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Research Article

Spending Floors in Gifted Education Services

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For nearly two decades, the state of Texas mandated gifted education services and provided funding to public school districts. One policy that was unique to the state was a mandatory minimum spending requirement. This research examines how mandatory minimum spending floors influenced spending in public school districts within the state and how that influence varied across locales. Our findings provide evidence that rural public school districts in Texas were more likely to operate nearer to the mandatory state minimum spending for gifted education than non-rural public school districts. In particular, rural public school districts allocated 50% fewer funds toward gifted education programming than suburban public school districts after accounting for minimum spending floors. The results should provide caution to policy makers on the possible ramifications of removing spending floors on gifted education programming in rural public school districts.

The Texas school system is a vast and diverse body, composed of more than 1,200 independent school districts (ISDs) with needs that vary widely. Of the state's more than five million students enrolled, over 300,000 have been identified as gifted – representing nearly 12% of the nation's total population of students who receive gifted services. To further complicate matters for policy makers and other stakeholders, massive public school districts such as Dallas ISD, Houston ISD, and Cypress-Fairbanks ISD exist alongside a vast swathe of 459 rural public school districts (Texas Education Agency [TEA], 2019). The orchestration of adequate and equitable funding for gifted programming in such a large and geographically diverse state is no small task; this challenge is particularly great for rural school districts.

The TEA requires that all districts, regardless of locale, both identify and serve students who are gifted and talented by ensuring "an array of learning opportunities that are commensurate with their abilities and that emphasize content in the four foundation curricular areas" (TEA, 2019). However, providing meaningful and engaging gifted education services within rural school districts presents many challenges (Azano et al., 2017). One of the biggest challenges facing rural school districts is a lack of financial resources coupled with high rates of poverty (Azano et al., 2014; Hodges, 2018; Puryear & Kettler, 2107). In Texas, a district's financial resources are not directly tied to its taxable property base but instead to its student enrollment (TEA, 2020). This means that even in rural districts that are surrounded by wealthy property from which to levy taxes (e.g., mineral and agricultural wealth), providing adequate funding for gifted education personnel can be challenging. In rural districts with low student enrollment, hiring a full-time gifted education teacher at tens of thousands of dollars in salary and benefits, along with purchasing a contract to administer a test for identifying students for gifted and talented services, is likely to be prohibitively expensive. For example, in a rural district of only 500 students, expending $50,000 to hire a single full-time equivalent gifted education teacher would decidedly be a much larger portion of a district budget than it would in a district with 10,000 students. The provision of gifted services in rural school districts is an example of how the influence of costs like teacher salaries and testing licenses are affected by the scale of the underlying economy (Hertz & Silva, 2020). Moreover, scholars have found evidence that Texas' gifted education funding scheme has disadvantaged rural school districts long before recent policy changes (Hodges, 2018; Hodges et al., 2018; Kettler et al., 2015; Puryear & Kettler, 2017).

For more than twenty years, the state of Texas maintained a funding structure for gifted and talented education meant to ensure that programs for students identified as gifted would receive state funding with regularity and oversight. Since 1995, the state of Texas committed to funding gifted programs in Texas through an additional funding allotment equal to .12 of each district's basic allotment, for up to 5% of the district's student population (Texas Education Agency, 2009). The funding came with the stipulation that 55% must be spent directly on programming and services, while only 45% could be

spent on indirect costs that could include a variety of expenses like building maintenance and school-wide resources. Though this funding structure was an imperfect means to promote equity and balance in the provision of gifted services across the state, its requirements carried the implication of regulation and at least some oversight of school spending. With the recent passage of a 13-billion-dollar investment in Texas public education, House Bill 3 (HB3), the future of gifted programming in Texas is in question, and the extent to which schools will fund it has become uncertain.

HB3 serves as a massive overhaul of the Texas public school finance system. Though the bill stands to inject significant funding into programmatic allotments, it also ushers the total repeal of allocation requirements for gifted and talented spending (TX HB3, 86th Legislature, [Texas, 2019]). In other words, while Texas public school districts are still required by the state to identify and provide services for gifted and talented students, there is no requirement regarding the proportion of state funding that districts must spend on gifted and talented programs or for how these funds should be allocated. For rural public school districts with limited resources, this would seem to pose an especially acute burden when it comes to maintaining the provision of specialized gifted services. The state of Texas houses the highest number of rural campuses in the country and serves students in more than 2,000 rural schools (TEA, 2019). Scholars have provided considerable evidence that rural public school districts fund their gifted education programs at lower rates than non-rural public school districts (Hodges, 2018; Lawrence, 2009; Kettler et al., 2015; Puryear & Kettler, 2017). In recent literature, Texas' rural gifted education programming and policy has been of great interest due to the state's large number of rural public school districts and its gifted education mandates. What has puzzled researchers is how gifted education programs in rural Texas public school districts have weathered reductions in state revenue and policy upheavals compared to those of suburban and urban districts. For example, where suburban and urban school districts have reduced the resources and personnel allocated to gifted education programs, rural school districts have maintained their level of funding over nearly two decades (Hodges, 2018).

