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Manager Race and the Race of New Hires

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Abstract: Using personnel data from a large U.S. retail firm, we examine whether the race of the hiring manager affects the racial composition of new hires. We exploit manager changes at hundreds of stores to estimate models with store fixed effects. We find significant effects of manager race and ethnicity. First, all non-black managers—i.e., whites, Hispanics, and Asians—hire more whites and fewer blacks than do black managers. The differences between non-black and black managers are especially large in the South. Second, in locations with large Hispanic populations, Hispanic managers hire more Hispanics and fewer whites than white managers.

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This study examines whether the race or ethnicity of the hiring manager is a determinant of the racial and ethnic composition of new hires. Several valuable studies have suggested this possibility. Using various cross-sectional data sets, Stoll, Raphael and Holzer (2004), Carrington and Troske (1998), Turner (1997), and Bates (1994) have all found that blacks are employed at greater rates in establishments with black supervisors or owners. In particular, Stoll et al. look at the effect of the hiring officer's race on both applications and hires, and they find that black hiring agents receive more applications from blacks than do white hiring agents and hire a greater proportion of blacks who apply.[1]

Nevertheless, as Stoll et al. acknowledge, none of these studies has been able to establish a *causal* relationship between manager race and the race of new hires. The causal effect is hard to identify because manager race is correlated with many other characteristics of a workplace and location that may also affect the race of a new hire. These characteristics—such as skill requirements and the demographics of the local labor pool—are typically unobserved, and so they are hard to control for in an analysis that relies on cross-sectional establishment data. As a result, the previous cross-sectional studies cannot confidently distinguish between the effects of manager race and the effects of unobserved differences across workplaces and local labor markets.

Using a new panel data set, the present study makes several contributions. First, this study is able to control for unobserved differences across workplaces and locations, and hence it is the first study that can determine whether manager race has a causal effect on the race of new hires.[2] Second, it is also the first study that looks at this important question with respect to Hispanics and Asians. Third, the data permits clean tests of whether the effects of manager race vary by geographic location. Finally, the data also permits analysis that may help explain why manager race affects the racial composition of new hires.

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[1] Hellerstein and Neumark (2005) also raise the question addressed in the present study. In an extensive analysis of racial and ethnic segregation across U.S. workplaces, they find that a large degree of segregation remains even after accounting for segregation by metropolitan area, and that very little of this segregation can be explained by observed differences in education and occupation. They conclude that future research "must examine explanations that are not skill-based."

[2] For brevity, we often use "race" to denote either race or ethnicity; i.e., "race" refers to each of the four groups we analyze—whites, blacks, Hispanics, and Asians.

Our data set is constructed from the personnel records of a large U.S. retail chain, and it tracks more than 100,000 employees at more than 700 stores for a period of thirty months. The crucial feature of this dataset is that it contains hundreds of stores that have at least one change in the manager who is responsible for hiring, and these new managers often are a different race from the managers they replace. This variation in manager race within stores allows us to estimate probit and multinomial logit regressions with both store fixed effects and with store-specific trends. We thus control for all fixed attributes of the workplace and the local labor market, and also for local trends in labor pool demographics.

Our results suggest that manager race is a significant determinant of the racial composition of new hires, though the primary determinants are the characteristics of the workplace and its location.

First, our strongest finding is the existence of significant differences between the hiring patterns of non-black managers and black managers. We find that all non-black managers—i.e., whites, Hispanics, and Asians—hire more whites and fewer blacks than do black managers. The estimates suggest that when a black manager is replaced by a non-black manager in a typical store, the share of new hires that is black falls roughly from 21 to 17 percent, and the share that is white rises from 60 to 64 percent. This result holds whether the new manager is white, Hispanic, or Asian. Further, the differences between black and non-black managers are especially large in the South. In a typical southern store, the replacement of a black manager with a non-black manager causes the share of blacks among new hires to fall from 29 to 21 percent.

Second, we find a significant difference in the hiring patterns of Hispanic and white managers, but only when we restrict the sample to stores in locations where Hispanics make up at least 30 percent of the local population. In this sub-population, we focus on the difference between Hispanic and white managers because non-Hispanic managers are nearly all white. Our estimates suggest that when a Hispanic manager is replaced by a white manager, the share of new hires that is Hispanic falls roughly from 59 to 48 percent, and the share of whites rises from 22 to 32 percent. By contrast, in locations where Hispanics are less than 30 percent of the local population, the hiring patterns of Hispanic and white managers are remarkably similar, and Hispanics account for about 10 percent of new hires on average.

