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WHY DO IMMIGRANT YOUTH WHO NEVER ENROLL IN U.S. SCHOOLS MATTER? AN EXAMINATION OF SCHOOL ENROLLMENT AMONG MEXICANS AND NON-HISPANIC WHITES

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Abstract

Using data from the 2000 Public Use Sample of the U.S. Census, this research examines how estimates of school enrollment and school-work patterns among Mexican-origin adolescents are affected by including or excluding young immigrants who never enrolled in U.S. schools. The analysis demonstrates that a non-trivial share of adolescents who were born in Mexico almost certainly never enrolled in U.S. schools; these youth most likely migrated to the United States for work. Excluding these adolescents from analyses substantially reduces gaps in school enrollment between Mexicans and Whites and between native and foreign-born Mexicans. Excluding never-enrolled immigrant youth also changes the relationship between duration of U.S. residence and idleness among Mexican immigrant youth, revealing that additional years of residence in the United States increase the likelihood of being out of school and not working compared to in school and not working. Overall, inferences about the level of school enrollment and intra-ethnic differences in school enrollment by duration of residence depend on how those who are likely to have never enrolled in U.S. schools are treated. Inferences about interethnic differences also are affected, although they are somewhat less sensitive to this issue.

Over the last several decades, the implications of recent trends in U.S. immigration have been hotly debated. Both the rising volume of immigration and shifts in immigrants' national origins have spurred concerns about the implications of migration for the economic, cultural, and political fabric of American society. Immigration from Mexico is at center stage in these debates because of the large number of Mexican immigrants and the substantial share of undocumented migrants among them. Currently, there are 10–12 million foreign-born persons from Mexico living in the United States, more than half of whom are undocumented (Bean 2001; Grieco 2003; Passel 2002). Although evidence on their educational selectivity is mixed, this large number of documented and undocumented Mexican immigrants has raised concerns about whether the relative educational “quality” of immigrants is declining and about their long-term prospects for assimilation (see Borjas 1999; Chiquiar and Hanson 2005; Feliciano 2005; Ibarrran and Lubotsky 2005; Orrenius and Zavodny 2005).

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The influx of Mexican immigrants has played a substantial role in the rapid growth of the Mexican-origin population (National Research Council 2006). In addition, the combination of high fertility and a youthful immigrant population has resulted in an age structure for the Mexican-origin population as a whole that is highly concentrated in the youngest age groups. In fact, 38 percent of Mexicans in the United States were under age 18 in 2000, compared to 24 percent of non-Hispanic Whites (Therian and Ramirez 2001). Because of this age structure, the long-term social and economic integration of Mexicans is tied to the fortunes of youth who are immigrants or the children of immigrants.

A key determinant of the future prospects of this group is educational attainment, with high school completion generally considered to be the minimum level that must be attained to certify competence in basic skills that are necessary to function productively. Unfortunately, the share of Mexican youth who drop out of high school remains quite high. According to our calculations from the 2000 Census, one-fourth of Mexicans aged 16–19 had exited high school before graduating (43% of the foreign born and 14% of the U.S. born), compared to 7% of non-Hispanic Whites (source: Ruggles et al., 2008; see also Fry, 2003; Schneider, Martinez, and Owens 2006).

Given the importance of education for immigrant incorporation, the present research focuses on the complexities of understanding high school enrollment status (or dropout) in conjunction with employment among youth born in Mexico.¹ Using the 2000 Census, our first objective is to assess the extent to which estimates of high school enrollment are sensitive to assumptions about who comprises the “at risk” population among immigrants; that is, whether all immigrant adolescents are considered to be at risk or only those who are likely to have entered the U.S. educational system. The second objective is to examine the implications of these assumptions for inferences about the magnitude of differences in enrollment and employment by ethnicity (Mexicans and Whites), nativity (among Mexicans) and length of U.S. residence (among those born in Mexico). As part of this analysis, we control for key covariates that can potentially account for observed associations. In addition to addressing these objectives and developing a set of research recommendations, we profile never-enrolled Mexico-born youth to gain insight into their situations and likely futures.

SCHOOL DROPOUT: TRENDS, DIFFERENTIALS, AND SOURCES OF BIAS

Whether one examines educational attainment among adults or school enrollment among adolescents, the conventional wisdom is that the educational prospects of Americans have improved over the past several decades. By most accounts, educational attainment in completed years has increased and the likelihood of dropping out of high school has decreased. Between 1972 and 2004, the status dropout rate for 16–24 year olds declined from 15% to 10% (U.S. Department of Education 2006: Table 7).² At the same time, gains in educational attainment and declines in school dropout have not been experienced equally by all groups. From 1980 to 2000, the average years of education increased from 12.8 to 13.6 for U.S.-born Whites (aged 25 – 59), but the gain was weaker (from 9.4 to 9.8 years) for Mexicans. Mexicans’ weaker gain can be attributed largely to the growing share of immigrants and their relatively low levels of education. In 2000, foreign-born Mexicans averaged 8.5 years of education and U.S.-born Mexicans averaged 12.1 years (Duncan,

¹ Following the National Research Council (2006), we use the terms “Mexican” and “Mexican-origin” to encompass “Mexicans,” “Mexican Americans,” and “Chicanos.” “White” refers to “non-Hispanic White.” “Immigrant” and “foreign born” are used interchangeably and all “foreign-born” Mexicans described here are born in Mexico. Such practices sacrifice linguistic precision to avoid cumbersome constructions. These practices should not be seen as an effort to negate the Americanness of some groups or to define them out of the mainstream.

² Status dropouts are those in a given age group who are not enrolled in high school and who have not completed a high school diploma or an equivalency certificate (U.S. Department of Education 2006).

Hotz, and Trejo 2006). Further, Mexican immigrant adolescents and young adults are among the most likely of any group to be status dropouts.

The conventional wisdom on high school completion has not gone unchallenged. Heckman and LaFontaine (2007; see also Warren and Halpern-Manners 2007) suggest that official figures conceal the fact that there has actually been a slight decline in high school graduation since the late 1960s and a lack of convergence in the graduation rates of race/ethnic groups over time. The misleading picture provided by official sources (such as the Current Population Survey) can be attributed to numerous potential sources of bias, such as inclusion of those who earn GEDs among high school graduates, exclusion of the incarcerated or otherwise institutionalized population, and inclusion of immigrants who never enrolled in school in the United States.

For our purposes, the implications of including or excluding immigrants who never attended U.S. schools are especially important. Unfortunately, there is a lack of conceptual clarity in both empirical research and official reports about when such immigrants should be included and the implications of this decision for the interpretation of results. An unknown percentage of Mexican immigrant youth dropped out of the educational system in Mexico before they migrated. They were never enrolled in U.S. schools because they came to this country to find work rather than to attend school. These youth are of interest when the aim is to describe or analyze the educational outcomes of the full population of Mexican adolescent immigrants. However, they are irrelevant to understanding the process of dropping out of U.S. schools because they never attended school in the United States.

BACKGROUND

A large number of sociological studies of school enrollment among immigrant youth are either implicitly (Driscoll 1999; Warren 1996; White and Glick 2000) or explicitly guided by assimilation theories (Glick and White 2003; Hirschman 2001; Landale, Oropesa and Llanes 1998; Perreira, Harris, and Lee 2006, 2007).³ Whether attention to assimilation is implicit or explicit, these studies focus on how educational disadvantage changes as immigrant children spend time in the host society and whether it peaks among immigrant children or their native-born co-ethnic counterparts. They also seek to identify the explanatory mechanisms for differences in educational outcomes by duration of residence and nativity (or generation), as well as to demonstrate the contribution of nativity-related factors to race/ethnic differences. This research is pursued in the service of larger concerns about whether immigrants and their descendants will follow pathways of incorporation that lead toward or away from the middle-class mainstream of American society.

Studies that purport to examine educational outcomes using an assimilation framework have relied on both samples drawn from the general population of youth (Hirschman 2001; Landale, Oropesa and Llanes 1998; Warren 1996) and samples drawn from youth in schools (Perreira, Harris and Lee 2006, 2007, Glick and White 2003; White and Glick 2000). For our purposes, the distinction between these two types of samples is crucial because the generalizations that can be made are limited by the link between the sample and the population of interest. In practice, however, the literature is often fuzzy in this regard. For example, school-based studies sometimes draw conclusions about the educational progress of immigrant youth *in general* without careful consideration of the limits of a school-based sample, and population-based studies sometimes draw conclusions about educational

³ The former studies minimize allusions to “theory” and “assimilation” per se. Instead, these *de facto* analyses of assimilation stick close to the data and may allude to “adaptation” or “incorporation.”

processes in the United States without recognizing that some immigrant youth were never enrolled in U.S. schools.

