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# UNDERREPRESENTATION OF HISPANICS IN GIFTED EDUCATION

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## ABSTRACT

This paper is the first to test a national panel data set of Hispanic enrollments in gifted education. Using data from 2002-2010, it is found that lower education budgets have a disproportionately negative impact on Hispanics and differences across states in learning disability programs may lower Hispanic gifted enrollments. Larger Hispanic student populations do not seem to be a significant factor across states, but have a negative effect within states over time. Graduating a high percentage of Hispanic students increases gifted program enrollments. Identification of students as learning disabled needs to be reexamined in the context of race/ethnicity as well. **JEL Classification:** I21, I20

## INTRODUCTION

As the fastest growing ethnic group in the United States, Hispanics significantly impact the country in several ways. The Hispanic population in the United States has grown six-fold since 1970, including both the native-born and immigrants (Brown, 2014). An important policy question is how quickly immigrants and their future generations' incomes converge with native-born populations. Research has shown that there remains a persistent, significant Hispanic-white wage gap (Fogel, 1966; Reimers, 1983; Verdugo, 1992; Cotton, 1993; Trejo, 1997; Mora, 2008; Hirsh and Winters, 2014). Educational attainment can be an important component helping to account for this lack of income convergence. While Hispanic high school graduation rates have been rising, a significant gap between completion rates of white and Hispanic students still exists (Murnane, 2013). This graduation gap can have roots early in life. Compared to white children, Hispanic children are far more likely to score in the lowest quartile for "reading readiness" upon entrance into grade school, and are more than 10% less likely to graduate high school (Gándara, 2008; National Center for Education Statistics, 2016). While graduation rates have been the focus of much academic research, the persistent ethnic gap in gifted programs has received far less attention. Gifted programs represent an additional investment by schools in students whom teachers believe to be potentially high performers. This identification can be done as early as primary school and can result in extra educational opportunities for these students all the way through public schooling. These opportunities can increase the likelihood of graduation, pursuing tertiary education, and subsequent success.

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Hispanics are underrepresented in gifted programs by about 42 percent, comparative to the overall school population (Subotnik, R.F., P. Olszewski-Kubilius and F.C. Worrell, 2012).

Although large populations of Hispanics have traditionally settled in Border States such as Texas, New Mexico, Arizona, and California, a widespread dispersion of Hispanic immigrants now exists throughout the country. This has made Hispanics in education an issue of interest for the country overall and not just for a handful of states. Across the United States, different states are encountering a variety of challenges associated with the Hispanic population in education, whether it is dealing with a large Hispanic presence in a border state, or satisfying the demand for bilingual teachers in a state that is experiencing an inflow of Hispanics in more recent years. Some states may do a better job of addressing the challenges associated with first and second-generation immigrant children succeeding in the public education system. If so, the admission process for gifted education programs could be modified to accommodate for the English language difficulties, cultural differences, and financial instabilities that face many Hispanic children.

Although significant research exists on minorities in gifted education, previous work has focused on individual states, districts, and schools. This study will propose a broader perspective on the ethnic breakdown of gifted education programs: variation by state and over time. This will allow for the comparison of Hispanic enrollments across states, as well as insight into Hispanic enrollment in gifted program trends over time, which previous research was unable to address. Hispanic enrollments in gifted education are tested as both an absolute measure, as well as relative to white students (the Hispanic-white gap). The panel analysis yields results which suggest that education spending is a crucial factor in addressing the Hispanic-white gap. Higher funding levels help to mitigate disadvantages Hispanic students may face and close a portion of the Hispanic-white gap. Results also suggest that states with recent increased Hispanic student populations are having problems with regards to gifted education.

The next section of the paper will consist of a literature review to motivate the study. Following the literature review is the data and variables section and then a description of the empirical methodology. Results are then examined. The paper will conclude with a discussion of the policy implications and some suggestions for future research.

## **LITERATURE REVIEW**

There have been numerous studies done on minorities in gifted education, whether the studies offer an explanation of why students of color are underrepresented in gifted education programs, propose a solution to the language barrier of immigrant students testing for entrance into gifted programs, or understand gifted education policy implications of different states (Irby, Lara-Alecio and Milke, 1999; Baker, 1995). The underrepresentation of minorities in gifted education is prevalent, and has become an even bigger concern as more immigrants enter the American public education system.