The goal of our study is to examine whether mandatory minimums in spending created a funding floor at which rural public school districts operated in Texas. In other words, when examining which districts were more likely to spend the minimum on gifted programming, what was the likelihood that the district be a rural district? Texas' policy of indirect and direct spending has historically obscured how much of the state allotment is spent on gifted services. Indirect funds could have potentially been used to cover indirect costs (e.g., utilities, building maintenance, etc.). Because Texas has not previously required districts to differentiate between direct and indirect funds or state and local funds in their financial reporting, determining whether or not rural public school districts were operating at mandatory minimums has been difficult to ascertain. Recently, though, Texas has released accounting reports to the public that detail the spending of state-provided funds meant for gifted education. Using this information, in conjunction with district-reported spending, district spending in relation to state mandated minimums can be calculated.

Literature

Gifted Education in Rural Schools

Rural gifted education is an area of research that does not receive the proportional amount of attention warranted, considering that nearly 20% of the nation's students are enrolled in rural schools (Rasheed, 2020). Colangelo et al.'s (1999) study examining and surveying rural gifted education brought the concerns of this area to the attention of scholars. In the following decade, researchers determined specific challenges that rural schools encounter. Systematically, scholars pointed out the existence of a resource gap between rural and non-rural schools as a likely cause for inequities in gifted education programming (Howley et al., 2009; Lawrence, 2009; Pendarvis and Wood, 2009). Further research on rural resource gaps has led scholars to focus on how financial and personnel allocations differ across locales (Hodges, 2018; Hodges, Tay, et al., 2018; Kettler et al., 2015; Puryear & Kettler, 2017) and how these disparities manifest in key areas, such as identification for gifted education services (Hodges et al., 2019) and participation within Advanced Placement courses (Lamb et al., 2019).

Because of this gap in resources, rural public school districts consistently allocate less funding and fewer personnel to gifted education programing than do non-rural public school districts (Hodges, 2018;

Hodges, Tay, et al., 2018; Kettler et al., 2015; Puryear & Kettler, 2017). This gap is most notable between rural and suburban districts, where suburban districts allocate nearly double the resources to gifted education programming (when controlling for district size and total budget) (Hodges, Tay, et al., 2018). However, in a recent study examining the impact of state education spending cuts on gifted education in the aftermath of the Great Recession, Hodges, Tay, et al. (2018) found that rural public school district budgetary allocations did not greatly change following state education spending cuts. In contrast, gifted education spending significantly declined in suburban public school districts. The overall mechanism for why this occurred was uncertain to the authors.

Funding for Gifted Education in Texas

As previously discussed, Texas provided a funding weight of .12 per student identified for up to 5% of the total school population between the years of 1996 and 2019. This portion of funding was considered part of the base entitlement of a school district. In Texas, if a school district's revenue did not meet its base entitlement, the state provided additional funds to meet those base levels (Texas, 2013). Direct costs were meant to include either teacher salary or curriculum and associated materials, but states provided little oversight regarding what constituted indirect costs, which could be allocated toward costs that indirectly supported gifted education programs. The definition of what constituted an indirect cost was intentionally ill-defined; this allowed districts to use the money for such things as maintenance and operations (e.g. utilities, as you cannot have gifted classes without electricity). In other words, districts that allocated funds directly to gifted programs could expect additional funding at a near match (55/45 split). This system was implemented, in part, to encourage gifted identification in public school districts with large populations of students from marginalized groups. Prior to this, it was common for public school districts to forgo gifted education programming in lieu of trying to equitably identify students from populations that are traditionally underrepresented in gifted education, such as students who are Black, Latinx, or Native American (Hodges, Tay, Maeda, et al., 2018; Lamb et al., 2019; Peters et al., 2019; Yoon & Gentry, 2009).

Following the 2019 legislative session, the funding requirement for gifted education was removed. In its place, a penalty structure was implemented. If a district elects not to provide a gifted education program, the state can levy a fine against the district, and the penalty is equal in amount to the prior direct funding allocation for gifted education (TX HB3, 86th Legislature, [Texas, 2019]). This fine must be paid from the district's general fund. Evidence from other states suggest that penalty structures associated with gifted education programs disproportionately affect rural districts (Hodges & Lamb, 2019). However, the state will not audit districts on whether or not they offer gifted education programming. Instead, districts are expected to truthfully report their service offerings to the state (TX HB3, 86th Legislature, [Texas, 2019]).

