An Analysis of Geographic Trends in Exceptional Student Education Services

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Abstract

This study examines geographic patterns of inclusive education placements and specialized programs for students with disabilities in a single region of Florida during the 2017–2018 academic year. Publicly available data on exceptional student education services are used to compare three adjacent school districts on enrollment patterns. Thematic mapping of educational placements at the school level is used to illustrate geographic patterns for one of the districts. Overall, results suggest that the majority of students in the region are served for most of the day in general education classrooms. Geographic maps show that schools with specialized programs tend to be clustered in areas with larger populations. These results have important implications for developing transportation routes that can minimize travel times for students with disabilities who attend specialized programs at schools outside of their assigned zone.

Keywords: inclusive education, geography, special education, placement, GIS

Introduction

Exceptional student education (ESE) services and supports are provided to students with disabilities along a continuum of placement options with the goal of educating students in the least restrictive setting possible. In the United States, approximately 13% of students enrolled in public schools receive ESE services, and a majority of these students (63%) spend most of the school day in general education classrooms (National Center for Education Statistics, 2018). The implementation of accommodations as documented in an Individualized Education Program (IEP) or Section 504 plan allows students with disabilities to be included in general education settings in accordance with the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA, 2004).

For students with disabilities who cannot be served in general education classrooms, many school districts provide specialized educational programs at selected schools. These programs provide intensive and specialized support for students with significant learning issues (e.g., developmental disorders, intellectual disabilities, or emotional/behavioral disorders), but allow students to be educated in the same school with their non-disabled peers. School districts in more populated areas may also provide educational services at exceptional centers for students with severe disabilities who need intensive supports in separate environments. Together, these programs and

centers offer a continuum of services with lower student-to-teacher ratios, but students with disabilities may have to travel long distances in order to attend these schools.

Across the country, specialized programs for students with a variety of different types of disabilities are widely available, yet little is known about geographic trends with regard to educational placements. Some studies have compared school districts on measures of inclusiveness, which is typically defined as the proportion of time students with disabilities spend in general education settings. For example, Kurth (2015) found that the percentage of students with autism spectrum disorders (ASD) who are placed in general education settings ranged from 8% to 62% nationally, with eastern states being more likely to utilize restrictive placements than western states. Research conducted in New York State used mapping to illustrate differences in rates of inclusiveness for students with intellectual disabilities (Cosier, White, & Wang, 2018). Results indicated a lack of identifiable patterns across districts, although the central and western regions of the state had somewhat higher rates of inclusion. Another study by Brock and Schaefer (2015) utilized a similar methodology to investigate the placement of students with developmental disabilities in Ohio. They found that students living in urban areas were less likely to be placed in general education classrooms than students in rural areas. Other studies have concluded that placement decisions for students with ASD tend to be based on geographic factors or available resources rather than the needs of the student (Dymond, Gilson, & Myran, 2007). The current study builds on these findings with a detailed analysis of specialized placements for students with a variety of different types of disabilities[1] across a diverse region comprised of rural, suburban, and urban areas, and incorporates the use of geographic information systems (GIS) technology to create thematic maps for one of the districts.

In the region of Florida selected for this study, over 70% of students who are eligible for ESE services and supports attend their neighborhood school with necessary accommodations to support learning, communication, independent functioning, or social and emotional behavior (Florida Department of Education [FDOE], 2018a, 2018b). The remaining 30% attend schools that provide specialized services at varying distances from the student's neighborhood. The purpose of this study is to investigate the relationships between the placement of students with disabilities and the geographic location of ESE programs and services in the region. Specifically, this study poses the following research questions:

1. How do the school districts in the region compare in terms of size, enrollment patterns, and inclusiveness of students with disabilities?
2. What are the different types of specialized programs that are available for students with disabilities?
3. Are the specialized programs geographically clustered or dispersed?
4. Is there geographic variability in ESE enrollment?

Method

This study represents one component of a larger project to investigate geographic trends in inclusive education. Specifically, the authors investigated similarities and differences between three school districts in a region of Florida as well as variability within one of the districts. These particular districts were selected because of the research team's familiarity with the schools, programs, and ESE administrators located within the districts. These districts are diverse and encompass urban, suburban, and rural areas. Multiple sources of publicly available data on all

[1] The specific IDEIA disability categories included in our analysis are: Orthopedic Impairment, Speech Impairment, Language Impairment, Deaf or Hard of Hearing, Visual Impairment, Emotional/Behavioral Disability, Specific Learning Disability, Hospital/Homebound, Autism Spectrum Disorder, Traumatic Brain Injury, Developmental Delay, Other Health Impairment, and Intellectual Disability.

