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## Effects of State-Level Funding Systems on Rates of Students Identified as Other Health Impaired

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*Since 1978, the Education for All Handicapped Children's Act (now IDEA) committed Congress to provide 40 percent of the average per pupil spending to educate children with disabilities. While states have used a variety of special education funding formulas to attempt to meet the needs of children with disabilities, the funding has never approached the 40 percent benchmark, forcing states to creatively supplement federal dollars. The purpose of this study was to examine the relationship between school funding formulas and identification of students with other health impairment (OHI). The relationship between special education funding formulas and per pupil spending (PPS) was also examined. Results indicated no formula was predictive for identification; however, PPS highly correlated to OHI identification rates. Better understanding of special education funding formulas and how they impact OHI diagnosis frequency and per pupil spending (PPS) is important for special education policymakers at the state and federal levels.*

*Keywords:* Other Health Impaired (OHI), Funding, Special Education

### Introduction

Other health impairment (OHI) is a broad disability category that encompasses a wide range of students in special education. Under the Individuals with Disabilities Education Act (IDEA) (Sec. 300.8 (c) (9)), students identified with OHI have, "limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment." These problems include chronic or acute health problems and must adversely affect a child's educational performance (Individuals with Disabilities Education Act, 2004). Students with OHI who meet the criteria may receive special education services and accommodations granted under federal law but require appropriate identification and funding in order to receive services and accommodations.

Between 2004-05 and 2017-18, the percentage of children identified as having other health impairments almost doubled, rising from 1.1 to 2.0 percent of total public school enrollment (National Center for Education Statistics, 2019). The sharp increase comes during a period of time where school funding has been relatively stagnant, with many states spending less per pupil now than when the Great Recession hit in 2008 (Partelow et al., 2018). At the start of 2017-18 school year, at least 12 states had cut formula funding by 7 percent or more over the previous decade (Leachman et al., 2017). This study seeks to examine the relationship between school funding formulas and the identification of students with OHI. Specifically, the study will seek to

determine if the type of special education funding formula employed by states increases or decreases the likelihood that students are identified with OHI to receive special education services. The relationship between special education funding formula and per pupil spending (PPS) is also examined.

Children identified with OHI are potentially eligible to receive free special education services from public schools if the disability adversely impacts their educational performance. While the services in this special education category are broad, three services common for students with OHI include medical services, school health services, and school nurse services (NICHCY, 2012). Schools may provide health-related support for students with OHI in many forms, including but not limited to: special feedings, cleaning intermittent catheterization, suctioning, managing tracheotomy, administering medications, planning for a child's safety, ensuring care at school and at school functions to prevent injury, chronic disease services, and conducting or promoting education and skills training (NICHCY, 2012; Colorado Department of Education, 2020). Without these services and supports, many children with disabilities could not attend school or be successful in the school setting.

The process for identifying students with disabilities such as OHI for services in special education are sensitive to a number of factors, including public policy and funding. After a growth spurt during the 1980's and 1990's, the overall special education population saw a reduction in the early 2000's (Samuels, 2019). While the reasons for the reduction are unclear, Samuels (2019) suggests a possible policy driver: the advent of Response to Intervention (RtI) processes designed to steer students to appropriate interventions before increased academic or behavioral problems develop. The unintended consequence of this policy includes the possibility that students requiring special education services may not get the services needed.

While RtI may have an inadvertent effect on identification rates, some limits on identification may be viewed as intentional. For example, Texas was reprimanded by the U.S. Department of Education in 2018 for failing to identify and evaluate students properly, overtly keeping special education numbers low (Ryder, 2018). State officials have suggested the cost for special education services over the next 3 years may increase by up to \$3 billion (Hawkins, 2019).