Finally, we find small and only marginally significant differences between Asian and white managers. However, the estimates regarding Asians are relatively imprecise due to small sample sizes.

After estimating the effects of manager race on hiring patterns, we explore the underlying causes of the effects we find. There are four primary reasons that the race of the hiring manager may affect the race of a new hire. First, racially segregated social networks may be used by managers when recruiting new applicants or by employees when looking for jobs. Second, if manager-employee similarity improves efficiency, then managers may hire racially similar employees for efficiency reasons. Third, managers may prefer to supervise racially similar employees, or may be biased against racially dissimilar employees. Fourth, employees may prefer to work for racially similar managers, or may be biased against racially dissimilar managers.

Using several types of analysis, we explore all four of these potential causes. We find no evidence that our main results are driven either by social networks or by efficiency considerations, though the power of our tests to reject these explanations is not that high. However, we do find evidence that our results may be driven by the racial preferences of both managers and employees. Our strongest finding here is that many white job-seekers apparently avoid working for non-white managers.

I. Data

The data are the daily personnel records of a large retail employer from February 1, 1996 through July 31, 1998. These records identify the demographic traits of both managers and their employees at each store, and they give the dates and descriptions of all personnel actions for each individual. We analyze a sample of more than 1,500 store managers, and more than 100,000 frontline, entry-level employees who were hired during the 30-month sample period. Because we must preserve the anonymity of the employer, we cannot disclose the exact sample sizes.

Our sample contains more than 700 stores located throughout the United States. While geographically diverse, these workplaces nevertheless are all very similar: they are all part of a national chain with highly uniform policies and procedures. In a typical store, there is one full-time, overall manager who has the title "store manager", and there are 25 to 50 mostly part-time employees.

The managers in our analysis are the "store managers"—i.e., the single, overall manager at each store. It is the store managers who are responsible for all hiring decisions. While telephone interviews are used for pre-screening applicants, the vast majority of hiring decisions are made only after a face-to-face interview with the store manager. The company's official hiring policy is neutral with respect to race and gender, and managers are given a small amount of training in fostering a diverse workforce.

For store managers, the median spell in a store lasts roughly 13 months.[3] As a result, 80 percent of the stores have at least one change in management during the 30-month sample period. Because there are frequent changes in managers and because there are large numbers of minority managers (see below), our sample has substantial within-store variation in manager race. About thirty percent of the exiting managers in our sample are replaced by someone of a different race. This variation in manager race is crucial to our analysis because it allows us to estimate models with workplace fixed effects.

The frontline employees we analyze make up 90 percent of all company employees. All these frontline jobs are entry-level positions that have similar job titles and descriptions, and that require only basic skills and little training. All frontline employees rotate through several tasks that involve both dealing with customers and doing support duties. These jobs have high rates of turnover—the median spell in a store for a frontline employee is 91 days, and roughly 90 percent of employee spells end within a year. As a result of this turnover, each store hires an average of five new employees per month.

Table 1 summarizes the racial and ethnic composition of the workplaces in the estimation sample and of the communities surrounding these stores. The racial and ethnic categories follow the company's codes, which form a set of mutually exclusive and collectively exhaustive categories. The community statistics are constructed from the 1990 Census, and are based on all Census tracts within a two-mile

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[3] Approximately 60 percent of the manager exits from a given store involve transfers to other company stores. The rest involve termination of employment with the company. Most terminations are voluntary, and the most common reasons are "found better job/prefer other work" (41 percent), "personal" (13 percent), "moving", "dislike hours", "limited career growth", and "return to school". Roughly 13 percent of manager terminations are involuntary, and result mainly from violations of company policy, substandard performance, or dishonesty. We found no evidence that manager dismissals were correlated with changes in hiring patterns.

radius from the center of each store's ZIP code.[4] The workforce of a store tends to be more racially and

ethnically diverse that the population it serves. The workforce of the average store is 60.4 percent white,

14.5 percent black, 13.2 percent Hispanic, and 10.2 percent Asian.[5]

Table 2 compares the demographic composition of managers and frontline workers in the

estimation sample (columns 1 and 2). The company's managers are much more homogeneous than the

frontline employees. Managers are 86.2 percent white, 5.9 percent black, 4.6 percent Hispanic, and 2.4

percent Asian. Frontline workers are 60.1 percent white, 15.1 percent black, 13.2 percent Hispanic, and

9.8 percent Asian.

