of a state's students enrolled in special education. As a result, I predict this variable to have a positive correlation with the dependent variable.

Total State Population

Total state population was found using historical population tables constructed by the United States Census Bureau and was measured in millions so that it would be more easily readable. This variable was used because previous research dictates that larger population will have greater percentage of students enrolled in special education. As a result, I predict this variable to have a positive correlation with my dependent variable because I am not measuring the total number of special education students, but rather the annual proportion of special education enrollment within a respective state. This allows for a measurement of whether the size of a state affects the proportion of students enrolled in special education within that state.

State Unemployment Rate (%)

State unemployment rate was found by using Local Area Unemployment statistics for the states from the Bureau of Labor Statistics (BLS). It was used to control for a state's economic conditions and because previous research has indicated that greater unemployment may have state financial implications which may have an effect on a state's ability to service the disabled. As a result, I predict this variable to have a negative correlation with my dependent variable.

State Median Family Income

State median family income was found by using historical data tables constructed by the United States Census Bureau concerning Median Family Income in the states. This variable in the data set was measured in the ten thousands so that it would be more easily readable. This variable was used because previous research has shown that income differences have a negative

effect on child enrollment rates. As a result, I predict this variable to have a negative correlation with my dependent variable.

Special Education Race: Hispanic and Black (%)

The percent of special education students for both Black and Hispanic special needs students was used to control for race in the data set. The percentage of white special education students was not included for multicollinearity. This variable comes from data produced by the Data Accountability Center. The percentage that was used was for all 14 disabilities categories identified by the federal government under IDEA. Some states did not report statistics for a given year which resulted in missing values[5]. These missing values were controlled for in two ways. The first way was by taking the average rate of both the previous and preceding values of the missing statistics. This was used for states that were missing data for one consecutive year. The second way concerned data that was missing for two or more consecutive years. This was controlled for by taking the same value for both of these years. Both of these ways to control for missing values are acceptable because of the limited variability of race over time. A problem that these approaches may cause is that it may make the standard errors for this variable slightly smaller. However, because very few states were missing variables, this approach is acceptable. This variable was used because previous research has shown that public schools place a disproportionate number of minority students into special education programs. As a result, I predict these variables to have a positive correlation with my dependent variable.

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[5] States missing variables and years: Alaska – Black (2008), North Dakota – Black (2005 and 2009), Vermont – Black (2005, 2007, 2008, 2009), Wyoming – Black (2006 and 2008), Alaska – Hispanic (2008), Vermont – Hispanic (2005, 2007, 2008, 2009), West Virginia – Hispanic (2007), Wyoming – Hispanic (2009)

Children in a Single Parent Household (%)

Percent of children in a single parent household was found by using data constructed by the National KIDS Count program conducted by the Annie E. Casey Foundation. This variable was used because previous research has shown that children in a single household perform more poorly in school which may place them in special education programs. As a result, I predict this variable to have a positive correlation with my dependent variable.

No Child Left Behind (2004) (Indicator Variable)

NCLB (2004) was used as an indicator variable in the data set. To construct this variable, NCLB (2004) was a 0 for 2000 - 2003 for every state and was a 1 for 2004 – 2009 for every state. NCLB (2004) was used to control for the perverse incentive of high – stakes state testing and because of the large discrepancy between states tests which has made them incomparable. I predict this variable to have a positive correlation with my dependent variable.

RESULTS

The results of my regressions show that state economic and social conditions, potential incentives and different categories of state special education funding formulas have an effect on the percent of a state's students enrolled in special education. My results show that all nine of the variables selected were statistically significant my linear regression, except for the indicator variable of NCLB (2004) which was significant in two (categories two and three) of the four regressions. Table 8, 9, 10, and 11 outline the result of this regression below. The remainder of this section will address the results of each variable individually.

