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From California Public Schools, 1990-2000

Jennifer Van Hook

Jason Snyder

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Jason Snyder

Center for Family and Demographic Research

Department of Sociology

Bowling Green State University

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ABSTRACT

This article investigates whether and the extent to which "white flight" from Hispanic and limited-English-Proficient (LEP) students has been occurring in California's public schools and further, examines the level (school or district) on which "white flight" may operate. Using school-level administrative data from the California Department of Education from 1990 to 2000, we estimate exponential growth rate models of white enrollment with school-level fixed effects. The results shed light on the implications of immigration for school segregation in the United States. The analysis indicates that white enrollment declined in response to increases in the number of Spanish-speaking LEP and Hispanic students, and that "white flight" from LEP or Hispanic students occurred more at the district than the school level in the case of primary schools, and at the school level for secondary schools. In addition, schools with higher percentages of Spanish LEP students in the school than the district, and with higher percentages in the district relative to the county, experienced greater losses in white enrollments than other schools, thus suggesting that higher levels of segregation in the wider metropolitan area accelerate white flight.

Immigration, Ethnicity, and the Loss of White Students

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Although race and ethnic integration in American schools increased substantially in the

years following forced school desegregation, with the most dramatic changes occurring in the

South, segregation of public schools has again increased in the past decade, particularly for

Hispanics (Orfield & Yun, 1999; Reardon, Yun & Eitle, 2000). Hispanic students are now more

segregated than African American schoolchildren (Orfield & Yun, 1999), and have been

increasingly concentrated in high-poverty neighborhoods (Jargowsky, 2003; Kingsley & Pettit,

2003). Growth in the share of children of immigrants attending U.S. schools may have

contributed to the upturn in Hispanic school segregation because recently arrived immigrants

(many of whom are Hispanic) tend to be more residentially segregated than natives (Van Hook

and Balistreri 2002), and because white students may have responded to these demographic

changes by no longer attending schools containing many immigrant and minority students, a

phenomenon sometimes referred to as "white flight". This article seeks to investigate whether

and the extent to which "white flight" from Hispanic and limited-English-Proficient (LEP)

students has been occurring in California's public schools and further, examines the level (school

or district) on which "white flight" may operate.

"White flight" and accompanying racial segregation can have serious consequences for

cities and schools. Since the end of World War II, middle-class whites as a group have tended to

move from central cities to whiter neighboring suburbs leaving behind a growing concentration

of lower-income families in the central city (Frey, 1979; Massey & Denton, 1993). These

residential shifts are thought to be at least partially responsible for a depletion of the tax base

sending the city into a spiral of decline (Frey, 1979; Massey & Denton), and lack of operational

funds for the local government may translate into loss of social services and poor quality public schools in the central city (Orfield & Yun 1999). An additional problem associated with segregation is that opportunities for the development and acquisition of social capital may decline (Coleman 1988). Some argue that "exposure" to middle-class schoolchildren may influence the attitudes minority and immigrant students have toward education, alter their outlook on opportunities for advancement after graduation and in the case of immigrant children, influence their path of incorporation into American society (Zhou & Bankston 1998; Ogbu 1991; Bankston & Caldas, 1996; Thomas & Brown, 1982).

Prior studies on declines in white public school enrollments have focused on increased exposure to African American schoolchildren (Andrews, 2002; Clotfelter, 2001; Smock & Wilson, 1991; Welch, 1987; Wilson, 1985), various types of desegregation plans (Welch, 1987; Wilson, 1985), availability and costs of private school alternatives (Buddin, Cordes & Kirby, 2001) and access to "whiter" school districts (Clotfelter, 2001) as possible determinants of white flight. In addition, Fairlie (2002) examined "Hispanic flight" to private schools from African American students, and Katzman (1983) investigated "Black flight." But few studies have explored white flight from Hispanics or Hispanic immigrants in schools. An important exception is Betts & Fairlie's (2003) study of native flight to private schools from immigrant schoolchildren, which finds a significant positive correlation between the proportion of immigrant students in public school districts and the number of native students attending private school. However, no study has yet examined shifts in public school-level and district-level attendance patterns of white students in response to increases in Hispanic or LEP enrollments.

We use public school enrollment data from the state of California from 1990 and 2000 to assess the relationship between school- and district-level ethnic and language composition and

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white enrollments. California is an ideal context in which to study white flight from immigrant

children because the state has received more immigrants than any other state in the past few

decades (Frey, 1995), and this has had a tremendous impact upon the ethnic and language

composition of the public schools. Between the 1981-82 and 2001-02 school years in California,

the percentage of all students that were Hispanic or Latino rose from 26% to 44%, while the

percentage non-Hispanic white dropped from 56% to 35% (California Department of Education,

2003:23). The school attendance patterns observed in California may hint at future trends in

other parts of the United States as the immigrant population becomes more geographically

dispersed.

PREVIOUS RESEARCH

Much of the existing research on white flight from public schools has been concerned

with the effects of various types of desegregation plans in order to determine if there is an

accelerated decline in white enrollments in response to any form of integration versus the most

controversial such as busing (Wilson, 1985). Although early results were mixed, most

researchers found evidence of white flight (Andrews, 2002; Carr & Zeigler, 1990; Farley,

Richards & Wurdock, 1980; Giles, 1978; Smock & Wilson, 1991; Welch, 1987; Wilson, 1985).