Alternative Models for Funding Gifted Education across the US

Texas's funding for gifted education represents only 1 of 51 different funding schemes across the United States (50 states and Washington D.C.). Funding models for gifted education services vary greatly across the country. The initial consideration for examining funding models is whether or not specific funds are allocated at the state level. For example, West Virginia allocates funds to public schools for the purpose of meeting the needs of students who require special education (Wisconsin Department of Public Instruction, 2019). Students receiving gifted services fall under this umbrella allocation, but districts are not mandated to allocate a certain portion of that funding to meet the needs of those students. A second form of funding is through competitive grants offered through state departments. For example, the Wisconsin legislature sets aside money that public school districts can apply for through the state education department (Wisconsin Department of Public Instruction, 2019). In line with Texas' prior funding scheme, several states use per pupil funding schemes to fund gifted education services: North Carolina, Washington, and Alabama provide funding on a per pupil basis. The difference between the states is the extent to which they provide per pupil funding and the associated funding caps. For example, North Carolina provides a flat amount of funding per student ($1300) up to a cap of 4% of the general population of students. In the case of Alabama, the state provides per pupil funding in addition to competitive grants for which public

school districts can apply. Despite these commonalities, funding strategies for gifted education vary greatly across the United States, but minimal research has been conducted on the efficacy of these different funding strategies. This lack of research has led scholars to call for increased research on funding and policies in gifted education (Plucker et al., 2017).

Purpose

The purpose of this paper is to assess how Texas' policy of incentivizing spending on gifted education programming differs across locales. Particularly, we are interested in whether rural public school districts are more likely to operate at minimum spending levels in comparison to non-rural public school districts. Such knowledge can aid policy makers and other stakeholders in assessing the effectiveness of incentivizing spending and in understanding how mandates on minimum spending affects districts differently across locales. Finally, with Texas' recent removal of direct funding for gifted education, quick identification of districts that were formerly operating at minimum spending levels allows state officials to provide early interventions to those districts that are at-risk of moving towards the new floor (i.e. no spending at all).

The following overarching research question guided the study: To what extent does spending for gifted education above the minimum threshold established by the state of Texas vary across public school districts between the 1999-2000 and 2018-2019 academic school years?

We hypothesized that rural public school districts spent at levels closer to the minimum threshold for gifted education spending when compared to non-rural districts. We formulated this hypothesis based on the findings of Hodges, Tay, et al. (2018) who found that spending on gifted education in Texas did not significantly decline in rural districts. We believe that this is due to rural districts already operating at spending floors.

Method

Sample

This study uses administrative data collected by TEA that is publicly available via the agency's website or through a public information request. This dataset contains information regarding school district revenue and expenditures. To address our research question, we requested the state allocations for gifted education. The public dataset only lists total revenue from the state and does not disaggregate it into specific funding allocations. For example, public datasets describe only how much a school district spent on gifted education services rather than how much it received from the state. District demographic information for the 1999-2000 to the 2014-2015 academic school year was obtained through a public request made to TEA. In the 2015-2016 school year, TEA implemented masking procedures wherein any student demographic values lower than 10 were reported as 9. For example, one district has a student population of 5 students who are Native American within the district's general population. Another district has a population of 7 students who are Black and identified as gifted. Both populations would be reported as 9 students within the public dataset. Rural district demographics were in turn disproportionately masked compared to urban and suburban districts. As such, district demographic information for the 2015-2016 was obtained through the Office of Civil Rights Data Collection (OCR, 2019). In total, this data spans the 1999-2000 to the 2015-2016 academic school years and will include all 1024 public school districts in the state of Texas.

Variables

Dependent Variable

The dependent variable in this study is per student spending on gifted education programming in excess of the state mandated minimum spending. This variable is not inflation adjusted. We refer to this variable as *Above Floor Spending Per Student***.** Above floor spending was calculated by subtracting minimum funding required by the state for gifted education programming from the total funding that a district spends on gifted education programming. This value was then divided by the total students in the district. This variable is a continuous variable and centered on zero. A district with a value of zero indicates a district that is spending at the state mandated spending floor for gifted education programs.

We chose to adjust spending on gifted education programming in excess of state mandated minimum spending by total students in the district rather than per identified student. Our rationale for this choice is that rural districts (our districts of interest) are disproportionately affected by fixed costs. As such,

rates of identification between rural districts can lead to greater variance when indexed against students identified for gifted services rather than total students which can lead to a distortion of results.

Independent Variables

The primary independent variable is locale, and the secondary independent variable is year. The covariates are district demographic composition variables, total revenue per student, and a dummy variable denoting major policy and economic changes in the state. A test for robustness was conducted by examining county level variables, by two additional specifications of the dependent variable, and by using additional National Center for Education Statistics (NCES) rural locale codes. A final test for robustness used Texas' school district locale codes in place of the NCES locale codes.

Locale. A 2 x 4 dummy variable matrix was used to describe locales within our model. The locales that we used are *rural*, *suburban*, *town*, and *urban*. In our analysis, *suburban* served as a baseline. Further, the NCES provides additional granularity in its locale designations that allowed us to include rural locale indicators for distance from an urban center. We used *non-rural* as our baseline designation. Finally, we included a test for robustness that focuses on how rurality is defined. Puryear and Kettler (2017) noted that the NCES codes were likely insufficient indicators of rurality for Texas public school districts. Given this evidence, we believe that including a test for robustness with regard to our indicator for rurality was warranted.

Year. Starting at zero, we coded this variable sequentially for all years beginning at the 1999-2000 school year.