TABLE 8: REGRESSION OUTPUT FOR THE EFFECT OF CATEGORY ONE STATE SPECIAL EDUCATION FUNDING FORMULAS ON THE PERCENT OF A STATE'S STUDENTS ENROLLED IN SPECIAL EDUCATION (2000 – 2009)

Variables	Total Students Enrolled in Special Education (Percent)					
	Coefficients	Robust Standard Error	p - value	t - value	95% Confidence Interval	
Time Effect (2000)	0.20	0.25	0.42	0.80	-0.29	0.70
Time Effect (2001)	0.50	0.28	0.07	1.82	-0.04	1.05
Time Effect (2002)	0.63*	0.30	0.04	2.10	0.04	1.22
Time Effect (2003)	0.26	0.26	0.32	1.00	-0.25	0.76
Time Effect (2004)	0.22	0.28	0.45	0.76	-0.34	0.77
Time Effect (2005)	-0.16	0.25	0.52	-0.65	-0.64	0.32
Time Effect (2006)	0.00	OMITTED				
Time Effect (2007)	0.18	0.24	0.44	0.78	-0.28	0.65
Time Effect (2008)	0.63	0.34	0.07	1.82	-0.05	1.30
Category 1 State Funding Fund (Indicator)	0.45**	0.12	< 0.01	3.68	0.21	0.70
Total Disability Rate (%)	0.65**	0.10	< 0.01	6.38	0.45	0.85
Total State Population (in 1,000,000)	-0.05**	0.01	< 0.01	-6.57	-0.06	-0.03
State Unemployment Rate (%)	-0.23**	0.07	< 0.01	-3.46	-0.36	-0.10
Median Family Income (in 10,000)	-0.38**	0.09	< 0.01	-4.45	-0.55	-0.21
Special Education - Hispanic (%)	0.20**	0.03	< 0.01	6.82	0.14	0.25
Special Education - Black (%)	0.29**	0.04	< 0.01	7.38	0.21	0.37
NCLB 2004 (Indicator)	0.45	0.25	0.07	1.79	-0.04	0.94
Kids in a Single Household (%)	0.22**	0.06	< 0.01	3.97	0.11	0.33
Constant	2.99	0.90	< 0.01	3.31	1.21	4.76

Observations: 500
R – Squared: .68
**p – value<0.01, *p – value<0.05

TABLE 9: REGRESSION OUTPUT FOR THE EFFECT OF CATEGORY TWO STATE SPECIAL EDUCATION FUNDING FORMULAS ON THE PERCENT OF A STATE'S STUDENTS ENROLLED IN SPECIAL EDUCATION (2000 – 2009)

Variables	Total Students Enrolled in Special Education (Percent)					
	Coefficients	Robust Standard Error	p - value	t - value	95% Confidence Interval	
Time Effect (2000)	0.21	0.25	0.41	0.83	-0.28	0.69
Time Effect (2001)	0.51	0.27	0.06	1.89	-0.02	1.04
Time Effect (2002)	0.63*	0.30	0.03	2.14	0.05	1.21
Time Effect (2003)	0.24	0.25	0.34	0.96	-0.25	0.74
Time Effect (2004)	0.21	0.28	0.45	0.75	-0.34	0.75
Time Effect (2005)	-0.14	0.24	0.56	-0.59	-0.61	0.33
Time Effect (2006)	0.00	OMITTED				
Time Effect (2007)	0.20	0.23	0.38	0.87	-0.25	0.65
Time Effect (2008)	0.66	0.34	0.05	1.94	-0.01	1.32
Category 2 State Funding Fund (Indicator)	-0.76**	0.14	< 0.01	-5.57	-1.02	-0.49
Total Disability Rate (%)	0.66**	0.10	< 0.01	6.80	0.47	0.86
Total State Population (in 1,000,000)	-0.04**	0.01	< 0.01	-5.88	-0.05	-0.03
State Unemployment Rate (%)	-0.23**	0.06	< 0.01	-3.61	-0.36	-0.11
Median Family Income (in 10,000)	-0.45**	0.08	< 0.01	-5.36	-0.61	-0.28
Special Education - Hispanic (%)	0.21**	0.03	< 0.01	7.29	0.15	0.27
Special Education - Black (%)	0.29**	0.04	< 0.01	7.36	0.21	0.37
NCLB 2004 (Indicator)	0.47*	0.24	0.05	1.94	-0.01	0.95
Kids in a Single Household (%)	0.22**	0.05	< 0.01	4.75	0.13	0.31
Constant	3.41	0.84	< 0.01	4.08	1.77	5.06

Observations: 500
R – Squared: .69
**p – value<0.01, *p – value<0.05

TABLE 10: REGRESSION OUTPUT FOR THE EFFECT OF CATEGORY THREE STATE SPECIAL EDUCATION FUNDING FORMULAS ON THE PERCENT OF A STATE'S STUDENTS ENROLLED IN SPECIAL EDUCATION (2000 – 2009)

