Rural Latinx Achievement Growth in a New Immigrant Destination

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The demographic landscape in the United States is changing with an increasing share of the population non-White. Between 1980 and 2010, the Latinx population increased by 36 million from 6.4 percent to an estimated 16.3 percent of the population (Hussar and Bailey 2013). Since the 1980s, dispersal patterns have changed from the traditional concentration in gateway areas to a significant Latinx settlement; between 1980 and 2010 the largest growth in the Latinx population took place in the Midwest (Hussar and Bailey 2013). The state of Indiana can be characterized as a new immigrant destination, due to the relatively large growth of its Latinx population in the past decade (Marrow 2005).

The Latinx population is relatively young, and therefore schools are an important context of reception for these new immigrants (Dondero and Muller 2012; Gándara 2015). In the current study, we investigate how Latinx whether and why Latinx student achievement growth is lower in rural counties compared to urban counties. We also explore whether instances of lower Latinx achievement growth in rural areas is due to white flight. Using data from the Indiana Department of Education (IDOE), we make three contributions to current research on new immigrant destinations. First, very little research investigates the educational achievement of Latinx youth in rural areas (Fischer 2010; Spees, Perreira, and Fuligni 2017). This is an important oversight in current research because of the increasing diversity of locations of immigrant settlement in the United States, as discussed above. Second, the majority of research investigates educational outcomes of high school students (Ackert 2017; Dondero and Muller 2012; Fischer 2010; Potochnick 2014; Spees, Perreira, and Fuligni 2017; Stamps and Bohon 2006), while we focus on students in 4th through 8th grades. Because early educational experiences are especially important for establishing students' achievement trajectory (Halpern-Manners 2016; Heckman and Raut 2016), it is important to investigate Latinx achievement growth in new destinations at the elementary and middle school grades. Finally, our data allows for adequate variation in school composition and sample size of Latinx students, which is a struggle with national studies that include Latinx youth (Langenkamp and Hoyt 2017; Muller et al. 2010). Our study builds on literatures on new immigrant destinations as well as race scholarship addressing racial group competition and perceived threat, contact hypothesis, and ethnic antagonism. We use the context of schools within this new immigrant destination to better understand how population changes affect achievement growth for students across ethnoracial groups.

Data and Methods

The data used in this study is drawn from the Indiana Department of Education's (IDOE) administrative data, which includes information on students, teachers, and schools. Relevant data for this project was collected in the spring annually from the 2010 academic year (AY) until the 2015 AY, and includes roughly 3.5 million cases on 1.08 million students. We restrict our statewide sample to students in traditional public schools and the largest three ethnoracial groups (white (reference), black, and Latinx). We use listwise deletion to eliminate missing cases on any relevant variable. Moreover, we exclude from our analysis the small number of students who change their reported race or gender over time

(.65% and .16% respectively). The analytic statewide sample includes 794,091 students and 2,278,903 cases.

Indiana is an ideal context for the study of school race/ethnic composition, particularly with respect to new immigrant destinations for Latinx school-age youth. From the 2007 AY to the 2016 AY, the proportion of Indiana third through eighth graders who self-identified as Latinx rose from 5.42% to 11.71% of the population (see Figure 2). Among Latinx students, almost two-thirds (64%) are categorized as Limited English Proficient (LEP), which underscores these students as relative recent arrivals to the United States. In addition, Indiana's black student population, at 11.5%, is nearly representative of the nation's student black population.

In our analysis, our dependent variable is student standardized math ISTEP+ score growth; student race/ethnicity and urban location (coded as urban, suburban, small town, and rural) are our explanatory variables of interest. Additionally, our models control for a variety of student and school-level measures. Student level controls include gender, free or reduced price lunch status (FRL), whether or the student is classified as limited English proficient (LEP), and qualifies for special education services (SPED). We also control on days suspended, which is a continuous variable indicating the number of days in a given year that a student was suspended. At the school level, models control on % Latinx, % Black, % FRL, % LEP, % SPED, and mean days suspended. Finally, models include the school mean standardized math score growth.