To successfully provide funding for students with disabilities, states across the United States have adopted varying funding systems to support the delivery of special education. Ahearn (2010) studied all 50 states to identify patterns in the special education funding models. The author grouped state systems categorically, but noted the unique implementation seen based on the state of origin. Updating the work of Ahearn (2010), the Education Commission of the States (Parker, 2019) and EdBuild (2020) both presented special education funding organized by categories. These funding categories include: single student weights, multiple student weights, resource-based (allocated), census based, (partial) reimbursement, block grant and integrated/non separate special education funding. In some states, funding systems are a hybrid design using a combination of categories to disperse dollars (EdBuild, 2020).

The use of different funding systems or a combination of funding systems raises the question of whether or not the type of funding system used by states encourages or discourages appropriate identification of students for special education services. Greene and Forster (2002) completed an

analysis of the rates of identification for special education students across a decade from 1991-2001. Comparing two types of state funding systems, previously known as Bounty Sum and Lump Sum, the researchers found the increase in special education rates were not attributable to more efficient systems of finding students with actual disabilities, but rather to the Bounty Sum system promoting identification of more students (Greene & Forster, 2002). Today, Bounty Sum and Lump Sum funding systems correlated to a Census-Based System and Multiple Student Weights systems (Ahearn 2010). The study also provided specific recommendations that states should adopt Lump Sum (i.e., Multiple Student Weights) funding formulas to stem the increase of students in special education, in addition to more federal oversight of special education placements.

The question of fiscal incentives and special education identification has been a topic for decades. Mahitivanichcha and Parrish (2005a) acknowledged the research evidence supporting the influence of various funding formulas on identification, but also countered with a number of modifiers to those systems such as “historical context, impact of advocacy groups or organizational structure, professional judgement, program constraints, and government regulations” (Mahitivanichcha & Parrish, 2005a, p. 40). The researchers duplicated the Greene and Forster (2002) study by adjusting the variable of high stakes testing, deemed to be statistically insignificant in the original study, with rates of poverty. The findings indicated that poverty was a statistically significant factor in special education rates of identification. The researchers removed California from the comparisons of the two systems, and the findings revealed a much smaller but consistent agreement with Greene and Forster (2002) indicating that special education rates of identification were lower (0.06%) in Census-Based Systems.

These findings reveal inconsistencies across various special education funding formulas, and more research on funding formulas including the use of multiple funding formulas for identification of students for special education is warranted. The impact of different funding formulas on the appropriate identification of students in special education, particularly for students with disabilities such as OHI who need special education services to succeed in school, is important for future policy considerations.

### **Study Purpose**

This study reviewed state special education funding formulas, other health impaired (OHI) identification rates and per pupil spending (PPS) for the year 2016. The purpose of this study was to examine the relationship between school funding formulas and identification of students with OHI. The relationship between special education funding formulas and per pupil spending (PPS) was also examined.

### **Methods**

To conduct this study, states were grouped according to the reimbursement model of special education funding used. The types of funding formulas reflect the groupings used by the Education Commission of the States and EdBuild. State funding formulas included: *Single Student Weight*, *Census-Based System*, *Resource Allocation Model*, *Reimbursement System*, *Block Grant*, *High-Cost Students System*, and *Multiple Models*. States using Multiple

Reimbursement Models were grouped together. They included Alaska, Arizona, Florida, Maine, Massachusetts, New Hampshire, New Jersey, Rhode Island, Vermont, West Virginia, Illinois, Montana, South Dakota, Minnesota, and Wisconsin.

Rates of identification of students with OHI for 2016 and PPS were collected through online data sources for all 50 states. After being grouped according to the funding formula used by the state, the average OHI identification rate and PPS rate were calculated for each respective special education funding formula.

**Data Sources**

**Other Health Impairments Disability Rate.** To determine OHI identification rates for each state, two sources of data were collected. The numerator was calculated using the United States Department of Education Office of Special Education Program 2016 child count data for ages 3-21 for students identified under the category of other health impairment. The denominator was calculated using data from the National Center for Education Statistics (NCES) enrollment in public elementary and secondary schools. The NCES table was updated in March 2019 to include the most recent data available from fall 2016. To calculate OHI identification rate, the numerator was divided into the denominator to get a percentage value.