Variables	Total Students Enrolled in Special Education (Percent)					
	Coefficients	Robust Standard Error	p - value	t - value	95% Confidence Interval	
Time Effect (2000)	0.24	0.25	0.34	0.96	-0.25	0.73
Time Effect (2001)	0.55*	0.27	0.05	1.99	0.01	1.09
Time Effect (2002)	0.67*	0.30	0.02	2.28	0.09	1.26
Time Effect (2003)	0.24	0.26	0.35	0.93	-0.27	0.75
Time Effect (2004)	0.23	0.29	0.43	0.80	-0.33	0.79
Time Effect (2005)	-0.14	0.24	0.57	-0.57	-0.61	0.34
Time Effect (2006)	0.00	OMITTED				
Time Effect (2007)	0.16	0.23	0.48	0.71	-0.29	0.62
Time Effect (2008)	0.64	0.34	0.06	1.88	-0.03	1.31
Category 3 State Funding Fund (Indicator)	0.94**	0.23	< 0.01	4.09	0.49	1.39
Total Disability Rate (%)	0.65**	0.10	< 0.01	6.20	0.44	0.85
Total State Population (in 1,000,000)	-0.04 **	0.01	< 0.01	-6.40	-0.06	-0.03
State Unemployment Rate (%)	-0.24**	0.07	< 0.01	-3.77	-0.37	-0.12
Median Family Income (in 10,000)	-0.44**	0.10	< 0.01	-4.66	-0.63	-0.26
Special Education - Hispanic (%)	0.17**	0.03	< 0.01	6.24	0.11	0.22
Special Education - Black (%)	0.33**	0.04	< 0.01	7.76	0.25	0.42
NCLB 2004 (Indicator)	0.50*	0.25	0.04	2.02	0.01	0.98
Kids in a Single Household (%)	0.27**	0.05	< 0.01	5.36	0.17	0.37
Constant	2.82	0.89	< 0.01	3.15	1.06	4.58

Observations: 500
R – Squared: .68
**p – value<0.01, *p – value<0.05

TABLE 11: REGRESSION OUTPUT FOR THE EFFECT OF CATEGORY FOUR STATE SPECIAL EDUCATION FUNDING FORMULAS ON THE PERCENT OF A STATE'S STUDENTS ENROLLED IN SPECIAL EDUCATION (2000 – 2009)

Variables	Total Students Enrolled in Special Education (Percent)					
	Coefficients	Robust Standard Error	p - value	t - value	95% Confidence Interval	
Time Effect (2000)	0.22	0.26	0.39	0.87	-0.28	0.73
Time Effect (2001)	0.53	0.28	0.06	1.87	-0.03	1.08
Time Effect (2002)	0.65*	0.30	0.03	2.16	0.06	1.24
Time Effect (2003)	0.26	0.26	0.33	0.99	-0.26	0.77
Time Effect (2004)	0.23	0.29	0.43	0.78	-0.34	0.79
Time Effect (2005)	-0.16	0.25	0.52	-0.65	-0.64	0.33
Time Effect (2006)	0.00	OMITTED				
Time Effect (2007)	0.17	0.24	0.48	0.70	-0.30	0.63
Time Effect (2008)	0.62	0.35	0.07	1.80	-0.06	1.30
Category 4 State Funding Fund (Indicator)	-0.45**	0.16	0.01	-2.82	-0.77	-0.14
Total Disability Rate (%)	0.64**	0.11	< 0.01	6.03	0.43	0.85
Total State Population (in 1,000,000)	-0.05**	0.01	< 0.01	-6.88	-0.07	-0.04
State Unemployment Rate (%)	-0.23**	0.07	< 0.01	-3.51	-0.37	-0.10
Median Family Income (in 10,000)	-0.37**	0.09	< 0.01	-4.09	-0.55	-0.19
Special Education - Hispanic (%)	0.17**	0.03	< 0.01	5.70	0.11	0.23
Special Education - Black (%)	0.31**	0.04	< 0.01	7.39	0.23	0.40
NCLB 2004 (Indicator)	0.46	0.25	0.07	1.82	-0.04	0.96
Kids in a Single Household (%)	0.25**	0.06	< 0.01	4.46	0.14	0.36
Constant	3.08	0.95	< 0.01	3.23	1.20	4.96

Observations: 500
R – Squared: .67
**p – value<0.01, *p – value<0.05

State Special Education Funding Formulas (Indicator Variable)

Category One (Multiple and Single Weights, Resource Based, Combination)

The indicator variable for category one state special education funding formulas was found to be positively correlated with the enrollment at the 1% significance level. The regression shows that if category one funding formulas were implemented, the percent of a state's students enrolled in special education will increase by a level of .45 percent. This is what was expected before the regression was run.