Analytic Plan & Preliminary Results

The influx of Latinx students into Indiana schools has significantly changed the ethnoracial composition of those schools. Across our data from the 2010 AY until the 2016 AY, the number of schools with no Latinx students fell from 305 to 90, or 16.7% to 5.1% of all schools. In concert with this trend, the number of schools with a majority of students who self-identified as Latinx grew from 18 to 47 over the same period. Overall, schools with greater proportions of Latinx students tend to be lower socioeconomic status schools. Nationally, approximately 77 % of Latinx students qualify for free or reduced lunch, compared to the national average of 48% (Snyder, de Brey, and Dillow 2016). We see the same proportions in our sample with 77.0% of Latinxs qualify for free- or reduced-lunch, compared to 46.3% of the analytic sample population. This trend is shown in Table 1, and is also the case when considering student suspension rates and standardized test scores.

The current study builds on previous research using the IDOE data that investigates the effect of Latinx school composition over time on student achievement by ethnoracial group (white, Latinx, and black students) (Langenkamp, Bjerre, and Fitzpatrick 2018). Findings from this study, as shown in Figure 1, suggest that effects of Latinx school composition changes differ depending on urban location. For all students, findings suggest a strong positive relationship between Latinx peer composition and student achievement in cities, which are offset by a negative relationship in rural areas. This presents an interesting puzzle: why would racial/ethnic composition changes affect students differently in rural areas? This puzzle is the focus of the current study.

First, our study will conduct extensive descriptive analyses on the population influx of Latinx youth and their families to the state of Indiana over the past 20 years. We will analyze which counties have experienced the largest growth. Some of the changes are illustrated in Figures 2-3. As shown in Figure 2, 16 counties in the state have a growth of at

least 1,000 Latinx individuals between 1990-2000, with recent data suggesting even more growth in these areas. Of these counties, two are urban (Lake and Marion, with cities Gary and Indianapolis, respectively), three are small(er) towns or cities (St. Joseph, Elkhart, and Allen), while 11 counties are classified as rural. As shown in Figure 3, there is an indication of significant Latinx student elementary school population growth, from 5.42% in 2007 to 11.71% overall in 2016.

To answer our first research question, why Latinx student achievement growth is lower in rural areas, we will begin our multivariate analyses with ordinary least squared (OLS) regression in order to predict math achievement growth. Initial models will include student level controls of female and race/ethnicity. In addition we will include a measure of urban location, time, and a series of interactions. We are interested in whether or not the urban location affects each of our ethnoracial groups differently. Therefore, we will investigate two-way interactions between ethnoracial group and urban location, as well as three-way interactions between ethnoracial group, urban location, and time. Subsequent models will add controls for students' FRL status, students' LEP status, students' SPED status, and days suspended. We will also include school-level controls of school % ethnoracial minority, school % FRL, school % LEP, school % SPED, and school mean days suspended. Finally, we will include a control for the average achievement growth at the school.

After conducting OLS regression models, we will attempt to identify any causal relationship between urban location and student achievement growth. Towards this effort, we utilize hierarchical linear models (HLMs) with fixed effects. Fixed effects eliminate all between-unit variation in the dependent variable from the analysis, leaving only between-unit variation. All of our fixed effects models allow us to pinpoint the effect of a change in a student's school environment (e.g., urban location) has on that student's achievement. We will also run a series of models that nets out changes in school environment due to students changing schools.

One important possible explanation for Latinx student lower achievement involves the ecological context within which incorporation is occurring. Therefore, we will investigate the schools themselves for resources available and how this has changed over time. In addition, we will investigate how white flight might play into the patterns we find. As shown in Figure 4, there is some indication that white students are moving out of public schools at higher rates in counties with an influx of Latinx students.