Most studies also found that, while white enrollment rates declined in the year following

implementation of desegregation plans, many white students returned to these districts in the

following years (Smock & Wilson, 1991; Wilson, 1985) although there were some exceptions in

the South (Andrews, 2002). The initial discrepant findings have been attributed to inconsistent

methods, analysis of too few points in time and inappropriate samples composed of a handful of

school districts rather than more representative samples (Wilson, 1985).

Further research suggests that white flight is more likely to occur when school districts with higher percentages of white students in the local area are available. The idea is that the decision of where to attend school involves the weighing of alternatives within the context of local areas, so the absolute percentage minority does not matter as much as the percentage minority relative to other districts in the area. For example, the suburbanization of America's cities may have contributed to increases in school segregation because suburbs provided new "whiter" and more affluent alternatives for whites wishing to avoid central city decline (Crowder, 2000; Frey, 1979; Massey & Denton, 1993; but see Sly & Pol, 1978). Indeed, in a study of schools and districts within 238 metropolitan areas, Clotfelter (2001) found that having access to "whiter" school districts was significantly related to the decline of white public school enrollments. The pattern was consistent for large and small metro areas as well as large and small districts.

Prior research also suggests that white flight—when it occurs—tends to operate at the district level rather than the school level (Wilson, 1985). In other words, decisions of where to attend school are more likely to depend on the characteristics of entire school districts than particular schools. In a study of recent trends in segregation, Reardon, Yun & Eitle (2000) found that the major cause of school segregation in recent years is compositional imbalances between city and suburban school districts rather than within districts themselves. Thus, as schools within districts have tended to become more similar with respect to race and ethnic composition, differences between districts within the same metropolitan areas have widened (Rivkin 1994).

Circumstantial evidence suggests that white enrollments may have also declined in response to increases in Hispanic or immigrant students. Krysan (2002) found that whites' beliefs about declining property values and increasing crime rates influenced their intentions to

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move when African Americans *or* Hispanics moved into predominantly white neighborhoods. Other research has shown that in high immigration states such as California, there has been increasing levels of out-migration that are suggestive of a response, particularly among poor whites, to the heightened levels of international immigration (Frey, 1995). Finally, in a cross-sectional study of California schools, Van Hook (2002) found that in areas with a significant limited-English-Proficient (LEP) population, a pattern of segregation appears between non-Hispanic white students, on the one hand, and LEP and African-American students, on the other.

Other research on white flight from Hispanics and immigrants has focused on private school attendance. Fairlie & Resch (2002) investigated white flight to private schools from different minority groups by race and income, and unexpectedly found a significant negative effect of Hispanic share on the private school rate of non-Hispanic whites. But in a more recent study using data from the 1980 and 1990 Censuses for 132 metropolitan areas, Betts & Fairlie (2003) found that increases in the immigrant share of public secondary schools led to a substantial flight of non-Hispanic white natives to private schools. For every four immigrants entering the public high school one native white student left for a private alternative. Interestingly, natives appeared to react most strongly to immigrant children that spoke languages other than English at home. The authors suggest that this may explain the lack of evidence for flight at the primary school level, as elementary schools are more likely to place LEP students into separate classes thereby reducing the amount of contact between immigrant and native children.

While the Betts and Fairlie (2003) study provides important information about flight to private schools from immigrant and non-English-speaking schoolchildren, the authors themselves point out that analyzing metropolitan- rather than school- or district-level data may

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have actually understated the true effect, missing patterns of flight both within and across school districts. Our contribution is to examine the dynamics of Hispanic and immigrant school attendance patterns at a much greater level of detail than before. In particular, we examine with a full decade of California Department of Education annual enrollment data the relationships between changes in school-, district-, and county-level enrollments of Hispanic and non-English-speaking students, on the one hand, and shifts in white enrollment, on the other. We thus are able to assess with greater precision *whether* white flight is occurring, the *level* at which flight is operating (school or district), and the degree to which flight depends on the composition of other schools or districts in the area.

A second limitation of prior research on white flight from immigrants and Hispanics is that it has focused on private school attendance. Yet white students may be diverted to public as well as to private schools. Although we are unable to discern where "diverted" white students end up (e.g., out of the state, in the suburbs, or in private schools), we assess the sum total of "white flight" from public schools and not just the portion going to private schools.

We specifically examine white flight from Spanish-speaking limited-English-proficient (LEP) students, non-Spanish-speaking LEP students, and English-speaking Hispanic students. We focus on language proficiency instead of immigration status because very little data are available on the school attendance patterns of immigrants (place of birth is not identified in the California data, for example). Not all immigrant children are LEP (two-fifths are), and not all LEP children are children of immigrants (10% of LEP children are the U.S.-born children of U.S.-born citizens) (Van Hook and Fix, 2000). Nevertheless, 90% of LEP students are either children of immigrants or foreign-born immigrant children, and many immigrant students were formerly designated as LEP. LEP students comprise some of the most vulnerable immigrant

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students, many of whom are at a point in their lives when they are still relatively new to the United States and struggling with the task of learning a new language. The response of white enrollment to LEP students may thus provide the most apt depiction of the effects of recent immigration on school segregation. In addition, by distinguishing between English-proficient and LEP Hispanic students, we are able to assess the relative importance of ethnicity versus language for white flight. While either may be cause for alarm, flight from all Hispanics regardless of English proficiency foreshadows longer-lasting consequences. Flight from low-English proficiency may diminish with time as immigrant students learn English and acculturate, but flight from Hispanic ethnicity may remain strong since Hispanic students are unlikely to change their ethnicity even with more time in the United States.