**Per Pupil Spending (PPS).** Data for 2016 PPS were obtained from the Governing website, which summarized total PPS by state. PPS data included non-personnel expenses and was a combination of instructional and support services spending.

**Special Education Funding Formulas**

Seven special education funding formulas were used for this study, and an eighth reimbursement category was created to represent states that use multiple funding models called, “Multiple Reimbursement Models.” States that used Multiple Reimbursement Models were not included in each individual funding formula to avoid skewing the data. Funding formulas for each state are presented in Table 1 and each funding formula is described below.

**Table 1**  
*Reimbursement Model by State*

<b>Reimbursement Model</b>	<b>States Using Model</b>
<b>Multiple Student Weights</b>	CO, GA, IN, IA, KY, NM, OH, OK, PA, SC, TX
<b>Single Student Weight</b>	LA, MD, MO, NV, NC, ND, OR, WA
<b>Census-Based System</b>	AL, CA, ID
<b>Resource Allocation Model</b>	DE, HI, MS, TN, VA
<b>Reimbursement System</b>	KS, MI, NE, WY
<b>Block Grant</b>	UT
<b>High-Cost Students</b>	AR, CT
<b>Multiple Reimbursement Models*</b>	AK, AZ, FL, ME, MA, NH, NJ, RI, VT, WV, IL, MT, SD, MN, WI

\*Multiple Reimbursement Models refers to states using more than one model for reimbursement.

**Multiple Student Weights.** The Multiple Student Weights (MSW) system is a formula that assigns funding to a student based on factors related to the severity and type of disability. In this formula, a school district would receive funding for the severity of the disability as well as the type of disability (e.g., OHI).

**Single Student Weight.** The Single Student Weight system allows school districts to receive funding on a per student basis. Regardless of the severity or type of disability, a district receives funding based on the number of students identified with disabilities.

**Census-Based.** The Census-Based system operates under the assumption that each school district in a state has roughly the same percentage of students who require special education services. Funding is provided to school districts based on the size of the district, with the assumption of percentage of disabilities used as the primary indicator of necessary funding.

**Resource Allocation Model.** The Resource Allocation Model provides resources, not funding dollars, to school districts based on the number of identified students requiring special education services. States using the Resource Allocation Model provide teachers, support staff, and additional services staff (e.g., Speech-Language Pathologist) to provide services for the students.

**Reimbursement System.** The Reimbursement System model allows school districts to submit special education expenses to the state, and the state determines if they will reimburse all or a portion of the expenses that have been submitted.

**Block Grant.** The Block Grant model provides funding from the state to be used for special education services. This model may be calculated based on spending in the previous year.

**High-Cost Students.** The High-Cost Students system allows states to provide funding based on the number of high-cost students in the district. This system is often coupled with another funding model to off-set the costs of special education services up to a certain threshold.

**Multiple Reimbursement Models.** The Multiple Reimbursement Models category accounts for states that use multiple funding models based on the funding formulas used above. For example, the state of South Dakota uses both the Census-Based system and Multiple Student Weights system to fund special education services, in addition to having a system for funding high cost students or programs.

### *Procedure*

For this study, data were collected from all 50 states. Several data points were not available for the District of Columbia, Bureau of Indian Affairs, Northern Mariana, American Samoa, Guam, Puerto Rico, and the United States Virgin Islands, resulting in their exclusion from the study. Additionally, Wisconsin was included in the study despite child count data being unavailable.

Data for each state were transferred to excel tables based on their funding formula or use of Multiple Reimbursement Models. OHI rates and PPS were calculated for each state, and mean scores were calculated for each funding formula.

***Data Agreement***

Data agreement was reached by independent review of the data collected for this study. The data collection was aggregated from source websites and placed into Excel spreadsheets by the first researcher. The second researcher did a check of the data placed into the spreadsheets for accuracy. Overall, no errors were identified by the 2nd reviewer. A second review of data was conducted by the first researcher and confirmed the presence of no errors or omissions.

***Data Analyses***

**Mean Rate of OHI Identification and Mean PPS.** States were divided into one of eight categories according to the reimbursement model they used to fund special education. For each of the eight categories, mean OHI identification rates and mean PPS were calculated for each special education funding model.