The estimation sample (summarized in the first two columns of Table 2) is restricted to stores that

hire at least one employee of each race group between Feb. 1, 1996 and July 31, 1998. This restriction is

necessary to estimate a fixed-effects multinomial logit model predicting the probabilities with which each

of the four race groups is hired. Obviously, this restriction eliminates stores with the most homogeneous

workforces. Compared to the restricted sample, the wider population of the company's U.S. retail

establishments (Table 2, cols. 3 and 4) has fewer minorities and more whites (67.5 vs. 60 percent for

frontline workers). However, a robustness test suggests that our sample restriction has little effect on the

estimation results (see Appendix Table A1).

Our data comes from a single employer, and it is important to consider how representative our

sample is of a larger population. Because our sample is from a retail firm, it is perhaps most useful to

look at how our sample compares to the U.S. retail sector as a whole—a sector that accounts for roughly

18 percent of all U.S. jobs. Compared to the retail sector (Table 2, columns 5 and 6), our employer is

typical with respect to its racial and ethnic composition.[6] However, both managers and employees are

relatively young (with average ages of 22 and 30 vs. 32 and 39), and this company has a higher share of

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[4] For consistency with the personnel data, we classify Hispanics by ethnicity and not by race (see Table 1 notes).
[5] "White" refers to non-Hispanic whites. Hispanics are classified by ethnicity and not by race. The remaining employees are either Native American or are classified as being of "Other" or "Unknown" race/ethnicity.
[6] Our company is also typical of the retail sector with respect to its turnover rates. Among 16-20 year olds who worked in low-wage (≤$9.00/hr) retail jobs in 1999, the median employment spell was about 110 days, and 87 percent left their job within a year. These figures are based on estimates from the NLSY97.

both female managers (79 vs. 50 percent) and female employees (73 vs. 66 percent).

Similar to other establishment data sets, our sample shows a strong correlation between the race of the hiring manager and the racial composition of new hires (Table 3). For example, the proportion of new hires that is black is 30.9 percent in stores with black managers, but only 18.5 percent in stores with white managers, 20.9 percent in stores with Hispanic managers, and 16.2 percent in stores with Asian managers. Compared to stores with non-Hispanic managers, the proportion of new hires that is Hispanic is twice as large in stores with Hispanic managers. And the proportion of new hires that is Asian is more than twice as large in stores with Asian managers. Of course, these correlations do not imply that the race of the hiring manager is a determinant of the race of new hires. The causal effect of manager race is identified in the analysis that follows.

II. Estimation Equations and Methods

We begin by estimating several probit equations that predict, as a function of manager race, the probability that a new hire belongs to a given race group. Equation 1 illustrates the model predicting the probability that a new hire is white.

$$(1) \ \Pr(\textit{new hire is white})_{ijt} = F(b_0^w + MgrBl_{ijt} \, b_B^w + MgrHi_{ijt} \, b_H^w + MgrAs_{ijt} \, b_A^w + S_j \, b_S^w$$
$$+ \ C_j \, b_C^w + \ M_t \ b_M^w + \ \epsilon_{ijt}^w).$$

The parameters of interest in equation (1) are the coefficients b_B^w, b_H^w and b_A^w on the dummy variables indicating that the manager is black, Hispanic, or Asian. Because white managers are the omitted category in this equation, a negative value for b_B^w would indicate that the probability of recruiting and hiring a white employee is smaller for black managers than it is for white managers.

Apart from the manager's race, other variables that may affect the probability that a new hire is white include the proportion of whites in the local labor pool, the particular needs of the store (e.g. the share of whites in the customer base if matching the customers is important), and any attributes of the store that may influence the preferences of whites for working at the store.[7] To learn how much these

[7] It is also possible that managers with more experience are better at managing diverse workforces. In our initial analysis, we experimented with two proxies for manager experience—the manager's age and the amount of

variables contribute to the observed correlation between manager race and hiring patterns, we estimate the model with several measured characteristics of the store (S_j) and community (C_j). These controls include the population share of each race group in the local community, population density, median household income, and the location type (mall, street, etc.) of the store.[8]

The racial composition of the labor pool might also be affected by changes over time in labor supply and demand. For example, whites may be more likely to work in low-wage retail jobs when labor markets are weak. Therefore, we also include a dummy variable for each of the 30 months in the sample (M_t) to control for national fluctuations in the labor market.

