



What Drives Special Education Spending: Evidence from Texas School Districts

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Special education finance systems rely on observable indicators such as disability classifications and educational placements to allocate resources, yet limited evidence exists regarding whether these indicators correspond to the expenditures districts incur serving students with disabilities. This study examines variation in special education spending across Texas public school districts operating under a predominantly placement-based funding system. Using administrative and financial data from 6,116 district-year observations spanning the 2019-20 through 2024-25 school years, we investigate whether district expenditures are associated with educational placement, disability composition, enrollment characteristics, and district demographics. Descriptive analyses reveal substantial and persistent variation in special education spending across districts, particularly among smaller districts. Multivariate regression analyses indicate that districts serving larger proportions of students in highly self-contained placements and districts with higher concentrations of students with autism spend significantly more per student receiving special education services. However, educational placement, disability composition, and other observable district characteristics explain only a modest share of the variation in overall spending. These findings provide partial support for the logic underlying placement- and disability-based funding approaches while also highlighting the limitations of commonly used administrative proxies for capturing district resource needs. The results suggest that special education expenditures are shaped by additional organizational, fiscal, and contextual factors that are not reflected in traditional funding formulas, raising important questions about the design and adequacy of special education finance systems.

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Abstract

Special education finance systems rely on indicators such as disability classifications and educational placements to allocate resources. However, limited evidence exists regarding whether these indicators correspond to the expenditures districts incur serving students with disabilities. This study examines variation in special education spending across Texas public school districts using a predominantly placement-based funding system. We use administrative and financial data from 6,116 district-year observations spanning the 2019-20 through 2024-25 school years to investigate whether district expenditures are associated with educational placement, disability composition, enrollment characteristics, and district demographics. Descriptive analyses reveal substantial and persistent variation in special education spending across districts, particularly among smaller districts. Multivariate regression analyses indicate that districts serving larger proportions of students in highly self-contained placements and districts with higher concentrations of students with autism spend significantly more per student receiving special education services. However, educational placement, disability composition, and other observable district characteristics explain only a modest share of the variation in overall spending. These findings provide partial support for the logic underlying placement- and disability-based funding approaches while also highlighting the limitations of commonly used administrative proxies for capturing district resource needs. The results suggest that special education expenditures are shaped by additional organizational, fiscal, and contextual factors that are not reflected in traditional funding formulas, raising important questions about the design and adequacy of special education finance systems.

Keywords: School Finance, Equity, Special Education

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Introduction

Under the Individuals with Disabilities Education Act (IDEA, 2004), school districts must provide individualized services and supports to ensure that eligible students with disabilities receive a free appropriate public education (FAPE) in the least restrictive environment. Although IDEA established a federal role in supporting the education of students with disabilities, federal funding has historically covered only a portion of special education costs, leaving states and local districts responsible for financing most services. Federal IDEA Part B funds are allocated to states through a formula based primarily on historical funding levels, child population, and poverty rather than on the current number or characteristics of students with disabilities (U.S. Department of Education, n.d.).

States likewise must allocate special education resources without directly observing the individualized services required to meet student needs. As a result, state funding systems rely on observable indicators, such as disability classifications, student counts, educational placements, or documented expenditures, to estimate differences in resource requirements across students and districts (Baker et al., 2018; Kolbe, 2019; Verstegen, 2011). Because districts remain legally responsible for providing the services specified in students' individualized education programs (IEPs), regardless of whether funding formulas fully reflect underlying costs, understanding the relationship between these funding indicators and actual expenditures is a critical policy concern.

These questions are particularly salient in Texas, where special education funding has been allocated primarily through a weighted system based on educational placement.¹ The underlying premise of this approach is that instructional settings serve as reasonable proxies for

¹ Recent legislation in Texas established a revised special education funding model that prioritizes the intensity of services specified in students IEPs, which reflects a shift from formulas primarily tied to educational placement.

differences in service intensity and cost.² Yet relatively little is known about whether district spending patterns align with the placement and disability measures used to allocate funding. Existing research has focused primarily on how finance systems influence disability identification and placement decisions (Cullen, 2003; Dhuey & Lipscomb, 2011; Kwak, 2010), while providing far less evidence regarding whether the characteristics embedded in funding formulas are actually associated with district expenditures.

This study addresses that gap by examining variation in special education spending across Texas traditional public school districts between the 2019-20 and 2024-25 school years. Using administrative and financial data from more than 6,000 district-year observations, we investigate whether district spending patterns are associated with educational placement, disability composition, enrollment characteristics, and district demographics. Findings indicate that districts exhibit substantial variation in spending, that one more restrictive instructional setting, and autism prevalence are associated with higher expenditures, and that observable district characteristics explain only a modest share of overall spending variation. These results provide new evidence regarding the extent to which placement-based funding systems align funding indicators with actual expenditures incurred by districts serving students with disabilities.

In what follows, we briefly review the literature on special education finance and on the use of disability and placement measures as proxies for student need. We then describe the Texas special education funding system, data, and analytic methods, and present findings on variation in district spending and its relationship to placement, disability composition, and district

² Texas instructional setting codes distinguish students based on where and for how much of the instructional day they receive special education services. Examples include mainstream, resource, and self-contained instructional settings. The specific setting codes used in this study are described in the Methods section.

characteristics. Finally, we discuss the implications of these findings for special education finance policy and future research.

Literature Review

How Special Education Finance Systems Work

School finance systems are designed to raise and allocate resources to promote educational opportunity while balancing competing goals of equity, efficiency, and local control (Baker, 2021; Rice et al., 2020). Since educational needs and the costs of providing services vary across students and districts, these systems often use formula adjustments and student weights to approximate differences in resource requirements (Baker & Duncombe, 2004; Rice et al., 2020). These approaches reflect a fundamental challenge in education finance: policymakers must allocate resources without directly observing the services or expenditures required to meet individual student needs. As a result, funding formulas often rely on readily measured characteristics, such as poverty, family language, and disability status, that are assumed to be associated with differences in educational need and cost.

Special education finance is a particularly complex example of this challenge because both educational needs and service costs vary substantially among students with disabilities. Under IDEA, students suspected of having disabilities are entitled to an individualized evaluation and, if found eligible, an IEP designed to provide FAPE. Consistent with the Supreme Court's decision in *Endrew F. v. Douglas County School District* (2017), schools must provide services reasonably calculated to enable a student to make appropriate progress, considering the child's circumstances. These obligations are individualized rather than categorical, meaning that the services required for two students within the same disability classification may differ

substantially. Consequently, the resources required to provide special education often vary both within and across disability categories.