**Comparison of Special Education Reimbursement Model versus OHI Identification Rate and PPS.** A one-way ANOVA was performed to determine the effect of reimbursement model on OHI identification rate, and the effect of special education reimbursement model on PPS. Data were analyzed using SPSS (Statistical Package for the Social Sciences).

**State-Level Correlation of OHI Rate and PPS.** A Pearson Product Moment Correlation was used to determine if a relationship existed between OHI identification rate and PPS. For this analysis, state-level data were used to determine if a state's OHI identification rate correlated with a state's PPS. Data were analyzed using SPSS (Statistical Package for the Social Sciences).

**Grouped State Comparison of Mean PPS and Mean State OHI Identification Rate.** States were divided into two groups for an additional comparison of states who rank in the top half of all states in PPS versus states who rank in the bottom half of all states in spending per pupil. States that were ranked 1-25 in spending were placed into group 1, while states ranked 26-50 in spending were placed into group 2. The two groups were compared on aggregate mean rates of OHI identification.

**Results**

The purpose of this study was to examine the relationship between school funding formulas and identification of students with other health impairment (OHI). The relationship between special education funding formulas and per pupil spending (PPS) was also examined.

**Comparison of Reimbursement Model versus Mean OHI Identification Rate and Mean PPS.** Mean OHI identification rate and mean PPS are reported in Table 2. The results indicated that states using the High-Cost Students model had the highest mean identification rate and highest mean PPS, while states using Multiple Reimbursement Models and the Single Student Weight model ranked second and third in both categories, respectively. In contrast, the state using the Block Grant model had the lowest mean OHI identification rate and lowest mean PPS, while states using the Census-Based System and Multiple Student Weights model had the second and third lowest means in both categories, respectively.

**Table 2**

*Means and Standard Deviations of OHI Rate and PPS by Reimbursement Model*

<b>Reimbursement Model</b>	<b>Mean OHI Identification Rate</b>	<b>Mean Per Pupil Spending (PPS)</b>
<b>High-Cost Students</b>	2.59% (.37)	\$14,402 (6,443)
<b>Multiple Reimbursement Models</b>	2.26% (.76)	\$13,326 (3,465)
<b>Single Student Weight</b>	2.18% (.57)	\$12,676 (4,023)
<b>Resource Allocation Model</b>	2.07% (.42)	\$11,481 (2,759)
<b>Reimbursement System</b>	1.90% (.23)	\$12,592 (2,750)
<b>Multiple Student Weights</b>	1.72% (.75)	\$10,411 (1,882)
<b>Census-Based System</b>	1.65% (.31)	\$9,296 (2,170)
<b>Block Grant</b>	1.10% (-)	\$6,953 (-)

\* Note: Multiple Reimbursement Models data does not include OHI Identification Rate for Wisconsin due to the data being unavailable; Utah is the only state using the Block Grant model.

**Comparison of Reimbursement Model versus OHI Identification Rate and PPS.** Results of the one-way ANOVA are reported in Table 3. Results indicated that special education reimbursement model did not predict either OHI identification rate or PPS.

**Table 3**

*The relationship between special education reimbursement model, OHI identification rate, and PPS.*

<i>Variable</i>		<b>Sum of Squares</b>	<i>df</i>	<b>Mean Square</b>	<b>F</b>	<b>p</b>
<b>OHI Identification Rate</b>	Between Groups	3.685	7	.526	1.294	.278
	Within Groups	16.680	41	.407		
	Total	20.365	48			
<b>PPS</b>	Between Groups	113478167.740	7	16211166.820	1.543	.179
	Within Groups	441228892.760	42	10505449.828		
	Total	554707060.500	49			

\*Sig. at  $p < .05$

**State-Level Correlation of OHI Rate and PPS.** The Pearson-Product Moment Correlation between OHI rate and PPS is reported in Table 4. The relationship between the rate of OHI and



PPS was examined at the state level. Results indicated a strong, positive relationship that was statistically significant ( $r = .516, p < .01$ ), indicating that the rate of OHI was correlated with the amount of PPS for the state.