School Enrollment and Dropout: School-Based and Population-Based Studies

Longitudinal studies using school-based samples have generated an inconsistent set of findings. Focusing on the effect of nativity or generation, some studies document elevated risks of dropout among immigrants (Perreira, Harris and Lee 2006; White and Glick 2000), while others de-emphasize nativity differences in the risk of school dropout before controls (Driscoll 1999). Moreover, some studies suggest that the conclusion that immigrant youth are *not* especially likely to drop out is robust in multivariate models that control for language and various background factors (Glick and White 2003). In other longitudinal school-based studies, multivariate analyses suggest that immigrant children have *lower* risks of dropout than their native-born co-ethnic counterparts. Perreira et al. (2006: 533) conclude that “adjusted for differences in the forms of capital available to them, dropout rates are always lowest among immigrant children and highest among the native” (see also Driscoll 1999; White and Glick 2000). Findings that suggest that immigrant children are not the most likely to have negative educational outcomes have been interpreted as supporting perspectives that point to possible deleterious consequences of exposure to the United States (i.e., segmented assimilation; see Portes and Rumbaut 2001, 2006). It should be noted that Perreira et al.’s findings also indicate that Hispanic immigrants who were age 6 or older at arrival do not experience the same advantage as those who arrived before age 6.

To a limited extent, studies using population-based surveys and censuses generate similar findings. Although he did not provide a comprehensive description of school enrollment among their native born co-ethnics, Hirschman (2001) examined the experience of 33 groups of foreign-born 15–17 year olds using the 1990 Census. His results suggest that non-enrollment is much higher among recent Mexican immigrants than earlier Mexican immigrants. About 42% of males and 37% of females who immigrated in the eight years prior to the census were not in school. The comparable figures for Mexican males and females who immigrated as young children were considerably lower (13% and 12%, respectively). This is consistent with other studies based on census data that show elevated risks of dropout and non-enrollment among youth who migrate to the United States at older ages (Landale, Oropesa, and Llanes 1998; Warren 1996). Regardless of age at entry, however, foreign-born Mexican youth were at *greater* risk of non-enrollment than native-born youth in general (Hirschman 2001) and native-born Mexicans (Warren 1996; Schneider, Martinez and Owens 2006).⁴

Fry (2005) updated and replicated these findings with the 2000 Census. Similar to prior studies, he found that status dropout rates of 15–17 year old immigrants from a variety of countries (including Mexico) are markedly higher among those arriving within eight years of the census than among those arriving earlier. Fry’s analysis also identified immigrant youth who may have had “schooling difficulties” in the country of origin prior to migrating using census information on the highest completed grade, age of immigration, and the usual educational attainment of U.S. youth at that age. He suggests that recent arrivals with “interrupted” schooling in the country of origin are especially likely to be school dropouts in the United States. Although this unpublished study is limited to descriptive analyses, it illuminates the need for greater attention to possible discontinuities in schooling prior to migration as well as age at migration and English proficiency.

⁴ It should be noted that this finding is generally consistent with those from longitudinal population-based surveys such as the *NLSY* and the *PSID* that are less relevant here because they are not restricted to youth, they follow respondents well into adulthood, or focus solely on adults.

Overall, one finding appears to be consistent across general population studies: In bivariate analyses of Hispanics in general and Mexicans in particular, immigrant adolescents who are recent arrivals (therefore arriving at older ages) are more likely to be out of school than immigrant adolescents who arrived earlier in their lives. In assessments of the relative risks of dropout, arren (1996) and Landale et al. (1998) also show that Mexican immigrant youth are more likely to be status dropouts than non-Hispanic Whites or native-born Mexican Americans before various background factors are controlled. After controlling for family background and language, differences between native and foreign-born Mexicans are largely eliminated. These results diverge from those reported for some school-based samples reviewed earlier. One potential source of divergence is that all school-based samples omit, by design, youth who have never been enrolled in U.S. schools.

School Enrollment and Employment

The potential existence of a large number of Mexican immigrant youth who never enrolled in U.S. schools as well as a large number of dropouts from U.S. schools directs attention to the school-to-work transition. A recent report by the National Research Council (2006) suggests that economic pressures on families may constrain Mexican children's schooling and encourage their employment. This pressure stems from several factors. First, women potentially contribute income to families, but Mexican-born women have a low employment rate (56%) in comparison with their native-born counterparts (76%) and non-Hispanic Whites (80%). Second, both foreign- and native-born Mexicans earn considerably less than Whites, regardless of gender, due largely to differences in human capital. However, the rate of return to education is somewhat lower for foreign-born Mexicans than native-born Mexicans (Duncan et al. 2006). Lastly, Mexican immigrant households have less than one-third the per capita income of households headed by Whites and are less likely to utilize public assistance (Reimers 2006).

These findings describe circumstances that provide an incentive for employment among Mexican youth in immigrant families. While they may contribute to departures from school for employment, a number of recent studies have found that school enrollment and employment can be compatible (Staff and Mortimer 2007; Warren, LePore, and Mare 2008). These studies challenge the conventional view that employment per se necessarily impinges on a student's ability to remain in high school or to matriculate to college because it competes with school for a youth's time and energy.

Although enrollment and employment transitions may intersect in complex ways that vary by ethnicity and nativity, previous studies of adolescents concentrate more on ethnic differences than nativity differences within ethnic groups. In contrast to what might be expected from economic pressures alone, one study using the 1979 National Longitudinal Survey of Youth (NLSY) suggests that Hispanic adolescents aged 14–15 are less likely than White adolescents to work (Rothstein 2001). In addition to demonstrating their lower likelihood of making normal progress and graduating from high school, bivariate analyses from another set of studies based on the 1979 NLSY suggest that Hispanic males and females either differ little from whites (Bacolod and Hotz 2006) or are slightly less likely than whites to work during high school (Ahituv and Tienda 2004; Tienda and Ahituv 1996;). Moreover, Ahituv and Tienda's multivariate analyses indicate that Hispanic youth are not more likely to experience deleterious educational outcomes once differences in group composition are taken into account. Their analyses also suggest that even though some labor force attachment may be associated with positive educational outcomes for all racial and ethnic groups, extensive work hours impinge on educational outcomes. This negative link appears to be strongest for Hispanic females (Ahituv and Tienda 2004) and Hispanic males with disadvantaged backgrounds (Tienda and Ahituv 1996). Still other studies suggest that

Hispanics are not more likely than Whites to drop out of school for employment (Stearns and Glennie 2006).

As alluded to above, insights from this literature are limited by the relative absence of attention to nativity or generational differences among Mexicans. In one of the few studies to focus on generational differences in school-employment patterns among Mexican adolescents, Landale et al. (1998) used 1990 census data to examine three states: in school, out of school and working, and out of school and not working (or idle). Their findings show substantial differences in the likelihood of being out of school and working (versus in school) by generation and age of migration among Mexicans. Compared to U.S.-born Mexicans and Mexicans who migrated to the United States at younger ages, Mexicans who migrated to the United States during their teens are especially likely to be out of school and working. These teen migrants are also more likely than others to be idle, in large part due to their much greater likelihood of not being enrolled in school. It is noteworthy that this study did not attempt to separate immigrants who had enrolled in U.S. schools from immigrants who had never enrolled in U.S. schools.

Taken as a whole, the empirical literature provides important background for understanding school enrollment and school-work linkages among Mexican youth. Yet, it is difficult to integrate findings because of inadequate attention to the implications of sample selection criteria for findings. School-based samples exclude youth who have never been enrolled in U.S. schools. Census-based studies potentially include all youth, but decisions about analytic samples may inadvertently omit some students who have never been enrolled in U.S. schools. For example, studies restricted to children of the household head (Warren 1996) or children who can be matched to their parents (Landale et al. 1998) may disproportionately exclude never-enrolled immigrant adolescents because such youth are less likely to live with their parents than other youth. Such decisions are potentially crucial for studies in which the theoretical framework is anchored in the experience of the total population of immigrants as opposed to the population of immigrants in schools. If some segments of immigrant youth are excluded from the former studies, then estimates of nativity/generational differences in dropout may be biased.

THE PRESENT RESEARCH

Focusing on Mexicans and Whites, this study uses the 2000 decennial census to examine school enrollment and joint school-employment patterns among 16–17 year-old youth. Census data are advantageous because they include large numbers of adolescents in specific ethnic and nativity groups. In addition, the census provides the opportunity to address an issue that has been recognized in prior studies (e.g., Fry 2003, 2005), but not fully analyzed. As we have emphasized, an unknown percentage of foreign-born Mexican youth are not enrolled in school because they migrated here after they had dropped out of school in Mexico. Many migrated to the United States as part of the transition to post-schooling adulthood. The implications of excluding or including these youth in analyses of school enrollment/dropout remain understudied.