Previous research has shown that the racial breakdown of gifted education programs is not proportional to the student population. Smutny et al (2012) suggest that minority students are unrepresented in gifted programs due to the identification

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system. It has been argued that if the identification system is corrected, minority students will be able to participate in gifted programs, and therefore, the equality gap will close (Minner, 1990). A project done in the Racine Unified School District in Milwaukee showed that as more minorities are admitted into gifted programs, more minorities will graduate and seek higher education. Some argue that the problem is not that minorities are incapable of succeeding in gifted programs, but that they are unable to be identified and placed into such programs (Smith, LeRose and Clasen, 1991). King, Kozleski, and Lansdowne (2009) suggest that Black, Hispanic, and Native American students are underrepresented in gifted programs, and the problem lies within the identification process. In particular, black students are increasingly underrepresented throughout their grade school years, further contributing to this problem. A recent study found that a school district in Scottsdale, Arizona has significant discrepancies in racial proportionality of gifted programs. Hispanic students, who make up 50% of the district's population, represent 14% of the gifted students. The reverse is true of white students (King, Kozleski, Lansdowne, 2009).

Poverty has a direct impact on the underrepresentation of minorities in gifted programs. With poverty come issues such as language barriers (especially for immigrants), lack of discipline in the classroom, and potential cultural rejection of academic achievement. These students could suffer from a lack of financial resources or the absence of an adult role model in their lives, which may prevent their participation in gifted programs (Slocumb and Olenchak, 2006). Private, tuition-based gifted programs exclude economically disadvantaged students (Baker, 1995). Additional research suggests that a separate classroom environment would be beneficial to students who come from poorer neighborhoods (Card and Giuliano, 2014). Minner's (1990) study suggests that teachers are less likely to refer economically disadvantaged students to gifted programs. Card and Giuliano (2014) argue that the underrepresentation of minority students is due to the current system which recognizes students with a high cognitive ability and disregards non-cognitive skills, which economically disadvantaged students possess and could possibly place these students into gifted programs.

Various reasons explain the underrepresentation phenomenon, including the language barrier that students from both poverty and immigrant families possess. Although language has been an obstacle for immigrant students in admission to gifted programs, Slocumb and Payne (2000) suggest that the use of language can actually identify gifted children, since young gifted students will develop language skills faster than non-gifted students. Irby, Lara-Alecio and Milke (1999) suggest the use of a screening instrument to identify gifted, bilingual, Hispanic students to help them pass the screening phase of gifted identification. In addition to the language barrier, cultural differences, neglect of health needs, fear of authority figures, lack of prior schooling upon arrival to the United States, family responsibilities, as well as other factors contribute to the underrepresentation of immigrant children in gifted programs (Harris, 1993).

Immigrant children who struggle with English may also be falsely identified as learning disabled. Minner (1999) argues that Hispanic students who have recently immigrated could have language barriers that classify them as "learning disabled." Teachers often refuse recommendations for children with learning disabilities, costing these children the opportunity to be placed into gifted programs (Minner, 1999). A related study by Tallent-Runnels and Sigler (1995) was conducted to determine

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whether learning disabled students in Texas were being identified for gifted programs, and concluded that Texas school districts were not modifying their selection process to accommodate such students.

Previous gifted education studies have focused on select school districts from different states. A study done by Baker looks at implications of policy trends affecting gifted education programs in three different states: Connecticut, New Jersey, and New York. Since states and districts are responsible for the majority of public education funding, a lack of national unity exists (Baker, 1995). Other studies focus on districts in Texas (Tallent-Runnels and Sigler, 1995), Wisconsin (Smith, LeRose and Clasen, 1991), and Arizona (King, Kozleski, and Lansdowne, 2009). Kao and Tienda (1995) study the impact of assimilation on educational achievement of immigrant children through a multivariate regression using indicators of achievement, such as standardized test scores and previous report card grades, as variables.

Prior research has focused on Hispanic underrepresentation in gifted programs in certain districts, among select states. This study examines Hispanic underrepresentation across states and builds on the empirical work both in gifted education and related research in academic achievement to test the issues of Hispanic underrepresentation in gifted education. Based on the literature, this paper will test the following four hypotheses:

H<sub>1</sub>: Education expenditure is expected to have a positive impact on Hispanic gifted enrollments. Well-funded school districts will be able to provide the extra resources to help Hispanic students succeed.

H<sub>2</sub>: Learning disability rates are expected to have a negative impact on Hispanic gifted education enrollments.

H<sub>3</sub>: Hispanic graduation rates are expected to have a positive impact on Hispanic gifted education enrollments. States that succeed in graduating Hispanics are expected to also do well enrolling Hispanics in gifted programs.

H<sub>4</sub>: English language proficiency is expected to have a significant positive impact on Hispanic gifted education enrollments.

