MINORITY POPULATION CONCENTRATION AND EARNINGS: CAUSAL EFFECT OR SPURIOUS ASSOCIATION?

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September 2008

Word Count: 8,293

***** DRAFT *****
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Abstract

Seemingly consistent with the hypothesis that heightened visibility and competition lead to greater economic discrimination against minorities, countless studies have observed a negative relationship between minority labor market population concentration and minority socioeconomic attainment. But minorities who reside in areas of high minority representation are likely to differ from minorities who reside in areas with few minorities on many typically unobserved characteristics related to economic attainment, and thus this association may be spurious, a product of either differential skills, behaviors, and networks acquired during childhood or of selective migration. Applying individual fixed-effects regression models to a quarter-century of panel data from the National Longitudinal Survey of Youth, we find that for both blacks and Latinos the contemporaneous inverse association between minority county racial-ethnic concentration and earnings is completely eliminated when unobserved person-specific characteristics are controlled. These results cast doubt on the widely-accepted hypothesis that high levels of minority labor market concentration generate income discrimination against minorities. Among Latinos, a moderate portion of the association between adult county ethnic composition and earnings is attributable to the county ethnic composition experienced during childhood.

MINORITY POPULATION CONCENTRATION AND EARNINGS: CAUSAL EFFECT OR SPURIOUS ASSOCIATION?

That members of minority groups fare worse economically when they reside in geographic areas with a large concentration of minorities is one of the most firmly entrenched and widely cited findings in the social scientific study of race relations. Over the past half-century, countless studies have documented an inverse association between minority population concentration in local labor markets and indicators of minority socioeconomic attainment (e.g., Albrecht, Albrecht, and Murguia 2005; Blalock 1956; 1957; Beggs, Villemez, and Arnold 1997; Brown and Fuguitt 1972; Burr, Galle and Fossett 1991; Cassirer 1996; Cohen 1998; 2001; Cohen and Huffman 2007; Fossett and Siebert 1997; Frisbie and Neidert 1977; Glenn 1964; Grant and Parcel 1990; Huffman and Cohen 2004; Jaret, Reid, and Adelman 2003; McCall 2001; McCreary, England, and Farkas 1989; Parcel 1979; Saenz 1997; Semyonov et al. 2000; Semyonov, Hoyt, and Scott 1984; Tienda and Lii 1987; Tomaskovic-Devey and Roscigno 1996; Wilcox and Roof 1978). While debate continues over the precise mechanisms linking minority population concentration to minority socioeconomic attainment and minority-majority inequality, all of these studies at least tacitly assume that this association reflects a causal effect.

But there are also good reasons to suspect that this association is spurious. Minority group members who reside in areas where minorities are numerically underrepresented are likely to differ from their counterparts who live in areas with high minority concentration on a variety of unmeasured or unobservable traits that might enhance earnings and related socioeconomic attainments. Minority group members who grow up in an area with few other minority group members (and many majority group members) may be more likely to acquire habits, skills, and social contacts that enhance earnings in later life. And, selective migration could lead to the concentration of high earning minorities in areas in which minorities are underrepresented, as

well as the concentration of low-earning minorities in areas with large minority populations. To our knowledge, however, the possibility that the oft-observed association between minority labor market concentration and minority earnings results not from a causal effect but rather from unobserved earnings-related differences between minorities who reside in labor markets in which minorities are underrepresented versus areas in which they are overrepresented has not been addressed rigorously in this vast literature.

The purpose of this paper is to determine whether the frequently observed statistical association between labor market racial concentration and minority earnings reflects a causal effect of labor market composition on earnings (as most theories and prior empirical studies assume) or, alternatively, results from unobserved preexisting differences between blacks and Latinos who reside in areas with few minority groups members and blacks and Latinos who reside in areas with large minority populations. We use twenty-five years of panel data from the National Longitudinal Survey of Youth (NLSY), allowing us to observe the earnings of the same individuals in different labor markets characterized by varying levels of minority population concentration. We estimate individual fixed-effects regression models that control for all stable (time-invariant) characteristics of individuals that might be related both to their earnings and to the racial-ethnic composition of their local labor market. We compare the results from these fixed-effects models with results obtained from conventional analytical strategies for examining the effect of minority population concentration on minority earnings. At a general level, then, our analysis heeds Reskin's (2003) call for greater exploration of the mechanisms that generate the inverse association between labor market racial composition and minority earnings.

THEORETICAL FRAMEWORK AND BACKGROUND

Within sociology, the dominant theoretical lens for interpreting the association between minority population concentration and minority socioeconomic attainment is the visibility-discrimination hypothesis.[1] Traceable most directly to Blalock (1967), this hypothesis posits that large minority populations are perceived as competitive economic and political threats by the dominant majority population, who retaliate by using their privileged position to diminish minorities' standing in the labor market (Burr, Galle, and Fossett 1991). Early tests of the visibility-discrimination hypothesis relied primarily on aggregate data (most often for metropolitan areas), typically linking the relative size of the minority population to some measure(s) of minority socioeconomic attainment and/or socioeconomic inequality between the minority and majority populations (e.g., Blalock 1956; 1957; Beggs, Villemez, and Arnold 1997; Burr, Galle and Fossett 1991; Fossett and Siebert 1997; Frisbie 1977; Glenn 1964; Grant and Parcel 1990; Jaret, Reid, and Adleman 2003; McCreary, England, and Farkas 1989; Semyonov et al. 2000; Semyonov, Hoyt, and Scott 1984; Tomaskovic-Devey and Roscigno 1996; Wilcox and Roof 1978). Although early research in this tradition focused primarily if not exclusively on African Americans, more recent studies have included other minority groups, particularly Hispanics (Saenz 1997) and Asians (Tienda and Lii 1987). Without exception, these studies find that minorities earn less, either in absolute terms or relative to whites, in labor markets in which they are comparatively overrepresented numerically. Some of this ostensible effect of minority labor market concentration on racial inequality in earnings and occupational attainment appears to be mediated by racial inequality in educational attainment (Grant and Parcel 1990) and by racial residential segregation (Jaret et al. 2003).