Because the importance of this topic is to some extent contingent upon group size, we first describe a method for indirectly identifying the never-enrolled segment of the immigrant population and show the implications of excluding them for estimates of school enrollment and employment among foreign-born Mexicans. We then investigate the implications of including or excluding never-enrolled youth for assessing the magnitude of interethnic and intra-ethnic differences in outcomes. This is followed by recommendations on how this group should be dealt with in future investigations.⁵

These research objectives are important because they have significant implications for efforts to evaluate sociological theories and perspectives using census data. Specifically, theories of assimilation share an interest in documenting and explaining ethno-generational patterns of youth disengagement from schooling and the labor force (Portes and Rumbaut 2001, 2006; see also Alba and Nee 2003). Concerns about downward trajectories that are set in motion by school dropout and unemployment are prominent in the assimilation literature. Yet, efforts to evaluate various theoretical perspectives cannot be divorced from assumptions about who forms the “at risk” population among immigrants because the immigrant generation serves as an anchor for comparisons intended to show the trajectory of educational assimilation.

The results presented below demonstrate that researchers must be explicit about the population of interest. Researchers who are concerned with the educational transitions of the Mexican-origin population in the U.S. school system should remove the never enrolled. Those who are interested in the prospects of the Mexican-origin population as a whole should recognize and include this group to minimize coverage bias and improve statistical inferences. These rudimentary guidelines have not been adhered to in the past in census-based research for a variety of reasons, including the absence of an algorithm to identify the never enrolled.

DATA AND METHODS

This study utilizes the five percent Public Use Microdata Sample of the 2000 U.S. Census. This dataset consists of about one-third of the 16% of all housing units that received the long form of the census. The analysis is limited to adolescents who are ages 16–17 and are identified as Mexican or non-Hispanic White. The age cutoffs were guided by both substantive and practical considerations. Sixteen was chosen as the lower age because most states have compulsory school attendance until the age of 16. In addition, information on employment activities is only available in the census for those who are age 16 and older. Seventeen was chosen as the upper age cutoff because of our interest in persons who have not reached the age of majority, persons who could normally be expected to live with at least one parent, and persons who should not have made the transition to college by the reference date of the census question on school enrollment (February 1, 2000).

All adolescents who were living in either institutional or non-institutional group quarters are eliminated from the analysis. The exclusion of these adolescents is warranted for several reasons, including maintaining consistency with prior studies and the fact that the number of adolescents living in these settings is extremely small. Just .3% of foreign-born Mexican adolescents are institutionalized and .5% live in “other” group quarters. Estimates in our analysis are not sensitive to this decision.⁶

Our analysis focuses on two dependent variables. The first is school enrollment (enrolled vs. not enrolled) and the second is a measure that combines both enrollment and employment to identify those who are enrolled in school and not employed, those who are both enrolled and employed, those who are not enrolled and are employed, and those who are idle (not

⁵ Our research is different in at least three important ways from that of Fry (2003, 2005). First, we provide an in-depth portrait of the Mexican-origin population rather than a general descriptive overview of pan-ethnic groups (e.g., Latinos) and nativity groups disassociated from ethnicity (e.g., the foreign born). Second, we explicitly recognize and demonstrate the extent of uncertainty in identifying the “never-enrolled” population due to numerous assumptions. Third, unlike previous studies, we show how bivariate and multivariate inferences about key indicators of exposure and assimilation for the Mexican-origin population are contingent on how the never enrolled are treated. Thus, the research goals of this study complement and significantly extend those of prior studies.

⁶ The institutionalized also cannot be included in the analysis of school-work activity patterns because they are not at risk of employment and are classified as “not in the labor force” by the U.S. census. Also, those in other group settings may be under some form of supervision or may have some type of mental or physical incapacity.

enrolled, not employed). One of the virtues of the combined measure is that it captures the full range of situations of adolescents. At the same time, cross-sectional data cannot directly address issues related to the sequencing of employment and enrollment transitions. Some students may have dropped out of school with a job in hand while others may not have found employment or may never have been enrolled in U.S. schools to begin with. We discuss our approach to identifying the latter group below.

The existing literature on Mexican youth focuses on two independent variables: nativity and generation. Unfortunately, the census is more amenable to analyses of the role of nativity than the role of generation because it does not provide information on the birthplace of the parents of each person in the household. Thus, after excluding those who were born abroad of American parents (Hirschman 2001), we examine Mexicans who were born in Mexico ($N = 11,826$), Mexicans who were born in the United States ($N = 24,503$), foreign-born Whites ($N = 3,967$) and native-born Whites ($N = 257,492$).⁷ In years here based on the year of entry.

Independent Variables

The multivariate analysis includes several covariates that describe the characteristics of youth. In addition to age (16 vs. 17) and gender, we examine the youth's relationship to the household head. Using children of the head as the reference category, we utilize dummy variables that separately identify youth who are "heads, spouses, or unmarried partners," siblings, grandchildren, cousins (and aunts/uncles), other relatives and other non-relatives. Another variable indicates the number of parents each youth has residing in the household. Those with no parents or one parent are contrasted with those who live with two parents. These are potentially important control variables, given variation by ethnicity and nativity in various indicators of family structure and living arrangements that may be associated with educational outcomes (Landale, Oropesa, and Bradatan 2006).

Investigations of educational and employment outcomes among immigrants draw attention to language proficiency as an indicator of human capital (Duncan et al. 2006). English language proficiency is determined from a question on how well the youth speaks English. We distinguish those who speak English "not at all" or "not well" from those who speak English "well" or "very well."

Given the interest in new immigrant destinations and school policy, we also include measures of region of residence and each state's age of required school attendance. Region is described by 9 dummy variables that contrast standard census regions with a reference category that consists of states along the U.S.-Mexico border. Age of required school attendance in each state describes the institutional environment for school enrollment (see Angrist and Krueger 1991). We distinguish between states with compulsory enrollment up to the ages of 16, 17, and 18.

Our ability to include a comprehensive set of covariates is limited by the content of the census and the aims of our study. Studies of schooling should ideally include information on parental characteristics that play a role in the inter-generational transmission of status, especially parental education. This is problematic with the census because no questions

⁷ Because the census does not ask for parental birthplace, a measure of generation can be constructed only by linking records of children to records of their co-resident parents (identified by "relationship to head" codes). Although this may be a viable strategy for identifying the second and third generations for the majority of children, there are "blind spots" for children who do not live with their parents, children who live with single parents (e.g., a child with a single analyses limited to those born in Mexico, we include a measure of U.S. exposure; that is, the number of native-born parent and an absent foreign-born parent might be misclassified as third+ generation), and children in blended families. The first blind spot may be especially important for young migrants who were never enrolled. This is one reason we focus on nativity differences rather than generational differences.

pertain directly to parental characteristics for each person in the household. Some researchers have worked around this limitation by linking the records of children to those of co-resident parents, but the universe of interest in these studies is children living with their parents (Landale et al. 1998). This procedure is inadequate for the present study because our universe of interest is the non-institutionalized population, irrespective of whether they live with their parents, and parental characteristics cannot be retrieved for youth who do not live with their parents. Although the head's education could serve as a proxy, we do not include this covariate because the error involved in substituting the head's education would be systematically associated with nativity and ethnicity; that is, the error would be larger for foreign-born Mexicans because they have complex living arrangements. This can be inferred from the results that follow.

Similar concerns provide the basis for our decision to exclude other variables from the multivariate analysis. For example, ideally we would like to identify children from families whose income falls below the official federal poverty threshold and children who were raised in families that provided limited exposure to English because children from disadvantaged backgrounds are less well-prepared when they enter the school system and more likely to leave school than others (Schneider et al. 2006). These variables are not included in our multivariate analysis because the census only describes the situation of the current household, not the household of the family of origin. Nonetheless, we present descriptive information on poverty and linguistic isolation to enrich our portrait of Mexican youth.

ANALYSIS PLAN

As noted above, one challenge to studying school enrollment with cross-sectional data is identification of the “at risk” population. Following procedures developed in studies of education and labor market processes among adults (Betts and Lofstrom 2000; Chiswick 1978; Dávila and Mora 2000; see Fry 2003, 2005), we utilize information on age at immigration and the last grade of school completed to identify the segment of the 16–17 year-old immigrant population that is not at risk of enrollment. This segment is *ultimately* defined as non-enrolled youth whose age at migration is greater than or equal to their highest completed grade plus six.⁸ For example, a 17 year old whose highest completed grade is the 6th grade (normally completed at age 12) and who entered the United States at the age of 15 is unlikely to have been enrolled in school in this country. A 17 year old who completed the 10th grade and entered this country at the age of 12 was probably enrolled in school in the United States.

This is an indirect method for identifying the never enrolled. Some imprecision may be introduced by variation in the ages of entry into school, grade placement, and inconsistency in the responses of serial migrants to census questions that ask for year of migration (Redstone and Massey 2005).⁹ We will demonstrate how assumptions about the highest grade completed, the age of entry into school (used to determine age of completion), and migration during the same year as school completion affect estimates of the size of the never-enrolled population.

⁸ Age at migration can be calculated from the census as: age at census – [2000 – census year – year of migration].