Responsibility for funding special education is shared among federal, state, and local governments. Although IDEA and its predecessor, the Education for All Handicapped Children Act of 1975, established a federal role in supporting the education of students with disabilities, federal funding has historically covered only a portion of total special education costs, leaving states and local districts to finance most services (Kolbe, 2019; Parrish et al., 2015). In response, states have developed a variety of approaches to distributing special education aid. These approaches generally fall into three broad categories: student-based formulas, resource-based formulas, and expenditure-based formulas (Hartman, 1992; Kolbe, 2021).

Student-based systems allocate funding based on counts of students with disabilities or total student enrollment, and often incorporate weights intended to reflect differences in educational need or service intensity. Resource-based systems provide funding based on prescribed staffing ratios or instructional units, such as special education teachers, paraprofessionals, or related service providers. Expenditure-based systems reimburse districts for a portion of documented special education spending. Many states also supplement their primary formula with high-cost or contingency funds designed to offset the extraordinary expenses associated with students requiring intensive supports and services (Kolbe, 2021). Although these approaches differ in how aid is generated and distributed, each seeks to estimate resource needs using observable indicators rather than direct measures of the services necessary to provide FAPE.

Despite their differences, all special education funding models face a common measurement problem. Policymakers cannot directly observe the individualized services and

supports required to implement each student's IEP, so funding systems must rely on administrative proxies such as disability classifications, student counts, staffing ratios, educational placements, and prior expenditures to estimate need and cost (Baker et al., 2018; Chambers et al., 2004; Kolbe, 2021; Verstegen, 2011). The accuracy of these proxies has significant financial implications because districts remain legally obligated to provide the services specified in students' IEPs, regardless of whether state funding fully covers associated costs. Consequently, when funding formulas do not adequately capture variation in service intensity or resource requirements, districts must absorb the difference through general operating revenues. This tension highlights a central challenge in special education finance: developing funding mechanisms that are administratively feasible while accurately reflecting the highly individualized and variable costs of educating students with disabilities.

Special Education Funding Indicators and Expenditures

A central question in special education finance is whether the indicators used in funding formulas accurately reflect the resources required to serve students with disabilities. Evidence from federal special education finance raises concerns about this assumption. Kolbe et al. (2023) found that the IDEA Part B allocation formula generates substantial disparities in funding across states because the indicators used to distribute aid may not adequately capture differences in special education demand or educational costs. Their findings highlight a broader challenge confronting special education finance systems; that funding must be allocated using observable characteristics that are assumed to approximate educational need and cost rather than direct measures of the services districts provide.

Although administrative proxies offer simplicity and predictability, special education expenditures are shaped by a complex mix of instructional services, personnel needs, transportation, related services, assistive technology, and local service-delivery arrangements (Conlin & Jalilevand, 2015; Mahitivanichcha & Parrish, 2005). Consequently, no single observable characteristic is likely to fully capture variation in student needs or resource requirements. An enduring question in special education finance, therefore, is whether the indicators embedded in funding formulas are meaningfully associated with the expenditures districts incur in serving students with disabilities.

One longstanding concern involves the use of disability classifications as measures of educational need. Researchers have questioned the extent to which federal disability categories accurately capture underlying differences in service needs among students (Agran et al., 2020; Graves et al., 2017; Morgan et al., 2025). Categories such as specific learning disability, autism, emotional disturbance, and speech impairment encompass a wide range of student characteristics and support needs while often requiring professional judgment during identification, evaluation processes, and IEP planning processes. Studies have documented substantial variation across districts and states in the prevalence of high-incidence disability classifications, particularly specific learning disabilities and speech impairments (Cullen, 2003; Kwak, 2010). Such variation suggests that disability identification may partially reflect local organizational practices, institutional contexts, and professional decision-making rather than differences in student populations alone (DeMatthews & Mawhinney, 2013; Brock & Schaefer, 2015; Voulagarides, 2026). As a result, disability classifications may serve as imperfect proxies for educational need when used as the basis for funding allocations.

A related body of research demonstrates that districts respond to the incentives embedded within special education funding systems. Cullen (2003) found that stronger financial incentives increase disability identification rates, while Kwak (2010) showed that both marginal funding incentives and overall funding levels influence district identification decisions. Similarly, Dhuey and Lipscomb (2011) found that census-based funding reforms reduced special education identification rates, particularly among disability categories that involve greater professional discretion. Collectively, these studies suggest that the indicators used in finance systems are not simply reflections of student need but may also be influenced by organizational responses to fiscal incentives.

Educational placement occupies a particularly important role within many state funding systems because it is often assumed to reflect differences in service intensity and cost. Although IDEA does not define placement as a specific classroom or school, the U.S. Department of Education (2006) has emphasized that placement refers to the provision of special education and related services. In Texas, for example, special education funding is largely determined by instructional setting, with higher weights assigned to placements presumed to require more intensive services, such as residential care and treatment facilities, hospital classes, and self-contained programs (Texas Education Code § 48.102). The underlying assumption is that placements correspond to meaningful differences in resource requirements. However, placement decisions also involve professional judgment and may be shaped by district service-delivery models, staffing availability, organizational structures, and local policy contexts (Bray & Russell, 2016; Yell et al., 2020). Consequently, placement may function simultaneously as an indicator of student need and as an outcome of institutional decision-making (Dhuey &

Lipscomb, 2011; Kwak, 2010). This dual role complicates efforts to determine whether placement-based funding systems accurately align funding with actual expenditures.

Further research suggests that the distribution of students with disabilities varies systematically across districts and communities. Baker and Ramsey (2010) found that disability prevalence is associated with demographic, economic, and geographic characteristics, indicating that some variation in special education spending is likely attributable to legitimate differences in student populations and service needs. At the same time, observed spending differences may reflect factors unrelated to student characteristics, including local fiscal capacity, labor market conditions, service-delivery arrangements, and administrative practices. Distinguishing among these competing explanations remains a central challenge for special education finance research.

Despite extensive research examining disability identification, placement decisions, and fiscal incentives, comparatively little attention has been devoted to whether the characteristics commonly used in funding formulas are associated with differences in district expenditures. Consequently, there is limited empirical evidence regarding whether districts serving students in more restrictive placements or students presumed to require more intensive supports incur higher costs under contemporary funding systems. This study addresses that gap by shifting attention from behavioral responses to expenditure outcomes. Specifically, we examine a core assumption underlying many special education finance systems: that the proxies used to allocate funding are meaningfully associated with the expenditures districts incur to serve students with disabilities. By assessing the relationship between commonly used funding indicators and district spending patterns, this study provides evidence on the extent to which these indicators correspond to observed district expenditure patterns.