public schools in these districts (including charter schools[2]) were used to answer the research questions. For RQ #1, district-level data were obtained from the FDOE's PK-20 Education Information Portal, which provided information about the number of schools, student enrollment, and disability characteristics of students enrolled in ESE programs. Current reports (2017–2018) on the inclusiveness of the educational environment for students with disabilities at the district level also were obtained from the FDOE website. Chi-square tests of independence were used to compare the districts on each of the indicators. To answer RQ #2, information was compiled from a school district website on specialized programs for students with disabilities (ESE Program Boundaries 2017–2018) in order to determine the locations of the programs and the type of supports available. This information also was used to answer RQ #3 by merging information about the specialized programs with the address of each public school obtained from the National Center for Education Statistics' Common Core of Data (2017–2018). For RQ #4, publicly available GIS data on school boundaries were obtained from the county government website. This information was used to create thematic maps using ArcGIS software (Version 10.5.1; Esri, 2016) to show the geographic clustering of schools and corresponding ESE enrollment patterns. GIS technology is increasingly being used in the field of education to display this kind of information because maps can convey spatial relationships that are too complex to report in traditional tables or graphs (Lubienski & Lee, 2017).

Results

District-Level Results

Study results corresponding to RQ #1 are shown in Tables 1–3. Specifically, Table 1 presents an overview of the school and enrollment data for the three districts in the region. District B serves the most students and is the eighth largest school district in the country. The proportion of students with disabilities ranged from 13% in District C to 16% in District A during the 2017–2018 school year. An overall chi-square test revealed statistically significant differences between the districts in the proportion of enrolled students with disabilities, $\chi^2(2, N = 55940) = 15543668.40$, $p < .0001$. Pairwise differences in the proportions also were statistically significant (ps < .0001).

Table 1. *Public School Enrollment Data by School District (2017–2018)*

	School District		
	A	**B**	**C**
N of students	73,682	219,484	102,181
n (%) of students with disabilities	11,711 (15.9)	30,786 (14.2)	13,443 (13.2)
n of public schools	99	283	135
n of exceptional centers	3	8	5

As shown in Table 2, District C had a higher percentage of students with language impairments, autism, emotional/behavioral disabilities, and intellectual disabilities than Districts A and B. By contrast, District B had a higher percentage of students with a specific learning disability than Districts A and C. Chi-square tests showed statistically significant differences across the districts in the proportion of students with language impairment [$\chi^2(2, n = 7692) = 686.88$, $p < .0001$], emotional/behavioral disability [$\chi^2(2, n = 2146) = 40.56$, $p < .0001$], specific learning disability [$\chi^2(2, n = 20590) = 1374.05$, $p < .0001$]hospital/homebound [$\chi^2(2, n = 241) = 123.48$, $p < .0001$], autism spectrum disorder [$\chi^2(2, n = 5171) = 61.23$, $p < .0001$], developmentally delayed [$\chi^2(2, n = 2471) = 3122.85$, $p < .0001$], other health impaired [$\chi^2(2, n = 4304) = 305.20$, $p < .0001$], and

[2] Charter schools were included in our analysis of public schools because they are publicly funded schools.

intellectual disability [$\chi^2(2, n = 4000) = 134.96, p < .0001$]. For the remaining disabilities, the difference in proportions across districts was not statistically significant.

Table 2. *Florida Department of Education Exceptional Student Data by Disability (2017–2018)*

	School District					
	A		B		C	
Disability categories	*n*	% of all students	*n*	% of all students	*n*	% of all students
Orthopedically impaired	75	0.6	169	0.5	67	0.5
Speech impaired	1,671	14.3	4,411	14.3	1,860	13.8
Language impaired	1,745	14.9	3,276	10.6	2,671	19.9
Deaf or hard of hearing	172	1.5	426	1.4	155	1.2
Visually impaired	44	0.4	106	0.3	41	0.3
Emotional/behavioral disability	478	4.1	1,046	3.4	622	4.6
Specific learning disability	3,981	34.0	13,255	43.1	3,354	24.9
Hospital/homebound	92	0.8	47	0.2	102	0.8
Autism spectrum disorder	923	7.9	2,807	9.1	1,441	10.7
Traumatic brain injured	12	0.1	34	0.1	12	0.1
Developmentally delayed	633	5.4	1,183	3.8	655	4.9
Other health impaired	1,241	10.6	1,838	6.0	1,225	9.1
Intellectual disability	632	5.4	2,141	7.0	1,227	9.1

Table 3 compares the three counties on the IDEIA measure of least restrictive environment (i.e., degree of inclusive placement). As compared to Districts B and C, District A had the highest proportion of students with disabilities served in a general education classroom. The overall chi-square tests revealed that the differences in proportions were statistically significant, $\chi^2(2, N = 41674) = 163.15, p < .0001$. However, District A also had a higher percentage of students served in separate classes (i.e., less than 40% of the school week spent with nondisabled peers), and the value of the chi-square for this overall difference also was significant, $\chi^2(2, N = 7376) = 373.58, p < .0001$. By contrast, Districts B and C had higher percentages of students served in separate environments, which may be explained by the fact that these counties have a greater number of exceptional centers.