## **DATA AND DESCRIPTIVE STATISTICS**

The panel data set consists of 414 observations over the years 2002-2010. The data has an annual frequency across 46 states. The panel begins with the first year in which the relevant data was widely collected by the government and ends with the most recent year available. The necessary variables are not available for Connecticut, District of Columbia, Kentucky, Mississippi, and Rhode Island and are therefore excluded. The data is a balanced panel. There are two dependent variables based on gifted enrollment data: an absolute and a relative measure. The first dependent variable, an absolute measure, is the percentage of Hispanic students in the state that are enrolled in gifted programs. The second dependent variable, a relative measure, is the ratio of the percentage of Hispanic students enrolled in gifted education to the percentage of white students enrolled in gifted education. This second relative measure is necessary as there are state-to-state differences in gifted enrollments across all race/ethnicities. The gifted enrollment data comes from the Digest of Education Statistics and is available for the years 2002, 2004, and 2006. Since gifted enrollment

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data does not vary significantly over a one-year period within a state, it was possible to use these observations to interpolate and extrapolate the missing observations. This was performed using the `impute` command in Stata. The attributes of the original data series and the ones including the imputed values did not have a significantly different mean, variance, skewness, or kurtosis.

There are eight independent variables in the analysis. The independent variables are English language proficiency, education expenditure, size of the Hispanic student population, learning disability rates, migrant populations, Hispanic high school graduation rates, border state dummy, and a time trend. The expenditure and Hispanic student population data are from the Digest of Education Statistics (National Center for Education Statistics, 2016). The language, migrant, disability, and graduation rate data are from the Department of Education Data Express service (U.S. Department of Education, 2016). The border state and time trend variables are calculated from the data.

The language variable is defined as the percent of all English language learners in grades K through 12, enrolled in elementary or secondary schools, who scored at the proficient level in the annual state English language proficiency assessment. The language variable was chosen because Hispanic students who have limited proficiency in the English language, either from immigrating to the United States or coming from a Spanish-speaking home, may struggle with gifted program entrance exams due to the language barrier.

The education expenditure variable is the total and current expenditures per pupil for fall enrollment in public elementary and secondary schools in thousands of dollars. Education spending may impact the state's ability to provide Hispanic students with the needed academic support to overcome barriers that would otherwise hold these students back from admission into gifted programs.

The Hispanic student population variable is the percentage of the public student population that is Hispanic. It could be possible that the more Hispanic students in the state, the better equipped the state is in dealing with large populations of migrants, and therefore, the state has put programs in place to help these students keep up with their peers. The more likely these students are to succeed, the more likely they will have the opportunity to participate in gifted programs. On the other hand, it could be possible that the more Hispanic students in the state, the harder the time the state has in dealing with the large population, and therefore, Hispanic students are less likely to participate in gifted programs.

The migrant variable serves a similar purpose, although it also accounts for differences among generations of Hispanics, which the Hispanic variable does not. Migrant is the unduplicated statewide number of total eligible migrant children who, within three years of making a qualifying move, resided in a state for one or more days between September 1 and August 31. The two variables (migrant, Hispanic) have a 0.486 correlation, and do have overlap since the Hispanic variable is across all generations of Hispanics, including immigrants. The Hispanic variable could explain cultural differences among non-migrant students, whereas the migrant variable explains the generational effect of first-generation Hispanic immigrants (Harris, 1993).

The learning disability variable is the percentage of children served under the Individuals and Disabilities Education Act (IDEA), Part B, for ages 3-21. Migrant students with language, cultural, and/or other learning barriers are often classified as learning disabled. Minner (1999) suggests that students with this classification are

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less likely to be recommended by teachers for gifted programs, or may not have the ability to score high enough on the entrance exam to be admitted. Additionally, a large population of learning disabled students is very costly for schools, which in turn could be affecting the presence or quality of gifted education programs.

The graduation rate variable is the percentage of Hispanic students that graduate from high school with a regular diploma in four years statewide. A low Hispanic graduation rate could mean that Hispanics are not performing well generally in the states' schools, which could impact the likelihood of participation in gifted programs.

The border state variable is a dummy variable equal to one for the following Border States: Texas, Arizona, New Mexico and California. Since these states have traditionally had higher populations of Hispanic students, they may be better equipped with programs to help these students succeed. The year variable is a linear time trend to account for overall trends in enrollment over time that may be common across states. Individual year dummies were also tested but results suggest that enrollments followed a time trend and not unrelated year-by-year variations.