Methods

This study examines variation in special education spending across Texas traditional public school districts and investigates the district characteristics associated with these differences in expenditures. Although Texas allocates special education funding primarily according to students' educational placement settings, relatively little is known about the extent to which district spending varies under the current funding system or the district characteristics associated with these differences. Understanding the sources of variation in district spending has important implications for evaluating how the current funding framework corresponds to differences in educational placement, student composition, and district context. Specifically, this study addresses the following research questions:

- To what extent does average special education spending per student vary across Texas's traditional public school districts?
- Are district characteristics associated with variation in average special education spending per student?

To answer these questions, we construct a district-year panel dataset by aggregating student-level administrative records from the Texas Education Research Center (ERC), which houses a longitudinal data system spanning more than 30 years. We merge these data with publicly available district financial information from the Texas Education Agency (TEA). The special education expenditure data reported by TEA include expenditures from state, local, and federal funding sources. The analytic sample includes all Texas traditional public school districts from the 2019–20 through 2024–25 school years, yielding 6,116 district-year observations. The analysis begins with the 2019–20 school year because Texas began reporting dyslexia-related

funding and expenditures as a separate special education category beginning that year. Prior years were excluded to ensure consistency in measuring district special education expenditures over time.

The analysis proceeds in three stages. First, we document variation in district special education spending using summary statistics, annual spending distributions, and geographic patterns. Second, we examine the relationship between district special education enrollment and per-student spending, with particular attention to whether spending dispersion differs by district size. Finally, we estimate multivariate regression models to examine the district characteristics associated with variation in special education spending. The regression specifications are described in greater detail below.

Sample

Table 1 presents descriptive statistics for the analytic sample, which consists of 6,116 district-year observations from Texas traditional public school districts during the 2019–20 through 2024–25 school years. The average special education spending per student was \$11,317, with substantial variation across districts ($SD = \$6,765$). The middle 50% of district-year observations spent between \$7,451 and \$13,246 per student, while a relatively small number of districts reported considerably higher expenditures. Districts served an average of 610 students receiving special education services, although enrollment varied substantially across districts ($SD = 1,545$), reflecting the considerable differences in district size across Texas.

Disability composition is based on students' primary disability classifications. We also identify whether students have a secondary disability recorded in addition to their primary disability. Disability composition also varied across districts. Students with learning disabilities

represented the largest disability category, accounting for an average of 40.3% of students receiving special education services, followed by speech impairment (18.6%), other health impairment (12.8%), intellectual disability (10.2%), autism (10.1%), and emotional disturbance (5.2%). The interquartile ranges reported in Table 1 indicate meaningful variation in the composition of disability across districts.

Educational placement composition also varied across districts. Texas educational placement codes classify students by the instructional settings in which they receive special education services. Setting 00 indicates no instructional setting (e.g., speech therapy), while Setting 40 represents mainstream placement (100% of the instructional day in a general education classroom). Settings 41 and 42 represent resource room or related services for less than 21% and 21% to less than 50% of the instructional day, respectively. Settings 43 and 44 represent self-contained placements on a regular campus for 50%–60% and more than 60% of the instructional day, respectively. Mainstream placement (Setting 40) and resource room or related services for less than 21% of the instructional day (Setting 41) were the largest categories, accounting for an average of 30.0% and 28.5% of students receiving special education services, respectively. These were followed by no instructional setting (Setting 00; 17.7%) and resource room or related services for 21% to less than 50% of the instructional day (Setting 42; 11.3%). Smaller proportions of students were served in self-contained settings for 50%–60% (Setting 43; 2.0%) or more than 60% (Setting 44; 7.9%) of the instructional day. The relatively wide interquartile ranges for several placement categories, particularly Settings 40 and 41, indicate substantial differences in placement composition across districts.

Table 1*Descriptive Statistics for the Analytic Sample*

Variable	Mean	SD	P25	Median	P75
Special Education Spending and Enrollment					
Special Education Spending per Student (\$)	11,317.29	6,765.46	7,451.15	10,439.92	13,245.86
Special Education Enrollment	609.89	1,545.24	47	124	407
Special Education Enrollment (ln)	5.01	1.59	3.85	4.82	6.01
Special Education Enrollment Rate	13.87%	4.05%	11.10%	13.49%	16.18%
District Characteristics					
Economically Disadvantaged Student Share	58.90%	19.50%	47.03%	60.29%	72.65%
English Learner Share	11.31%	19.00%	3.02%	7.27%	15.63%
Disability Composition					
Learning Disability Share	40.34%	11.60%	32.75%	39.81%	47.33%
Speech Impairment Share	18.57%	9.10%	13.14%	17.00%	22.41%
Other Health Impairment Share	12.79%	6.30%	8.72%	12.42%	16.19%
Intellectual Disability Share	10.20%	6.20%	6.06%	9.43%	13.36%
Autism Share	10.07%	5.60%	6.45%	9.73%	13.33%
Emotional Disturbance Share	5.22%	3.80%	2.86%	5.00%	7.09%
Secondary Disability Share	31.38%	9.31%	25.72%	32.23%	37.50%
Educational Placement Composition					
No Instructional Setting (00)	17.65%	9.10%	12.24%	16.13%	21.21%
Mainstream (40)	30.03%	15.30%	20.00%	29.27%	39.30%
Resource Room/Services <21% (41)	28.49%	14.30%	18.58%	26.60%	36.36%
Resource Room/Services 21≤50% (42)	11.32%	9.00%	4.37%	9.87%	16.25%
Self-Contained 50–60% (43)	2.01%	2.50%	0.00%	1.31%	2.86%
Self-Contained >60% (44)	7.94%	6.20%	2.21%	7.94%	12.39%

Notes. The analytic sample consists of 6,116 district-year observations from Texas traditional public school districts during the 2019–20 through 2024–25 school years. Disability and educational placement measures represent the share of students receiving special education services in each category. Disability categories are based on students' primary disability classifications. Secondary Disability Share represents the proportion of students receiving special education services who have a secondary disability recorded in addition to their primary disability. Setting 00 represents no instructional setting (e.g., speech therapy); Setting 40 represents mainstream placement; Settings 41 and 42 represent resource room/services for less than 21% and 21% to less than 50% of the instructional day, respectively; and Settings 43 and 44 represent self-contained placements on a regular campus for 50%–60% and more than 60% of the instructional day, respectively. Special education enrollment rate, economically disadvantaged student share, and English learner share are calculated relative to total district enrollment.

Analytical Strategy

To examine the district characteristics associated with variation in special education spending, we estimate a series of ordinary least squares (OLS) regression models in which the dependent variable is “average special education spending per student” receiving special

education services. The models are estimated at the district-year level and include year fixed effects to account for statewide changes in spending and other common factors over time. Since districts are observed repeatedly across school years, standard errors are clustered at the district level to account for within-district correlation over time.