DATA AND METHODS

Data

We used administrative data on school enrollments for all public schools in California from 1989 to 2000. The California Department of Education has been conducting a language census of all public schools in the state since the mid-1980s, collecting information on the number of students enrolled in a given school that is considered limited English proficient (LEP) by language (e.g., Spanish, Mandarin, Vietnamese, etc.). In addition to the language census, the California Board of Education collects data on enrollments by race/ethnicity as well as the percentage of a school's students that receive free or reduced-price meals, a commonly used proxy for socioeconomic status. As with the language census, this information is collected annually from all public schools in the state.

Our sample included all public primary and secondary schools in California (serving children in grades K-12) that were in operation each year from 1990 through 2000 with at least 100 white students in 1990, and had valid data on enrollments of various LEP, ethnic, and school-meal groups (2,975 primary and 803 secondary schools). The analytic sample included an observation for each of the eleven years from 1990 to 2000 (32,725 primary and 8,833 secondary school-years). For some of the descriptive analyses that do not use poverty data (which only became available starting in 1988), we included data from 1985 through 2000.

Variables

White Enrollment. Following Clotfelter (2001), we used the exponential growth rate formula to estimate the annual rate of change in school-level white enrollments (r):

$$r = \ln(W_{d,s,t}) - \ln(W_{d,s,t-1}), \tag{1}$$

where $W_{d,s,t}$ and $W_{d,s,t-1}$ are defined as above in equation 1 as the number of non-Hispanic whites enrolled at school s, district d in years t and t-1. We carried the $\ln(W_{d,s,t-1})$ term over to the left-hand side of the equation as shown below in equation 2. The means and standard deviations of all our measures are displayed in Table 1. White enrollments declined at an average annual rate of 4 percent (5.49 - 5.53 = -.04) in primary schools and by 2 percent in secondary schools (6.14 – 6.16 = -.02).

[Table 1 about here]

Hispanic and LEP Enrollment. We examined the effects on white flight of Hispanic and Limited-English-Proficient (LEP) populations, specifically focusing on the number of Spanish-speaking LEP students, non-Spanish-speaking LEP students, and non-LEP Hispanic students. Schools used a variety of methods to identify LEP students, including on the basis of parent requests, teacher referral, home language surveys, oral or written language exams, the student's

previous school record, and achievement test results. According to the Schools and Staffing Survey, about 85% of schools with LEP students used more than one method, half used four or more, and 7.6% reported using all of the methods mentioned. Schools with many LEP students were more likely to use home language surveys and oral or written language examinations, and schools with relatively few LEP students were more likely to rely on parent recommendations and teacher referrals (Van Hook 2002).

The California Department of Education data include the number of LEP students by language and the number of students by race/ethnicity, but not the number of LEP students by race/ethnicity. We estimated the number of non-LEP Hispanic students as the total number of Hispanic students minus the number of Spanish-speaking LEP students (this assumes that most, if not all, Spanish-speaking LEP students also identify as Hispanic). We used numbers of students rather than the proportion or percentage of students to avoid results that are driven by mathematical imperatives (if the proportion of group A increases in a school, then by definition the proportion not in group A will decline). As noted above, all enrollment variables were logged and measured at both the school and district levels. To make the log transformation possible, enrollment numbers equaling 0 were recoded to 1.

To examine the effects of *relative* levels of Hispanic and LEP students among local area schools and districts, we created difference scores that compare the percentage of Spanish LEP, other LEP, and non-LEP Hispanic composition of schools with the district in which the school is located (e.g., percent Spanish $LEP_{d,s,t-1}$ – percent Spanish $LEP_{d,t}$). We created parallel measures that compare the composition of districts with the county in which the district is located.

Controls. Because much of the previous research on white flight has found effects of other minorities on white enrollments, we included in the multivariate models controls for the

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number of black students in the school and district. We also controlled for the number of poor students in the school and district, using the number of students receiving free or reduced lunches or breakfasts as a proxy. School-meal participation is the only available indicator of poverty status in the California school enrollment data for all years from 1990 to 2000. Free or reduced-price lunch eligibility is determined by multiplying the Federal income poverty guidelines by 1.30 and 1.85 respectively, and income guidelines are adjusted annually for inflation as dictated by the National School Lunch Act. Because the number of local-area schools and districts affect the degree to which white students have the opportunity to attend school elsewhere, we controlled for the number of schools in the district and the number of districts in the county. On average, primary schools tend to be located in districts with more schools than are secondary schools (because primary school districts tend to contain more but smaller-sized schools than secondary school districts).