Category Two (Census Based and Percent Reimbursements)

The indicator variable for category two state special education funding formulas was found to be positively correlated with the enrollment rate at the 1% significance level. The regression shows that if category two funding formulas were implemented, the percent of a state's students enrolled in special education will decrease by a level of .76 percent. This is what was expected before the regression was run.

Category Three (No Separate Special Education Fund)

The indicator variable for category three state special education funding formulas was found to be positively correlated to the enrollment rate at the 1% significance level. The regression shows that if the category three funding formula was implemented, the percent of a state's students enrolled in special education will increase by a level of .94 percent. This was not expected before the regression was run. A possible explanation as to why this relationship occurred can be explained through the complexity of these funding formulas. For example, North Dakota does apply some form of a weighted formula for special needs students despite having no separate special education fund. It is important to note that these categories represent broad typologies of categories for simplification. As a result, further research at the state level is

necessary to understand the effect no separate special education fund has on total state special education enrollment.

Category Four (Block Grants)

The indicator variable for category four state special education funding formulas was found to be negatively correlated with the enrollment rate at the 1% significance level. The regression shows that if the category four funding formula was implemented, the percent of a state's students enrolled in special education will decrease by a level of .45 percent. This is what was expected before the regression was run.

Total State Disability Rate (%)

The total state disability rate was found to be positively correlated with the enrollment rate at the 1% significance level in all four regressions. The regressions show that, on average, a 1 percent increase in the level of total state disability rate results in approximately a .65 percent increase in the level of the percent of a state's students enrolled in special education. This is what was expected before the regressions were run.

Total State Population

The total state population was found to be negatively correlated with the enrollment rate at the 1% level in all four regressions. The regressions show that, on average, for every 1,000,000 people increase in the total state population, the level of the percent of a state's students enrolled in special education decreases by approximately .05 percent. The negative correlation was unexpected and a possible explanation for this could be that more populated states may have a financial incentive to enroll fewer students as special needs to provide less costly special education services.

State Unemployment Rate (%)

The state unemployment rate was found to be negatively correlated with the enrollment rate at the 1% significance level in all four regressions. The regressions show that, on average, a 1 percent increase in the level of state unemployment results in approximately a .23 percent decrease in the level of the percent of a state's students enrolled in special education. This is what was expected before the regressions were run.

State Median Family Income

The state median family income was found to be negatively correlated with the enrollment rate at the 1% significance level in all four regressions. The regressions show that, on average, a $10,000 increase in the level of state median family income will result in approximately a .41 percent decrease in the level of the percent of a state's students enrolled in special education. This is what was expected before the regressions were run.

Special Education Race: Hispanic and Black (%)

The special education variable for both Hispanic and Black special needs students was found to be positively correlated with the enrollment rate for both race groups at the 1% significance level in all four regressions. The regressions show that, on average, a 1 percent increase in the level of both Hispanic and Black special education students results in approximately .18 percent and .30 percent increases, respectively, in the level of the percent of a state's students enrolled in special education. This is what was expected before the regressions were run.

Children in a Single Parent Household (%)

The percent of kids in a single parent household was found to be positively correlated with the enrollment rate at the 1% significance level in all four regressions. The regressions show

that, on average, a 1 percent increase in the level of the percent of children in single households results in approximately a .24 percent increase in the level of the percent of a state's students enrolled in special education. This is what was expected before the regressions were run.

No Child Left Behind (2004) (Indicator Variable)

The indicator variable for No Child Left Behind (2004) was not found to be positively correlated with the enrollment rate at the 5% significance level in two of the four regressions. It was only found to be statistically significant when the state special education funding formula category was a either a two or a three. These regressions show that the implementation of NCLB results in approximately a .47 increase if category two is implemented and a .50 percent increase if category three is implemented, respectively, in the levels of the percent of a state's students enrolled in special education. The significance with category two special education funding formula could occur for two reasons. The first is that it may just be a product of random noise. The second is that the opposite effects NCLB and category two funding have on the dependent variable could mean that there is some other factor outside the model that is causing the effect. A possible explanation as to why category three state special education funding formula was found to be statistically significant is that the NCLB (2004) drastically increased the role of the federal government in education which may cause states to overcompensate in identifying special needs students to demonstrate they are in line with federal mandates.