**Table 4**  
*Pearson-Product Moment Correlation of State-Level OHI Rate and PPS.*

	<b>Other Health Impaired</b>	<b>Per Pupil Spending</b>
<b>Other Health Impaired</b>	Pearson's r	.516
	p-value	.000**
<b>Per Pupil Spending</b>	Pearson's r	
	p-value	

\*\* $p < 0.01$

**Grouped State Comparison of Mean PPS and Mean State OHI Identification Rate.** The results of states ranked 1-25 in spending per pupil (Group 1) versus states ranked 26-50 in spending per pupil (Group 2) are summarized in Table 5. For Group 1, the OHI identification rate was 2.34%. Group 2, in contrast, evidenced an OHI identification rate of 1.73%, which is a 30% difference between the two groups. The results indicate that the states ranked 1-25 in PPS identified students with OHI at a higher rate than states ranked 26-50 in PPS.

**Table 5**  
*OHI Mean Identification Rates for States Ranked 1-25 v. 26-51 in Per Pupil Spending (PPS)*

<i>Per Pupil Spending (PPS) Rank</i>	<i>Other Health Impaired Mean Identification Rate</i>
<b>Group 1: States Ranked 1-25 in PPS</b>	2.30%
<b>Group 2: States Ranked 26-51 in PPS</b>	1.74%

### Discussion

As the number of students identified under OHI increase and education spending trends downward, the role of special education funding methodology and its influence on child find processes has emerged as a more significant problem (Leachman et al., 2017; Morrill; 2018; NCES, 2019; Partelow et al., 2018). Working with limited federal funding for special education, states have adopted a variety of approaches to meet the cost of educating eligible students (Ahearn, 2010). A variety of studies have identified the potential funding has to affect the number of students identified for special education, and this study sought to determine if specific approaches to funding positively or negatively influenced the identification rate of students with OHI (Greene & Forster, 2002; Mahitivanichcha, K. & Parrish, T., 2005a; Morrill, 2018).

In evaluating these various systems, special education funding models presented in near symmetry for OHI identification rate and mean PPS (see Table 2). Mean PPS and identification

rates paired from highest to lowest consistently across the funding models. The only exception to this was the Reimbursement System model, which evidenced a slightly higher PPS when compared to the Resource Allocation model despite having a lower OHI identification rate. Overall, these results connect spending and rates of identification; however, further analysis of the different funding formula methods did not have significance results. No funding method emerged as predictors of the likelihood for increasing or decreasing rates of identification in students with OHI.

While specific funding models did not result in influencing identification, the strong correlation between the amount of education funding and rates of identification was statistically significant (see Table 4). The correlation of PPS and OHI identification rates infers an existing relationship, although a direct causal connection must be tempered with the knowledge of multiple factors that influence identification of students under the category of OHI (Ahearn, 2010). The influence of state spending can also be observed in the aggregate comparison of ranked spending groups (1-25, 26-51) and rates of identification (see Table 5). A difference of 0.56 percent between these two groups is further support that states with higher per pupil spending identify students with OHI at higher rates.

### **State spending**

State spending is dictated by a number of factors, including (but not limited to) the wealth of the middle class in states (Madland et al., 2011). State revenues, teacher salaries, sparsity, class size and demographics are also factors identified as influencing education spending (Maciag, 2016). Public opinions about education, both positive and negative, have also been found to relate to the amount of education spending in states (Houston, 2019). Combinations of these factors are the linchpin in states decisions on funding, and in turn, result in wealthier and poorer systems in terms of education funding.

With winners and losers in the scope of education funding, all states seek to make the most of the funding dedicated to education. The high number of states electing to use a Multiple Reimbursement model, which combines elements of various special education funding formula models to fund special education, implies that state policymakers are focused on influencing the actions of school spending, rather than equitable fund distribution. In reality, all special education funding systems are designed to influence spending. While Mahitivanichcha and Parrish (2005a) offered the opinion that special education professionals likely do not intentionally seek to limit identification based upon funding, they noted many states undertake changes in funding mechanisms to attempt to shape behaviors of schools and teams. They cautioned policymakers to consider the impact of altering funding systems.