Because fertility has been declining among non-Hispanic whites relative to Hispanics, we examined whether white flight may be explained in part by declines in non-Hispanic white fertility rates in the area. We therefore controlled for the difference in the number of non-Hispanic white and Hispanic births in the county in the primary school models. We lagged the number of births by five years because changes in the number of births in a given year will not affect the number of children enrolled in school until the children reach kindergarten age. We measured the number of births at the county level due to data limitations (birth data are available at the county but not school district level). In the secondary school models, we took a similar approach, only instead of controlling for the number of births in the county, we controlled for fluctuations in the number of non-Hispanic white students (relative to Hispanics) in feeder schools. We thus included in the secondary school models the difference in the number of non-

Hispanic white and Hispanic students in primary school in the county. As with births, primary school enrollments were lagged by five years since, on average, changes in enrollments in primary school will not filter up to the secondary school level for five to six years; most of the children in primary school in a certain year will have all moved up to secondary school five years later. It may have been preferable to control for ethnic differences in sixth grade enrollments, lagged by only one year. But this was not possible because the school enrollment data do not provide race/ethnic breakdowns by grade level within schools.

Descriptive Statistics

We presented some statistics showing the average percentage of LEP schoolmates among various groups of California school children (Figure 1). We used a "P-star" (i.e., "Interaction") measure, which assesses the degree to which two groups are likely to interact within schools (Lieberson and Carter 1982; Bell, 1954). "P-star" measures have been used extensively in other work on school segregation (e.g., Clotfelter 2001; Orfield et al., 1997) and school composition effects (e.g., Wilson 1985; Smock and Wilson 1991). These measures estimate the proportion of students in group Y (LEP students) in the school of the typical student in group X. For example, the average proportion of LEP students in the typical black student's school is calculated as:

$$_L P_B^* = \frac{\sum_s B_s \cdot \frac{L_s}{T_s}}{\sum_s B_s} \times 100 \, ,$$

where B_s, L_s, and T_s are, respectively, the number of black, LEP , and total students in school s.

Models

One approach to assessing white flight is to estimate difference models, which relate the change in white enrollments to the change in school composition in the prior year. However, these models do not control for unmeasured characteristics of school districts that may be

associated with simultaneous declines in white enrollment and increases in minority composition. Farley et al. (1980) instead recommend deviations models, which relate the deviation from a district's average annual change of white students to the district's deviation from its average annual change in segregation, thus taking into account "secular" trends. We took a similar approach by estimating fixed effects models, which specify a separate error term for each school, effectively controlling for the non-time-varying effects associated with each school (Greene 2003; Stata Corporation 2003).

$$\ln W_{d,s,t} = \alpha + \beta_1 \ln W_{d,s,t\text{-}1} + \mathbf{S}_{d,s,t\text{-}1}\boldsymbol{\beta_2} + \mathbf{D}_{d,t\text{-}1}\boldsymbol{\beta_3} + \mathbf{X}_{d,s,t\text{-}1}\boldsymbol{\beta_5} + \mathbf{Z}_{d,t\text{-}1}\boldsymbol{\beta_5} + \nu_{d,s} + \varepsilon_{d,s,t}, \qquad (2)$$

where $W_{d,s,t}$ is the number of white students in district d, school s, year t. $S_{d,s,t\text{-}1}$ is a vector of school-level enrollments in year t-1 (logged number of Spanish-LEP, other LEP, and non-LEP Hispanic students), $D_{d,\,t\text{-}1}$ is a parallel vector of district-level enrollments in year t-1, and $X_{d,s,t\text{-}1}$ and $Z_{d,\,t\text{-}1}$ are vectors of school- and district-level controls in year t-1, respectively. We controlled for white enrollment in the prior year, so the model estimates the effects of school and district characteristics on the change in white enrollment. Since the dependent variable and all enrollment variables are logged, $\boldsymbol{\beta_2}$ and $\boldsymbol{\beta_3}$ estimate the percent change in white enrollment associated with a one percent change in enrollment of Spanish-LEP, other LEP, and non-LEP Hispanic students (Wonnacott and Wonnacott 1981). Thus the coefficient for Spanish-LEP enrollment of -.019 in Model 1 of Table 2 indicates that a one percent increase in Spanish LEP enrollment is associated with a .019 percent decline in white enrollment.

RESULTS

Descriptive Findings. Between 1990 and 2000, the share of Hispanic students attending public school in California increased from 32.9% to 42.2% while the share of non-Hispanic

white students declined from 47.1% to 36.9%. During this same time period, the average

primary school saw a near doubling in Spanish-speaking LEP enrollment from 8.9% to 17.1%.

For secondary schools, the share of Spanish-speaking LEP students increased from 6.1% to

10.0% (results not shown).

Despite these demographic shifts, the schools attended by non-Hispanic white students

did not changed very much. Figure 1 shows the average percentage of minority and LEP

students in the schools attended by children of various linguistic and race/ethnic backgrounds

from 1985 to 2000. Even though the share of minority and LEP students increased somewhat in

the average non-Hispanic white child's school, the level remained much lower than any other

race/ethnic or linguistic grouping. This suggests that non-Hispanic white students' schools

remained relatively "untouched" by the demographic changes occurring in California as a result

of new immigration during the 1990s.