Discussion of Results

The empirical results of my regressions have descriptive power because the methodology it uses preserves the internal validity so I am confident that I have found causal effects for these variables based upon the question I have posed. The explanatory variable that I am most interested in (categories of special education funding) varies very little in the data set which

results in a weak panel. To measure fixed effects, the construction of a panel data set must

possess variables that have a lot of variation. As a result, a fixed effects model would not be the

appropriate model to use. These effects would virtually be completely explained by the cross

sectional variation in the states rather than in the funding formula variables resulting in very little

predictive power. Fixed effects are difficult to control for when concerning state education

policies because these policies change very infrequently. However, I was able to control for any

unmeasured or unobserved time effects because I do control for variation in time using FY 1999

as the base year in my models. As a result, running OLS regressions would be acceptable. I

simply have been restricted to saying that my regressions result in changes in the levels of the

variables rather than changes in percent. All the $F-$ values are found to be < 0.001 which shows

the coefficients of the variables in the model are statistically and significantly different from

zero, and that variables unique to each state are quite important. My results are generalizable to

the United States because I included all 50 states and their characteristics in my analysis. The

methodology and characteristics of the models used allow me to confidently state that I can

reject the null hypothesis that different categories of state special education funding formulas do

have an effect on the percent of a state's students enrolled in special education.

Limitations and Caveats

Like any analysis, there are limitations and caveats. One of the limitations was that I

considered the funding formulas to be exogenous variables when it is possible that these

variables may actually be endogenous. This means that it is possible that the funding formulas

may be correlated with one or more of my other explanatory variables which would have

resulted in bias results. One way to correct for the possibility of endogeneity would be to run a

two stage instrumental variable approach in which the funding formula variable is replaced with

an instrumental variable (IV), and then regressed on the percent of a state's students enrolled in special education. An IV is any variable that is: 1) not already included in the model, 2) correlated with the funding formula variable, and 3) uncorrelated with the dependent variable. Future research should be aware of the possibility that funding formulas may be endogenous, and thus test for this using an appropriate IV. The other possible way to correct for the possibility of endogeneity would to be run a fixed effects model in which within estimators are used resulting in an evening out of all effects that are both observed and unobserved. As previously mentioned, a fixed effects model was not the appropriate model to estimate my research question. However, even without fixed effect estimators, time effects were controlled for which allows for an expression of how special education enrollment changes over time. This allows for a measurement of the increasing or decreasing effect as time goes by while also keeping the overall effect fixed.

Questions may arise as to why I ran four separate regression models using each funding formula category as an indicator variable rather than running one separate regression with containing all four funding formula indicator variable. I ran four separate regressions models because it allowed me to capture the variance in coefficients of all explanatory variables across funding formulas. I did this because I wanted to see if the coefficients changed on the other independent variables as a result of implementing the different funding categories. This would allow for easier interpretation of my regression results than running a single regression model. I could have run a single regression leaving one of the funding categories out and using interaction variables. However, both methods are acceptable and would have resulted in similar estimations.

A final limitation was controlling for the incentive of high stakes testing. Research has shown that the advent of high stakes testing may result in perverse incentives to place poorly

testing students in special education. I attempted to control for this incentive by using the No Child Left Behind (2004) indicator variable. An ideal variable would be one that measures high stakes testing on a national level, but such measures only exist at the state level. Future research would benefit from researching potential variables that may better capture this effect.

The total disability rate variable was shown to have a high correlation (.66) with the dependent variable. This was what was expected, and was included in the model because previous research has measured the effect between these variables. Furthermore, there are likely other variables not included in the model that could explain the percent of a state's students enrolled in special education such as teacher effects and other state socioeconomic characteristics. Because I did not use a fixed effects model, I did not control for unobservable or unmeasured effects which may cause omitted variable bias and bias my results. Regardless of interpretation, I hope that these findings have added to the literature on special education financing and encourage future research.