[1] As Burr, Galle, and Fossett (1991) note, this hypothesis is sometimes referred to as the competition hypothesis or the minority group size hypothesis.

More recent tests of the visibility-discrimination hypothesis have tended to rely on individual-level data, most often decennial census data (e.g., Cassirer 1996; Cohen 1998; 2001; Cohen and Huffman 2007; McCall 2001; Tienda and Lii 1987). These designs typically link some measure of the racial composition of the local labor market (e.g., percent black) to minorities' earnings or occupational attainment, while controlling for other individual-level influences on socioeconomic attainment. A key advantage of individual-level studies over aggregate-level studies is the ability to control for some possible confounders of the relationship between minority population concentration and minority attainment, such as educational attainment and nativity. Even with these controls, however, these individual-level studies also find strong associations between minority relative group size and minority socioeconomic attainment. Most, if not all, of these studies interpret this association as support for the visibility-discrimination hypothesis.[2]

The Case for Spuriousness

The oft-observed association between minority labor market concentration and minority socioeconomic attainment may, as the visibility-discrimination hypothesis and the studies reviewed above imply, be causal in nature. But it is also possible that this association is spurious, a product of unobserved differences between minority group members who reside in areas with large minority population versus minority group members who reside in areas with small minority populations. There are at least two possible factors that might confound the

[2] Some observers also point to the positive association between minority group size and whites' anti-minority attitudes (Fossett and Kiecolt 1989; Quillian 1996; Taylor 1998) as support for the visibility-discrimination hypothesis. But this association provides only indirect evidence for the hypothesis. It is possible that white's attitudes are responding not to the size of the minority population but rather to the correlates of minority group size, such as poverty, crime, and residential segregation. Indeed, white's racial attitudes may be at least partly endogenous to minority socioeconomic attainment.

association between the contemporaneous minority population concentration experienced as adults and minority earnings.

First, minority group members who, as adults, reside in areas with few minority group members (and many majority group members) are also likely to have resided in such areas when they were children; racial segregation tends to be perpetuated over the life course (Braddock and McPartland 1989; Sharkey 2008; Wells and Crain 1994). And, minority children who grow up in areas with few minority group members (and many majority group members) are likely to differ systematically—and in ways that enhance future earnings—from minority children who grow up in areas with many fellow minority group members (and comparatively few majority group members). Given differences in educational funding and other resources, schools in predominantly majority areas may provide a better quality education—or at least one that is more conducive to higher earnings later in life—than schools in predominantly minority areas. And, because minorities residing in areas in small minority populations experience less residential and school segregation from the white majority (Massey and Denton 1993), minority children who grow up in areas with many majority group members are more likely to be exposed to aspects of the dominant culture that will be useful for socioeconomic attainment in later life. They may be more likely to learn cultural styles of dress, speech (including, for Latinos, English language proficiency), deportment, and other forms of dominant cultural capital that are instrumental for success in white-dominated workplaces (Carter 2003). In areas with many majority group members, there are greater opportunities to form friendships and other social associations with whites (Arum 2000; McPherson, Smith-Lovin, and Cook 2001). The weak and strong ties in these social networks may prove useful for later-life socioeconomic attainment.

In contrast, minority children who grow up in areas that are numerically dominated by other minorities will be less exposed to the dominant culture, and hence they may be less likely to acquire skills, habits, and networks that facilitate success in the labor market. These minority children will be more residentially segregated from whites, and thus these children will be shut out from social networks that contain majority group members who might be instrumental for later-life attainments. Because of this social and geographic isolation, these minorities may be less likely to develop the "soft skills" that facilitate minority success in white-dominated workplaces (Moss and Tilly 1996; 2001). These culturally-defined skills, which include the ability to interact successfully with customers, coworkers and supervisors, having a positive attitude, and a willingness to learn on the job, are reported by employers to be highly valued traits (Moss and Tilly 1996: 257). Minority children in predominantly minority areas are also likely to attend schools that are poor and have few resources, thus reducing educational quality. Thus, one possibility is that the ostensible effect of the contemporaneous minority population concentration on minority earnings is simply capturing the effect of areal racial-ethnic composition experienced during childhood.