⁹ Misclassifications may occur in the absence of information on specific dates and places of enrollment. This method will correctly classify those who delayed entry into school or experienced grade retention in Mexico. A few false negatives (incorrectly classifying someone as “never enrolled in the U.S.”) may occur for those who enrolled in the United States during their year of migration but dropped out after completing that year here. A few false positives (incorrectly counting someone as “ever enrolled in the U.S.”) may occur as well for any student who skipped a grade in Mexico, but did not enroll in the United States.

After presenting information on the impact of assumptions on estimates of the relative size of the population that is “not at risk” of dropping out of U.S. schools, we describe how the inclusion or exclusion of this group affects estimates of the school enrollment and employment patterns of the ethno-nativity groups of interest. This is followed by a sociodemographic profile of the never enrolled and a multivariate analysis that focuses on the consequences of ethnicity, nativity, and time in the United States for schooling and work. This analysis is performed with SUDAAN to adjust for the nesting of observations within households --- some of the 16–17 year olds in our sample are not independent observations because they live in the same household. In addition, all results are based on weighted data, with the weights adjusted to retain the unweighted sample size of each group.

In summary, our analysis focuses on a *potential* source of coverage error in studies of school enrollment among Mexican immigrant youth. This topic is within the purview of a growing literature on measurement and data source issues that are pertinent to documenting levels and trends in high school graduation (Swanson 2004; Warren and Halpern-Manners 2007). The implications of non-enrollment among immigrants have been recognized as a theoretical possibility for adult immigrants (Swanson 2004) and youth (Hirschman 2001), but remain underexplored in the literature. We contribute further to these efforts by clarifying below how coverage error can be reduced by either including or excluding the never enrolled, depending on the theoretical and research context of a particular study.

RESULTS

Estimates of the Never Enrolled Segment and School-Employment Activity Patterns

Table 1 presents a range of estimates of the percentage of foreign-born Mexican youth aged 16–17 who never enrolled in U.S. schools. The estimates differ as a result of assumptions about the age of entry into first grade, the grade level of the highest year of completed education for those who fall into census intervals (e.g., 5th or 6th, 7th or 8th grade),¹⁰ and whether school dropout occurred before or after migration when both events occurred in the same year. The top figure in each cell is based on the assumption that those who ended their education in the same year that they migrated completed their education in Mexico (or elsewhere for foreign-born Whites). The bottom (bracketed) figure is based on the assumption that school dropout occurred subsequent to immigration for this group.

A cursory inspection of Table 1 reveals that attention should focus primarily on foreign-born Mexicans since variation across the estimates is trivial for foreign-born Whites. Among those born in Mexico, within-column comparisons show that the estimates are relatively unaffected by decisions about how to treat education levels when the census reports an interval for completed education. However, within-row and within-cell comparisons reveal that estimates of the relative size of the never-enrolled population do depend somewhat on the assumed age of entry into first grade and the treatment of those who migrated at the same age that they completed their schooling. Focusing on the most common ages of entry into the first grade in Mexico (6 or 7) and assuming that school dropout preceded migration for those who left school and migrated at the same age, the estimates of the never enrolled range from 14.2% to 17.5%. If we assume that migration preceded school dropout, then estimates range from 10.8% to 14.8% (bracketed figures in columns 3 and 1). In additional analyses, we determined that the majority of cases in which migration and school

¹⁰ The census uses grouped categories (intervals) before the 9th grade and single years for grades 9 thru 12 to describe completed education. Among the grouped categories are “5th or 6th grade” and “7th or 8th grade.” The “low” assumption is that the typical person in these intervals completed 5 and 7 years of schooling (respectively). The “mid-point” assumption is that the typical person in these intervals completed 5.5 and 7.5 years. The “high” assumption is that the typical person in each category completed 6th and 8th grade.

completion occurred in the same year involve individuals who ended their schooling after the 9th or 10th grade. Given that these are common stopping points for education in Mexico, it is likely that most of these adolescents finished school in Mexico and subsequently migrated to the United States. Thus, we rely on the various assumptions underlying the middle unbracketed estimate (17.0% rather than 14.8% in column 1, row 2) to identify immigrant youth who never enrolled in school in the United States. The results are not sensitive to this decision.¹¹

School enrollment and activity patterns of Mexican and White youth are provided in Table 2. Panel A presents information for “never” enrolled Mexican immigrants (column 1), “ever” enrolled Mexican immigrants (column 2), the total Mexican immigrant population (column 3, never-enrolled and ever-enrolled combined) and native-born Mexicans. Because few are classified as never enrolled (N=61), we do not disaggregate foreign-born Whites into never enrolled and ever enrolled (column 5).

Panel A shows that there is little difference in school enrollment between U.S.-born Mexicans (94%) and Whites (96%). However, there is a surprising difference in the work patterns of those who are in school. Native-born Whites (35%) are more likely than native-born Mexicans (21%) and every other group to be in school *and* working. The results also demonstrate the extent to which school enrollment is structured by nativity for Mexicans, as well as the sensitivity of estimates to the exclusion of the never-enrolled population. As noted, 94% of native-born Mexicans are in school and 73% are in school and not working. In comparison, just 71% of foreign-born Mexicans are in school and 58% are in school and not working. These differences are substantial, but a large share of each difference is due to inclusion of the never enrolled in the calculations. Indeed, about 86% of foreign-born Mexicans who were ever enrolled are in school and 70% are enrolled and not working. Conversely, the foreign born (29%) are much more likely than the native born (7%) to be out of school, but if the never enrolled are excluded from calculations for foreign-born Mexicans, the non-enrollment rate is only 14%.

Also of interest in Table 2 are the work patterns of Mexican youth who are not in school (Panel B). About 56% of foreign-born Mexican youth who never enrolled in U.S. schools are working. This is substantially higher than the employment rates of 45% for their ever-enrolled counterparts who are not in school and 29% for native-born Mexicans who are not in school. At the same time, foreign-born Mexican youth who enter but later drop out of U.S. schools are more likely to be employed (45%) than those who remain in school (18 = 15.9/86). Thus, among those not in school, never-enrolled foreign-born Mexicans are the least likely to be idle and native-born Mexicans are the most likely to be idle.

A Profile of the Never-Enrolled

Table 3 provides additional insights into the circumstances of never-enrolled and ever-enrolled youth by showing their demographic and socioeconomic characteristics. Because they are central to the issues at hand, we emphasize foreign-born Mexicans. We are especially interested in determining whether the group that we classify as never enrolled has

¹¹ Article 65(I) of the current General Education Law of Mexico stipulates that the minimum age of entry into first grade is six (by December 31st of the school year). Some sources describe Mexican federal law as mandating compulsory education from ages 6–14 (International Labour Office 1998) and others describe compulsory education through the ninth grade (the last level of secundaria, see Post 2001; U.S. Department of State 2007). Regarding the age of entry into school, our calculations using public use data from the Mexican Census indicate that the majority of children in Mexico enter the first grade at age six. Regarding the age of exit from schools, many Mexicans in the past exited the educational system upon the completion of the 6th grade and about two-thirds of children who enter the first grade in Mexico currently complete nine years of education (U.S. Department of State 2007). Thus, a case could be made for using the high estimate instead of the middle estimate for collapsed categories in the U.S. census, but the results are not sensitive to this decision.

a profile that is consistent with what we might expect for labor migrants. Descriptive statistics appear in boxes for variables on which the never enrolled stand out.

The first column shows that never-enrolled foreign-born Mexican youth are distinct. For example, the mean number of years in the United States for the never enrolled is 1.5. This is substantially lower than the mean of 7.6 years for those who have attended U.S. schools. The never enrolled also are dissimilar to the ever enrolled and native-born Mexicans on other characteristics. The never enrolled are older (64% are 17 vs. 50% for the ever enrolled) and much more likely to be male (72%). Moreover, only 18% of never-enrolled foreign-born Mexicans are children of the householder and 81% do not live with at least one parent.¹² Three-fourths of this group lives with non-relatives (26%), siblings (26%), cousins (20%) or other relatives (4%). Moreover, just 17% of the never enrolled speak English well or very well. Consistent with the recent geographic expansion of labor migrants beyond traditional gateway states, never-enrolled foreign-born Mexican youth are less likely than other Mexicans to live in states along the border. Instead, they are more likely to live in South Atlantic states. Their distribution across states classified by the minimum age at which youth can leave school is unremarkable. Overall, the profile of the never enrolled suggests that they are labor migrants who are more likely than not to be “emancipated” from their families of origin.

The linguistic isolation and poverty status of adolescents’ households (not shown in Table 3) also provide insights into their circumstances, even though they cannot be used as predictors due to their potential endogeneity. Fully two-thirds of never-enrolled Mexican immigrants live in a household that is linguistically isolated (i.e. no one age 14 or over speaks English very well). This is substantially higher than the figures for ever-enrolled Mexican immigrants (33%) and native-born Mexicans (4%). In keeping with their living situations, the never enrolled are also relatively likely to be poor. Over 40% of never-enrolled Mexican immigrants live below the poverty line, compared to 33% of ever-enrolled Mexican immigrants and 21% of native-born Mexicans. Needless to say, such figures lend themselves to a somewhat pessimistic view of the long-term prospects of this group --- a subject that we return to.