The residuals in equation (1), ϵ_{ijt}^{w}, are assumed to be identically distributed and independent across stores, but not necessarily within stores. We use Huber-White robust estimates of the standard errors that are corrected for within-store correlation of the error terms.[9]

Despite the uniformity of jobs in the sample and the ability to control for several store and community characteristics, it is likely that the residual, ϵ_{ijt}^{w}, contains unobservable features of the store and community that are correlated both with the manager's race and with the probability of hiring a white employee. For example, the exact racial composition of each store's potential applicant pool is not observed and the community demographics may provide only an imperfect proxy. Such omitted variables may result in biased estimates of the effect of manager race on hiring outcomes.

To the extent that the unobserved factors affecting both manager and employee demographics are fixed over time, we can control for them using store fixed effects. The fixed-effects model is:

(2) $\Pr(\textit{new hire is white})_{ijt} = F(b_0^{w} + MgrBl_{ijt}\, b_B^{w} + MgrHi_{ijt}\, b_H^{w} + MgrAs_{ijt}\, b_A^{w} + M_t\, b_M^{w} + \alpha_j^{w} + \varepsilon_{ijt}^{w})$.

The workplace fixed effects, α_j^{w}, summarize the effects of any permanent differences across stores, communities, and local labor markets on the probability that a new hire is white.

To estimate the fixed-effects model, our estimation equation includes a dummy variable for each

experience with the company. However, these variables were not correlated with hiring patterns in any of our estimations; therefore, we did not include them in our final estimation model.

[8] Measures of "community" demographics are constructed from the 1990 Census, and are based on all Census tracts within two miles of the center of each store's ZIP code.

[9] We also use this approach to estimate the standard errors of all subsequent equations.

store. A potential concern with this method is that maximum likelihood estimation provides consistent estimates of the fixed effects only if the number of observations per group is large enough.[10] Fortunately, our data include an average of 140 employee hires per store, which is large by the standards of the current literature.[11]

If there are omitted variables that vary both across stores and over time, then even the fixed-effects specification in equation (2) may produce biased estimates. For example, the coefficients from equation (2) would overstate the causal effect of manager race on hiring patterns if trends in local demographics led to parallel trends in the applicant pools of both managers and employees. To rule out local trends as a source of any correlations between manager race and hiring patterns, we estimate equations that include store-specific trends in addition to store fixed effects.

The binomial probit model is restrictive in that it ignores the fact that managers may choose simultaneously from among four possible race categories rather than choosing white vs. non-white, black vs. non-black, etc. Therefore, in addition to the probit models, we estimate a multinomial logit model that incorporates the full set of possible choices with respect to race.[12] Because the fixed effects prove important in the probit estimations, we estimate a multinomial logit model with store fixed effects by including a dummy variable for each store. We do not control for store trends, however. This is because of computational limitations, and because the store trends prove to be relatively unimportant in the probit estimations.

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[10] The other common method for estimating nonlinear binomial choice models with panel data is Chamberlain's (1980) conditional logit model. This model bypasses estimation of the fixed effects by estimating the probability of a positive outcome conditional on the number of positive outcomes in the group. Unfortunately, it is impractical to estimate conditional logit models with well over 100 observations per group and large numbers of both positive and negative outcomes. However, we ran several tests using the conditional logit model on smaller subsets of the data in order to compare these estimates with those from the fixed-effects probit model. The estimates from the two models were very close. We also ran all binomial specifications using a fixed-effects linear probability model, and obtained results substantively similar to those obtained from the probit estimations (See Appendix Table A1).

[11] For example, Greene (2004) presents Monte Carlo evidence suggesting that the bias from estimating nonlinear models using maximum likelihood with fixed effects drops off rapidly as the number of observations per group increases above three and is substantially reduced even at 20 observations per group.

[12] There are too few Native Americans in our sample to obtain reliable estimates for this group. In all analyses reported in this paper, the small number of Native American and "other" race employees are treated as white. In the probit equation predicting the probability that a new hire is white, we also calculated estimates treating Native Americans and others as non-white. The results were nearly identical.