District Demographic Composition. A set of continuous variables was used to describe a public school district's demographic composition within our model. The first set are percentages which describe the race/ethnic composition. We included Asian, Black, Latinx, and Native American. The percentage of students who are White will be used as the baseline in the analysis. Further, we included the percentage of students within the district participating in federal meal assistance programs or who are qualified to participate in these programs.

Robustness

Additional models were tested to examine the influence of locale on spending for gifted education services as well as the robustness of the model. A check for robustness was performed to examine the specification of the model (Lu & White, 2014). The variables that we included to examine for robustness are public school district Chapter 41 designation, Texas Locale codes, and a re-specification of the dependent variable.

Chapter 41 Designation. This is a binary variable that indicates if a public school district is a Chapter 41 designated district. Texas differs from the majority of other funding schemes across the nation in its use of the so-called "Robin Hood Law," formally known as Chapter 41 (Hoxby & Kuziemko, 2004). Under this scheme, the state appropriates funds from public school districts whose property revenue exceeds their per student entitlement and redistributes these funds to property poor public school districts. This has led to a transfer of wealth largely from metropolitan and mineral-rich rural areas to impoverished rural areas of the state. This system has been criticized by scholars (Hoxby & Kuziemko, 2004) but has led to modest improvements in academic performance in impoverished districts (Tajalli, 2019). Given the influence of Chapter 41 on all aspects of school finance in Texas (Belew et al., 2018), any discussion of gifted education funding should include Chapter 41.

Texas Locale Codes. Texas provides its own locale designations for its public school districts. These locale codes include designations for community growth, overall population size, and distance from a metropolitan center. A direct 1-to-1 comparison of the Texas locale codes and the NCES codes is not possible. As such, we chose to create a binary rural/non-rural variable.

District Total Spending Per Student. This re-specification of the dependent variable will be calculated by dividing the total local funds allocated to gifted education services by the number of students in the public school district. This variable measures the amount of funding allocated towards gifted education services in excess of state provided funds. This variable examines the second of two floors in Texas' gifted education funding scheme – the first being the minimum.

Analysis

Model fitting and assumption checking was performed using R 4.0.1 (R Core Team, 2019). The following regression model was used:

$$\begin{aligned} Y(Spending) = \ & \alpha + \beta_1(Local) + \beta_2(year) \\ & + \beta_3(district\ demographics) \\ & + [\gamma_{0i} + \gamma_{1i}(year) \\ & + \gamma_{2i}(district\ demographics)] \\ & + \varepsilon \end{aligned}$$

This model states that a school district's spending per student on gifted education programming above the state minimum is predicted by its locale, the year, and the district's demographic characteristics. The intercept was allowed to vary by district, and the slope was allowed to vary by year and district demographics.

Assumptions

The assumption of normality was evaluated through an examination of the qq-plot. The assumption of multivariable collinearity was evaluated through examining the correlation matrix. The assumption of homoscedasticity was evaluated through examining the error plot.

Inference

We have chosen to include *p*-values in this analysis, but their purpose is not to draw inference. Because the analysis was conducted on a population, the estimates are parameters rather than estimates of parameters. A *p*-value should be interpreted as provided evidence of stability of a parameter rather than its statistical significance. Further, *p*-values are calculated from the Wald *t* (Faraway, 2016). Finally, model effect size was calculated using the method for hierarchical linear models proposed by Xu (2002).

Results

Descriptives

Of the 1,023 public school districts in the state of Texas, 633 (61.78%) are classified by the National Center for Education Statistics as rural public school districts. During the academic years examined in this study (1999-2000 to 2016-2017), 466 public school districts allocated lower funds to gifted education services than the minimum required by the state in at least one budgetary year. Of those 466 public school districts, 72.74% were rural. This translates to a 1.18 rate ratio between the rate of rural public school districts not meeting minimum required spending and the rate of rural school districts in the state. In other words, rural public school districts were more likely not to meet the minimum required spending on gifted education services mandated by the state. Descriptive statistics can be found in Tables 1 and 2.

Figure 1 showcases the distribution and centrality of spending by public school districts over the state mandated minimum in the 1999-2000 fiscal year. Figure 2 showcases the same information for the 2016-2017 fiscal year. Visually, the spread across all locales was less dispersed, though this is especially apparent among rural locales. Further, the spread decreases from the 1999-2000 fiscal year to the 2016-2017 fiscal year both for those public school districts in excess of the mandatory minimum and those below it. In other words, the distribution shifted from being platykurtic (short and flatter) to leptokurtic (tall and thinner) over two decades. A similar distribution compression can be seen in Figures 3 and 4, indicating a visually noticeable difference in the change in distribution between rural remote/distant and rural fringe.

