Economic and Demographic Factors Impacting Placement of Students with Autism

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Abstract

Educational placement of students with autism is often associated with child factors, such as IQ and communication skills. However, variability in placement patterns across states suggests that other factors are at play. This study used hierarchical cluster analysis techniques to identify demographic, economic, and educational covariates associated with placement patterns across states in highly inclusive, moderately inclusive, moderately restrictive, and highly restrictive clusters. Findings indicate that highly inclusive states are more rural, have more adults with high school diplomas, and more White citizens compared to other clusters. States that are highly restrictive were largely less economically and racially privileged. These findings suggest an inequitable access to the least restrictive environment for students with autism. Implications of these findings are included.

Introduction

There is an increasing number of students with autism spectrum disorders (ASD) being identified (Baio, 2012) and receiving special education services in U.S. schools (U.S. Department of Education, 2008). As students receive an autism diagnosis and enter schools, educational teams must determine the appropriate manner and placement for their education (Individuals with Disabilities Education Improvement Act [IDEA], 2004). Educational teams consist of invested individuals, including special and general education teachers, parents, administrators, school psychologists, and other education professionals (e.g., speech-language pathologists) who determine eligibility for special education, individual goals and services, and the settings in which those goals and services will be delivered (IDEA, 2004). Placement decisions involve deciding in which setting individual goals and services will be delivered and the amount of time (typically expressed as a percentage of time) in which students with ASD will be educated in the general education setting.

Educational teams tasked with making placement decisions for students with ASD arrive at their decisions for a variety of reasons, including an analysis of factors that are specific to a child (e.g., cognitive ability and social skills) and factors that are external to the child (e.g., locally available resources). While child factors (e.g., age, IQ, and skills) are often assumed to be primary determinants of placement decisions, and likely reflect the intent of IDEA to focus on unique child needs, state of residence has emerged as an important factor in educational placement. In fact, variability of placement by state or geographic region has been associated with placement patterns for a number of disability categories, including autism (Kurth, 2014), learning disability (McLeskey, Landers, Hoppey, & Williamson, 2011), intellectual disability

(Katsiyannis, Zhang, & Archwmety, 2002), and emotional behavioral disorders (Landrum, Katsiyannis, & Archwmety, 2004). The fact that state of residence is an enduring factor in determining placement decisions is a strong indicator that child-specific factors alone do not account for placement decisions. Instead, this variability suggests that there are important factors within and across U.S. states impacting placement decisions. Because placement decisions have enduring ramifications on student academic outcomes (e.g., Kurth & Mastergeorge, 2010, 2012) and, because once placed in a particular educational environment, students rarely leave that type of setting (White et al., 2007), these placement decisions have critically important lifelong impacts on students (Test et al., 2009).

While IDEA requires that schools place students in the least restrictive environment to meet their needs, this mandate has often been misinterpreted as a need to provide a continuum of placement options (Taylor, 1988). A placement is considered less restrictive when students in that placement have more access to the general curriculum and setting; it is considered more restrictive when students have limited access to the general curriculum and setting. Placement of students with ASD in less restrictive settings has been associated with academic learning (e.g., Kurth & Mastergeorge, 2010) and social engagement (e.g., Lyons, Cappadocia, & Weiss, 2011), although access to less restrictive settings is unequal for students from varying backgrounds.

Specifically, previous research has examined student-level, family-level, and social-level factors associated with restrictiveness of special education placement. Students from high-poverty schools, as well as those representing racially minoritized groups, are more likely to be placed in more restrictive special education placements compared to White students and students from higher socioeconomic backgrounds (Fierros & Conroy, 2002). Further, Cosier and

Causton-Theoharis (2011) used hierarchical regression techniques to assess the extent to which various economic and demographic variables predict the level of student participation in inclusive settings (defined as 80% or more of the school day in general education settings) in the state of New York. These authors found inclusive education was positively associated with higher per pupil spending on general education students, less per pupil spending on special education students, and was negatively associated with percentage of students receiving a free and reduced lunch.