We estimate the models sequentially to examine how the association between educational placement composition and spending changes as additional district characteristics are considered. The baseline specification includes the proportions of students receiving special education services in each educational placement category, with mainstream placement (Setting 40) omitted because it represents the least restrictive instructional placement and provides a natural benchmark for comparing more intensive placement settings. The second specification adds the natural logarithm of special education enrollment and the proportion of all district students receiving special education services to account for differences in the size and concentration of district special education programs. The third specification adds the proportions of economically disadvantaged students and English learners, and the final specification incorporates district urbanicity, with urban districts serving as the reference category.

We then estimate a parallel set of models that additionally incorporates district disability composition. Disability composition is measured as the proportion of students receiving special education services in each primary disability category, with learning disability serving as the omitted category. Learning disability is used as the reference category because it is the most prevalent primary disability classification in the analytic sample, providing a substantively meaningful benchmark for comparing differences across disability categories. We also include the proportion of students with a recorded secondary disability to account for differences in the prevalence of multiple identified disabilities across districts. This specification allows us to

examine whether associations between educational placement and spending persist after accounting for differences in the disability composition of students served across districts. All proportion measures are expressed on a 0-to-1 scale; accordingly, regression coefficients for these variables can be interpreted as percentage-point differences in district composition.

Results

Figure 1 shows the distribution of average special education spending per student across Texas traditional public school districts from the 2019–20 through 2024–25 school years. District spending varies substantially over the study period. Although the median spending level remains relatively stable across years, the distribution is consistently right-skewed, with a small number of districts reporting exceptionally high per-student spending. Most districts fall within a relatively narrow interquartile range, whereas the upper tail extends considerably, indicating substantial heterogeneity in district expenditures. While several high-spending outliers are observed each year, the magnitude of these extreme values appears to decline slightly over time, particularly after 2021. Overall, the distribution suggests that large differences in special education spending across districts persist throughout the study period rather than being driven by a single year.

Figure 1

Distribution of Special Education Spending per Student

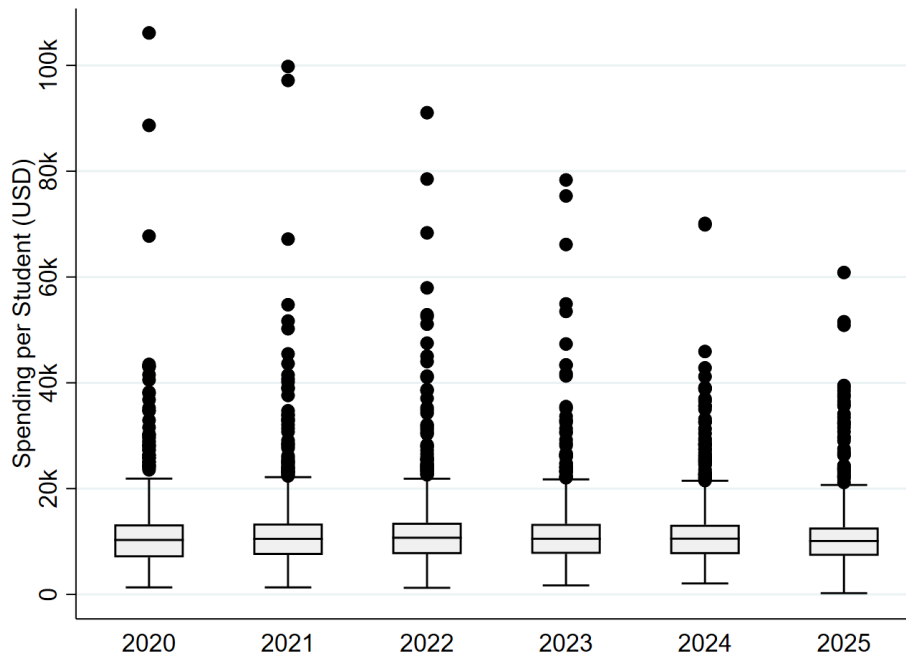


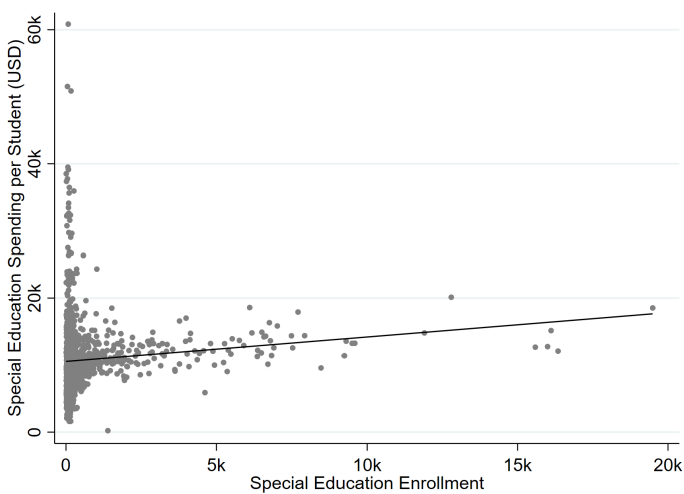
Figure 2 illustrates average special education spending per student by district special education enrollment in the 2024–25 school year. Rather than demonstrating a strong relationship between district size and spending, the figure highlights where variation in district spending occurs. Districts serving relatively small numbers of students receiving special education exhibit substantially greater variation in per-student spending, with expenditures ranging from relatively low to exceptionally high levels. In contrast, spending among larger districts is considerably more concentrated, with far fewer extreme values. Presenting district enrollment on the logarithmic scale further illustrates that the wide dispersion in spending is primarily driven by smaller districts rather than differences among medium- and large-sized

districts. These descriptive patterns suggest that much of the observed heterogeneity in district spending arises among smaller districts, where average expenditures are likely more sensitive to individual high-cost students, local service delivery arrangements, and fixed program costs.

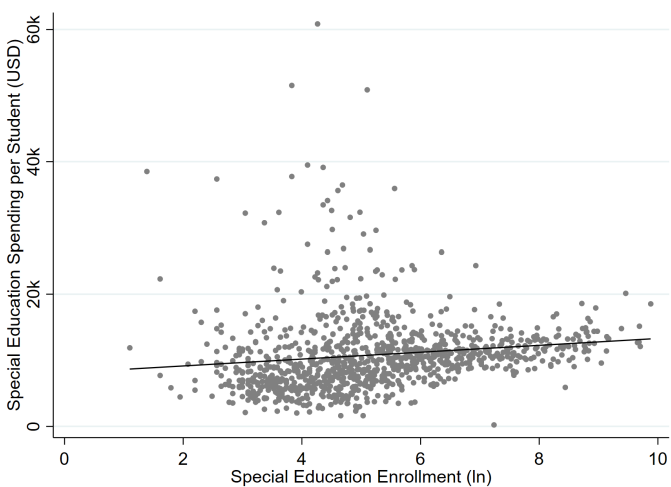
Figure 2

Special Education Spending per Student by District Special Education Enrollment, 2024–25

Panel A. Special Education Enrollment



Panel B. Special Education Enrollment (Log Scale)



Notes. Panel A presents special education enrollment; Panel B presents the natural logarithm of special education enrollment. The solid line represents the linear fitted relationship.