Table 3. *Local Education Agency (LEA) School District ESE Data (2017–2018)*

	School District		
	A	B	C
Served in general education class[a]	79%	73%	74%
Served in resource room[b]	2%	11%	4%
Served in separate class[c]	18%	11%	14%
Served in other separate environment[d]	< 1%	6%	8%

Note. [a] Students who spend 80% or more of their school week with peers without disabilities.
[b] Students who spend 40%–80% of their school week with peers without disabilities.
[c] Students who spend less than 40% of their school week with peers without disabilities.
[d] Students served in public or private separate schools, residential placements, or hospital/homebound placements.

School-Level Results

For RQ #2, a review of documents posted on the District A website revealed that the district offers a wide variety of specialized programs for students with disabilities (see Table 4). Students are assigned to a specialized program based on the location of their zoned school. There are two

specialized program tracks: one for students who are pursuing a standard diploma (Florida Standards) and one for students who are pursuing a standard diploma through access points (Access Standards), which gives students with disabilities access to the general curriculum at a reduced level of complexity (CPALMS, 2017). District A has three programs for students pursuing Florida Standards and five programs for students pursing Access Standards.

District A's Self-Contained Academic Program is available for students with significant delays in academic skills and mild/moderate behavioral needs. The Social Behavior Communication Program is for students with moderate to severe behavior, communication, and sensory needs that are associated with autism spectrum disorder (ASD). The Social Behavior Program is for students with moderate to severe emotional and behavioral needs. The Access Standards programs are designed for students with significant cognitive disabilities and behavioral needs. The level of support provided to the student increases with each program as indicated by the program title; i.e., independent, supported/participatory, and intensive. As shown in Table 4, a large number of schools in District A provide specialized programs, and many schools offer more than one program. For example, schools that offer Access Standards programs often have multiple levels of support available.

Table 4. *Specialized Programs in District A (2017–2018)*

Diploma type	Specialized program	*N* of schools
Florida Standards	Self-Contained Academic	6
	Social Behavior Communication Program	6
	Social Behavior Program	14
Access Standards	Independent	21
	Supported or Participatory	13
	Supported or Participatory w/ Skilled Medical Supports	10
	Social Behavior Communication Program	13
	Intensive Behavior Supports	4

To answer RQ #3, a map was generated to show the locations of the schools with specialized programs in District A and determine whether they are geographically clustered or dispersed. Figure 1 indicates the locations of elementary, middle, and high schools, with black symbols representing schools that offer a specialized program. Results suggest that these programs tend to be located in towns with higher populations.

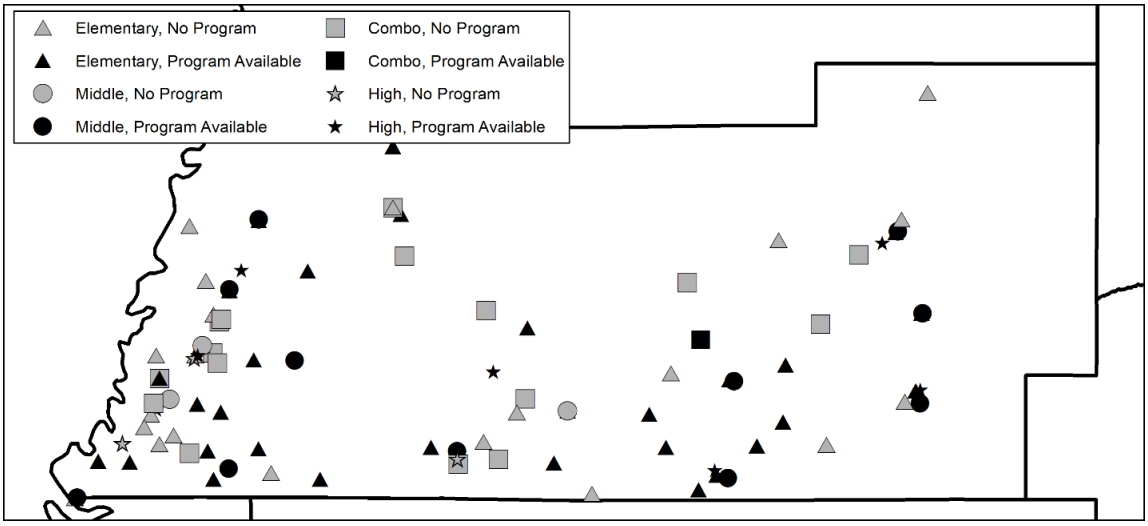

Figure 1. Locations of public schools with specialized programs in District A (2017–2018).