[Figure 1 here]

Further descriptive evidence suggests that non-Hispanic white enrollments tended to

decline the most in schools with the greatest increases in Spanish-speaking LEP students. We

divided all schools into three groups: those that experienced a net decline in the share of Spanish

LEP students from 1990 to 2000, those that experienced a small increase (up to 15 percentage

points), and those that experienced a larger increase than 15 percentage points. Figure 2 shows

the average percentage growth in the number of white students in each of these groups of

schools. Points below zero (below the x axis) indicate declines in white enrollments. As shown

in Figure 2, schools with the largest increases in Spanish LEP students experienced the largest

average annual percent declines in non-Hispanic white enrollments, and in no year did non-

Hispanic white enrollments increase. Schools in the other two groups experienced very little

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change (and sometimes increased) in non-Hispanic white enrollments. The pattern shown in Figure 2, which breaks schools down by changes in Spanish LEP, was very similar when we broke the schools down by changes in the share of non-Spanish-speaking LEP students or by the share of Hispanic students (results not shown).

[Figure 2 here]

Fixed Effects Models. Although suggestive of white flight, the descriptive results in Figure 2 do not control for factors that affect both declines in white students and simultaneous increases in Hispanic students. After all, if the number of students from one group declined for whatever reason, and if the number of students permitted to attend a given school is more-or-less fixed, then enrollments of other groups *must* have increased almost by definition. Thus, we turned to multivariate fixed effects models, which estimate the effects of changes in the school's enrollment of various groupings of students (by language and ethnicity) on percent changes in white enrollments in the following year. Because the independent variables were lagged back in time by one year, we reduced the problem of simultaneity between the white enrollments on the one hand, and Hispanic and LEP enrollments on the other. We caution, however, that the associations observed in the models between increases in Hispanic and LEP enrollments and white enrollments in the next year may not be causal relationships. Longitudinal data following individual students over time would help sort out the causal ordering of compositional shifts in schools and the reduction in the number of white students attending that school. At this time, individual-level data appropriate for studying this topic is not available, so we were limited to using aggregated school-level data.

We estimated three nested fixed effects models. Model 1 included only the key independent variables (Hispanic and LEP enrollments) and white enrollments one year earlier.

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In order to examine whether relationships observed in Model 1 may be explained by associated characteristics of schools and school districts, Model 2 added controls for the number of black and poor students and the number of school in the district and districts in the county. Finally, to assess whether the associations of LEP and Hispanic students with white flight may be explained by fluctuations in non-Hispanic white fertility or the relative size of non-Hispanic white cohorts in feeder schools, Model 3 for the primary school models controlled for the number of non-Hispanic white versus Hispanic births five years earlier. For the secondary school models, Model 3 added the difference in non-Hispanic white and Hispanic primary school enrollment in the county five years earlier. All models included school-level fixed effects, which purged from the estimates the effects of secular trends and all other non-time-varying school-level characteristics. The results are shown in Table 2.

[Table 2 here]

Three major findings emerged. First, white enrollment appears to have declined in response to increases in the number of LEP and Hispanic students. In the case of primary schools, increases in the number of Spanish LEP students in the school were significantly associated with modest declines in the number of white students, and increasing numbers of Hispanic students (LEP and non-LEP alike) in the wider school district were associated with larger declines in white students (Model 1). The associations of Hispanic and LEP school-level enrollments with white flight retained their significance and strength when school- and district-level controls were added (Model 2). Furthermore, the school-level effects could not be explained at all by declines in non-Hispanic white births (Model 3). The results were similar for secondary schools in that increases in the numbers of Spanish-LEP students in the school were associated with losses in white students. Notably, the effects of increasing Hispanic and

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Spanish-LEP enrollments were generally stronger than the effects of black and poor students in the school and district.

A second major finding was that "white flight" from LEP or Hispanic students appears to have occurred more at the district than the school level in the case of primary schools (although about one-third of the district-level effects were partially explained by other factors). For secondary schools, "white flight" appears to have been a response of changes in school level characteristics. No significant district level effects were found for secondary schools, except that after controlling for school-level composition, increases in non-LEP Hispanic students were associated with *increases* in the number of white students. This effect was suppressed in Model 1, suggesting that these types of schools would have experienced growth in the number of non-Hispanic white students were it not for the fact that these school districts tended to also have growing numbers of poor students. Growth in the number of poor students at the district level was more strongly associated with declines in white students in secondary schools than any other predictor.

The third major finding was that, at the school level, declines in white enrollment appear to have been responsive to Spanish LEP students but not non-LEP Hispanic or non-Spanish LEP students. Thus the unique combination of limited English proficiency and Hispanic ethnicity in schools diverted white students. But at the district level for primary schools, declines in white enrollment were associated with Hispanics and (to a lesser degree) poor students of any linguistic status. A similar pattern could be seen in the case of secondary schools in that poverty and not LEP students were associated with the loss of white students.

In practical terms, how large are these effects? Taking primary schools as an example, the annual percentage increase in number of Spanish LEP students in Los Angeles was 3.6% at

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the 50th percentile, and 23.4% at the 75th percentile. Based on model 3 for primary schools in

Table 2, an increase in Spanish LEP students as high as the median school in Los Angeles would

be associated with a 0.06% annual decline in white enrollment, and a similar increase in Spanish

LEP at the district level would result in an addition decline of 0.10%. For a hypothetical primary

school with 1,000 white students, this rate of decline at both the school and district levels would

result in very little change in white enrollment: a loss of fewer than two white students in the first

year and 8 students over 5 years. But the effects are greater for schools at the 75th percentile,

which would lose 10 white students in the first year and 51 over five years.