Figure 3 presents the geographic distribution of average special education spending per student and educational placement patterns across Texas traditional public school districts in the 2024–25 school year. Panel A classifies districts into three groups based on the statewide distribution of average special education spending per student: the bottom 25%, middle 50%, and top 25%. High- and low-spending districts are dispersed throughout the state rather than concentrated in a single geographic region. Substantial variation is also visible within and around major metropolitan areas, including Austin, Dallas–Fort Worth, Houston, and San Antonio, where districts in different spending categories are located in relatively close proximity. These patterns suggest that statewide or broad regional differences alone are unlikely to account for the observed variation in district special education spending.

Because educational placement forms the basis of Texas's special education funding formula, Panel B examines whether the geographic distribution of spending corresponds to differences in district placement patterns. Specifically, the panel displays quartiles of the proportion of students receiving special education services who spend at least 80% of the instructional day in general education settings (Settings 00, 40, and 41). General education placement rates also vary considerably across the state. Although districts with relatively high placement rates in general education settings for at least 80% of the instructional day appear more frequently in portions of western and northern Texas, districts in different quartiles are found throughout the state and are often located near one another, indicating substantial within-region variation. A comparison of the two panels provides descriptive evidence that spending and placement patterns may be related: some areas with relatively high spending also contain districts with lower general education placement rates. However, the correspondence is far from uniform, as districts with similar placement rates can fall into different spending categories and

vice versa. These descriptive patterns motivate the multivariate analyses that follow, which examine the association between educational placement composition and district special education spending while accounting for other district characteristics.

Figure 3

Geographic Variation in Special Education Spending and General Education Placement Rates, 2024–25.

Figure 3.A Geographic Variation in Special Education Spending

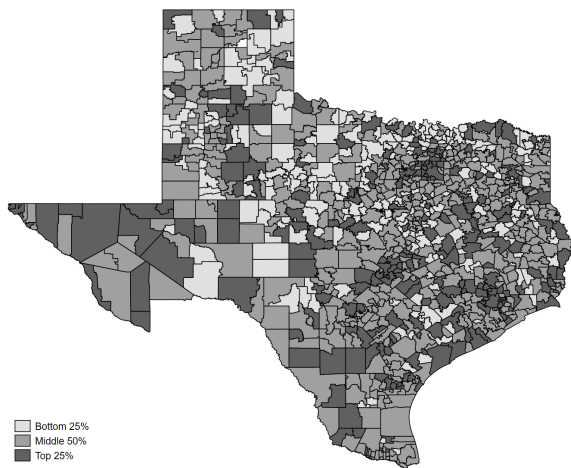


Figure 3.B Geographic Variation in General Education Placement Rates (at least 80% of day)

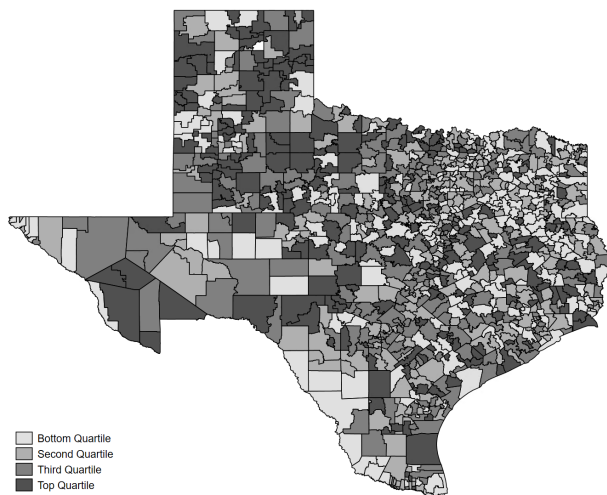


Table 2 presents regression estimates examining the relationship between educational placement composition and average special education spending per student. All models include year fixed effects, with additional district characteristics introduced sequentially across specifications. Setting 40 serves as the reference category for educational placement. Across all four models, the share of students served in Setting 44 is consistently associated with substantially higher spending per student. In Model 1, a 10-percentage-point higher share of students in Setting 44 relative to Setting 40 is associated with approximately \$2,080 higher spending per student receiving special education. The magnitude declines as district characteristics are introduced but remains large and statistically significant at the 1% level. In the fully specified model (Model 4), the estimated coefficient is \$17,532, implying that a 10-percentage-point higher share of students in Setting 44, relative to Setting 40, is associated with approximately \$1,753 higher spending per student receiving special education. In contrast, the estimated coefficients for Settings 00, 41, 42, and 43 are not statistically significant across specifications. Among the additional district characteristics, the special education enrollment rate is negatively and statistically significantly associated with average per-student spending. In Model 4, a 10-percentage-point increase in the special education enrollment rate is associated with approximately \$2,852 lower spending per student. By comparison, the absolute number of students receiving special education services, economic disadvantage, English learner concentration, and urbanicity are not statistically significant in the fully specified model. The R-squared increases from 0.04 in Model 1 to 0.07 in Model 4, indicating that educational placement and observed district characteristics explain only a limited share of the overall variation in district special education spending.

Table 2*Educational Placement Composition and Special Education Spending per Student*

	(1)	(2)	(3)	(4)
Educational Placement Composition				
No Instructional Setting (00)	1,419.72 (2,095.97)	112.53 (1,932.90)	-34.46 (1,964.18)	-258.79 (1,971.15)
Resource Room/Services <21% (41)	-889.42 (1,530.49)	-355.61 (1,532.32)	-407.00 (1,521.88)	-407.86 (1,525.64)
Resource Room/Services 21≤50% (42)	42.58 (1,866.56)	810.78 (1,864.89)	790.57 (1,880.67)	808.65 (1,885.05)
Self-Contained 50–60% (43)	6,081.31 (5,233.40)	6,469.91 (5,142.14)	6,343.03 (5,017.31)	6,023.15 (5,000.03)
Self-Contained >60% (44)	20,799.70*** (2,624.86)	18,123.97*** (3,262.55)	18,582.52*** (3,568.62)	17,532.30*** (3,531.20)
Other Settings	530.45 (4,776.88)	2,648.40 (5,384.31)	2,537.59 (5,450.36)	2,545.82 (5,381.78)
District Characteristics				
Special Education Enrollment (ln)		132.80 (119.75)	175.26 (130.60)	-46.15 (177.48)
Special Education Enrollment Rate		-29,100.44*** (5,427.20)	-30,119.07*** (5,845.01)	-28,518.45*** (6,016.14)
Economically Disadvantaged Student Share			-30.07 (1,252.33)	-412.30 (1,266.36)
English Learner Share			-1,907.66 (1,401.80)	-1,819.17 (1,411.52)
Urbanicity				
Suburban				267.08 (514.85)
Town				60.87 (625.06)
Rural				-1,095.08 (737.50)
Constant	9,352.58*** (790.63)	12,243.25*** (1,075.85)	12,377.90*** (1,294.00)	14,259.27*** (1,746.79)
Observations	6,116	6,116	6,116	6,116
R-squared	0.04	0.06	0.06	0.07