Regression

Assumptions

An analysis of the qq-plot provided evidence that normality was violated. As a remedy, a log transformation of the independent variables was applied (Faraway, 2016). Since a portion of the observations were negative, the absolute value of the minimum observation was added to the dependent variables (e.g. if the lowest allocated per student spending on gifted education programming in excess of the state mandated minimum was -100, then 100 would be added to each value in the dependent variable). Following the log transformation, the distribution still exhibited long tails. The large size of the dataset (1023 public school districts measured annual for 19 years) does provide a level of robustness against violations of normality (Faraway, 2016), but caution should be used when trying to interpret public school districts that are 2 standard deviations above or below the mean. An examination of the fitted vs residual plot provided further evidence of the inability of the model to accurately describe values at the tails. Upon further examination

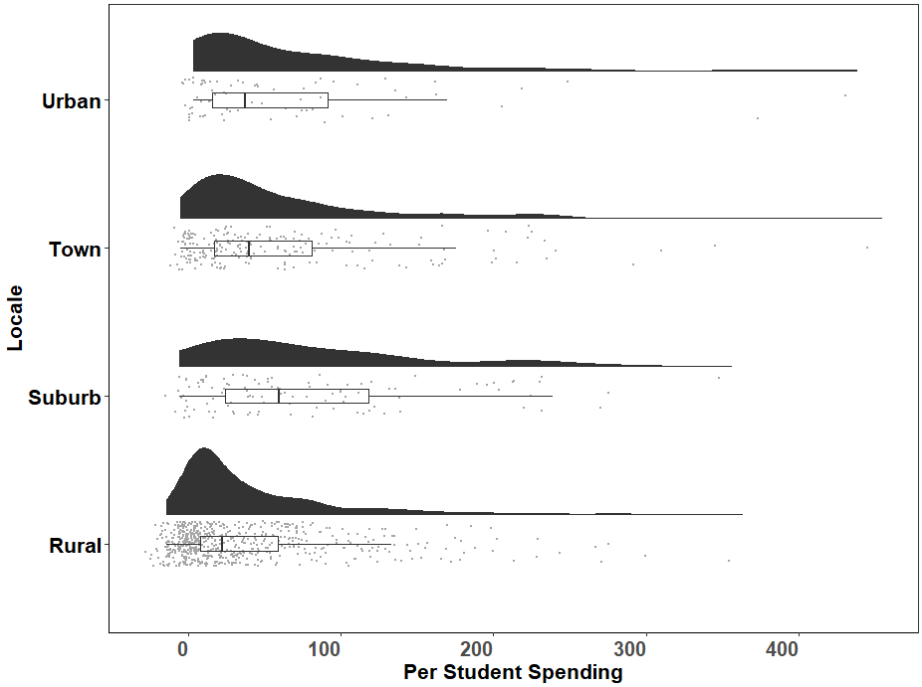

Figure 1. Raincloud plot depicting funding for gifted education over the state mandated minimum in the 1999-000 fiscal year across locales. Negative values indicate public school districts not meeting state mandated minimum funding requirements. Statistical outliers are intentionally included to provide a complete picture of spending across districts.

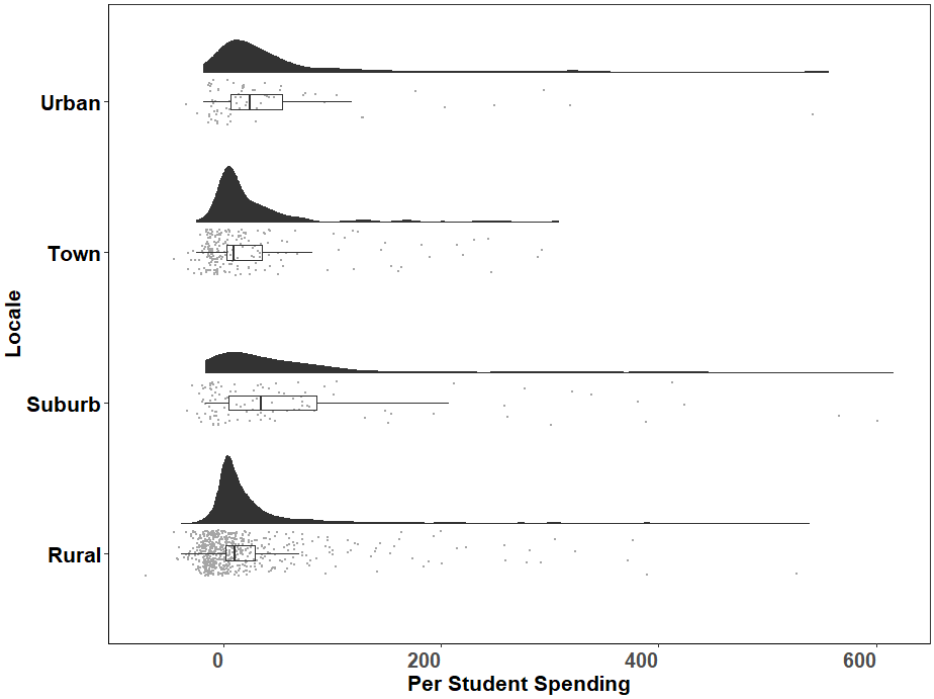

Figure 2. Raincloud plot depicting funding for gifted education over the state mandated minimum in the 2016-2017 fiscal year across locales. Negative values indicate public school districts not meeting state mandated minimum funding requirements. Statistical outliers are intentionally included to provide a complete picture of spending across districts.