     Contextual Effects. We next examined the effects of the share of Hispanic and LEP

students in schools *relative* to the surrounding district and county. We substituted the district-

level enrollment variables with the *difference* between the school and the district and between the

district and the county of the percentage of Spanish LEP, other LEP, non-LEP Hispanic students,

black, and poor students. The coefficients for the school-level and difference variables are

shown in Table 3. All other controls shown in Model 3 (Table 2) except district-level

enrollments were included in the models.

     The results showed that primary schools with higher percentages of Spanish LEP students

in the school than the wider school district experienced greater losses in white enrollments than

other schools in the same district. Along these same lines, primary schools located in districts

with higher percentages of LEP students (Spanish and non-Spanish alike) than the surrounding

county tended to lose more white students. Secondary schools showed a similar pattern at the

county level, in that those in districts with relatively high proportions of Hispanic students (LEP

and non-LEP alike) compared with the surrounding county tended to lose white students.

Notably, relative shares of Hispanic and LEP students tended to be more important than the relative share of poor or black students.

The results thus suggested that the broader context of the metropolitan area acted to accelerate or limit the degree of white loss from schools. For example, the hypothetical primary school in Los Angeles described above with the 3.6% growth in Spanish LEP students would be expected to lose white students at an annual rate of only .05% if the percentage share of Spanish LEP in the school were equal to the district, and the district were equal to the share in the county. But if the share of Spanish LEP in the school were 10 percentage points greater than the district, the annual rate of decline would be 2.6%. And if the share of Spanish LEP in the district were 10 percentage points greater than the county, the loss would increase to 7.1%. For a school with 1000 white students, a 7.1% annual decline would mean a loss of 69 students in the first year and 300 students over 5 years.

DISCUSSION

The results shed light on the relationship between immigration and racial and ethnic segregation in the United States. Consistent with our expectations, white enrollment appears to have declined in response to increases in the number of LEP and Hispanic students, and notably, the effects of increasing Hispanic and Spanish-LEP enrollments were generally stronger than the effects of black and poor students in the school and district. More specifically, "white flight" from LEP or Hispanic students appears to have occurred more at the district than the school level in the case of primary schools, and at the school level for secondary schools. One possible explanation for the difference between primary and secondary schools is that families with young children may be more likely to move to a new school district, particularly in anticipation

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of their children starting kindergarten. However, because families with older children are more settled and less likely to move, school choice would take place within districts. Furthermore, older students may be less tied to neighborhood schools within their districts because they can travel longer distances and drive. School choice within the school district may be possible even if their families do not move. Thus, white middle- and high-school students became more concentrated in districts with growing numbers of settled (English-speaking) Hispanic, non-poor students, but within these districts, tended to avoid schools with growing numbers of Spanish-LEP students.

Another major finding was that no significant negative effect of LEP students other than those that spoke Spanish were found, implying that not all immigration has a negative effect on white enrollments. At the school level, declines in white enrollment appeared to be in response to Spanish LEP students but not non-LEP Hispanic or non-Spanish LEP students. Thus the unique combination of limited English proficiency and Hispanic ethnicity in schools appears to have diverted white students. It is possible that school districts accelerated this process by, for example, creating magnate schools that specialized in Spanish. But at the district level, declines in white enrollment were associated with Hispanics and poor students of any linguistic status, suggesting that broad-based impressions of school districts as "Hispanic" or "poor" affected the decisions white families made about what school district to live in.

Finally, the results suggest that the broader context of metropolitan areas, particularly the level of segregation in the area, acted to accelerate white flight. Schools with higher percentages of Spanish LEP students in the school than the district, and with higher percentages in the district relative to the county, experienced greater losses in white enrollments than other schools. This supports the idea is that the decision of where to attend school involves the weighing of

alternatives within the context of local areas, so the absolute percentage minority does not matter as much as the percentage minority relative to other districts in the area. The results further suggest that as immigration contributes to compositional imbalances between city and suburban school districts, the segregation of white students from Hispanic and immigrants students is likely to accelerate.

One limitation of this analysis is that the models did not control for parents' perception of school quality. Previous research has found that the quality of public schools is not a significant predictor of private school choice in California (Buddin et al., 2001), but this may not be true of parental choices in public schools. Because we did not control for perceived school quality some of the effects in the results presented here may be overestimated. Unfortunately, standardized test scores, a commonly used measure of perceived school quality, were not available until 1997. As more data become available over time, further research that takes into account schools' average test scores will be possible.

Another limitation is the inability to determine with certainty the precise paths through which white enrollments are moving. The results show that the proportion of LEP and Hispanic students in schools relative to other schools in the district and other districts in the county has a strong effect on the number of non-Hispanic white students in a school. This provides some indication that white enrollments may have declined due to shifts of students among public schools within the area. This conclusion is further supported by the fact that these effects remained strong even after controlling for past fluctuations in non-Hispanic versus Hispanic births and enrollments in feeder schools. It is therefore unlikely that migration of non-Hispanic whites out of California entirely or a decline in non-Hispanic white fertility can explain the declines in the number of non-Hispanic white students attending schools with growing numbers

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of LEP and Hispanic students. Nevertheless, it remains unclear the degree to which non-Hispanic white students may have moved to nearby private school alternatives, or how factors like residential segregation, school choice policies, the organization of instruction for Limited English Proficient students, or busing patterns affect the level of ethnic and linguistic segregation in schools. Examination of individual level data that tracks students as they move from school to school over time would bring much greater clarity to this research question.