A second process that might sort high-earning minority group members into areas in which minorities are numerically underrepresented and low earning minority group members into areas in which minorities are numerically overrepresented is selective migration. Classical sociological thought has long viewed migrants as different from non-migrants on a variety of traits (Park 1928), including those that are likely related to earnings capacity. Such selectivity is likely to particularly characterize the migration of minorities into geographic areas in which there are few co-ethnics. Tolnay's (2003:214) summary of the African American Great Migration suggests that such migrants may have been selected from their Southern origin

populations "..based on their greater ambition, stronger work ethic, and willingness to defer gratification." We know that minority migration into areas in which they are underrepresented is positively selected on *observable* characteristics that are related to earnings attainment (Vigdor 2002). For example, black migration into states and local neighborhoods containing comparatively few blacks (and comparatively more non-Hispanic whites) is positively related to education (Tolnay 2003; Frey and Liaw 2005; Crowder, South, and Chavez 2006), as theories of spatial assimilation would anticipate (Massey 1985). Similarly, higher-educated Latinos and those with greater English language fluency are more likely than others to move to regions, states, and neighborhoods containing relatively few Latinos and proportionally more non-Hispanic whites (McConnell and LeClere 2002; South, Crowder and Chavez 2005; Stamps and Bohon 2006). We also know that, while residence in areas containing large proportions of co-ethnics deters the out-migration of minorities (Tienda and Wilson 1992), the retentive effect of co-ethnics is weaker among more educated than among less educated minorities (Frey and Liaw 2005). Given this, it seems reasonable to suggest that minorities who move to areas containing relatively few minorities are also selected on *unobservable* characteristics that are positively associated with earnings attainment.

In addition to exhibiting greater industriousness, ambition, and risk-taking, minority group members who move to geographic areas with small minority population and large majority populations might express greater willingness to interact with the dominant white population. Like minority group members who grow up in areas with large majority populations, minority group members who move to such areas might exhibit styles of dress, speech, demeanor, and deportment that the ethno-racial majority are likely to find acceptable or at least non-threatening. They might acquire knowledge of the dominant group culture—a sort of cultural capital—that

garners rewards in mainstream workplaces and organizations. Their social networks, often thought to be critical for successful employment outcomes, may be more likely to include those that are better connected to mainstream employment opportunities.

The hypothesis that selective migration might account for the association between minority population concentration and socioeconomic attainment also implies selective non-migration—that is, that minorities who remain in labor markets that contain many minority group members exhibit traits that inhibit economic attainment. Tienda and Wilson (1992) suggest that Hispanics who reside in areas of high ethnic density prize social and cultural bonds over economic rewards, and are willing to sacrifice the latter for the former. More generally, compared to minority group members who move to areas in which their group is underrepresented, minorities who remain in areas of high co-ethnic concentration are perhaps less inclined to pursue mainstream economic opportunities, more concerned with non-economic fulfillment, and less willing or able to interact profitably with the dominant white majority.

Of course, measuring in any meaningful way all of these preexisting earnings-enhancing characteristics that might distinguish minorities who live in areas of high minority concentration from those who live in areas of low minority concentration is a difficult and likely insurmountable task. However, because these traits are likely to be reasonably stable over the adult life course, we can utilize individual fixed-effects models to estimate the effects of minority population concentration on earnings holding constant all of these (presumably time-invariant) characteristics that might confound the association between minority population composition and earnings.

DATA AND METHODS

The NLSY is a well-known and frequently used survey for social and economic research and for studying the determinants of socioeconomic attainment in particular (e.g., England et al. 1988; England, Reid, and Kilbourne 1988; Tomaskovic-Devey, Thomas, and Johnson 2005). The survey began in 1979 with 12,686 respondents ages 14-22. The respondents were followed annually through 1994 and bi-annually since that time. The response rate (defined as the percent of initial respondents remaining eligible to be re-interviewed) through the 2002 round of interviews was 80.9%. We use data through the 2004 round of interviews, the most recent release. We thus have a maximum of 21 yearly observations for each NLSY respondent, covering a 25-year period.

The NLSY Geocode files record each respondents' county of residence at each interview. We use this information to append to the individual NLSY records census information describing the racial composition (percent black and percent Latino) of the respondents' county at each interview (U.S. Department of Commerce 1982; 1992; U.S. Bureau of the Census 2002). We use counties as geographic representations of labor markets. Although most cross-sectional studies in this tradition use census-defined metropolitan areas (e.g., Cohen 1998; Tienda and Lii 1987), counties offer two distinct advantages for our purposes. First, using counties eliminates the need to adjust for changes over time in the geographic composition of metropolitan areas. Adjusting for such compositional changes would be a difficult task given that we follow the NLSY respondents through four census decades. Second, unlike metropolitan areas, counties cover the entire country, allowing us to include metropolitan and nonmetropolitan residents alike. Given recent evidence that the association between minority concentration and minority earnings extends to nonmetropolitan areas (Albrecht, Albrecht, and Murguia 2005), as well as

the nontrivial clustering of minorities in these areas, we see no reason to exclude nonmetropolitan areas from the analysis. The U.S census provides information on the racial/ethnic composition of counties only for the census years. To estimate these values for non-census years, we use linear interpolation and extrapolation.

Sample selection: For this analysis we select NLSY respondents who report being either African American or Latino.[3] Following much cross-sectional, census-based studies of the impact of minority population composition on earnings (e.g., Cohen 1998), we begin observing these respondents when they turn age 25.[4]

Measures: The dependent variable is the log of hourly earnings. The focal explanatory variables are the proportion of the county population that is black (for models based on the NLSY black respondents) and the proportion of the county population that is Hispanic (for models based on the NLSY Latino respondents), which are treated as time-varying covariates. We also control for individual-level determinants of earnings that typically appear in studies of the relationship between minority population concentration and earnings. Because we are able to reproduce the inverse association between minority population composition and earnings reported in the cross-sectional (primarily census-based) studies reviewed above (see results below), the selection and inclusion of control variables is to a large extent immaterial. Nonetheless, we include these controls to align our analyses more closely with those of prior studies.