CONCLUSION

The state of special education in the United States is currently at a contentious state. State policymakers are struggling with providing special needs services as special needs costs and enrollment continue to increase. The results of my analysis show that the state economic and social characteristics, incentives and the different types of state special education funding categories has an effect on the percent of a state's students enrolled in special education. However, these findings are limited because they only represent changes in the levels of these variables and do not represent percent changes in these variables over time. Nonetheless, these results are helpful for both government leaders and researchers because my results show that

different categories types of funding formulas have effects on the percent of a state's students

enrolled in special education. As a result, policy leaders at all levels of government should be

aware of the impact that their special education financing policies have in their respective states

and continue to experiment with policies which most efficiently and effectively provide services

to special needs students. Studies should also be conducted to determine the most appropriate

levels for both special education enrollment and total special education funding at the national,

state and local levels. These studies should also determine the most appropriate level of

government funding that can most efficiently finance special education in the United States.

Finally, replicating these results and including more information concerning the incentives and

state financing of special education would better clarify the relationship between state funding

formulas and state special education enrollment. Future research should be centered on trying to

better understand the effects different funding formulas have on special education service, in

terms of costs, at all levels of government, and any incentives that may cause a state to

implement a particular funding formula to finance special education.

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APPENDIX

TABLE 1:   STATE SPECIAL EDUCATION FUNDING FORMULAS 2008 – 2009

Formula Type	Description
Multiple Student Weights	Funding (either a series of multiples of the general education amount or tiered dollar amounts) allocated per special education student that varies by disability, type of placement, or student need
Census - based	A fixed dollar amount per total enrollment or Average Daily Membership (ADM)
Single Student Weights	Funding (either a single multiple of the general education amount or a fixed dollar amount) allocated per special education student
No Separate Special Education Funding	Funding to support special education is rolled into the overall funding levels
Resource - based	Funding based on payment for a certain number of specific education resources (e.g., teachers or classroom units), usually determined by prescribed staff/student ratios that may vary by disability, type of placement or student need
Combination	Funding based on a combination of formula types
Percentage Reimbursement	Funding based on a percentage of allowable, actual expenditures
Block grant	Funding based on base-year or prior year allocations, revenues, and/or enrollment

*Source: Survey on State Special Education Funding Systems 2008 – 2009 (Ahearn 2010)

TABLE 3: SUMMARY STATISTICS

Variables	Observations	Mean	Standard Error	Maximum	Minimum
Total Students Enrolled in Special Education (Percent)	500.00	13.96	2.22	26.66	8.52
Total State Disability Rate (Percent)	500.00	8.27	1.78	17.58	4.76
Total Stat Population (in 1,000,000)	500.00	5.88	6.45	36.96	0.49
State Unemployment Rate (Percent)	500.00	5.16	1.66	13.40	2.30
Median Family Income (in 10,000)	500.00	4.60	0.78	6.81	2.94
Special Education - Hispanic (Percent)	500.00	10.86	2.89	23.82	5.72
Special Education - Black (Percent)	500.00	15.05	2.36	23.19	9.80
NCLB 2004 (Indicator)	500.00	0.60	0.49	1.00	0.00
Children in a Single Household (Percent)	500.00	7.02	1.28	11.39	0.68
Category 1 State Funding Formula (Indicator)	500.00	0.58	0.49	1.00	0.00
Category 2 State Funding Formula (Indicator)	500.00	0.26	0.44	1.00	0.00
Category 3 State Funding Formula (Indicator)	500.00	0.08	0.27	1.00	0.00
Category 4 State Funding Formula (Indicator)	500.00	0.07	0.26	1.00	0.00

TABLE 4: INDEPENDENT VARIABLES AND EXPECTED SIGN

Explanatory Variables	Expected Sign
Total State Disability Rate (%)	(+)
Total Stat Population (in 1,000,000)	(+)
State Unemployment Rate (%)	(-)
Median Family Income (in 10,000)	(-)
Special Education - Hispanic (%)	(+)
Special Education - Black (%)	(+)
NCLB 2004 (Indicator)	(+)
Children in Single Household (%)	(+)
Category 1 State Funding Formula (Indicator)	(+)
Category 2 State Funding Formula (Indicator)	(-)
Category 3 State Funding Formula (Indicator)	(-)
Category 4 State Funding Formula (Indicator)	(-)