In seeking this consideration, Mahitivanichcha and Parrish (2005b) asked states to look beyond balancing budgets to desired outcomes for students in special education. They encouraged aligning funding to promote “best special education practices” (p. 21). With the continued tension of limited federal and state funding, states may not have the luxury of considering if certain funding decisions support the delivery of best practices to special education students, but evidence supports increased educational funding as a mechanism for better identification of students with OHI. IDEA mandates all states to have effective systems of identification for

special education (IDEA, 2004). The results of this study bring forward the conclusion that states must consider the adequacy of funding for special education to ensure they are meeting federal requirements for child find.

### **Limitations**

In this study, a lack of specific special education data expenditures was a limiting factor. Despite a thorough search of publicly available data from state and federal government, as well as other entities collecting this type of data, no specific data could be identified that specifies a per child amount related to special education. The only available student spending data provided aggregate costs of educating per pupil but did not breakdown the costs to include special education. The quality of data collected on a state-to-state basis is another limitation to the study, as several states had missing data, or the date was noted as “unavailable”. The varied approaches states use to collect and collate their data in many ways mirrors the variability seen within state funding formulas. The timeliness of the data is considered a limitation as well, as special education child counts, and the most current pupil spending amounts are continuously updated from year to year. Data is not immediately publicly available for analysis, meaning data may be outdated by the time it is analyzed. Finally, the identification process for OHI varies from state to state in terms of criteria used to determine eligibility.

### **Recommendations for Future Research**

This study identified a range of variations in identification rates of students with OHI across the U.S. The results call for a deeper understanding of the criteria and processes used by various states. Researching the commonalities between and across states identified as being in clusters that have similar and dissimilar identification rates may produce evidence of other policies and procedures that influence the interpretation of federal child find laws at the state level. Additionally, analyzing specific funding systems, such as Multiple Reimbursements, from a policy standpoint, as well as historical viewpoint, may provide illumination into the cause and effect expected from adoption of a particular funding method. Questions about ongoing legislative efforts, gubernatorial priorities and economic drivers should be explored to find trends in adoption of special education funding models.

Researching the practices used during the eligibility determination process is another avenue for further research. Determining how schools implement the state criteria for OHI eligibility at the team level, including the tools used, the influence of clinical judgement and decisions made by the committee process may provide more insight into the fluctuations being experienced for OHI rates. As Sadeh and Sullivan (2017) observed, the eligibility decisions made by school teams are frequently influenced by factors that influence appropriate decision-making, leaving determinations adrift from the requirements of IDEA. The analysis of school team eligibility determination practices that stem from state policy and interpretation of that policy may provide guidance for more consistent and fact-based processes when conducting eligibility determinations for OHI.

## Conclusion

The IDEA federal requirements for the category of OHI are straightforward (IDEA, 2004). The federal definition requires identification of a “chronic or acute health problem” that “adversely affects a child’s educational performance” (IDEA, 2004, para. 2). The overarching federal law guidance leads to an expectation of consistency in the identification of students, however, the data presented demonstrates systemic differences. However, the percent of students identified with OHI varies significantly from state to state, with the amount of funding available in a state impacting the rate at which students are identified. Spending rank data, when compared in aggregate fashion to identification rates, reveals a blunt contrast; states that spend more per pupil identify more students with OHI. As noted by Ahearn (2010), the systems of funding for special education across the U.S. are rife with complexities. Their findings noted the structures that each individual state uses to fund their special education systems are based on a wide range of inputs and outputs (2010). Ultimately, no matter how states design their systems, when states spend more per student, systems identify more students with health impairments under IDEA. More work can be done to discern the various practices being promoted and followed for states and local school districts, to ensure a higher degree of consistency for students potentially in need of special education who have health impairments.

## Author Notes

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