Multivariate Analyses

Up to this point, we have established that: (1) a non-trivial share of Mexico-born youth are likely to have never enrolled in U.S. schools; (2) purging the never enrolled from the foreign-born segment of the Mexican population attenuates ethnic and nativity differences in school and work patterns because the never-enrolled population inflates estimates of the share of foreign-born Mexican youth who drop out of U.S. schools; and (3) the never-enrolled segment consists largely of males who have been emancipated from their parents. The next two tables more fully examine the implications of these patterns for school enrollment and school-work activities. In Table 4, school enrollment is examined with logistic regression models for the total sample of Mexicans and Whites, Mexicans born in the United States and Mexico, and those born in Mexico. The first two samples provide information on the roles of ethnicity and nativity in school enrollment. The Mexico-born sample provides insights into the role of length of residence in the United States. These analyses are conducted for all youth, regardless of the likelihood of ever having enrolled in high school (Panel A), and for youth who are likely to have enrolled in U.S. high schools (Panel B). All results control for the full set of predictors.

¹² The difference between the fact that 18% are “children” of the head and 19.5% live with at least one parent is due to the fact that some children live with a parent in a subfamily that is headed by someone other than a parent.

The first column of Table 4 provides results that are consistent with the previous tables. Regardless of how the never enrolled are treated, Mexicans are less likely than Whites to be enrolled in school. In contrast to foreign-born Whites, who are more likely than native-born Whites to be enrolled, the odds of school enrollment for foreign-born Mexicans are just one-fourth the odds for native-born Whites when the never enrolled are included and four-tenths the odds when the never enrolled are excluded. Moreover, native-born Mexicans are less likely than their White counterparts to be enrolled in school.

The second column shows that among Mexicans, the foreign born are less likely to be enrolled in school than the native born. Inclusion of the never enrolled generates an odds ratio of .47 (Panel A), which changes substantially to .75 when the never enrolled are excluded (Panel B). Thus, the nature of the nativity difference remains the same but the strength of the association weakens considerably when the never enrolled are excluded.

The last column reveals that conclusions about the effect of years of residence in the United States are sensitive to how the at-risk population is defined. In Panel A the odds ratio for years of U.S. residence is 1.08; this indicates that the likelihood of being enrolled increases with time in the United States. However, the odds ratio for the sample restricted to the ever enrolled in Panel B is .96, indicating that the relationship between enrollment and length of residence is negative. Net of controls, the likelihood of enrollment declines with years in the United States among those born in Mexico.

The latter finding is counterintuitive. Additional analysis (not shown) indicates that in models restricted to the ever enrolled, the negative relationship between duration of residence and school enrollment in the multivariate model is due to the inclusion of language. The parameter estimate is positive in bivariate models (not shown) and not significant in multivariate models restricted to all of the covariates except language. Apparently, the newest ever-enrolled Mexican immigrants are the least likely to be in school primarily because of background factors and their lower proficiency in English compared to earlier immigrants. Once their difficulty with English is controlled, they are actually more likely to be in school than those who have lived in the United States longer. Thus, inferences are contingent on how the never enrolled are treated, as well as how models are specified.

Panel B also presents the odds ratios for the covariates, which are of secondary interest. Focusing on Mexicans, the results in the second and third columns show that enrollment is less likely for 17 year-olds and males. In addition, the risks of dropping out are tied to transitions out of the child role. Enrollment is positively associated with the number of parents in the household and being the grandchild of the head. Enrollment is negatively associated with being a “head/spouse/partner” or an “other relative” in column 2. Additionally, the results for relationship to head must be interpreted in light of the fact that the number of parents in the household is controlled. In models that do not include the number of parents, school enrollment is negatively associated with additional categories for relationship to head. These associations are due to the fact that no parents are present in the household.

Enrollment status also is associated with human capital and location. Not speaking English well is a risk factor for school dropout. Further, Mexicans who live outside the border region in East North Central, New England, Mountain, and South Atlantic states are less likely to be enrolled than their counterparts in California, Arizona, New Mexico and Texas. This is despite the fact that Mexicans who live in states that require education until age 18 are *less* likely to be enrolled in school than those who live in states that require education to age 16 (unlike the relationship for the total sample).

Table 5 presents a more detailed analysis of the activity patterns of youth by considering employment and school enrollment simultaneously. The multinomial logistic regression models contrast three activity status groups to the reference group (enrolled, not employed): in school and employed, not in school and employed, and neither in school nor employed.¹³ All odds ratios are generated from multivariate models that include the full set of covariates for the samples that include the never enrolled (columns 1–3) and the samples that exclude the never enrolled (columns 4–6).

The results for the total sample shown in Panel A show that, regardless of whether or not never-enrolled youth are included, Mexicans are more likely than Whites to be idle and more likely to be out of school with a job. This is especially the case for foreign-born Mexican youth, but it holds for native-born Mexicans as well. Among youth who are in school, all groups are less likely than native-born Whites to be employed.

Another important set of findings concerns parameter estimates of interethnic differences. For the majority of comparisons involving those born in Mexico, inclusion of the never enrolled amplifies differences between Mexicans and Whites. In column 3 of Panel A, the odds of being idle are 3.1 times higher for those born in Mexico than for the reference group. In column 6, which excludes the never enrolled, the odds ratio falls to 2.0. In column 3 of Panel B, the odds ratio of 1.7 indicates that those born in Mexico are more likely than their U.S.-born Mexican counterparts to be idle, but the odds ratio is close to one (1.1) and non-significant when the never enrolled are excluded (col. 6). A reduction in the odds ratio is also shown for nativity differences in the likelihood of being out of school with a job. The parameter estimates for employment among those who are in school in columns 1 and 4 are largely unaffected because purging the sample of the never enrolled only changes the composition of the sample that is not in school.

As in the previous results for school enrollment, a more complicated pattern is found for years of residence in the United States for those born in Mexico (Panel C). When the never enrolled are included in the analysis (cols. 1–3), more time spent in the United States is associated with a lower likelihood of leaving school for employment or idleness. This conclusion must be modified substantially if those who were never enrolled in U.S. schools are excluded. Among the ever enrolled, time in the United States makes adolescents *more* likely to be idle or to be out of school with a job. Again, additional analyses suggest that this reversal of sign is a function of how the model is specified; that is, whether English proficiency is included.

The Never Enrolled and Sample Restrictions in Prior Studies

The foregoing has established that estimates of school enrollment and dropout are sensitive to how never-enrolled youth are treated. By definition, school-based studies exclude never-enrolled youth. Typically, studies based on census data do not consider whether youth have ever enrolled in U.S. schools. However, other sample selection criteria used in census-based studies may inadvertently exclude a substantial share of never-enrolled immigrant adolescents. This raises the question of whether inferences from prior census-based studies would have been affected by explicit decisions about the treatment of the never enrolled. Limited inroads into this issue are possible by comparing our results for all children to the results for a sample restricted to the children of household heads --- a restriction that is common in census-based studies that link children to parents (e.g., Hirschman 2001; Warren

¹³ Due to a change in the reference category, a shift in perspective is required to read this table. Table 4 answers the question: What predicts school enrollment? Table 5 answers the question: What predicts various types of employment-related departures from the modal (majority) pattern of enrollment without working? This should be kept in mind in the interpretation of the parameter estimates and a comparison of results in these two tables.

1996). This restriction is often imposed because parental characteristics are generally unavailable for youth who are not children of the household head, and such characteristics are often of substantive interest. For the sake of brevity, we address this issue only for school enrollment.

Additional analyses (not shown) reveal that excluding the never enrolled *weakens* the bivariate relationship between nativity and school enrollment for samples restricted to children of the head, as was the case for all children. At the same time, the practice of restricting the sample to children of the household head *weakens* the relationship for nativity because it inadvertently excludes many youth who have never enrolled in the United States. Specifically, the bivariate odds of enrollment for those born in Mexico are less than one-fifth (.17) the odds for U.S.-born Mexicans when all children are examined and the never enrolled are included. When just children of the head are examined, the odds ratio is .35. This is a substantial difference, as is the difference when the never enrolled are excluded (.43 for the total sample of children vs. .58 for children of the head). This suggests that previous analyses that focus on children of the head or children living with their parents may have generated correct inferences about the nature of bivariate nativity differences, but underestimated their magnitude if their goal was to describe the total population of immigrant youth.

Lastly, the bivariate association between length of U.S. residence and school enrollment for those born in Mexico is also weakened when the never enrolled are excluded, regardless of sample. When all children are examined and the never enrolled are included, the bivariate odds ratio is 1.23, compared to 1.05 when the never enrolled are excluded. When only the children of the head are examined and the never enrolled are included, the odds ratio for duration of residence is 1.17, compared to 1.04 when the never enrolled are excluded.¹⁴

Overall, sample restrictions based on both prior enrollment and relationship to the household head matter for inferences. Restricting samples to children of the household head changes inferences in part because it disproportionately excludes children who never enrolled in U.S. schools. A more complete evaluation of this issue will require additional data that can link the never enrolled to their parents and allow for more fully-specified models. Nevertheless, future investigations need to be aware of the implications of sample selection based on either of these criteria.