Given the variability in placement patterns for students with ASD, and the lack of guidance from IDEA related to how students with disabilities are referred, evaluated, and placed in special education (Donovan & Cross, 2002), the aims of this study are to (1) profile state placement patterns for students with ASD into more or less restrictive placements and (2) examine within- and across-state covariates that may explain patterns of restrictiveness of placement of students with ASD.

Method

The federal government requires states to monitor the implementation of IDEA with the intent of improving educational results and functional outcomes for students with disabilities. One component of the monitoring approach consists of 20 IDEA Part B indicators (OSEP, 2009), including Indicator 5, which measures participation of students with disabilities in general education settings (least restrictive environment, or LRE). Indicator 5 requires states to report the percentage of students ages 6-21 served in the following three categories:

- Category A: Inside the regular class 80% or more of the day
- Category B: Inside the regular class less than 40% of the day, and

- Category C: Educated in separate schools, residential facilities, or homebound/hospital placements

Inclusive Education

Inclusive education is defined as a community of belonging (Artiles & Kozleski, 2007) where students have supports provided to address their needs. Inclusive education may be further defined as the provision of the range of supports and services provided to students in general settings to meet their unique learning needs thus maximizing student learning and participation. State level data prevents analysis of the types of supports and community developed within classrooms, and therefore percentage of time is used a proxy measure of inclusivity (Cosier & Causton-Theoharis, 2011). For our purposes here, a placement is considered "highly inclusive" when students spend 80% of more of their school day in general education settings (Category A). A placement is considered "moderately inclusive/restrictive" when students with ASD visit a general education classroom for portions of the school day but receive the majority of their education in a separate setting (Category B). Finally, a placement is considered "highly restrictive" when students with ASD are educated in separate schools or facilities (Category C).

Covariates

The covariates in this analysis include both economic, demographic, and disability status data from the 50 U.S. states and District of Columbia (referred to hereafter as a 'state'). Economic variables include: (a) percent of population within a state living below poverty (as defined by the U.S. Census Bureau); (b) percent of students receiving a free or reduced lunch in

the state; (c) median household income within a state; and (d) per pupil spending in the state. For this analysis, we were not able to obtain reliable data (e.g., per pupil spending) for each state related to only students with ASD, thus these variables reflect all students in the state. Demographic variables include: (a) percent of population living in an urban area (as defined by U.S. Census Bureau); (b) percent of people in the state aged 25 and older who have a high school diploma; (c) percent of people in the state aged 25 and older who have a bachelor's degree; (d) race/ethnicity; and (e) language spoken at home. Disability status variables include: (a) percent of all IDEA eligible students with ASD in a state; (b) the number of general education students for every one student with ASD in the state; (c) number of students with IEPs in a state; and (d) number of students with ASD in the state.

Data and Sampling

Students with ASD, ages 6-22, in the 51 U.S. states were included in this analysis for the year 2012. Defining students with ASD is complicated by differences between clinical definitions of ASD (from the *Diagnostic and Statistical Manual*, DSM-V; American Psychological Association, 2013) and administrative definitions of ASD (from IDEA); further complicating matters, there is across state variability in administrative definitions of ASD (Travers, Krezmien, Mulcahy, & Tincani, 2014). Considering these challenges, it is likely that discrepancies exist; however, these data are deemed the best available at this time (e.g., Kurth, Morningstar, & Kozleski, 2014).

Three publicly available data sources were used for this analysis. Data on placement by disability label was obtained from the Office of Special Education Programs (OSEP) at www.ideadata.org. These data are collected and reported annually to OSEP by each state. Total

child count for all disability categories for students ages 6 to 22, and total child count for students with ASD ages 6-22, in all U.S. states and Washington DC for the year 2012 were analyzed to determine the proportion of students with ASD within each state. Demographic information for each state (race/ethnicity, language spoken at home, high school diploma rate, bachelor's degree rate, median household income, percent of persons living below poverty, and percent of the population living in urban areas) was obtained from the U.S. Department of the Census at http://quickfacts.census.gov/qfd/states. Finally, information on per pupil spending (for all students), and total numbers of students grades K-12 in each state was obtained from the National Center for Education Statistics (www.nces.ed.gov). Data tables were downloaded from these sources and copied into an SPSS 21.0 worksheet for analysis.