Respondents' sex is captured by a dummy variable scored 1 for females. Respondent's marital status is captured by a dummy variable scored 1 for married respondents and 0 for all other marital statuses. Number of children is the number of respondent's biological, adopted, or step children living in the household. School enrollment is a dummy variable scored 1 for

[3] The NLSY includes too few members of other minority groups to sustain analysis. Members of the military sub-sample are excluded from our analyses.

[4] Supplemental analyses using younger age cutoffs (e.g., 18 or 21) produce similar results to those we report here.

respondents currently enrolled in school. Education is measured as years of school completed. Hours worked is the usual number of hours worked per week by the respondent. Among Latinos, we distinguish between the foreign-born (scored 1) and the native-born (scored 0).[5] All of these variables save respondents' sex and foreign-born status are measured at each interview and are treated as time-varying covariates.

Analytical Strategy: We use individual longitudinal fixed-effects models to examine the impact of minority population concentration on earnings. In this context, the main advantage of fixed-effects models over conventional strategies is the ability to control for all time-invariant characteristics of individuals that might be related both to their earnings and to the racial-ethnic composition of their county of residence. Fixed-effects models have previously been used in conjunction with the NLSY (e.g., England, Reid, and Kilbourne 1988; Tomaskovic-Devey, Thomas, and Johnson 2005) but not to our knowledge to examine the putative impact of minority population concentration on earnings. The essence of fixed-effects models is to examine how, within-individuals, over-time variation in the explanatory variables is related to over-time variation in the outcome of interest (Allison 2005; Petersen 1993). By exploiting multiple observations for the same respondents, each individual serves as her own control. Because most of the NLSY respondents move between counties one or more times over the study period, we observe variation in both their earnings and the racial-ethnic composition of their local labor markets.

Following work on *employment* spells (e.g., England, Reid, and Kilbourne 1988), we segment each NLSY respondent's history into a series of *residential* spells. Each residential spell begins when we first observe a respondent in a given county; a spell ends (and a new spell begins) if and when the respondent moves to a different county. Because observations

[5] Too few black immigrants are included in the NLSY to warrant this distinction among the black sample.

(residential spells) for the same respondent are not independent of each other, we adjust for the clustering of observations within individuals by computing robust standard errors in all of the regression models.[6]

RESULTS

Table 1 presents descriptive statistics for all variables used in the analysis, separately for the non-Hispanic black and Latino NLSY respondents. These statistics are based on the pooled person-spell observations. The mean hourly pay for blacks, in constant 2004 dollars, is $10.07 (ln = $2.31). Latinos make slightly more ($11.47, ln = $2.44). Forty-six percent of both the black and Latino respondents are female. Only about one-third of the black respondents are married, compared to almost half of the Latinos. Blacks have slightly lower fertility levels than Latinos (.87 children versus 1.02). Relatively few members of either group were enrolled in school at the beginning of the residential spell, an unsurprising finding given the age range of the respondents. Both groups average a little more the 12 years of education, and work about 31 hours per in the typical week. One-quarter of the Latino respondents are foreign-born.

Table 1 about here

The focal explanatory variables are measures of the racial and ethnic composition of the respondents' counties of residence. On average, in the typical residential spell the NLSY blacks reside in a county in which one-quarter of the population is non-Hispanic black. The Latino respondents reside in counties in which, on average, 26 percent of the population is Hispanic.

The viability of an individual fixed-effects approach to estimating the impact of areal minority population composition on earnings hinges on observing sufficient intra-individual variation in areal minority population composition across the study period. Minimally, for such

[6] Values of the independent and dependent variables are taken from the first interview for each residential spell. Supplemental analyses that used values from the last interview for each residential spell produced similar results to those reported in the text.

variation to exist, we must observe substantial inter-county migration of individuals throughout the period that we observe them. Table 2 shows the number of residential spells contributed by the black and Latino NLSY respondents. Among the black respondents, 64.6% (= 100 – 35.4) experience at least two residential spells—that is, they move between counties at least once over the observation period. Because we will observe intra-individual variation in county percent black for most of these respondents, they will contribute information to the parameters of interest in the fixed-effects regression models. Some of the respondents move quite frequently between counties. For example, almost 11 percent of the black respondents contribute exactly four residential spells (i.e., they move from one county to another three times), and over 13% of the black respondents contribute five or more spells (i.e., they move from one county to another at least four times).

Table 2 about here

Similar levels of inter-county migration are observed for the Latinos in the sample. Sixty-nine percent of the Latinos contribute at least two residential spells. One-quarter of the Latinos contribute four or more residential spells.

By itself, of course, inter-county migration need not generate substantial intra-individual variation in county racial and ethnic composition unless these residential moves are to destination counties with a different racial and ethnic composition than the counties of origin. Our results show that this is indeed the case. Among the black respondents, the within-person standard deviation for county proportion black (.090) is fairly comparable to the between-person standard deviation (.142). About 30% of the total variation in county percent blacks exists within persons.

In absolute terms, slightly greater intra-individual variation in county ethnic composition is observed among the Latino NLSY respondents. Among Latinos, the within-person standard deviation for county proportion Hispanic is .106. The between-person standard deviation is .199. Over 23% of the total variation in county percent Hispanic exists within persons. Overall, then, it appears that the NLSY respondents move frequently enough between counties of different racial and ethnic composition to generate sufficient intra-individual variability for observing effects of county minority population composition on earnings in the fixed-effects models, should such effects exist.

Table 3 presents the results of the OLS (i.e., non-fixed-effects) and individual fixed-effects regression models for blacks. As noted above, because the person-spell observations on which these models are based are not independent of one another, these models adjust the standard errors of the coefficients for the clustering of person-spell observations within persons.