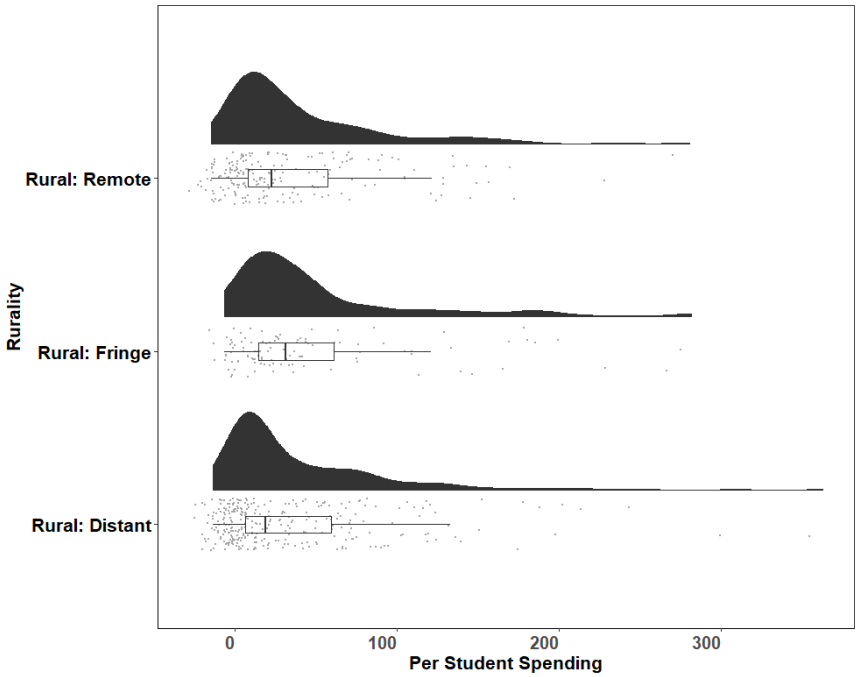

Figure 3. Raincloud plot depicting funding for gifted education over the state mandated minimum in the 1999-2000 fiscal year across rural locales. Negative values indicate public school districts not meeting state mandated minimum funding requirements. Statistical outliers are intentionally included to provide a complete picture of spending across districts.

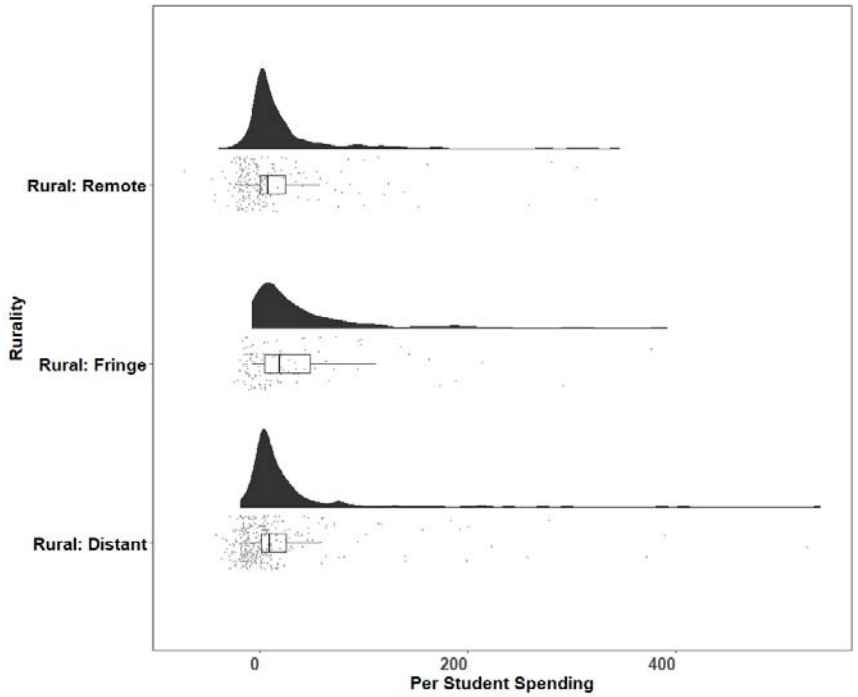

Figure 4. Raincloud plot depicting funding for gifted education over the state mandated minimum in the 2016-2017 fiscal year across rural locales. Negative values indicate public school districts not meeting state mandated minimum funding requirements. Statistical outliers are intentionally included to provide a complete picture of spending across districts.

Table 1
District averages by Locale from 1999 to 2017.

	N	Over Mandatory Minimum Per Capita	Percentage Black	Percentage Hispanic
Rural	632	$37.33	28.21%	4.76%
Suburban	108	$79.94	11.33%	40.44%
Town	211	$52.45	9.01%	44.12%
Urban	72	$65.89	14.38%	48.87%

Table 2
Rural District averages by NCES rurality from 1999 to 2017.