Data Analysis

Statistical analyses were conducted in SPSS 21.0. We employed hierarchical cluster analysis using Ward's method and the squared Euclidian distance to determine clusters of students in each placement category (A-C). One-way ANOVAs, along with a post-hoc Tukey's test, were utilized to validate the presence of unique clusters within the dataset. In addition, ANOVAs were computed to determine if the clusters differed significantly from each other on state demographic, economic, and disability status characteristics.

Person-centered analyses allow for the estimation of distinct, homogeneous subgroups. These subgroups can then be compared on a variety of covariates. Empirically derived person-centered analyses supplement the research in this field, because they move beyond the Census Bureau's classification of subgroups by geography, and consider patterns of student placement as the metric by which states are grouped. Furthermore, instead of considering each placement

category separately, as they would be in a variable-centered approach, cluster analysis allows for examination of nuanced differences in levels of all three-placement categories.

Results

States varied in their placement patterns into Categories A-C, as well as the percentages of all IDEA-eligible students within the state, as seen in Table 1.

<<Insert Table 1 about here>>

Examination of a dendrogram associated with the full sample of states and the District of Columbia (n = 51) revealed four distinct clusters of students within three educational placement categories (*Highly inclusive, Moderately inclusive, Moderately restrictive, and Highly restrictive)*. As seen in Table 2, one-way ANOVAs confirmed that the four clusters varied significantly in their percentages of students in each placement category.

<<Insert Table 2 about here>>

The breakdown of state by cluster is displayed in Table 3. The first cluster (n =13) was labeled as *highly inclusive* because this cluster had the highest average percentage of students in Category A, and lowest levels Category B and Category C settings. The second cluster (n = 12*)* had a low percentage of students in the Categories B and C, so it was labeled *moderately inclusive.* The third cluster (n = 15) was labeled as *moderately restrictive* because it contained a high percentage of students in the Categories B and C relative to the other clusters. The fourth and final cluster (n = 11) was labeled as *highly restrictive* because the states in this cluster had a significantly higher percentage of students in separate school placements (Category C) compared

with the other three clusters. Additionally, this cluster had the lowest percentage of students in Category A settings.

<<Insert Table 3 here>>

We then examined if the clusters varied by state-level characteristics. Table 4 displays only those covariates that significantly differed among the clusters. The *highly restrictive* cluster included states that were more urban, were more densely populated, had a higher percentage of Black citizens, lower graduation rates, and more students receiving free or reduced lunch than the other three clusters of states. Furthermore, the *highly restrictive* cluster consisted of states with citizens with higher median income and higher per pupil spending than the other clusters. In a sense, the *highly restrictive* cluster represents the most minoritized students (Black students, urban, and receiving free or reduced lunch) and some of the most privileged citizens (highest income and highest per pupil spending). The *moderately restrictive* cluster included states with higher poverty, lower median income, lower per pupil spending, lower population density, and lower percentages of citizens with high school diplomas than states in the other clusters. The *highly inclusive* cluster includes states that are more rural, lowest in poverty, had highest graduate rates, highest proportion of citizens having high school diplomas, the greatest percentage of White citizens. This cluster, in many respects, represents the most privileged citizens in terms of wealth and Whiteness. There were no variables in which the *moderately inclusive* cluster represented the most or least degree.

<<Insert Table 4 here>>

It is further important to note that additional variables, including disability density within a state (represented by the percentage of students with IEPs), proportion of a state's Hispanic

population, and the proportion of citizens in a state with bachelor's degrees were found to have no statistical significance in this analysis.

Discussion

Limitations

Several limitations impact the interpretation of these results. First, the data collection systems in place to collect economic and demographic variables through the IDEA Data Accountability System may contain measurement errors that can impact the accuracy of data reporting. Thus, the accuracy of data from local and state education agencies, including percentages of time in various settings, warrants further investigation. Similarly, the diagnostic and administrative labels of autism spectrum disorders may result in variability in state definitions of ASD, and therefore the number of students with ASD educated in each state. Similarly, because ASD exists along a continuum of support needs, it is uncertain how different states categorize and support students along this spectrum. Further research is needed to describe this variability and the impact of these sources of measurement error on reported data.