## METHODOLOGY

The paper's hypotheses are tested using two empirical methods: pooled ordinary least squares (OLS) and generalized least squares (GLS) with fixed effects. Robust standard errors are employed in order to correct for heteroscedasticity. Generalized Least Squares is a regression method designed to deal specifically with panel data. As part of this approach, state level fixed effects are employed in the GLS method. These state fixed effects account for heterogeneity across states that may not be addressed by other variables in the regression (or are unobserved). For this reason, a GLS fixed effects model focuses primarily on "within" variation, as the state level fixed effect will account for much of the remaining "between" variation. This makes GLS particularly useful at explaining changes within states over time. The variables are described in the previous section in Table 1. The border variable dummy cannot be employed in the panel fixed effects estimation, as it is time invariant (and therefore drops out of a fixed effects model).

Both empirical methods are used to test each of the two dependent variables yielding a total of four tested equations. The first two equations use the relative measure of gifted Hispanic ratio (compared to white gifted enrollment) as the dependent variable, and are tested via pooled OLS (Equation 1) and panel fixed effects (Equation 2). The gifted Hispanic percent (absolute measure) is the dependent variable in Equations 3 and 4. Subscripts *i* and *t* represent state and year, respectively.

$$GiftRatio_{i,t} = \beta_0 + \beta_1 M_{i,t} + \beta_2 L_{i,t} + \beta_3 H_{i,t} + \beta_4 E_{i,t} + \beta_5 G^H_{i,t} + \beta_6 D_{i,t} + \beta_7 Y_{i,t} \quad (1)$$

$$GiftRatio_{i,t} = \beta_0 + \beta_1 M_{i,t} + \beta_2 L_{i,t} + \beta_3 H_{i,t} + \beta_4 E_{i,t} + \beta_5 G^H_{i,t} + \beta_6 D_{i,t} + \beta_7 Y_{i,t} + \beta_8 SW_{i,t} \quad (2)$$

$$GiftPerc_{i,t} = \beta_0 + \beta_1 M_{i,t} + \beta_2 L_{i,t} + \beta_3 H_{i,t} + \beta_4 E_{i,t} + \beta_5 G^H_{i,t} + \beta_6 D_{i,t} + \beta_7 Y_{i,t} \quad (3)$$



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## ESTIMATION RESULTS

The absolute and relative gifted enrollment measures appear to be driven by different factors. There are also significant differences across states versus over time within states. For example, regarding the first hypothesis, education expenditures are not significant with regards to the percentage of Hispanics enrolled in gifted programs. But education expenditures are a highly significant indicator of the Hispanic-white gap. This suggests that additional education funding may be helping to mitigate the additional challenges faced by Hispanic students and close a portion of the gap with white students.

The second hypothesis regarding the negative impact of learning disability rates is supported by the OLS analysis but not by the GLS. The GLS regressions focus on variation within states over time. Changes in disability rates within states during the sample period (2002-2010) did not appear to impact Hispanic gifted enrollments. This is not particularly surprising as there is far more variation in learning disability rates across states as opposed to within a state over a decade's time. The OLS regressions capture the variation across states and find a negative impact of learning disability rates. This supports the previous local and individual state studies, which found ethnicity to be a factor in learning disability identification with this new national, panel level data set.

The third hypothesis regarding Hispanic graduation rates was strongly supported by all regressions. Improvements in graduating Hispanic students translates to higher Hispanic student enrollment in gifted programs, whether measured in absolute or relative terms. This holds true across states and over time. The fourth hypothesis regarding English language skills, however, is not supported by the data. The English language test variable has inconsistent results (positive, negative, and insignificant). There are two potential issues with this variable that may explain the inconsistent results. The test of English language proficiency can vary significantly from state to state, and it was during the 2000s that many states were first developing and revising these tests (Forte, Kuti, and O'Day, 2012). This could potentially explain these inconsistent results.

The size of the Hispanic student population was significant in the GLS regressions but not in the OLS tests. This suggests that differences across states in the size of the Hispanic student population are not a significant factor. This is consistent with the border state (southwest) variable being insignificant as well. However, there was a significant negative effect of Hispanic student population within states over the sample time period. Over the 2002-2010 time frame, the Hispanic student population increased rapidly in states that traditionally lacked experience with this group. Results suggest that this influx has been challenging for Hispanic students with regards to gifted programs. The time trend variable had mixed results of being positive, negative and insignificant. A robustness test of individual year dummies (as an alternative to a time trend) did not find significant results. Therefore, no conclusion can be made regarding a general time trend across all states. The migrant population variable was insignificant in the regressions. This effect could be getting captured by the Hispanic student population variable.

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## CONCLUSION

This paper represents a first attempt to study the determinants of Hispanic student enrollments in gifted programs with a nationwide, panel data set. In addition, enrollments were studied both in absolute and relative measures. The paper's results suggest that there are lessons to be learned from this type of data set and two different measures that capture nuances in a complex problem. The results support some of the existing localized studies on this issue, and provide additional insights across states and over time.