DISCUSSION AND CONCLUSION

The study of school outcomes among Mexican-origin youth is critical for understanding the future incorporation of the growing Mexican population in the United States. Mexican-origin youth are at disproportionate risk of dropping out of high school, and a major question posed in the literature is whether educational outcomes improve or deteriorate with duration of U.S. residence or across generations. Prior research on this topic has drawn on data collected from both school-based samples and samples of the general population of youth, often with a lack of clarity about the implications of the type of sample for the conclusions that can be drawn. A major question for studies of school outcomes among Mexicans is how to deal with the substantial segment of foreign-born Mexican youth who never enrolled in U.S. schools. This segment is omitted by design in school-based studies and typically included in studies of all youth without being separately identified.¹⁵ We have

¹⁴ Multivariate analyses were also conducted with identically specified models for the total sample and a sample of children of the head (relationship to head was dropped because it is a constant in samples restricted to children of the head). The significant negative parameter estimate for length of residence in the multivariate models for all Mexico-born youth who were ever enrolled in U.S. schools was *not* replicated for an ever enrolled sample of children of the head. The odds ratio for the latter group weakened considerably and was non-significant (odds ratio = .99, $p = .35$).

argued that it is crucial to make explicit decisions about the treatment of the never-enrolled and the treatment of the never enrolled should depend upon the research question at hand.

Using an indirect method to identify never-enrolled youth using information on age at migration and the likely age at completion of the highest grade of education, our analysis indicates that estimates of school enrollment and school-employment activity patterns of 16–17 year old Mexicans are sensitive to decisions about whether to include the never enrolled. This is because the foreign born comprise a large share of the U.S. Mexican population, and a large share of foreign-born adolescents (perhaps 17% for this age group) may have already completed their education by the time of migration to the United States.¹⁶ The findings indicate that approximately 86% of ever-enrolled Mexico-born youth ages 16–17 are in school, but this figure drops to 70% when the never enrolled are included. In addition, the share of Mexico-born youth that is idle nearly doubles (from 8% to 14%) when the never enrolled are included in estimates. Thus, estimates of the severity of the dropout problem for foreign-born Mexican youth are influenced by the treatment of the never enrolled.

It should be recognized that this method for identifying the never enrolled is not based on detailed information gathered directly from individuals on their educational histories. Nonetheless, other evidence attests to the general validity of this indirect method. Most notably, the never-enrolled segment is comprised disproportionately of male adolescents who have spent a relatively short period of time in the United States and have other characteristics that fit the profile of labor migrants (Durand, Massey, and Zenteno 2001; Massey, Durand, and Malone 2002). They are likely to be emancipated from their parents and living in poverty in linguistically-isolated households with siblings, other relatives, and roommates. Mexico-born males who were never enrolled also have the highest likelihood of any group of being employed. Their less numerous female counterparts are less likely to be working (not shown).

A challenge created by the ascendance of the assimilation paradigm and the data sources used in empirical research is to determine how assumptions about who belongs in the at-risk population affect inferences about the nature of differences in outcomes. All theories of assimilation draw attention to the duration of time since immigration among members of a particular ethnic group, especially foreign-born members. When the entire ethnic group is examined, duration is indicated by nativity and generation. Among the foreign born, it is indicated by length of residence in the host country. The central tasks of assimilation theories are to describe trajectories that are anchored in the experiences of the immigrant generation and to identify the explanatory mechanisms for observed trajectories. Such mechanisms are revealed through comparisons involving the majority population, the native and foreign-born segments of a particular group, and individuals with varying durations of residence among the foreign born. If inferences drawn from these comparisons are not sensitive to how the at-risk population is defined, then there is little reason for concern about the issue because it has few practical implications.

Our results show that some inferences are sensitive to decisions about treatment of the never enrolled and some are not. Conclusions about the nature of interethnic and intra-ethnic differences by nativity are generally not sensitive to such decisions in either bivariate or multivariate models. Bivariate results indicate that those born in Mexico have the lowest rates of school enrollment and the highest rates of idleness, followed by U.S.-born Mexicans

¹⁵ As noted, analyses limited to children of the head may inadvertently omit many never enrolled youth.

¹⁶ One important question is how underenumeration of undocumented migrants might affect our results. Although there are no estimates of the undercount for undocumented Mexicans for the 2000 census, the undercount for Hispanics overall is estimated to be about 2.85% (U.S. Census Bureau 2001). The undercount is likely to be higher for undocumented migrants. The implication for our results is that our estimate of 17% never enrolled among Mexican foreign-born youth may be conservative.

and non-Hispanic Whites (in that order). At the same time, decisions about the treatment of the never enrolled have a substantial effect on the magnitude of differences that involve those born in Mexico. Inclusion of the never enrolled produces substantially larger differences in school enrollment and idleness across the groups of interest, compared to exclusion of never-enrolled youth. Clearly, the decision to include or exclude the never enrolled has implications for assessments of the severity of nativity differences in school dropout.

Although the magnitude of estimates of school enrollment is contingent upon how never-enrolled Mexican immigrants are treated, the decision to include or exclude the never enrolled has its greatest implications for inferences about the effect of duration of residence in the United States. Multivariate models that *include* the never enrolled suggest that the likelihood of school enrollment increases and the likelihood of idleness decreases with years of U.S. residence. When the never enrolled are *excluded*, these associations reverse direction: school enrollment decreases and idleness increases with years of residence. Supplementary analyses revealed that this reversal in sign is due primarily to the effect of English language proficiency, which implies that recency of migration has a protective effect among those who enroll in U.S. schools and overcome language barriers.

This reversal in sign is noteworthy because it demonstrates the potential of this procedure for reconciling some divergent findings from studies based on samples of the general population and studies that rely on school-based samples. Specifically, exclusion of the never enrolled from samples of the general population effectively replicates school-based samples. This is a major reason why our finding regarding the negative effect of length of residence replicates findings from some studies that rely on school-based samples (White and Glick 2000; see also Perreira, Harris, and Lee's [2006] findings for Asians). At the same time, this negative effect is counterintuitive. Why might we expect the likelihood of enrollment to decrease with exposure to the United States?

One possible answer to this question draws on the notion of immigrant optimism, which is often invoked to explain academic achievement among foreign-born minorities (Kao 2004; Kao and Tienda 1995). The basic idea is that immigrants are optimistic and determined to take advantage of educational opportunities in the United States (e.g., Suárez-Orozco and Suárez-Orozco 1995). Once the language barrier is overcome, this outlook can provide later-arriving immigrants with psychological resources to overcome socioeconomic disadvantages and to stay in high school. This explanation assumes that optimism and determination fade over time with duration of residence. An additional possibility is that later-arriving immigrants benefit from having been schooled for a longer period of time in their native language in the country of origin. This might provide them with the academic skills and knowledge that are necessary for quickly mastering course content in American schools as they master English (Padilla and Gonzalez 2001). Those who have less schooling in their native country may have less of a foundation to master the basics that are necessary to be academically successful in American schools as they learn English. Additional research is needed to evaluate these speculative explanations.

Although immigrant optimism might be useful for understanding the sign of the coefficient, the dependence of inferences about the effect of duration of U.S. residence on decisions about treatment of the never enrolled raises larger theoretical issues. The classic assimilation view is that incorporation and integration into mainstream institutions progressively unfold over time as numerous barriers associated with being a newcomer are overcome. This view would be supported by a positive or a non-significant association between length of residence and enrollment after covariates measuring different forms of capital are controlled (e.g., English proficiency). This was shown for the sample that includes the never enrolled.

The segmented assimilation perspective suggests that exposure to the host society can impede educational achievement among immigrants who belong to ethnic groups that are generally devalued in the host society. Among Mexico-born youth who ever attended U.S. schools, the likelihood of dropping out and the likelihood of idleness increase with time in the United States once we account for English language proficiency. Obviously, these different findings raise a conundrum about the relationships between data, theories, and research objectives, which we delve into below in our recommendations.

Because the purview of assimilation theory is expansive and extends to both the never- and ever-enrolled, the future educational prospects of the large population of never-enrolled Mexican adolescents deserve special attention.¹⁷ It is difficult to be sanguine about the prospects of these youth because they have few incentives to acquire additional education, at least over the short-term, given that their overriding motivation for migration is to find employment and to earn money. This implies that they would face considerable opportunity costs in the form of foregone wages and employment if they enrolled in a traditional school.