State placement patterns

This analysis reveals that a variety of economic, demographic, and educational factors are associated with educational placement of students with ASD. This analysis found students with ASD residing in states that are more rural, have more adults with high school diplomas, more White citizens, and higher gradation rates are more likely to be educated in inclusive settings. Students with ASD residing in states that are more urban, have a higher population density, more

Black citizens, more students receiving a free or reduced cost lunch, higher median income, and higher per pupil spending are more likely to be educated in the most restrictive settings.

Inclusive education has often been associated with more economically and racially privileged groups. Specifically, children from higher socioeconomic (SES) backgrounds are more likely to receive less restrictive placements than children from lower SES backgrounds (Szumski & Karwowski, 2012). Typically, families must advocate for less restrictive placements for their children, but often families from lower SES backgrounds lack the resources for this type of sustained advocacy (Wakelin, 2008). Additionally, African-American, Hispanic, Native American, and English Language Learners have a higher chance of being placed in more restrictive placements than White students (de Valenzuela, Copeland, Huaqing Qi, & Park, 2006; Misra, 2006). Lastly, students with high-incidence disabilities (i.e., learning disabilities, speech/language impairments) are more likely to be placed in less restrictive settings than students with more significant disabilities (i.e., autism, intellectual disabilities, multiple disabilities; Misra, 2006). This analysis confirms these findings, indicating that states with citizens who are wealthier and Whiter are more likely to provide inclusive services to students with ASD.

However, the present analysis found highly restrictive states also included indicators of privilege (higher median income and higher per pupil spending) than states in other clusters. The highly restrictive states also had in common a number of indicators of low-privilege, including population density, higher percentage of Black citizens, and the percentage of students receiving a free or low cost lunch. These findings suggest highly restrictive placements may occur due to family choice in some instances (i.e., privileged families selecting highly restrictive settings due

to assumptions about the effectiveness of those settings), while less privileged families may have no other options. Lauderdale-Littin, Howell, and Blacher (2013) similarly report that students with ASD from higher incomes were more likely to be educated in more restrictive settings. The benefits of highly restrictive placements reflect a set of assumptions about the unique opportunities of these settings, including access to distraction-free environments, specialized curriculum/instruction, behavioral supports, and development of a community of learners which are, in fact, rarely realized in these settings (Causton-Theoharis, Theoharis, Orsait, & Cosier, 2011). However, the assumptions about beneficial outcomes associated with highly restrictive settings for students with the greatest learning and support needs persist, which may influence privileged families to seek these placements. Conversely, families who have less privilege may have less opportunity to seek and obtain any placement other than what is directly offered them by the local school district, which may result in a disproportionate number of students of color and lower SES backgrounds being placed in the most restrictive settings, despite any wishes of their families.

Lastly, the disproportionate identification of students with ASD from various ethnic backgrounds may impact placement rates. Black and Hispanic students continue to be under-identified for administrative prevalence of ASD compared to White students (Travers et al., 2014). Failure to identify students with ASD who are of color, while simultaneously placing more students of color in the most restrictive settings, may impact placement rates across states while perpetuating the Whiteness of inclusive settings.

Implications

Researchers have asserted that placement in less-restrictive settings conceptually (Jackson, Ryndak, & Wehmeyer, 2009) and practically (e.g., Kurth & Mastergeorge, 2012) benefit students with disabilities, including students with ASD. The present analysis, however, found that placement in less-restrictive settings varied along a number of economic, demographic, and educational variables, suggesting an inequitable access to the LRE for students with ASD, suggesting a need for further research into the factors that contribute to this outcome.

The present analysis focused on placement of students with ASD for the year 2012, including analysis of Census and IDEA data. However, these data provide simply a snapshot in time. Further analyses of data over the past decade may reveal trends in placement patterns over time, particularly following the implementation of IDEA 2004 and No Child Left Behind Act of 2001, both of which strengthened federal commitments to access and progress in general education (e.g., Wilson, Kim, & Michaels, 2013). Similarly, it is possible that trends in placement may correlate with trends in prevalence of ASD. Specifically, the *Centers for Disease Control* report that ASD prevalence increased from 1 in 150 in the year 2000, to 1 in 68 in the year 2010; it is unknown to what extent changes in placement patterns correspond with increasing prevalence over this same time period. It is possible that as schools have grappled with the issue of serving more students with ASD, they made changes in placement patterns as the increasing numbers of students impacted existing placements. Again, a fuller picture of placement patterns over time may indicate the extent to which progress is, or is not, being made in gaining access to the LRE for all students with ASD.