As suggested by the limitations of the present study, future research on the effects of immigration on public school enrollments could benefit from improved data. Nevertheless, the results suggest that areas that receive large numbers of immigrants may be faced with difficulties providing equal, quality education to all children. Immigrant and minority schoolchildren may become isolated from non-Hispanic white children in low-performing public schools. Policies that reaffirm the Supreme Court's pledge to provide both diversity and equality in public education may be the only remedy to this situation as levels of immigration to the United States continue to grow.

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Table 1. Sample Means and Standard Deviations

	Primary Schools		Secondary Schools	
	Mean	SD	Mean	SD
Dependent Variable				
White Students, t (logged)	5.490	0.661	6.143	0.919
White Students in school, t-1 (logged)	5.527	0.633	6.160	0.902
School-level Characteristics, t-1				
Hispanic				
LEP (logged)	3.290	1.790	3.607	1.931
Non-LEP (logged)	4.093	1.117	4.960	1.294
Non-Spanish LEP (logged)	2.428	1.613	2.800	1.881
Poor (logged)	4.063	1.325	4.255	1.582
Black (logged)	2.867	1.449	3.438	1.651
District-level Characteristics, t-1				
Hispanic				
LEP (logged)	6.551	2.531	6.427	2.424
Non-LEP (logged)	7.223	2.016	7.274	1.776
Non-Spanish LEP (logged)	5.571	2.694	5.384	2.636
Poor (logged)	7.169	2.055	6.994	1.898
Black (logged)	6.033	2.486	5.871	2.309
School-District Differences, t-1				
Hispanic				
LEP (%)	-0.340	11.119	-3.291	7.682
Non-LEP (%)	-1.314	5.963	1.811	6.290
Non-Spanish LEP (%)	0.355	5.537	-0.614	3.435
Poor (%)	-1.255	11.928	-3.823	8.693
Black (%)	-0.649	5.330	0.133	4.655
District-County Differences, t-1				
Hispanic				
LEP (%)	-0.576	10.258	-2.071	9.905
Non-LEP (%)	-0.942	7.961	-0.017	8.859
Non-Spanish LEP (%)	-0.077	4.687	-0.497	4.238
Poor (%)	0.239	9.392	-1.928	8.475
Black (%)	-0.305	6.767	-0.948	6.403
N of Schools in District	43.910	81.436	36.922	73.142
N of Districts in County	35.159	23.663	33.941	23.870
County-level Characteristics, t-5				
NHW-Hispanic births (logged)	0.420	0.742	---	---
NHW-Hispanic primary school enrollment (logged)	---	---	10.724	1.247
N Schools	32,725		8,833	

Source: California Department of Education (Basic Educational Data System),
School-level data files for school years 1989-2000

Table 2. White Enrollment (logged) and School- and District-level Spanish LEP, other LEP,
and other Hispanic Enrollments (School-level Fixed Effects Models)

	Primary Schools			Secondary Schools		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Intercept	1.624 ***	1.811 ***	1.687 ***	1.373 ***	1.465 ***	1.355 ***
White Students, t-1 (logged)	0.806 ***	0.798 ***	0.787 ***	0.767 ***	0.759 ***	0.755 ***
School-level Characteristics, t-1						
Hispanic						
LEP (logged)	-0.019 ***	-0.017 ***	-0.017 ***	-0.011 ***	-0.011 ***	-0.010 ***
Non-LEP (logged)	-0.004	-0.003	-0.002	0.003	0.001	0.003
Non-Spanish LEP (logged)	-0.003	-0.003	-0.002	-0.001	-0.001	-0.001
Poor (logged)	----	-0.006 **	-0.005 *	----	0.005 *	0.006 *
Black (logged)	----	-0.003	-0.002	----	0.003	0.003
District-level Characteristics, t-1						
Hispanic						
LEP (logged)	-0.044 ***	-0.037 ***	-0.028 ***	0.007	0.010 *	0.014 **
Non-LEP (logged)	-0.033 ***	-0.027 ***	-0.020 ***	-0.002	0.005	0.012
Non-Spanish LEP (logged)	0.005	0.005	0.004	0.009 *	0.010 *	0.010 *
Poor (logged)	----	-0.008 *	-0.006	----	-0.015 **	-0.016 **
Black (logged)	----	0.005	0.006	----	0.001	0.002
N Schools in District (logged)	----	-0.005 ***	-0.004 ***	----	-0.003 ***	-0.002 ***
N Districts in County (logged)	----	0.001	0.001	----	0.002	0.002
County-level Characteristics, t-5						
NHW-Hispanic births (logged)	----	----	0.036 ***	----	----	----
NHW-Hispanic primary school enrollment (logged)	----	----	----	----	----	0.026 **
R-Squared (within)	0.710	0.712	0.713	0.665	0.666	0.666
between	0.903	0.608	0.660	0.996	0.932	0.951
overall	0.879	0.609	0.659	0.981	0.921	0.939

Source: California Department of Education (Basic Educational Data System),
     School-level data files for school years 1989-2000
Sample: 32,725 Primary School-years (2,975 Schools);
     8,833 Secondary School-years (803 Schools)