For RQ #4, a different map was created to show the enrollment of ESE students at each school, with larger circles indicating more students (see Figure 2). The map shows several large clusters of ESE students enrolled in schools near the left-hand edge. A comparison of results obtained across the two maps indicates that the region on the left side has more ESE students, but relatively few schools in that area provide specialized programs.

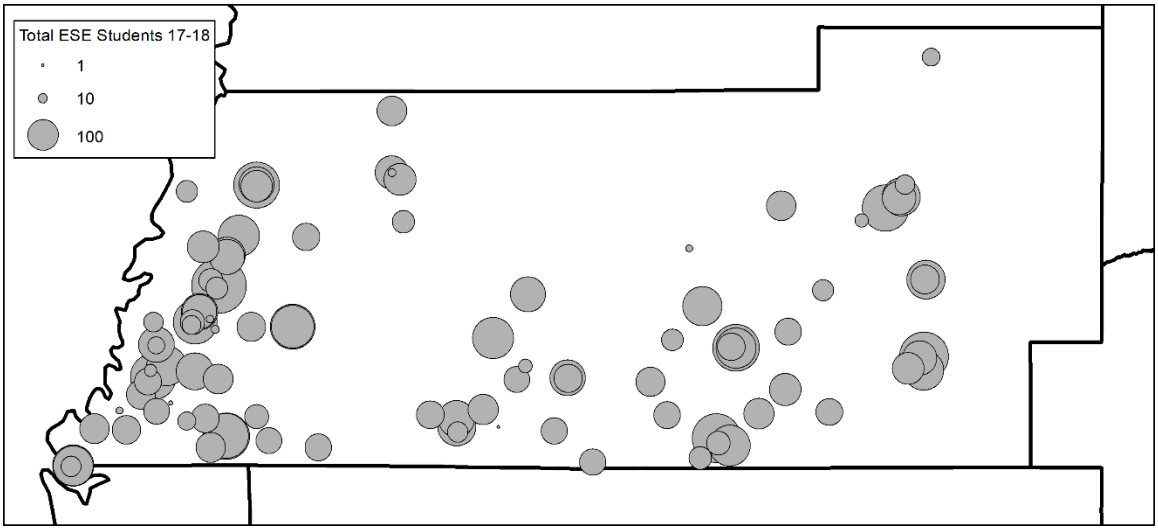

Figure 2. Enrollment of ESE students in public schools in District A (2017–2018).

Discussion

This study provides important information about enrollment patterns, ESE services, and educational placements for students with a variety of different types of disabilities across a metropolitan area. Overall, this study found that District A serves a greater proportion of students with disabilities than Districts B and C, although the largest absolute difference in proportions was only 2.7%. Additionally, District A serves significantly more students with disabilities in general education classrooms as compared to Districts B and C, although the absolute differences were relatively small. District A also offers a variety of specialized programs to serve students with academic delays, autism spectrum disorder, emotional/behavioral disorders, and cognitive disabilities who cannot be served in general education classrooms; however, some areas with high concentrations of ESE students have relatively few schools with these specialized programs.

This study represents an initial investigation of geographic patterns in ESE services and supports both within and across school districts. One limitation of the study is that school-level information only was available for one of the districts, so it was not possible to make geographic comparisons across districts on some of the indicators. Additionally, each school district has different structures, policies, and practices in place regarding ESE placements and services, which makes comparability of results somewhat difficult. However, all schools are required to report information about student placements in special education settings, and future research will utilize these school-level data to investigate geographic trends in more depth. Nonetheless, the present findings indicate that, as a whole, the region performs better than the national average in educating students with disabilities in general education classrooms alongside their non-disabled peers.

Spatial information about catchment areas is important for school personnel and family members who make special arrangements for ESE student transportation. In many cases, students with disabilities do not reside close to their school, and lengthy commutes can adversely affect attendance and achievement (Dunifon, Kalil, & Bajracharya, 2005). The geographic information

presented in this study may be helpful for making program location decisions and developing transportation routes that minimize these negative outcomes. This is especially true for very large school districts like District B, which has 283 schools located across 1,000 square miles (Florida Legislature Office of Economic and Demographic Research, 2018; U.S. Census Bureau, 2010). Taken together, the information presented provides an opportunity to make better decisions regarding the needs of students with disabilities.

Conclusion

Results of this study suggest that the majority of ESE students in this region of Florida are served for most of the day in general education classrooms. Time spent in general education classrooms is a common indicator of inclusiveness; therefore, our findings are consistent with the IDEIA policy goal of educating students with disabilities in the least restrictive setting possible. Although a variety of specialized programs are available for students with severe disabilities, these programs tend to be clustered in larger towns, which presents transportation challenges for students in rural areas. It is important for future research to examine the multifaceted reasons for establishing specialized programs at particular schools and to investigate whether the most efficient transportation routes are being utilized to maximize educational access for students with disabilities.

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