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Table 1: Means and Standard Deviations in 2015, by Ethnoracial Group and School Context

	All			
	White	**Black**	**Latinx**	**Total**
Outcome Variable				
Math Score (Std)	0.15	-0.35	-0.12	0.069
	(0.82)	(1.01)	(0.86)	(0.86)
Student-Level Variables				
Female	0.49	0.50	0.49	0.49
FRL	0.39	0.79	0.78	0.48
LEP	0.012	0.029	0.64	0.083
SPED	0.13	0.15	0.11	0.13
Days Suspended	0.28	1.19	0.38	0.38
	(1.76)	(3.49)	(2.32)	(2.10)
Math Score (Std., Previous Year)	0.12	-0.58	-0.31	0.0011
	(0.97)	(0.94)	(0.95)	(1.00)
School-Level Variables				
School Proportion Latinx	0.073	0.17	0.24	0.10
	(0.084)	(0.14)	(0.19)	(0.12)
School Proportion Black	0.047	0.39	0.17	0.097
	(0.088)	(0.26)	(0.20)	(0.17)
School Proportion FRPL	0.44	0.69	0.62	0.49
	(0.19)	(0.20)	(0.22)	(0.22)
School Proportion LEP	0.068	0.15	0.21	0.092
	(0.091)	(0.13)	(0.16)	(0.12)
School Proportion SPED	0.15	0.16	0.14	0.15
	(0.047)	(0.053)	(0.043)	(0.047)
School Mean Days Suspended	0.33	0.80	0.58	0.41
	(0.49)	(1.13)	(0.73)	(0.64)
Geographic Location				
City	0.17	0.64	0.39	0.25
Suburb	0.27	0.29	0.34	0.28
Town	0.17	0.023	0.11	0.15
Rural	0.39	0.049	0.16	0.33
School Mean Math Score (Std., Previous Year)	0.061	-0.30	-0.16	-0.01
	(0.30)	(0.39)	(0.33)	(0.33)
N	**253,788**	**34,047**	**35,894**	**323,729**

Figure 1. School Fixed Effects Predicting Math Achievement Growth, by Latinx School Composition Change and Urban Location