Table 3. Percent Growth in White Enrollment and School-District and District-County Differences in Hispanic and LEP Enrollments (Exponential Growth Models with School-level Fixed Effects)
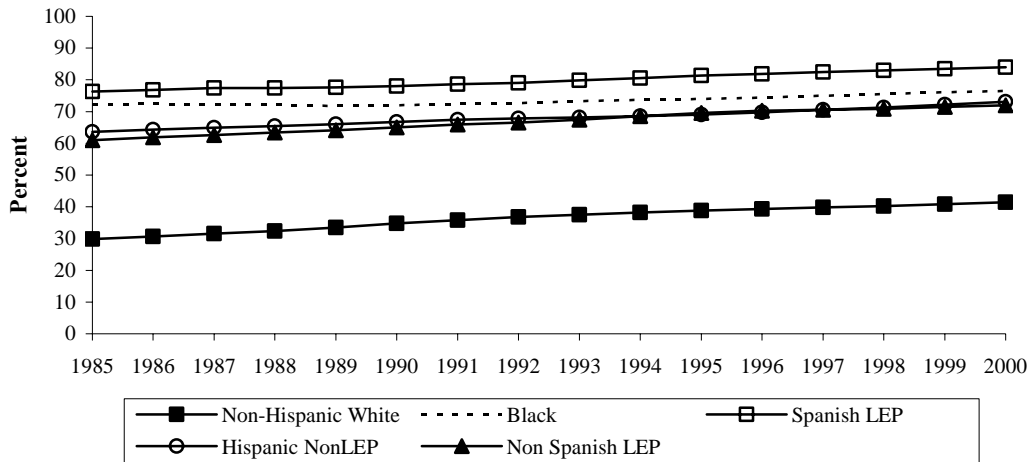
	Primary	Secondary
<u>School-level Characteristics, t-1</u>		
Hispanic		
LEP (logged)	-0.0146 ***	-0.0045
Non-LEP (logged)	-0.0260 ***	-0.0042
Non-Spanish LEP (logged)	-0.0026	0.0047
Poor (logged)	-0.0119 ***	0.0006
Black (logged)	-0.0033	-0.0006
<u>School-District Differences, t-1</u>		
Hispanic		
LEP (%)	-0.0026 ***	0.0004
Non-LEP (%)	0.0024 ***	0.0028 ***
Non-Spanish LEP (%)	-0.0001	-0.0021 *
Poor (%)	0.0006 ***	0.0008 **
Black (%)	-0.0002	0.0017
<u>District-County Differences, t-1</u>		
Hispanic		
LEP (%)	-0.0045 ***	-0.0030 ***
Non-LEP (%)	-0.0003	-0.0033 ***
Non-Spanish LEP (%)	-0.0037 ***	-0.0019
Poor (%)	-0.0012 **	-0.0024 **
Black (%)	-0.0001	0.0031 *
School-years	32,719	8,833
R-Squared (within)	0.7153	0.6685
between	0.6517	0.9433
overall	0.6516	0.9321

Source and Sample: See Table 1
Note: Models include all controls listed in Table 1.

Figure 1

Average Percentage Minority Schoolmates
Among California School Children, 1985-2000

Average Percentage LEP Schoolmates Among
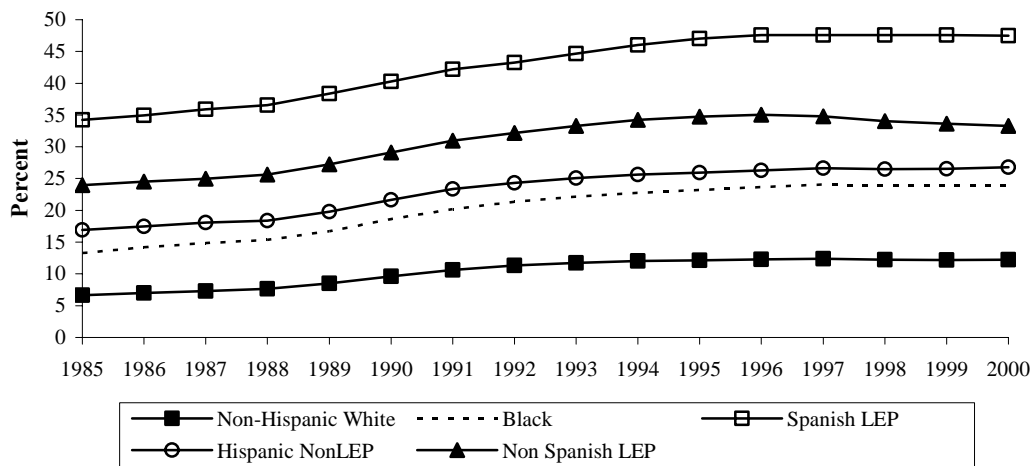### California School Children, 1985-2000

Figure 2
Annual Percentage Change in White Enrollment by Change in Share of Spanish LEP,
Primary and Secondary Schools in California, 1990-2000

Primary Schools

Secondary Schools

Net Change in % Spanish LEP over Decade
- - - - Schools With Decline in % Spanish LEP
- - - - Schools With Small Increase in % Spanish LEP
(up to 15 points)
—— Schools With Large Increase in % Spanish LEP
(15 points or more)