Notes. The dependent variable is average special education expenditure per student receiving special education services. Setting 00 represents no instructional setting (e.g., speech therapy); Setting 40 represents mainstream placement; Settings 41 and 42 represent resource room/services for less than 21% and 21% to less than 50% of the instructional day, respectively; and Settings 43 and 44 represent self-contained placements on a regular campus for 50%–60% and more than 60% of the instructional day, respectively. Setting 40 is the omitted educational placement category and urban district is the omitted urbanicity category. All share and rate variables are measured on a 0–1 scale. Year fixed effects are included in all models. Standard errors are clustered at the district level and reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3 extends the analysis by incorporating district disability composition in addition to educational placement composition. Learning disability, the most prevalent primary disability category in the analytic sample, serves as the reference disability category. The inclusion of

disability composition reduces the estimated association between Setting 44 and district spending, although the relationship remains large and statistically significant across all model specifications. In the fully specified model, the coefficient for Setting 44 decreases from approximately \$17,532 in Table 2 to \$13,605 after disability composition is included. This implies that a 10-percentage-point higher share of students in Setting 44 relative to Setting 40 is associated with approximately \$1,360 higher spending per special education student after accounting for disability composition and other district characteristics. The reduction in the Setting 44 coefficient suggests that part of the association between restrictive placement and spending overlaps with differences in the types of disabilities served across districts, while placement composition remains independently associated with expenditures.

Among the disability categories, autism exhibits the most consistent relationship with district spending. Across all specifications, districts with larger shares of students with autism have significantly higher average special education spending per student. In the fully specified model, the estimated coefficient is approximately \$9,962, indicating that a 10-percentage-point higher share of students with autism relative to learning disability is associated with approximately \$996 higher spending per special education student. The estimated coefficients for intellectual disability and emotional disturbance are also positive and relatively large, but they are not statistically significant once standard errors are clustered at the district level. Similarly, the coefficients for other health impairment and the share of students with a secondary disability are not statistically distinguishable from zero.

The special education enrollment rate remains negatively and statistically significantly associated with spending after disability composition is introduced. In Model 4, a 10-percentage-point higher special education enrollment rate is associated with approximately \$2,560 lower

average spending per student. Other district demographic and geographic characteristics remain statistically insignificant. The R-squared increases from 0.05 in Model 1 to 0.08 in Model 4. Taken together, the results identify specific dimensions of educational placement and disability composition—most notably highly self-contained placement (Setting 44) and autism—that are associated with higher district spending. At the same time, the relatively low explanatory power of the models indicates that most of the observed variation in average special education expenditures remains unexplained by the student composition and district characteristics included in the analysis.

Table 3

Educational Placement and Disability Composition and Special Education Spending per Student

	(1)	(2)	(3)	(4)
Educational Placement Composition				
No Instructional Setting (00)	8,039.23 (5626.85)	7,483.62 (5192.37)	7,761.59 (5181.77)	7,549.52 (5147.74)
Resource Room/Services <21% (41)	-829.24 (1530.53)	-360.01 (1538.27)	-441.34 (1517.30)	-421.29 (1521.62)
Resource Room/Services 21≤50% (42)	-346.41 (1928.95)	443.91 (1946.24)	304.12 (1964.97)	273.09 (1972.31)
Self-Contained 50–60% (43)	3,069.98 (4955.34)	3,431.63 (4887.94)	3,240.12 (4871.67)	3,000.19 (4868.16)
Self-Contained >60% (44)	13,410.81*** (3476.12)	13,711.95*** (3661.15)	14,443.03*** (3846.37)	13,604.50*** (3846.32)
Other Settings	-1,644.37 (5156.91)	332.20 (5513.60)	407.63 (5572.82)	515.91 (5514.87)
Disability Composition				
Speech Impairment Share	-5,044.19 (5118.39)	-6,077.26 (4916.24)	-6,665.69 (4924.45)	-6,702.23 (4903.22)
Other Health Impairment Share	4,932.88 (4197.39)	3,105.63 (4375.04)	2,605.62 (4440.88)	2,432.88 (4466.69)
Intellectual Disability Share	6,771.05 (4401.16)	5,664.27 (4403.67)	6,448.69 (4563.35)	6,238.77 (4508.92)
Emotional Disturbance Share	4,427.55 (4205.61)	6,528.02 (4398.72)	6,170.95 (4439.27)	6,171.16 (4441.29)
Autism Share	14,222.94*** (3218.97)	10,105.88*** (3346.29)	10,152.57*** (3324.79)	9,961.74*** (3310.87)
Secondary Disability Share	-56.52 (2118.28)	466.72 (2028.68)	417.65 (1995.25)	310.62 (1969.66)
District Characteristics				

Special Education Enrollment (ln)	29.94 (122.66)	55.27 (133.33)	-131.29 (174.67)
Special Education Enrollment Rate	-26,650.21*** (5835.41)	-26,848.31*** (6147.24)	-25,597.79*** (6245.75)
Economically Disadvantaged Student Share		-624.41 (1308.22)	-1,015.53 (1324.78)
English Learner Share		-1,439.14 (1389.39)	-1,308.36 (1396.16)
Urbanicity			
Suburban			148.06 (515.07)
Town			208.80 (612.59)
Rural			-938.49 (721.70)
Constant	6,922.31*** (1217.10)	10,342.98*** (1549.63)	10,811.81*** (1712.45)
Observations	6,116	6,116	6,116
R-squared	0.05	0.07	0.08

Notes. The dependent variable is average special education expenditure per student receiving special education services. Setting 00 represents no instructional setting (e.g., speech therapy); Setting 40 represents mainstream placement; Settings 41 and 42 represent resource room/services for less than 21% and 21% to less than 50% of the instructional day, respectively; and Settings 43 and 44 represent self-contained placements on a regular campus for 50%–60% and more than 60% of the instructional day, respectively. Disability categories are based on students' primary disability classifications. Secondary Disability Share represents the proportion of students receiving special education services who have a secondary disability recorded in addition to their primary disability. Setting 40 is the omitted educational placement category, learning disability is the omitted disability category, and urban districts are the omitted urbanicity category. All share and rate variables are measured on a 0–1 scale. Year fixed effects are included in all models. Standard errors are clustered at the district level and reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Discussion

This study examined variation in special education spending across Texas traditional public school districts operating within a primarily placement-based funding system. This weighted approach is similar to many other states in the U.S., although each state is unique (Duncombe, 2023; Kolbe, 2019). The findings highlight substantial heterogeneity in district expenditures, with spending per student with a disability varying widely across districts and years. Some of the variation reflects differences in educational placement and disability composition, but most of the spending variation remains unexplained by the observable district characteristics included in our analyses. These results suggest that educational placement and disability composition capture some dimensions of resource use reflected in district expenditures, but they provide only a partial explanation for variation in district special education

expenditures. In practice, this means that two Texas districts serving students with comparable disability characteristics and placement patterns may spend different amounts on special education.