TABLE 5: CORRELATION MATRIX FOR INDEPENDENT VARIABLES

	Total Students Enrolled in Special Education (%)	Total State Disability Rate (%)	Total State Population (in 1,000,000)	State Unemployment Rate (%)	Median Family Income (in 10,000)	Special Education - Hispanic (%)	Special Education - Black (%)	NCLB 2004 (Indicator)	Children in Single Household (%)	Category 1 State Funding Formula (Indicator)	Category 2 State Funding Formula (Indicator)	Category 3 State Funding Formula (Indicator)	Category 4 State Funding Formula (Indicator)
Total Students Enrolled in Special Education (%)	1.00												
Total State Disability Rate (%)	0.66	1.00											
Total State Population (in 1,000,000)	(0.17)	(0.02)	1.00										
State Unemployment Rate (%)	(0.03)	0.12	0.22	1.00									
Median Family Income (in 10,000)	(0.09)	(0.06)	0.07	(0.01)	1.00								
Special Education - Hispanic (%)	0.46	0.27	(0.05)	(0.01)	0.32	1.00							
Special Education - Black (%)	0.54	0.27	0.01	0.01	0.05	0.48	1.00						
NCLB 2004 (Indicator)	0.02	0.01	0.02	0.18	0.37	0.05	0.02	1.00					
Children in Single Household (%)	(0.06)	(0.00)	0.24	0.35	(0.26)	(0.41)	(0.21)	0.09	1.00				
Category 1 State Funding Formula (Indicator)	0.07	(0.04)	0.02	0.06	(0.12)	(0.24)	0.02	0.04	0.35	1.00			
Category 2 State Funding Formula (Indicator)	(0.02)	0.15	0.12	(0.01)	(0.00)	0.26	0.07	0.03	(0.21)	(0.71)	1.00		
Category 3 State Funding Formula (Indicator)	0.07	(0.03)	(0.17)	(0.03)	0.21	0.13	(0.12)	0.06	(0.09)	(0.35)	(0.18)	1.00	
Category 4 State Funding Formula (Indicator)	(0.18)	(0.13)	(0.07)	(0.06)	0.02	(0.12)	(0.03)	(0.08)	(0.20)	(0.33)	(0.17)	(0.08)	1.00

TABLE 6: STATE SPECIAL EDUCATION FUNDING FORMULAS (1999 - 2000) AND (2008 - 2009) WITH YEAR OF CHANGES

Special Education Funding Categories	1999 - 2000	2008 - 2009	Changes: State & Year
Multiple Student Weights	Arizona, Florida, Georgia, Indiana, Iowa, Kentucky, New Hampshire, New Jersey, North Carolina, Ohio, Oklahoma, South Carolina, Texas, Washington (n=15)	Arizona, Colorado, Florida, Georgia, Indian, Iowa, Kentucky, New Mexico, Ohio, Oklahoma, South Carolina, Texas (n=12)	Colorado (2005), New Mexico (2008)
Census Based	Alabama, Alaska, California, Connecticut, Idaho, Massachusetts, Montana, North Dakota, Pennsylvania (n=9)	Alabama, California, Idaho, Massachusetts, Montana, New Jersey, Pennsylvania (n=7)	New Jersey (2008)
Single Student Weights	Louisiana, Oregon, West Virginia (n=3)	Louisiana, Maine, New Hampshire, New York, North Carolina, Oregon, Washington, (n=7)	Maine (2005), New Hampshire (2007), New York (2007), North Carolina (2006), Washington (2005)
No Separate Special Education Fund	*Did Not Exist	Arkansas, Connecticut, Hawaii, Missouri, North Dakota, Rhode Island, West Virginia (n=7)	Arkansas (2007), Connecticut (2005), Missouri (2007), North Dakota (2007), West Virginia (2008)
Resource Based	Deleware, Kansas, Mississippi, Nevada, Tennessee, Virginia (n=6)	Deleware, Kansas, Mississippi, Nevada, Tennessee, Virginia (n=6)	
Combination	Maryland, Missouri, New Mexico, South Dakota, Vermont (n=5)	Alaska, Illinois, Maryland, South Dakota, Vermont (n=5)	Alaska (2008), Illinois (2008)
Percentage Reimbursement	Illinois, Maine, Michigan, Nebraska, Wisconsin, Wyoming (n=6)	Michigan, Minnesota, Nebraska, Wisconsin, Wyoming (n=5)	Minnesota (2008)
Grant (Flat or Block)	Arkansas, Colorado, Minnesota, Utah (n=4)	Utah (n=1)	
*Hawaii was not placed in 1999-2000 – No Funding Formula in State Code			
**Rhode Island was not placed in 1999-2000 – Fiscal Spending Suspended in FY 1999			

*Sources: Survey on State Special Education Funding Systems 1999 – 2000 (Parrish et. al 2003) & Survey on State Special Education Funding Systems 2008 – 2009 (Ahearn 2010)