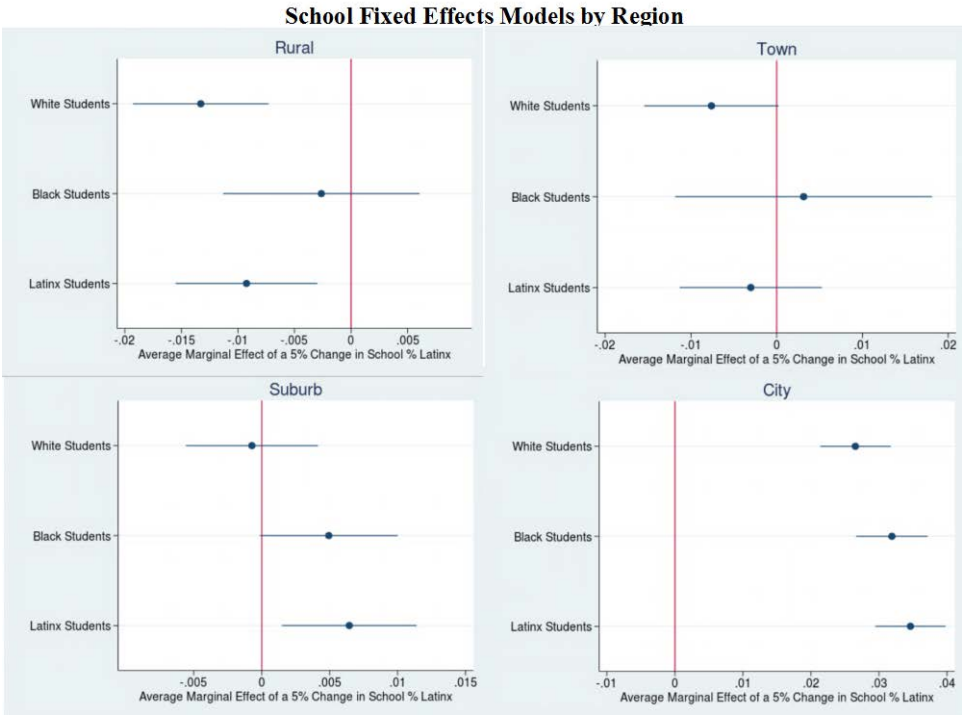


Figure 2. Indiana Latinx Population Growth, by County

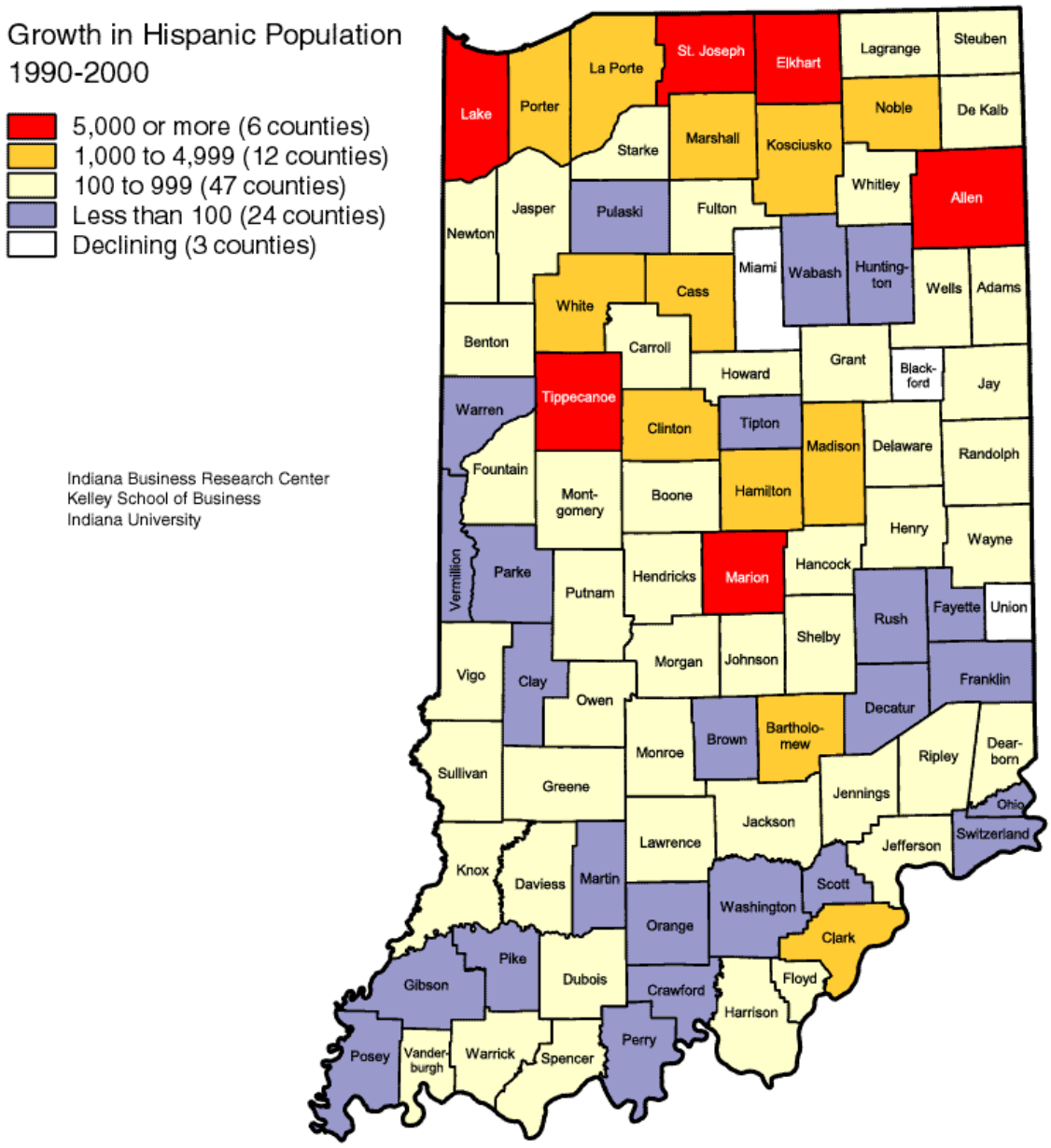
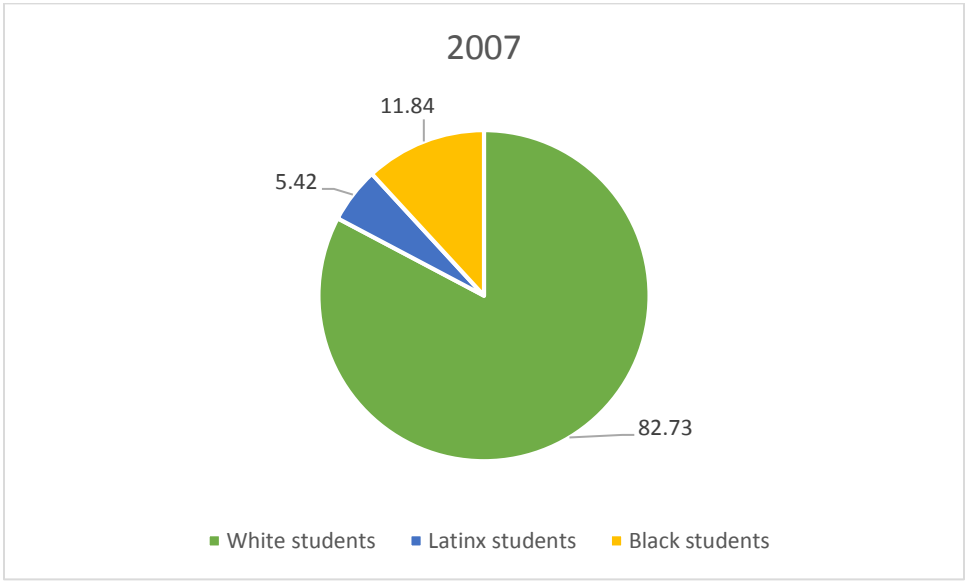