The strongest and most consistent finding concerns the relationship between restrictive educational placements and district spending. Across all model specifications, districts serving larger proportions of students in Setting 44 reported substantially higher expenditures per student with a disability, even after accounting for disability composition, enrollment patterns, district demographics, and geography. This finding is not unexpected, given that Setting 44 represents one of the more restrictive instructional arrangements in Texas, where students with disabilities are educated in self-contained settings for more than 60% of the school day. Such placements often require smaller student-to-staff ratios, specialized personnel, and more intensive supports. Districts serving larger shares of students with autism also exhibit significantly higher spending levels. Together, these findings provide evidence that the placement and disability measures embedded within special education finance systems are associated with resource requirements in ways consistent with existing assumptions regarding service intensity and cost. Students requiring more intensive supports and more restrictive educational environments appear to be associated with higher district expenditures, lending some support to the logic underlying placement-based funding approaches, even though the explanatory power of these measures was modest.

Even the most comprehensive models accounted for only a small proportion of the overall variation in district spending. This limited explanatory power is an important finding because it highlights how much district-level spending variation remains outside the observable characteristics in conventional administrative data. Whereas prior special education finance

research has largely focused on how funding systems influence disability identification and placement decisions (Cullen, 2003; Dhuey & Lipscomb, 2011; Kwak, 2010), our findings suggest that the indicators commonly used as proxies for student need explain only a limited share of the differences in expenditure across districts. This finding is consistent with broader concerns in special education finance that administrative categories may serve as imperfect proxies for educational costs (Kolbe et al., 2023). Consequently, disability classifications and placement measures may capture important dimensions of need while overlooking other factors that substantially shape district spending. If so, the characteristics used to allocate funding may correspond only imperfectly to the costs districts incur in providing special education services.

The findings also point to the importance of local context in shaping special education expenditures. The substantial unexplained variation across districts may reflect a range of social, economic, and political factors including differences in labor markets, staffing costs, service availability, contracting arrangements, transportation needs, fiscal capacity, accounting practices, and the presence of students with exceptionally high service costs (Baker, 2021; Mahitivanichcha & Parrish, 2005; Marchand & Weber, 2020; Taylor, 2006). Consistent with Doutre and Kolbe's (2020) report on special education funding, expenditures may also vary because districts organize supports, deploy personnel, and structure service delivery differently. Relatedly, Conlin and Jalilevand (2015) found that special education spending varied substantially across districts and was shaped by local wealth, student composition, and institutional arrangements, suggesting that expenditures are influenced by factors extending well beyond the disability and funding categories commonly used in special education finance systems. Although our data do not allow us to distinguish among these mechanisms, prior

research suggests several plausible sources of this residual variation. Such organizational factors are rarely captured in administrative datasets but may substantially influence spending patterns.

Small districts may also face particularly high per-pupil costs when fixed program expenses or a small number of students with intensive needs account for a large share of total expenditures. These explanations align with longstanding research indicating that special education costs are shaped by service-delivery arrangements and contextual factors that extend beyond disability classifications or placement categories (Baker & Ramsey, 2010; Chambers et al., 2004; Mahitivanichcha & Parrish, 2005). The descriptive analyses support this possibility, as spending variation appears particularly pronounced among smaller districts, where fixed program costs and individual high-cost students may exert a larger influence on average expenditures. Some of these factors are often absent from administrative datasets yet may play a critical role in determining actual district spending levels.

Limitations

Several limitations should be considered when interpreting these findings. First, the analyses rely on district-reported expenditure data, which may not be fully comparable across districts. Differences in accounting practices, cost allocation procedures, and reporting decisions may contribute to observed spending variation independent of actual differences in services provided. Second, the administrative data do not capture many organizational factors that may influence expenditures, including staffing models, contracting arrangements, transportation costs, and the service needs of individual high-cost students. Third, because the analyses are conducted at the district level, the findings cannot illuminate variation in resource allocation across schools or programs within districts. Consequently, some portion of the unexplained variation may reflect both unobserved determinants of spending and limitations in the measurement of special

education expenditures. Fourth, the analyses are descriptive and associational. Instructional arrangements and disability composition are not randomly assigned and may themselves reflect student needs, district capacity, staffing availability, and local service-delivery decisions. The estimated relationships therefore should not be interpreted as causal effects of placement or disability composition on spending.

Implications

The study has several implications for policy. Placement-based funding systems are predicated on the assumption that instructional setting serves as a reasonable proxy for resource needs. The positive association between restrictive placements and spending suggests that this assumption is not entirely misplaced. However, the limited share of the overall variation in expenditure accounted for by placement, disability composition, and other observable characteristics suggests that funding formulas based primarily on these measures may not fully capture the factors driving district costs. Policymakers should therefore exercise caution when considering whether funding categories alone accurately represent district resource requirements. As Texas and other states continue to reform special education finance systems, consideration may need to be given to mechanisms that better account for rare high-cost students, economies of scale, regional cost differences, and other contextual factors that influence spending but are not reflected in traditional funding proxies.

The findings from this study also suggest several directions for future research. First, researchers should examine the organizational and fiscal factors that contribute to variation in spending, including staffing models, service delivery arrangements, contracting practices, transportation systems, and local labor market conditions. Mixed-methods studies combining

expenditure analyses with qualitative case studies of districts or schools with unusually high or low spending could provide insight into how leaders allocate resources and organize services. Second, future research should develop more precise measures of special education resource use, including staffing allocations, caseloads, personnel expenditures, related services, and school-level resource deployment (Kolbe et al., 2022). District-level expenditure data may obscure important variation in resource distribution across schools and programs. Finally, researchers should investigate whether differences in spending are associated with service quality, student outcomes, or compliance with special education requirements. Comparative studies across states with different funding models could also assess whether the patterns observed in Texas reflect broader features of special education finance.