The disincentive of undocumented labor migrants to invest in additional education can also be linked to the structure of labor markets. Undocumented workers are confined primarily to the secondary sector of the labor market in jobs that offer low wages (by American standards) and few benefits. In the secondary labor market, undocumented Mexican workers face a wage penalty and their returns to formal education are relatively flat (see Duncan et al. 2006; Rivera-Batiz 1999; Trejo 1997). This is because employers in the secondary labor market are not looking for the kinds of general skills that are certified by a high school degree; rather they are looking for specific capital in the form of skills that are acquired “on the job” as well as “soft skills” that enable employees to work productively with others (Waldinger and Lichter 2003). Thus, the motivation to augment their education is diminished by the motivation for migration, the role of legal status in constricting opportunities, and employer preferences. Needless to say, incentives may change over a longer time horizon.

The incentive for these youthful migrants to invest in traditional education, either in the United States or Mexico, is also undermined by the imperfect transferability of educational credentials across borders (Belman and Heywood 1991). A high school degree from Mexico is devalued in the U.S. labor market, and additional U.S. schooling without obtaining a degree for those who start their education elsewhere does not yield an economic payoff (Gonzalez 2003). Those who start their education elsewhere and earn a traditional high school degree in the United States will benefit economically (Bratsberg and Ragan, Jr. 2002), but the essential fact is that most older adolescents who migrate for work and never attend U.S. schools are likely to remain outside the education system.

In the long term, an option for adolescents who interrupt their schooling by exiting the formal education system is to secure a G.E.D. (General Educational Development certification by exam). Unfortunately, it is not clear that this would be economically beneficial. Some studies indicate that G.E.D. recipients are more similar in terms of their labor market position to high school dropouts than traditional high school graduates (Cameron and Heckman 1993; Cao, Stromsdorfer, and Weeks 1996; Heckman and LaFontaine 2007). At the same time, other studies suggest that a G.E.D. earned in the United States may confer a slight wage advantage over a secondary degree earned abroad *as*

¹⁷ To some extent, this is not an issue for temporary migrants who return to Mexico after a short stay. Yet, many will become permanent migrants for several reasons, including the decision to have children in the United States, the difficulty of moving back-and-forth between countries due to increased government efforts to restrict the flow of people across the U.S.-Mexico border, and higher wages in the United States. Migration of family members from Mexico to the United States also discourages return migration (Ibarraran and Lubotsky 2005; McKenzie and Rapoport 2006; Mora and Taylor 2006).

immigrants age because it signals increased productivity to employers (Clark and Jaeger 2006). Collectively, these results do not encourage optimism regarding the prospects of never-enrolled migrant youth.

Recommendations

In keeping with the general thrust of Vélez and Saenz's (2001) appeal for greater attention to conceptual and measurement issues in the study of school dropout, the remaining issue is whether and when investigations should identify and exclude the never enrolled. This is important because inferences about the level of enrollment and the nature of associations involving key predictors are sensitive to whether never-enrolled youth are defined as part of the "at-risk" population. Thus, a principled set of recommendations is required to provide some guidance as to how to reduce coverage error that would result from the failure to include relevant segments of the population or the failure to exclude irrelevant segments of the population.¹⁸

Decisions about this issue must be made in order to generate a sample that accurately reflects the population of interest. The key criterion for decisions is the fit between the research objectives and the type of data that are to be analyzed. For research that is designed to evaluate hypotheses derived from particular theoretical perspectives, one must turn to the scope conditions of the theoretical perspectives. The scope conditions of theories are the "domains" or "boundary conditions" under which generalizations about a process apply (Stinchcombe 2005; Walker and Cohen 1985). The most obvious boundaries are those that demarcate the groups to which theories refer. Policy-oriented research must also pay attention to boundary issues in order to identify the relevant population.

As noted, assimilation theories are prominent in the sociological literature on Mexican-origin youth. Because assimilation theories are broad and inclusive in describing processes that apply to all group members, the never enrolled should normally be included along with those who have ever been enrolled when the research objective is to provide a comprehensive portrait of the total population of Mexican-origin youth. Moreover, they should normally be identified separately when it is feasible to do so because never-enrolled youth differ in important ways from ever-enrolled youth. This cannot be done in school-based samples and it has not been done in most studies that have utilized census data.

This recommendation might be taken by some to imply that it is always inappropriate for empirical tests of assimilation theories to exclude the never enrolled or to use school-based samples. In turn, this view would imply that it is inappropriate to examine school dropout from the vantage point of assimilation theory because attention is directed away from the total population to the segment that has ever enrolled in U.S. schools. This position is untenable. Assimilation theories also focus on immigrants' experiences with the major institutions of the host society. Indeed, the seminal project in the segmented assimilation tradition is based on tracking the progress of a longitudinal sample of youth originally drawn from a school-based sampling frame (Portes and Rumbaut 2001). Thus, exclusion of the never enrolled is not always problematic for researchers concerned with assimilation processes.

Regardless of whether they are working within an assimilation framework, researchers whose objective is to focus on various school-related transitions or to assess the performance of U.S. schools for the purpose of informing educational policy should endeavor to exclude the never enrolled because the scope of these studies is limited to schools.¹⁹ Although this

¹⁸ Coverage error is normally discussed in terms of sampling procedures. The concept of coverage error is extended here to refer to the extent to which analytic samples exclusively and completely capture members of the population.

exclusion is accomplished by design in surveys administered to school-based samples, it is problematic for studies based on census data or large-scale population-based surveys. Clearly, the never enrolled should be excluded from the “at risk” population to avoid distorting findings if schools are the focus of attention (see Heckman and LaFontaine 2007). To do otherwise in census-based studies of transitions experienced by those enrolled in schools would introduce a form of coverage error that downwardly biases estimates of the level of school enrollment among those born in Mexico and upwardly biases parameter estimates that summarize differences by nativity.

There is one important qualification to this recommendation, especially for those who are interested in the school-to-work transition among Mexican immigrants. For researchers who use census-based products to examine school-work activity patterns, the geopolitical boundaries of the population examined are circumscribed by the borders of the United States. However, the presence of numerous young Mexican labor migrants in the United States suggests that the scope of future research could be expanded to include Mexico by employing origin-destination designs (e.g., see Oropesa and Landale [2000] and Landale, Oropesa, and Gorman [2000]). This type of design would allow researchers to describe how the educational transitions that are involved in school completion and employment complement binational migration systems. It would allow researchers to bring those never enrolled in U.S. schools into analyses because they were enrolled in Mexican schools (a project that is underway).

In closing, we would be remiss if we did not answer the question posed in the title of this study: Why do never enrolled Mexican immigrant youth matter? Never-enrolled Mexican youth matter for a variety of reasons. From the perspective of sociological research, the never enrolled matter because they have remained in the shadows of prior research for reasons that have been made clear. Relegating them to the shadows is problematic because the decision to include or exclude these youth has consequences for inferences. At the same time, never-enrolled adolescents matter because they are hidden in the shadows of society at large. A substantial share of this group may be undocumented and stay in the United States in the future, especially if they form families here and immigration reforms provide them with the opportunity to regularize their legal status. Their life chances and those of their children will be structured not only by how much education they receive, but where they obtain their education. For immigrants, degrees from U.S. educational institutions are likely to confer advantages and it is in our long-term national interest to facilitate the integration of Mexican-origin adolescents into the American educational system. Ultimately, these are the reasons why never-enrolled Mexican immigrant youth matter.

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¹⁹ These would include the school-to-work transition, the transition from one grade to another, and the transition from one level of school to another (e.g., college).

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Table 1

Estimated Percentage of Foreign Born Youths Age 16–17 Who Were Never Enrolled in US Schools Under Different Assumptions

	Assumed Age of Entry into First Grade			
	Age 6		Age 7	
	Mexican (1)	White (2)	Mexican (3)	White (4)
<u>Assumed Grade Level</u>				
Low	17.5 [14.8]	1.6 [1.2]	14.8 [12.5]	1.2 [.9]
Midpoint	17.0 [14.8]	1.6 [1.2]	14.2 [12.5]	1.2 [.9]
High	17.0 [14.2]	1.6 [1.2]	14.2 [10.8]	1.2 [.8]

Note: All percentages are weighted. Each percentage corresponds to the assumed age of entry into first grade (column) and the assumed grade level for grouped categories in the census (rows). The top figure counts those who migrated during the same year that they completed school as having completed school in Mexico (or elsewhere for Whites). Thus, this group is counted among never-enrolled adolescents in the U.S. The bracketed figure counts these adolescents as having enrolled in the U.S.

Table 2
Enrollment and Employment Activity Status of 16–17 Year Olds by Race and Nativity

	Mexican			Non-Hispanic White		
	Foreign Born			Native Born % (4)	Foreign Born % (5)	Native Born % (6)
	Never Enrolled % (1)	Ever Enrolled % (2)	Total % (3)			
Panel A. Total Sample						
In School		86.0	71.4	93.5	95.7	96.2
Employed		15.9	13.2	20.6	23.2	35.1
Not Employed		70.1	58.2	72.9	72.5	61.1
Not In School		14.0	28.6	6.5	4.4	3.9
Employed	55.7	6.3	14.7	1.9	1.0	1.5
Not Employed	44.3	7.7	13.9	4.6	3.4	2.4
Panel B. Not in School						
Employed	55.7	45.0	51.4	29.2	22.7	38.5
Not Employed	44.3	55.0	48.6	70.8	77.3	61.5
Total (N - Unweighted)	100.0 (1,981)	100.0 (9,845)	100.0 (11,826)	100.0 (24,503)	100.0 (3,967)	100.0 (257,492)

Note: All percentages are based on weighted data. Never-enrolled non-Hispanic Whites have been included with their ever-enrolled counterparts to simplify the table. Thus, columns 3 and 5 are comparable. Also, foreign-born Mexicans were born in Mexico.