	N	Over Mandatory Minimum Per Capita	Percentage Black	Percentage Hispanic
Distant	107	$33.84	5.92%	25.17%
Fringe	307	$53.85	6.10%	31.59%
Remote	218	$33.92	4.66%	32.35%

of the data, the data points that yield these violations of assumption are from a suburban, affluent public school district that reported allocations of fewer funds toward gifted education during a portion of the surveyed years, suggesting a probable error in reporting. As previously mentioned, the size of the dataset provides some level of robustness towards violations of assumptions, and so we chose not to eliminate any data. Again, caution should be used in interpreting the results for public school districts that are at the tails of the distribution.

Results

The results from the regression model can be found in Table 3 and 4. Model effect size increased from .63 in the null model to .79 in the full model. Given that this is an analysis of repeated measures of public school districts, it is not surprising to see a majority of variance explained by the fixed and random intercept. In the analysis, a log transformation was performed. Further, suburban public school districts served as the baseline within the regression. These two points should be considered when interpreting the model.

Taken as a whole, the results provide evidence that rural public school districts allocate nearly 50% fewer funds per students over the state mandated minimum than suburban public school districts (B = -0.47, SE = .05). In other words, for every dollar above the minimum that suburban public school districts allocate to gifted education funding, rural public school districts allocate 50 cents. Combined with the visual evidence in Figures 1 and 2, these results provide evidence that rural public school districts are more likely to operate at state mandated minimums than non-rural districts.

Robustness

The results from the tests for robustness can be found in Table 4. Model 1 is the original regression model. Model 2 is the model with the dependent variable, *district total spending per student.* Model 3 is the model that replaces the NCES definition of rurality with the Texas Education Association's definition. Model 4 re-codes rurality using increased granularity. Finally, model 5 includes a binary variable describing if a public school district is under recapture.

Overall, through the test of robustness, the variable rurality is stable across different model specifications. Of note from the robustness checks, is the shift in effect magnitude using the increased granularity for rurality in Model 3. This suggests that those districts near urban centers might be different from those rural public school districts away from urban centers. This variance in rural schools by distance from urban centers has been noted by other scholars (Puryear & Kettler, 2017).

Discussion

This research builds on the body of work highlighting differences in resource allocation towards gifted education programs by locale. Previous research demonstrated that rural public school districts were more likely to allocate fewer resources towards gifted education services than their non-rural counterparts (Hodges, 2018; Kettler et al.,

Table 3
Regression Results

Fixed Effects				
	Coefficient	*SE*	*T*	*p*
Intercept	4.81	0.05	93.45	< .01
Rural	-0.47	0.05	-9.58	< .01
Town	-0.26	0.06	-4.64	< .01
Urban	-0.17	0.07	-2.36	.02
Year	-0.02	> 0.01	-11.48	< .01
% Black	-0.01	0.17	-0.07	< .01
% Latinx	-0.22	0.06	-3.84	.95

Random Effects			
	Variance	*SD*	*Corr*
Intercept	.30	0.55	
Year	> 0.01	0.04	-.42
% Black	5.33	2.31	-.39
% Latinx			-.47
Residual	.08	.29	

Table 4
Test of Robustness Results

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	4.81	5.03	4.57	4.65	4.80
Rural	-0.47	-0.38			-0.46
Town	-0.26	-0.20			-0.25
Urban	-0.17	-0.14			-0.17
TEA Rural			-0.30		
Rural: Fringe				-0.13	
Rural: Distant				-0.34	
Rural: Remote				-0.34	
Year	-0.02	-0.02	-0.02	-0.02	-0.02
% Black	-0.01	0.09	0.04	-0.04	0.01
% Latinx	-0.22	-0.18	-0.17	-0.25	-0.21
Recapture					0.04

2015). In short, the results provide evidence to the likely future of gifted education programs in Texas following the removal of spending floors for gifted education programs.

Rural public school districts allocated significantly fewer resources to gifted education and were more likely to fund at close to the mandatory minimums than other locales. It is reasonable to believe that the removal of those floors will lead rural gifted education programs to be funded at lower levels than those at present. Figure 1 shows the distribution of above floor spending in the 1999-2000 academic school year. This distribution is from two years after the 1996 update to gifted education funding where a minimum floor for spending was legislated, and public school districts were still adjusting. As can be seen in Figure 2, rural district variance in funding diminished greatly. We do not believe that the removal of direct state funds will lead to public school districts spending more, but rather to district superintendents choosing to spend less. The core issue will be whether district superintendents decide that assuming the state penalty is more attractive than funding gifted education programs in their districts. The absence of an oversight plan

associated with the implementation guidelines of HB3 highlights this concern.