Conclusion

The findings of this study raise a fundamental question for special education finance policy: if educational placement and disability composition are often the primary indicators used to allocate funding, why do they explain so little of the variation in districts' actual spending? While the results show that more restrictive placements and higher concentrations of students with autism are associated with higher expenditures, most of the variation in spending remains unexplained by the observable characteristics that underpin the Texas special education funding system. These findings suggest that special education expenditures may also be substantially shaped by local capacity, service-delivery decisions, labor market conditions, and organizational factors that conventional indicators do not capture. For researchers, this points to the need for a new generation of studies that move beyond identification, placement, and funding formulas to investigate how districts and schools organize and deliver services. For policymakers, the results

invite a more provocative reconsideration of whether current funding mechanisms are measuring the right things. As states continue or begin to pursue equity and adequacy in special education finance, the central challenge may no longer be determining how much funding to provide but identifying the factors that truly drive need and cost. Until those factors are better understood, special education funding systems may continue to rely on indicators that account for only a modest share of the substantial variation observed in district special education expenditures.³

References

- Agran, M., Jackson, L., Kurth, J. A., Ryndak, D., Burnette, K., Jameson, M., ... & Wehmeyer, M. (2020). Why aren't students with severe disabilities being placed in general education classrooms: Examining the relations among classroom placement, learner outcomes, and other factors. *Research and Practice for Persons with Severe Disabilities*, 45(1), 4-13.
- Baker, B. D. (2021). *Educational inequality and school finance: Why money matters for America's students*. Harvard Education Press.
- Baker, B. D., Green, P. C., & Ramsey, M. J. (2018). Financing education for children with special needs. In *Handbook of leadership and administration for special education* (pp. 116-133). Routledge.
- Baker, B. D., & Ramsey, M. J. (2010). What we don't know can't hurt us? Equity consequences of financing special education on the untested assumption of uniform needs. *Journal of Education Finance*, 35(3), 245-275.
- Bray, L. E., & Russell, J. L. (2016). Going off script: Structure and agency in individualized education program meetings. *American Journal of Education*, 122(3), 367-398.
- Brock, M. E., & Schaefer, J. M. (2015). Location matters: Geographic location and educational placement of students with developmental disabilities. *Research and Practice for Persons with Severe Disabilities*, 40(2), 154-164.
- Chambers, J. G., Parrish, T. B., & Harr, J. (2004). *What are we spending on special education*

³ The authors used a generative artificial intelligence (AI) tool to assist with manuscript editing, including improving grammar, clarity, readability, and writing style. The AI tool was not used for study design, data collection, data management, data analysis, statistical modeling, interpretation of results, or the generation of findings, tables, figures, or references. All analyses, results, and conclusions were developed and verified by the authors. The authors reviewed and edited all AI-assisted text and assume full responsibility for the content of the manuscript.

- services in the United States, 1999–2000?* American Institutes for Research.
- Conlin, M., & Jalilevand, M. (2015). Systemic inequities in special education financing. *Journal of Education Finance*, 83-100.
- Cullen, J. B. (2003). The impact of fiscal incentives on student disability rates. *Journal of Public Economics*, 87(7–8), 1557–1589. [https://doi.org/10.1016/S0047-2727\(01\)00203-1](https://doi.org/10.1016/S0047-2727(01)00203-1)
- DeMatthews, D. E., & Mawhinney, H. (2013). Addressing the inclusion imperative: An urban school district's responses. *Education Policy Analysis Archives*, 21, 1-30.
- Dhuey, E., & Lipscomb, S. (2011). Funding special education by capitation: Evidence from state finance reforms. *Education Finance and Policy*, 6(2), 168-201.
- Doutre, S., & Kolbe, T. (2020). *Special education funding: Three critical moves state policymakers can make to maintain funding and bolster performance*. WestEd.
- Duncombe, C. (2023, September 25). *Your question: Our response: Funding special education services and equitable funding approaches*. Education Commission of the States. https://www.ecs.org/wp-content/uploads/State-Information-Request_Equitable-Special-Education-Funding.pdf
- Endrew F. v. Douglas County School District RE-1*, 580 U.S. 386 (2017).
- Graves Jr, S. L., & Ye, F. F. (2017). Are special education labels accurate for Black children? Racial differences in academic trajectories of youth diagnosed with specific learning and intellectual disabilities. *Journal of Black Psychology*, 43(2), 192-213.
- Individuals with Disabilities Education Act, 20 U.S.C. § 1400 et seq. (2004).
- Kolbe, T. (2019). *Funding special education: Charting a path that confronts complexity and crafts coherence*. National Education Policy Center.
- Kolbe, T. (2021). State funding for special education: Aligning policy with priorities. *Journal of Special Education Leadership*, 34(1), 19.
- Kolbe, T., Dhuey, E., & Doutre, S. M. (2022). More money is not enough: (Re)considering policy proposals to increase federal funding for special education. *American Journal of Education*, 129(1), 79–108.
- Kolbe, T., Dhuey, E., & Doutre, S. M. (2023). Unequal and increasingly unfair: How federal policy creates disparities in special education funding. *Exceptional Children*, 90(1), 57–75.
- Kwak, S. (2010). The impact of intergovernmental incentives on student disability rates. *Public*

- Finance Review*, 38(1), 41–73. <https://doi.org/10.1177/1091142109358707>
- Mahitivanichcha, K., & Parrish, T. (2005). The implications of fiscal incentives on identification rates and placement in special education: Formulas for influencing best practice. *Journal of Education Finance*, 1-22.
- Marchand, J., & Weber, J. G. (2020). How local economic conditions affect school finances, teacher quality, and student achievement: evidence from the Texas shale boom. *Journal of Policy Analysis and Management*, 39(1), 36-63.
- Morgan, P. L., Hu, E. H., & Oh, Y. (2025). Racial and ethnic disparities in school-based disability identification. *Educational Researcher*, 54(7), 437-441.
- Taylor, L. L. (2006). Comparable wages, inflation, and school finance equity. *Education Finance and Policy*, 1(3), 349-371.
- Tex. Educ. Code § 48.102 (2025).
- U.S. Department of Education. (2006, August 14). *Assistance to states for the education of children with disabilities and preschool grants for children with disabilities; final rule*. *Federal Register*, 71(156), 46,540-46,824.
- U.S. Department of Education, Office of Special Education and Rehabilitative Services. (n.d.). *IDEA grants to states (Part B, Sec. 611)*. Retrieved August 9, 2026, from [IDEA Grants to States \(Part B, Sec. 611\)](#)
- Verstegen, D. A. (2011). Public education finance systems in the United States and funding policies for populations with special educational needs. *Education Policy Analysis Archives*, 19(21), 1–30.
- Voulgarides, C. K. (2026). *Beyond compliance: Reclaiming agency in special education*. Harvard Education Press.