Table 3 about here

Model 1 of Table 3 is an OLS model that includes only county percent black as an independent variable.[7] Consistent with prior studies of the relationship between areal minority population composition and earnings, this bivariate coefficient is negative and statistically significant (b = -.173; $p < .001$). Blacks earn significantly less money in counties containing proportionally many black residents. Model 2, also an OLS model, adds the conventional covariates that typically appear in models of minority earnings. Most of the coefficients for these variables exhibit the anticipated effect. Black females earn significantly less than black males and married respondents earn significantly more than their unmarried counterparts.

[7] In this and the fixed-effects model presented in Table 4, the Hausman test leads to a rejection of the null hypothesis that the individual level random intercept is independent of the covariates. As a result, the random effects estimator is deemed inappropriate for these analyses. However, the inclusion of an individual level random intercept in supplementary HLM analyses also explains away the inverse relationship between county racial composition and earnings.

Education and hours worked are positively and significantly related to earnings. Even controlling for these individual-level determinants of earnings, however, the coefficient for the proportion of the county population that is non-Hispanic black remains negative and statistically significant (b = -.147; $p < .01$).

Model 3 of Table 3 is a fixed-effects model that implicitly controls for all time-invariant characteristics of the respondents that might confound the association between the explanatory variables, including county racial composition, and earnings. (Because respondent's sex is a time-constant characteristic, the variable "female" drops out of the fixed-effects model.) For the most part, the associations between the control variables and earnings differ only modestly between the OLS and the fixed-effects models. The coefficient for marital status drops by about half, and becomes statistically nonsignificant, in the fixed-effects model, suggesting that some of the initial association reflects the selection of high-earning blacks into marriage. The coefficient for number of children becomes slightly more positive and now attains statistical significance. And the negative coefficient for school enrollment grows stronger and becomes significant at a conventional level. But the coefficients for education and hours worked are fairly similar in the OLS and fixed-effects models, retaining their signs and significance levels.

In contrast, the coefficient for the explanatory variable of primary interest—the proportion of the county population that is non-Hispanic black—drops to near zero in the fixed-effects model. Indeed, the point estimate of the parameter is now positive (b = .014), although the coefficient falls far from attaining statistical significance. This finding suggests that the oft-observed negative association between areal minority composition and the earnings of blacks is driven not by a causal effect of minority composition on earnings, as the visibility-discrimination hypothesis posits, but rather by the selection (or retention) of high-earning blacks into counties

with relatively small black populations and, equivalently, by the selection (or retention) of low-earning blacks into counties with relatively large black populations.

Results for Latinos

Table 4 presents a parallel analysis for the Latino respondents. Model 1 demonstrates a strong inverse bivariate association between the percentage of the county population that is Hispanic and Latino earnings (b = -.438; $p < .001$). Indeed, the association between county proportion Hispanic and Latino earnings is considerably stronger than the corresponding association between county proportion black and black earnings (Table 3, Model 1).

Table 4 about here

Model 2 adds to Model 1 the other conventional determinants of earnings, and for the most part these again exhibit the anticipated effects. Latino females earn significantly less than Latino males, and married Latinos earn significantly more than unmarried Latinos. Being enrolled in school at the beginning of the residential spell is inversely associated with earnings. Education and hours worked are significantly and positively associated with earnings, and foreign-born Latinos earn significantly more than their native-born counterparts, net of the effects of the other variables in the model. Yet, controlling for these observable determinants of earnings has little impact on the association between county percent Hispanic and Latino earnings; the coefficient for county proportion Hispanic and earnings remains strong and statistically significant (b = -.400; $p < .001$)

Model 3 of Table 4 presents the results of the fixed-effects model. Here, the two time-invariant covariates—sex (female) and nativity (foreign-born status)—drop out of the model. As was the case for blacks, differences between the OLS and fixed-effects in the estimated effects of the individual-level determinants of earnings are fairly modest. The net earnings difference

between married and unmarried Latino respondents is about halved and becomes statistically nonsignificant. The coefficient for number of children, which is nonsignificant in the OLS model, becomes positive and significant at a borderline level in the OLS model. The coefficient for school enrollment is significant and negative in both the OLS and fixed-effects models. The coefficients for education and hours worked are smaller in the fixed-effects than the OLS models, though they remain significant at least at a borderline level. The diminution in the significance of the coefficient for education is largely a function of the much larger standard error in the fixed-effects model.

More important for our purposes is the difference in the coefficient for the proportion of the county population that is Hispanic. As was the case for the analogous coefficient among blacks, this coefficient declines precipitously—here by almost 90%—in the fixed-effects model. And, while remaining negative, the coefficient is now nowhere close to being statistically significant. Thus, like the case for blacks, it appears that much if not all of the frequently observed inverse association between county percent Latino and Latino earnings is accounted for by the selection of high-earning Latinos into counties with comparatively few Latinos and, correspondingly, the selection of low-earning Latinos into counties with relatively many Latinos.

Supplemental Analyses

If the oft-observed inverse association between minority areal population composition and minority earnings does not reflect a causal relationship, to what can this association be attributed? Earlier we suggested two reasons why this association might be spurious, a product of unobserved differences conducive to high earnings between minorities who reside in largely minority areas and minorities who reside in largely majority areas. First, minorities who, as adults, reside in areas with few minorities (and many majority group members) are also likely to

have lived in such areas as children, and growing up in such areas may facilitate the acquisition of skills, behaviors, and social networks that enhance earnings in later life. Second, minorities with unobserved characteristics conducive to high earnings may be more likely to move to, or remain in, geographic areas with few minorities (the selective migration hypothesis). In this section we provide a partial test of the first explanation.