Figure 3. Elementary School Enrollment Changes, by Ethnoracial Group, between 2007 and 2016



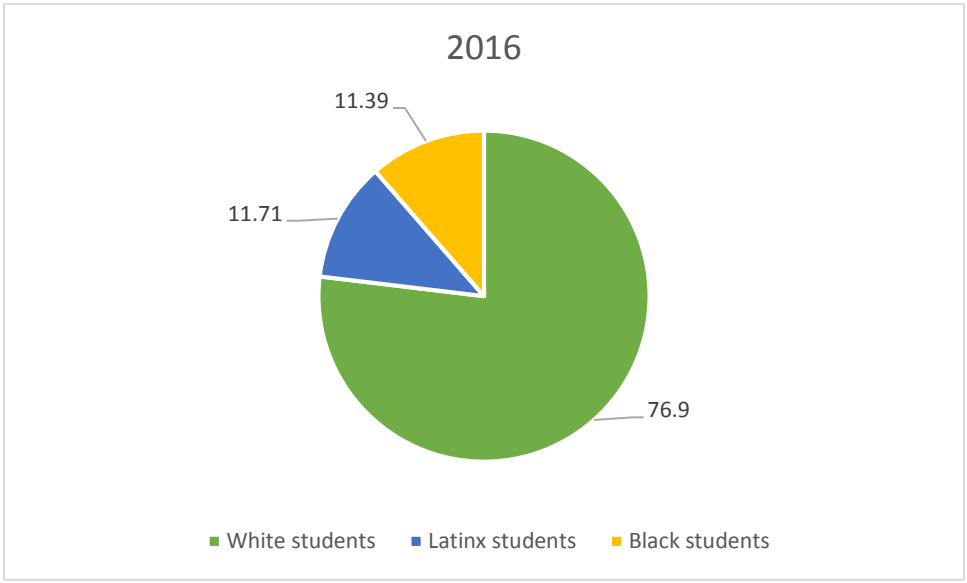


Figure 4. Destination of White Students Exiting Traditional Public Schools