Table 3

Descriptive Statistics

	Mexican				Non-Hispanic White	
	Foreign Born			Native Born	Foreign Born	Native Born
	Never Enrolled	Ever Enrolled	Total			
	(1)	(2)	(3)		(5)	(6)
<u>Mean Years in the U.S.</u>	1.5	7.6	6.6	---	6.9	---
<u>Age</u>						
% 17	63.9	50.2	52.6	51.0	51.2	50.0
<u>Sex</u>						
% Male	72.3	55.6	58.5	50.2	50.2	51.4
<u>Relationship to Head</u>						
% Head/Spouse/Partner	6.4	2.8	3.4	1.5	1.3	.8
% Child	17.5	69.5	60.6	86.1	83.9	93.1
% Sibling/Sibling in-law	26.0	10.4	13.0	2.2	2.1	.5
% Grandchild	.4	1.2	1.0	4.4	1.3	2.6
% Aunt/Uncle/Cousin	19.5	7.3	9.4	2.2	1.7	.6
% Other Relatives	3.8	1.9	2.3	.9	.6	.2
% Other non-Relatives	26.3	7.0	10.3	2.7	9.0	2.1
<u>Number of Parents</u>						

% Two	10.9	55.5	47.9	61.9	71.8	73.2
% One	8.6	16.4	15.1	26.7	13.0	20.7
% None	80.5	28.1	37.0	11.4	15.2	6.1
<u>English Proficiency</u>						
% Speaks English Well	16.7	73.6	63.9	97.2	94.4	99.1
<u>Region</u>						
% Border States	52.1	68.6	65.8	77.5	23.1	14.6
% New England	.3	.4	.4	.2	7.4	5.7
% Mid-Atlantic	4.8	3.4	3.6	.9	21.9	13.5
% East North Central	9.9	8.3	8.6	8.2	15.6	19.8
% West North Central	2.5	2.4	2.4	2.0	4.6	9.9
% South Atlantic	15.0	6.8	8.2	2.8	14.4	16.1
% East South Central	2.6	.9	1.2	.5	2.0	6.8
% West South Central	2.7	1.1	1.4	1.1	1.6	4.2
% Mountain	6.5	4.9	5.2	4.4	3.4	5.1
% Pacific	3.6	3.2	3.3	2.4	6.0	4.4
<u>State Compulsory Education</u>						
% 18	35.4	30.4	31.2	38.3	25.6	32.1
% 17	3.9	3.2	3.3	2.0	5.2	12.6
% 16	60.7	66.4	65.5	59.7	69.2	55.3
Total	100.0	100.0	100.0	100.0	100.0	100.0
N (Unweighted)	(1,981)	(9,845)	(11,826)	(24,503)	(3,967)	(257,492)

Note. All percentages and means are weighted. Never-enrolled non-Hispanic Whites have been included with their ever-enrolled counterparts to simplify the table. Thus, columns 3 and 5 are comparable. Also, all foreign-born Mexicans were born in Mexico.

Table 4

Odds Ratios from Multivariate Logistic Regressions: School Enrollment

	Mexican		
	Total Sample	Born in US & Mexico	Born in Mexico
	Enrolled vs. Not Enrolled (1)	Enrolled vs. Not Enrolled (2)	Enrolled vs. Not Enrolled (3)
Panel A – Include Never Enrolled			
<u>Years of Residence in USA</u>			1.08 ***
<u>Ethnicity and Nativity</u>			
Foreign-Born Mexican	.24 ***	.47 ***	
Native-Born Mexican	.56 ***	1.0	
Foreign-Born White	1.19 +		
Native-Born White (ref.)	1.0		
Panel B – Exclude Never Enrolled			
<u>Years of Residence in USA</u>			.96 ***
<u>Ethnicity and Nativity</u>			
Foreign-Born Mexican	.39 ***	.75 ***	
Native-Born Mexican	.54 ***	1.0	
Foreign-Born White	1.69 ***		
Native-Born White (ref.)	1.0		
<u>Age</u>			
17	.57 ***	.74 ***	.87+
16 (ref.)	1.0	1.0	1.0
<u>Sex</u>			
Male	.85 ***	.82 ***	.79 **
Female (ref.)	1.0	1.0	1.0
<u>Relationship to Head</u>			
Head/Spouse/Partner	.21 ***	.30 ***	.39 ***
Child (ref)	1.0	1.0	1.0
Sibling	.70 ***	1.00	1.24
Grandchild	.99	1.53 **	1.87 +
Cousin/Aunt/Uncle	.78 *	.95	1.21
Other Relative	.36 ***	.48 ***	.69
Other Non-Relatives	.69	.98	1.08
<u>Number of Parents</u>			
Two	3.91 ***	4.25 ***	4.42 ***
One	1.80 ***	2.26 ***	2.43 ***
None	1.0	1.0	1.0
<u>English Proficiency</u>			

	Total Sample	Mexican	
		Born in US & Mexico	Born in Mexico
	Enrolled vs. Not Enrolled (1)	Enrolled vs. Not Enrolled (2)	Enrolled vs. Not Enrolled (3)
Does Not Speak English	.61 ***	.46 ***	.35 ***
Speaks English	1.0	1.0	1.0
<u>Region</u>			
New England	.81 ***	.56 ⁺	.38 *
Mid-Atlantic	.83 ***	.81	.86
East North Central	.65 ***	.58 ***	.61 ***
West North Central	.71 ***	.73 ⁺	.82
South Atlantic	.49 ***	.55 ***	.57 ***
East South Central	.54 ***	.66	.74
West South Central	.55 ***	.69	1.37
Mountain	.59 ***	.43 ***	.52 **
Pacific	.64 ***	.81	.85
Border States (ref.)	1.0	1.0	1.0
<u>State Compulsory Education</u>			
18	1.08 **	.75 ***	.70 ***
17	1.03	1.10	1.05
16 (ref.)	1.0	1.0	1.0

⁺ p < .10,

* p < .05,

** p < .01,

*** p < .001.

Note. All parameters are estimated with SUDAAN using weighted data, after adjusting the weights to retain the unweighted sample size for tests of significance. For Panel A, the unweighted N's are as follows: (1) total sample, N=297,788; (2) Mexican, N=36,329; (3) foreign-born Mexican, N=11,826. For Panel B, the unweighted N's are as follows: (1) total sample, N=295,746; (2) Mexican, N=34,348; (3) foreign-born Mexican, N=9,845. Panel B excludes both foreign-born Mexicans (N=1,981) and foreign-born Whites (N=61) who were not enrolled in school in the U.S.

Table 5
Odds Ratios from Multivariate Multinomial Logistic Regressions: School and Employment Activities

	Include Never Enrolled			Exclude Never Enrolled		
	School & Job vs. School & No Job (1)	No School & Job vs. School & No Job (2)	No School & No Job vs. School & No Job (3)	School & Job vs. School & No Job (4)	No School & Job vs. School & No Job (5)	No School & No Job vs. School & No Job (6)
Panel A – Total Sample						
<u>Ethnicity and Nativity</u>						
Foreign-Born Mexican	.47***	3.82***	3.11***	.47***	2.25***	1.98***
Native-Born Mexican	.62***	1.26***	1.70***	.62***	1.34***	1.74***
Foreign-Born White	.57***	.36***	.96	.58***	.30***	.63***
Native-Born White (ref.)	1.0	1.0	1.0	1.0	1.0	1.0
Panel B – Mexican						
<u>Ethnicity and Nativity</u>						
Foreign-Born Mexican	.69**	2.48***	1.68***	.70***	1.49***	1.10
Native-Born Mexican (ref.)	1.0	1.0	1.0	1.0	1.0	1.0
Panel C – Born in Mexico						
Years of Residence in USA	.98*	.90***	.93***	.98**	1.02 ⁺	1.06***

⁺ p < .10,

* p < .05,

** p < .01,

*** p < .001

Note. All parameters are estimated with SUDAAN using weighted data, after adjusting the weights to retain the unweighted sample size for tests of significance. The unweighted N's for columns 1–3 are as follows: (1) total sample, N=297,788; (2) Mexican, N=36,329; (3) born in Mexico, N=11,826. For columns 4–6, the N's are as follows: (1) total sample, N=295,746; (2) Mexican, N=34,348; (3) born in Mexico, N=9,845. All models include age, sex, relationship to household head, number of parents in the household, English proficiency, region, and state age of compulsory education.