If the association between the contemporaneous minority areal population composition and earnings is a spurious result of the effect on later-life earnings of minority area population composition experienced during childhood, then controlling for childhood minority population composition should substantially attenuate, and perhaps eliminate, the association between contemporaneous county racial composition and earnings. We can provide only a partial test of this hypothesis because the NLSY does not provide data on county racial/ethnic composition during the entire childhood life course. But for a substantial proportion of the sample (2790 blacks and 1606 Latinos) we do have data on the county racial-ethnic composition that the respondents were exposed to at age 14.

The OLS regression models presented in Table 5 address whether the association between current (or contemporaneous) county racial-ethnic composition and minority earnings can be accounted for by the county racial-ethnic composition that the respondents experienced at age 14. We first re-estimate Model 2 of Tables 3 and 4 using the smaller samples of blacks and Latinos for whom we have data on the county racial/ethnic composition experienced at age 14. We then add to this model a control for the county racial/ethnic composition experienced at age

14.[8] In Table 5, the results for blacks are shown in Models 1 and 2 and the results for Hispanics are shown in Models 3 and 4.

Table 5 about here

As shown in Model 1 of Table 5, with the slightly smaller sample of blacks for whom county racial composition at age 14 is known, the association between contemporaneous county proportion non-Hispanic black and earnings (b = -.152) is virtually identical to that observed for the full sample presented in Table 3 (b = -.147). As shown in Model 2, controlling for county racial composition at age 14 has only a modest effect on this association. Although the coefficient for county proportion non-Hispanic black (b = -.112) is no longer statistically significant, the coefficient itself falls by a relatively small amount (about 25%). Moreover, the net effect of county proportion non-Hispanic black at age 14 on earnings is weak and statistically non-significant. Thus, it does not appear that among blacks the minority areal population concentration experienced during childhood can account for much of the negative association between county racial composition experienced as adults and earnings, perhaps suggesting that selective migration can better account for this association.

A somewhat different story emerges for Hispanics. As shown in Model 3 of Table 5, among the smaller sample of Hispanic NLSY respondents for whom we have data on county ethnic composition at age 14, the coefficient for the contemporaneous county proportion Hispanic remains strong, negative, and statistically significant; indeed, the coefficient is identical to that observed for the full sample of Hispanics in Model 2 of Table 4 (b = -.400). More importantly, controlling for the county proportion Hispanic experienced at age 14 decreases this coefficient to -.262, a reduction of over one-third (Model 4). And, the coefficient for the county

[8] Among blacks, the correlation between county proportion black at age 14 and the county proportion black during the adult years is .58; the parallel correlation for Latinos is .61. Diagnostic checks did not indicate problems of multicollinearity.

proportion Hispanic experienced at age 14 is negative, statistically significant, and rivals in magnitude the effect of the contemporaneous county proportion Hispanic. Thus, it appears that, for Latinos, a moderate portion of the association between the contemporaneous minority areal population composition and earnings is a result of having grown up in an area with an ethnic composition similar to that experienced as an adult. Whether the remaining portion of this association can be attributed the county ethnic composition experienced during other childhood years, to selective migration, or to some other mechanism awaits further research.

DISCUSSION AND CONCLUSION

A long and extensive body of research documents an inverse association between minorities' numerical representation in spatially-defined labor markets and their socioeconomic attainment. Within sociology, this statistical association is virtually always interpreted as support for the visibility-discrimination hypothesis, which holds that greater minority population concentration engenders perceptions of competition and group threat on the part of whites, which in turn leads whites to discriminate economically against minority group members. An alternative explanation is that minorities who reside in areas with few minorities differ from minorities who reside in areas with many minorities in ways that enhance earnings but that are difficult if not impossible to observe. Our analysis attempts to adjudicate between these rival interpretations by estimating individual fixed-effects regression models that control for all stable characteristics of adults throughout their early years in the labor force. Although we are able to reproduce the inverse association between minority population composition and earnings found in prior studies, our results suggest that this association is almost entirely attributable to time-invariant (albeit unmeasured) characteristics of minority group members. This finding thus casts

doubt on the widely-accepted hypothesis that high levels of minority labor market concentration generate income discrimination against minorities.

Minimally, two processes could generate a non-causal inverse association between minority areal population concentration and earnings. First, minorities who, as adults, live in areas with few other minorities are also likely to have grown up in such areas, and thus they may have acquired early in life the skills, habits, and social networks that enhance later-life earnings. We find some support for this explanation, although more so for Latinos than for blacks. Latinos who grow up in areas with large majority populations may experience opportunities to acquire forms of dominant cultural capital that facilitate success in Anglo-controlled workplaces and organizations (Bourdieu 1977).

Another explanation for the ostensible non-causal association between minority population composition and earnings is selective migration. Minorities with latent propensities for high (or low) earnings may selectively migrate between areas with few (or many) minorities. Although we do not explicitly test this hypothesis, our results are also consistent with this interpretation. Future research might profit by developing stronger tests of these explanations for why the association between minority population concentration and minority earnings appears to be non-causal.