The results of this study align with previous research on gifted education in the state of Texas. Scholars have demonstrated that a deficit exists between rural and non-rural public school districts. Rural public school districts in the state were found to have differential outcomes in terms of identification (Hodges et al., 2019; Lamb et al., 2019), funding (Hodges, 2018), and personnel allocation (Kettler et al., 2015). Our findings underscore concern that recent legislative changes in Texas' school funding structure will exacerbate inequities in gifted education for rural districts that have long been incentivized to operate within closer margins of state mandated minimums than other locales.

One key question that this study cannot fully address is why rural districts choose to operate at such minimums. A likely cause is related to economies of scale (Robertson, 2007). For example, larger public school districts are better able to absorb costs that come with hiring; spending $50,000 on a gifted education teacher is easier for a district with a budget of $10,000,000 than it is for a district with $1,000,000. However, there is no empirical base to draw from in understanding why rural public school districts behave differently than other locales.

Further, scholarly examinations of policy are woefully under-endeavored by researchers in the field of gifted education (Plucker et al., 2017). Without an understanding of current and prior policy, legislators are ill-equipped when tasked with constructing new policy; such policymaking can have unforeseen negative consequences. Because of this paucity in policy-related research, Texas legislators were likely unaware of the potential impact of removing mandatory minimum spending floors on gifted education programming.

Implications

The primary implication of this study is that it provides evidence that rural districts were largely spending at minimal levels on gifted programs. Now that the floor on spending has been removed, it is uncertain that rural districts will continue to maintain existing services. Evidence from other states suggests that gifted programs in rural districts are vulnerable to negative policy changes and pressures (Hodges & Lamb, 2019).

Scholars have posited reasons why rural districts might discontinue support for gifted education programming, ranging from from negative perceptions of gifted education (Carr & Kefalas, 2009; Petrin et al., 2014) to a lack of personnel and funding (Howley et al., 2009; Lawrence, 2009; Pendarvis and Wood, 2009). Further, there are substantial gaps in equity in rural districts' gifted education programming that likely stem from misalignment between programming and identification methods (Hodges et al., 2019, Sternberg et al., 2006; Sternberg, 2007). When facing these issues, decision-makers in rural districts may see little benefit to the continued provision of gifted services when incentives (like funding through indirect costs) have been removed. For this reason, gifted education programs in rural districts must be monitored to assess potential negative changes in access to services for gifted students in rural areas.

Future Directions

Our goal is to monitor and document changes in gifted education programming in Texas. It is our prediction that the changes to gifted education funding in Texas will lead to disproportionately negative effects on rural districts. As such, the primary future direction of this research is to replicate it within the next five years. The results from the replication will then be compared with these results to examine how the removal of the spending floor influenced total gifted education funding in rural districts.

Limitations

The first limitation of this study extends to all studies examining self-reported public school district administrative data. The results of the analysis rely on public school districts being accurate self-reporters. In the dataset, we included data points that are likely attributable to poor self-reporting. For example, one suburban public district had dramatic year-to-year differences in its budgetary allocation towards gifted education programming. There is the distinct possibility that this error is due to a typo. That stated, the number of public school districts analyzed, coupled with the number of repeated measures, provides some assurance that any potential errors are subsumed in the overall size of the dataset. In other words, it is unlikely that errors in self-reporting of administrative data are likely to influence the results of this analysis.

A second limitation is the definitions of rurality used. Puryear and Kettler (2017) noted the problem in defining rurality. Particularly, they noted the inadequacy of federal definitions to accurately capture the construct. To address this limitation, we included three different specifications of rurality. However, it is still possible that the specifications used in this analysis do not accurately capture rurality.

A third limitation is in the variables used within the analysis. There may be unaddressed influences that cause public school districts to allocate few funds beyond the minimum required by the state (or perhaps even less than the minimum). The existence of these possibly meaningful relationships is not accessible for exploration because the Texas Education Agency does not require public school districts to report on these variables. Qualitative methods would likely be necessary to address this limitation in future research.

A final limitation is the nature of this analysis. Because this is an observational study, we are unable to make strong causal claims. Despite this limitation, we believe that our findings can be used by scholars to direct future studies that examine causal links between rurality and spending beyond mandatory minimums in gifted education.

Conclusion

For over 20 years, Texas was a state in which all public school districts, regardless of size or means, provided gifted education programming to their students. A primary reason for this was that the state mandated that a certain amount of funding be spent towards gifted education programming. Because gifted education was part of the basic funding entitlement, all districts received funding with stipulations regarding how and on what it was to be spent. Following the 2018-2019 legislative session, this funding structure was dismantled.

This decision will likely have negative consequences for rural public school districts and may exacerbate inequity in gifted programming between districts with disparate access to funding and resources. As this study demonstrated, rural school districts were more likely than other locales to fund their gifted education programs nearer to the mandatory minimum set by the state. When that mandatory minimum is removed, or "when the floor is pulled out from under them," what will be the fate of gifted education programs in rural public school districts? For financially taxed districts already operating at mandatory minimums, it is possible that students requiring gifted education services in rural locales will no longer have access to those services. It is our hope that the findings presented in this study will facilitate legislators and policy makers in making informed choices in future legislative sessions.

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