Furthermore, existing research has documented disproportionate identification of students with ASD. Specifically, White and Asian/Pacific Islander students tend to be over-represented in the ASD category, whereas Black, Hispanic, and American Indian/Alaska Native students tend to be under-represented (Marks & Kurth, 2014; Travers et al., 2014). Marks and Kurth further found that states with a higher ASD prevalence rate demonstrated less disproportional identification of students with ASD by race than lower prevalence states, suggesting states with higher prevalence rates may have systems and structures in place to develop statewide efforts related to ASD awareness which may impact disproportional identification. The findings of this analysis indicate minoritized students with ASD are more likely to be placed in more restrictive settings. Further understanding and development of policies, including funding mechanisms and state placement guidelines, that support less-restrictive placement patterns, particularly for minoritized youth, are needed.

Finally, clarification regarding how IEP teams arrive at placement decisions is needed, including the role of biases and assumptions about students. For example, in a study of first-grade teacher opinions regarding educational placement, Segall and Campbell (2014) found teachers were more likely to place a hypothetical student described has having an intellectual disability and ASD in a more restrictive setting compared to a hypothetical student with average intelligence and ASD. On the other hand, Segall and Campbell also report teachers felt their own classrooms would be less appropriate for students with ASD than a hypothetical other classroom, although teachers who felt stakeholders such as parents and administrators favored inclusion and teachers with greater self-reported competence were more likely to suggest a less restrictive placement. In a similar analysis of assumptions and biases, Begeer and colleagues

(2009) found a referral bias in ASD, in that hypothetical students from ethnic minority groups were less likely to be referred for ASD identification than majority-group hypothetical students (Begeer, El Bouk, Boussaid, Terwogt, & Koot, 2009). Together, such research indicates the persistent impact of assumptions and biases on students with ASD, and the impact such biases may have on access to the LRE. The present analysis found a bifurcation in the highly segregated states, so that both high-privilege and low-privilege students were placed in restrictive settings. The biases and assumptions that underpin these findings need further exploration.

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Table 1

Percent of Students in with an ASD in Total and in Category A-C Placement by State (N=51).

State	Percent of all IDEA-eligible students with an ASD	Category A Placement Percent	Category B Placement Percent	Category C Placement Percent
AL	6.8	59.6	22.5	4.2
AK	5.8	34.6	21.2	7.2
AZ	7.7	36.3	16.9	5.3
AR	6.2	33.4	39.1	2.7
CA	10.4	33.3	42.0	8.5
CO	5.9	53.7	19.3	4.4
DC	5.1	25.2	36.3	15.7
CT	10.6	51.7	11.9	18.7
DE	6.0	28.0	39.4	27.1
FL	6.9	34.2	46.0	9.8
GA	7.6	40.7	36.9	3.2
HI	7.0	30.5	35.7	1.3
ID	8.8	48.0	28.5	1.1
IL	6.8	32.8	30.6	15.2
IN	8.4	53.7	25.9	5.8

IA	1.1	64.5	8.2	2.6
KS	5.2	43.9	25.8	4.3
KY	5.4	41.9	29.8	1.9
LA	5.3	27.9	46.4	2.8
ME	9.0	41.8	25.5	6.8
MD	9.9	42.0	27.3	17.0
MA	8.2	37.9	30.3	16.5
MI	8.1	46.0	25.1	13.1
MN	13.3	53.7	18.7	5.6
MS	5.5	43.5	36.9	3.5
MO	7.7	35.2	25.3	8.3
MT	3.2	37.5	29.6	1.1
NE	5.8	62.3	16.8	5.3
NV	9.0	41.8	36.9	1.3
NH	7.4	52.9	20.0	8.5
NJ	6.8	23.9	34.1	27.3
NM	4.3	29.1	49.1	1.1
NY	6.3	25.3	42.5	22.2
NC	7.4	39.9	39.5	3.4
ND	6.2	58.1	14.4	4.7
OH	7.4	42.6	26.3	11.2
OK	4.2	41.7	31.6	0.6
OR	10.9	50.9	29.5	2.8