Our findings recommend several other avenues for future research. First, future research should attempt to isolate the specific factors that contribute to unobserved heterogeneity among minority group members who live in areas with varying proportions of minorities. Perhaps qualitative studies will help uncover earnings-related differences in skills, habits, and social networks and cultural capital that cannot be captured in standard surveys. Similarly, studies of differences between migrants and non-migrants on these hard-to-measure characteristics are

needed to evaluate the possible role of selective migration in generating the inverse association between minority population composition and earnings. Qualitative research might be able to address other issues pertaining to selective migration such as the perceived monetary returns to migration, the presence of local amenities or public services associated with the area, and the ease of gathering information about employment and housing (Vigdor 2002). Studies in this vein may also contribute to our understanding of racial and ethnic differences in residential attainment (e.g., Sampson and Sharkey 2008).

Second, future research might also explore the role of selectivity in explaining the effects of the racial-ethnic composition of jobs on minority earnings. As with the effects of minority concentration in geographically-defined labor markets, jobs that are numerically dominated by minorities pay minorities less than other jobs, and this finding, too, is often interpreted as support for the visibility-discrimination hypothesis or its variants (Catanzarite and Aguilera 2002; Huffman 2004; Huffman and Cohen 2004; Kmec 2003). But minorities who work in predominantly minority jobs may also be selected on the basis of unobserved characteristics that influence earnings, perhaps rendering spurious the association between the racial-ethnic composition of jobs and minority earnings.

Third, our results may have particular salience for studies of immigrant and minority groups—perhaps especially Latinos—as they disperse geographically to "new destinations" where they have been historically underrepresented (Fischer and Tienda 2006). The visibility-discrimination hypothesis anticipates that the increasing concentration of minority groups in such areas will incur discrimination in earnings and other markers of socioeconomic attainment. Our findings may serve as a warning that before any declines in the earnings of minority groups concomitant with their increasing size are interpreted as evidence of discrimination, adequate

attention be given to unobserved differences between the various cohorts of migrants to these new destinations. The initial, pioneering migrants, who arrived in areas with few co-ethnics, may differ in unobserved but important ways from the later cohorts of migrants who come to join them.

While our results call into question the main premise of the visibility-discrimination hypothesis, we acknowledge that our analysis is not without limitations. One possible scenario that would be consistent with the visibility-discrimination hypothesis is if minority concentration depresses minorities' earnings when they first enter the labor force, but that subsequent earnings are determined mainly by initial earnings. In this case, repeated measures of earnings after the first observation would be unresponsive to the areal racial/ethnic population composition, even though minority population composition reduces minority earnings. Here, the repeated observations on areal minority population composition and earnings exploited by the fixed-effects models will provide no leverage for determining whether minority population concentration reduces minorities' earnings. Further complications arise if minority population composition is at least partly endogenous to earnings—for example, if the race- and ethnicity-specific migration patterns that determine minority areal population composition are themselves influenced by the earnings of specific racial and ethnic groups (including whites). But this problem of endogeneity, or reverse causation, would also plague the many cross-sectional studies of the relationship between minority population concentration and minority socioeconomic attainment on which our analysis builds.

We also acknowledge that our findings do not speak directly to the impact of minority population concentration on socioeconomic inequality between minorities and the white majority. It is still possible that minority population concentration increases black-white or

Latino-white earnings inequality. But if this is the case, then the effect of minority population concentration on earnings inequality operates not by depressing minorities' earnings but rather by raising whites' earnings. This result would seem to imply a different mechanism than that posited by the visibility-discrimination hypothesis, perhaps one that emphasizes whites' exploitation of minority populations (Glenn 1963). Moreover, reducing minority earnings is one of the key proximate mechanisms through which minority population composition is thought to influence racial and ethnic economic inequality (Cohen 1998). In any event, future research should extend our analyses to consider whether minority population concentration increases minority-majority socioeconomic inequality even after controlling for unobserved differences between individuals—minority and majority—who reside in areas of varying racial and ethnic composition.[9]

And, of course, we acknowledge that our analysis in no way serves to question that whites respond to a heightened presence of minorities with violence directed at minorities (e.g., Tolnay and Beck 1995), with increased efforts at the social control of minorities (e.g., Jacobs and Tope 2007; Stults and Baumer 2007), and with anti-minority sentiment (e.g., King and Wheelock 2007; Quillian 1995; 1996). That is, our results do not speak to the broader "minority group threat" (or "power-threat") theory from which the visibility-discrimination hypothesis derives. At the same time, however, our results suggest that statistical associations between areal minority group size and other indicators of minority well-being, such as life expectancy (Blanchard, Cossman, and Levin 2004; McLaughlin and Stokes 2002), may also be artifacts of

[9] Our finding that minority population composition does not affect minority earnings would have no implications for the effect of minority population composition on minority-majority earnings inequality only if unobserved individual characteristics suppressed the effect of minority population composition on majority earnings by the same amount that they "explained" minority earnings. However, supplementary analysis provided no evidence that the association between minority population composition and the earnings of non-Hispanic whites is suppressed by unobserved time-invariant individual characteristics.

unobserved differences between minorities who reside in predominantly minority areas and minorities who reside in predominantly majority areas. Efforts to take into account such unobserved differences, perhaps using fixed-effects models and other techniques for making causal inferences from nonexperimental data (Morgan and Winship 2007), should occupy a prominent position on the sociological research agenda.