The paper's results imply that additional funding is both necessary and effective in helping to bridge the Hispanic-white gap in gifted education. When states and communities come under strain and cut their education budgets, it is the groups of students who face additional challenges and other disadvantages, such as Hispanics students, that get left behind. The federal government may need to increase funding to states which have seen dramatic, recent increases in the size of their Hispanic student population. These states are having difficulty with this new student population. There is substantial evidence that the efforts that states are making to increase Hispanic graduation rates are having positive spillover effects on gifted enrollments. So a substantial part of this solution lies in funding (and expanding) existing efforts to serve the Hispanic student population.

The potential ethnic bias in the identification of students as learning disabled that has been found in previous studies was supported by this national level data set. This identification process varies considerably across states (and even within them). This suggests a greater focus on establishing standards and teacher training to recognize the language and cultural challenges faced by Hispanic students, which may not reflect academic potential. One sobering conclusion from this study is that there is not a positive general trend over time with regards to Hispanic enrollments in gifted programs. This is not to say that there are not success stories in different communities and states, but there is not a general trend nationally.

There are some limitations to and future possibilities for this research as well. The aggregated nature of this data, while useful for cross-state comparisons, does not address the success rates of individual programs. So, this paper should be viewed as a complement to, rather than a substitute for, research based on individual school districts. A possible useful extension of this paper would be to analyze immigrant and non-immigrant Hispanics separately as these groups likely exhibit different educational behavior. And as more states have gained experience with Hispanic students in the 2000s, it would be interesting to revisit this issue in several years to see if they are performing better with these populations in the 2010s. Also, this paper's empirical approach could be utilized to investigate the issue of race in gifted education or with other ethnicities.



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**TABLE 1. DESCRIPTIVE STATISTICS**

	Obs	Mean	Std. Dev	Min	Max
<b><i>Dependent Variables</i></b>					
GiftRatio (relative measure)	414	0.54	0.27	0.17	1.75
GiftPerc (absolute measure)	414	3.19	2.51	0.01	15.10
<b><i>Independent Variables</i></b>					
Migrant Population (M)	414	7.69	1.81	0.00	12.56
Language Skills (L)	414	0.23	0.48	-2.37	4.06
Hispanic Student Population (H)	414	12.66	13.17	0.10	59.90
Expenditure (E)	414	10.96	2.59	5.96	20.17
Graduation Hispanic (G)	414	0.71	0.10	0.41	1.04
Disability (D)	414	0.14	0.02	0.09	0.19
Southwest (SW)	414	0.09	0.28	0.00	1.00
Year (Y)	414	2006.00	2.59	2002.00	2010.00

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**TABLE 2. GIFTED HISPANIC ENROLLMENTS USING RELATIVE MEASURE**

	OLS	GLS
Migrant	-0.014 (1.60)	-0.007 (0.27)
Language	-0.017 (0.81)	-0.127 (5.05)***
Hispanic	-0.001 (0.52)	-0.031 (2.73)***
Expenditure	0.033 (4.44)***	0.023 (1.73)*
Grad Hispanic	0.321 (2.21)**	0.382 (3.02)***
Disability	-3.124 (3.35)***	0.738 (0.37)
Year	-0.012 (2.00)**	0.010 (1.04)
Southwest	0.064 (1.10)	
<i>Prob&gt;F</i>	0.000	0.000
<i>N</i>	414	414

**Notes:** Coefficients shown with absolute values of t-statistics in parentheses. \*, \*\*, and \*\*\* refer to significance at the 10%, 5% and 1% level, respectively.

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**TABLE 3. GIFTED HISPANIC ENROLLMENTS USING ABSOLUTE MEASURE**

	OLS	GLS
Migrant	-0.005 (0.05)	-0.182 (1.39)
Language	0.701 (2.27)**	-0.777 (5.87)***
Hispanic	0.006 (0.39)	-0.141 (2.35)***
Expenditure	0.082 (0.91)	0.011 (0.15)
Grad Hispanic	4.046 (3.02)***	3.06 (4.60)***
Disability	-29.106 (2.26)**	11.883 (1.13)
Year	-0.036 (0.58)	0.113 (2.24)**
Southwest	0.035 (0.08)	
<i>Prob&gt;F</i>	0.000	0.000
<i>N</i>	414	414

**Notes:** Coefficients shown with absolute values of t-statistics in parentheses. \*, \*\*, and \*\*\* refer to significance at the 10%, 5% and 1% level, respectively.

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