PA	8.4	43.5	22.8	10.7
RI	9.0	49.5	23.2	14.3
SC	5.0	29.8	49.8	2.7
SD	4.9	33.9	22.2	9.6
TN	5.7	42.7	34.0	3.0
TX	9.1	43.8	36.1	1.5
UT	6.6	34.3	33.8	6.4
VT	7.4	54.3	15.8	7.7
VA	9.2	40.0	31.3	7.3
WA	8.0	34.4	37.5	1.5
WV	3.9	33.7	37.5	1.0
WI	8.2	52.0	19.8	2.8
WY	6.0	46.5	19.9	2.4
U.S. Mean	7.7	40.9	29.5	8.9

Source: www.ideadata.org

Table 2

Mean Scores of Percentage of Students in each Placement Category by Cluster (N = 51)

Placement Categories	Clusters				*F*	Tukey HSD
	C1: Highly inclusive *n* = 13	C2: Moderately Inclusive *n* = 12	C3: Moderately Restrictive *n* = 15	C4: Highly Restrictive *n* = 11		
Category A 80% or more	55.20	42.47	36.76	25.58	49.45*	C1 > C2 > C3 > C4
Category B 40% or less	18.50	25.88	38.40	38.09	49.72*	C3, C4 > C2 > C1
Category C Separate settings	6.47	9.53	3.52	23.84	33.42*	C4 > C3, C2, C1; C2 > C3

Note. *$p < .001$

Table 3

States in each Cluster

Highly inclusive (*n* = 13)	Moderately Inclusive (*n* = 12)	Moderately Restrictive (*n* =15)	Highly Restrictive (*n* = 11)
Alabama	Idaho	Alaska	Arizona
Colorado	Kansas	Arkansas	California
Connecticut	Kentucky	Georgia	D.C.
Indiana	Massachusetts	Hawaii	Delaware
Michigan	Missouri	Illinois	Florida
Minnesota	Montana	Maryland	Iowa
North Dakota	Ohio	Maine	Louisiana
Nebraska	Oklahoma	Mississippi	New Jersey
New Hampshire	Pennsylvania	North Carolina	New Mexico
Oregon	South Dakota	Nevada	New York
Rhode Island	Virginia	Texas	South Carolina
Vermont	Wyoming	Utah	
Wisconsin		Washington	
		West Virginia	

Table 4

Clusters by State Demographic, Student, and Disability Density Characteristics (N = 51)

	C1: Highly inclusive *n* = 13	C2: Moderately Inclusive *n* = 12	C3: Moderately Restrictive *n* = 15	C4: Highly Restrictive *n* = 11		
Covariate	*M* within cluster				*F*	Tukey HSD
Location and population						
% Rural population	31.87	25.30	26.70	8.54	2.61†	C1 > C4
% Urban population	68.13	74.70	73.31	91.47	2.61†	C4 > C1
Persons/sq. mile	148.20	261.78	110.16	2981.00	7.06***	C4 > C1, C2, C3
Education Rates						
HS graduates age 25+	89.42	88.72	85.57	87.00	5.63**	C1, C2 > C3
Ethnicity within State						
White (not Hispanic)	80.81	77.59	63.67	53.98	6.77***	C1, C2 > C3, C4

Black	7.22	8.81	12.55	26.08	3.72*	C4 > C1, C2
SES indicators						
% Free/reduced lunch	40.21	44.98	53.48	74.65	7.47***	
Median income	55316.50	53672.93	50498.65	63426.50	3.12*	C4 > C3
% below poverty	12.39	13.50	15.84	13.70	4.19**	C3 > C1
Educational characteristics						
Graduation rates (2011)	83.31	81.21	75.00	74.65	5.51**	C1, C2 > C3
Per pupil spending	11752.80	11502.50	9525.48	17037.75	11.52***	C4 > C1, C2, C3

Note. ***$p < .001$, ** $p < .01$, *$p < .05$, †$p = .062$