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Table 1: Descriptive Statistics for Variables Used in Analysis of Earnings, NLSY Minority Respondents Ages 25-48, 1982-2004

	Non-Hispanic Black		Hispanic	
	Mean	(s.d.)	Mean	(s.d.)
Dependent Variable				
Natural log of hourly pay (in 2004 dollars)	2.31	(.63)	2.44	(.65)
Independent Variables				
Female	.46	(.50)	.46	(.50)
Married	.32	(.47)	.48	(.50)
Number of children	.87	(1.15)	1.02	(1.21)
Currently enrolled in school	.05	(.23)	.07	(.26)
Education (in years)	12.74	(2.08)	12.22	(2.68)
Usual hours worked per week	30.65	(17.24)	31.60	(16.93)
Foreign-born status	--	--	.25	(.43)
County Population Composition				
Proportion non-Hispanic black	.25	(.16)	--	--
Proportion Hispanic	--	--	.26	(.22)
N of persons	2905		1849	
N of residential spells	5998		3809	

Table 2: Distribution of County-level Residential Spells for NLSY Minority Respondents Ages 25-48, 1982-2004

	Non-Hispanic Black		Hispanic	
Number of County-level Residential Spells	N	Percent	N	Percent
One residential spell	1028	35.4	574	31.0
Two residential spells	615	21.2	473	25.6
Three residential spells	566	19.5	339	18.3
Four residential spells	316	10.9	222	12.0
Five or more residential spells	380	13.1	241	13.0
Total	2905	100.0	1849	100.0

Table 3: Regression Analysis of Hourly Pay (ln): NLSY Non-Hispanic Blacks Ages 25-48, 1982-2004

	OLS Coefficients Model 1	OLS Coefficients Model 2	Fixed-Effect Coefficients Model 3
County Population Composition			
Proportion non-Hispanic black	-.173 ***	-.147 **	.014
	(.064)	(.057)	(.073)
Individual Characteristics			
Female		-.173 ***	na
		(.020)	
Married		.071 ***	.033
		(.019)	(.027)
Number of children		.013	.054 ***
		(.009)	(.013)
Currently enrolled in school		-.082 †	-.221 ***
		(.043)	(.057)
Education (in years)		.088 ***	.087 ***
		(.006)	(.023)
Usual hours worked per week		.008 ***	.003 ***
		(.001)	(.001)
Constant	2.356 ***	1.044 ***	1.053 ***
	(.022)	(.075)	(.298)
R^2	.002	.172	.119
BIC	11534.54	10468.01	4650.47
N of persons	2905	2905	2905
N of residential spells	5998	5998	5998

† p < .10; * p< .05; ** p< .01; *** p< .001

Note: Entries are unstandardized regression coefficients with robust standard errors in parentheses.

Table 4: Regression Analysis of Hourly Pay (ln): NLSY Hispanics Ages 25-48, 1982-2004

	OLS Coefficients Model 1	OLS Coefficients Model 2	Fixed-Effect Coefficients Model 3
County Population Composition			
Proportion Hispanic	-.438 ***	-.400 ***	-.043
	(.055)	(.050)	(.077)
Individual Characteristics			
Female		-.169 ***	na
		(.023)	
Married		.089 ***	.037
		(.022)	(.034)
Number of children		-.005	.035 †
		(.009)	(.018)
Currently enrolled in school		-.115 **	-.226 **
		(.044)	(.069)
Education (in years)		.067 ***	.051 †
		(.004)	(.028)
Usual hours worked per week		.007 ***	.002 *
		(.001)	(.001)
Foreign-born status		.082 **	na
		(.025)	
Constant	2.551 ***	1.533 ***	1.728 ***
	(.020)	(.061)	(.339)
R^2	.002	.169	.096
BIC	7433.90	6871.807	3424.30
N of persons	1849	1849	1849
N of residential spells	3809	3809	3809

† p < .10; * p< .05; ** p< .01; *** p< .001

Note: Entries are unstandardized regression coefficients with robust standard errors in parentheses.

Table 5: Regression Analysis of Hourly Pay (ln) with Control for Childhood County Population Composition: NLSY Blacks and Hispanics Ages 25-48, 1982-2004

	Blacks		Hispanics	
	Model 1	Model 2	Model 3	Model 4
Adult County Population Composition				
Proportion non-Hispanic black	-.152 **	-.112	na	na
	(.059)	(.071)		
Proportion Hispanic	na	na	-.400 ***	-.262 ***
			(.052)	(.063)
Age 14 County Population Composition				
Proportion non-Hispanic black		-.067	na	na
		(.075)		
Proportion Hispanic	na	na		-.227 ***
				(.064)
Individual Characteristics				
Female	-.170 ***	-.170 ***	-.169 ***	-.168 ***
	(.020)	(.020)	(.025)	(.026)
Married	.074 ***	.075 ***	.088 ***	.094 ***
	(.019)	(.019)	(.024)	(.025)
Number of children	.010	.010	-.004	-.004
	(.009)	(.009)	(.010)	(.010)
Currently enrolled in school	-.075 †	-.076 †	-.147 **	-.150 **
	(.045)	(.045)	(.048)	(.048)
Education (in years)	.087 ***	.087 ***	.076 ***	.076 ***
	(.006)	(.006)	(.005)	(.005)
Usual hours worked per week	.008 ***	.008 ***	.006 ***	.006 ***
	(.001)	(.001)	(.001)	(.001)
Foreign-born status	na	na	.075 **	.067 *
			(.028)	(.028)
Constant	1.052 ***	1.061 ***	1.435 ***	1.450 ***
	(.078)	(.078)	(.073)	(.075)
R^2	.167	.172	.165	.169
BIC	9946.66	9953.88	6125.42	6118.30
N of persons	2790	2790	1606	1606
N of residential spells	5701	5701	3346	3346

† p < .10; * p< .05; ** p< .01; *** p< .001

Note: Entries are unstandardized OLS regression coefficients with robust standard errors in parentheses.