The fixed-effects multinomial logit model assumes that the residuals are distributed according to a Type I extreme value distribution. The probability that manager i in store j on date t chooses a new hire of race k is:

$$(3) \quad \Pr\text{(new hire is race k)}_{ijt} = \frac{\exp(b_0^{\,k} + MgrBl_{ijt}b_B^{\,k} + MgrHi_{ijt}b_H^{\,k} + MgrAs_{ijt}b_A^{\,k} + M_t b_M^{\,k} + \alpha_j^{\,k} + \varepsilon_{ijt}^{\,k})}{\sum_{l=1}^{4}\exp(b_0^{\,l} + MgrBl_{ijt}b_B^{\,l} + MgrHi_{ijt}b_H^{\,l} + MgrAs_{ijt}b_A^{\,l} + M_t^{\,l}b_M^{\,l} + \alpha_j^{\,l} + \varepsilon_{ijt}^{\,l})}$$

where $k = 1, \ldots, 4$ represents the four race groups white, black, Hispanic, and Asian.

An important assumption of the multinomial logit model is that the odds ratio for any two alternatives is independent of the other alternatives. This implies, for example, that the ratio of the odds of choosing a white employee to the odds of choosing a black employee is not affected by the presence of Hispanic and Asian employees as other alternatives. To test the validity of this "independence of irrelevant alternatives" assumption, we apply a Hausman type specification test by comparing estimates from models with and without each of the four alternatives. The test provides no evidence against the model.[13]

III. Results

A. Probit Estimates of the Effect of Manager Race on the Race of New Hires

Tables 4a-4d show the results from the probit models estimating the effect of manager race on the race of a new hire. The dependent variable in Table 4a is a dummy variable equal to one if the new hire is white and zero otherwise. In Tables 4b-4d, the dependent variables are dummies indicating that a new hire is black, Hispanic, and Asian. For ease of interpretation, we report marginal effects.[14] In each regression, the omitted manager race category is the race for which the dependent variable is defined. Hence, negative estimates for the manager race coefficients suggest that the probability that a new hire is

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[13] This application of Hausman's specification test is described by Hausman and McFadden (1984). The test is based on the test statistic $(b_r - b_f)'(V_r - V_f)(b_r - b_f)$, where b_r denotes the estimates of the restricted model in which one race alternative is omitted. These estimates are inefficient but still consistent under the null hypothesis of independence. b_f denotes estimates of the full model, which are efficient and consistent under the null. The statistic is distributed $\chi^2(>800)$ under the null hypothesis. The values of the test statistics are 36.12 (omitting white), 4.35 (black), 2.49 (Hispanic), and 2.24 (Asian), none of which provides evidence against the null.

[14] In the case of dummy variable regressors (such as the manager race indicators), we report the effect of a discrete change from zero to one.

a given race is smaller when the manager is a different race.

Correlates of Manager-Employee Similarity in the Cross Section.— In Tables 4a-4d, column 1 shows the results from the regressions with no controls. These results simply confirm the strong correlations between manager race and the race of a new hire that were seen in Table 3. The estimated effects are consistently negative for managers whose race differs from the employee race group being examined. Except for the Asian manager indicator in Table 4a, the coefficients on the manager race indicators are all significant at a confidence level of .1 percent.

Columns 2 and 3 show how much of the correlation between manager race and the race of a new hire is explained by controlling for observable differences across stores and locations. The pattern of results is similar for all four race groups. The specification in column 2 adds controls for the population share of each race group in the community. Not surprisingly, community demographics explain a significant part of the correlation between manager race and employee race. The magnitudes of the manager race estimates are consistently reduced by at least one quarter from column 1 to column 2. However, most of them remain significantly different from zero. Column 3 adds more location variables, including population density, median household income, and store location type. Although these variables are often statistically significant, they explain little of the correlation between manager race and employee race.

In column 4, the inclusion of month dummies controls for unobserved differences across time. This also has little effect, suggesting that the similarities between managers and new hires are not explained by seasonal and national fluctuations in the labor market.

Store Fixed-Effects Estimates.— After controlling for observed differences across stores and locations (columns 2 and 3) and unobserved differences across time (column 4), a substantial amount of the correlation between manager race and the race of new hires still remains to be explained. Column 5 of Tables 4a-4d shows the store fixed-effects specifications of the probit models. These estimates control for all fixed differences across stores and locations. A comparison of columns 4 and 5 reveals that in many cases, unobserved differences across stores and locations account for nearly all of the remaining

correlation between manager race and the race of new hires. In the equation predicting that a new hire is white (Table 4a, col. 5), the Hispanic and Asian manager effects are very small and not significantly different from zero. And in the equations predicting that a new hire is Hispanic (Table 4c, col. 5) or Asian (Table 4d, col. 5), none of the manager race effects are significantly different from zero at a five percent confidence level.

However, even after controlling for store fixed effects, one salient pattern remains. There is a significant difference between the hiring patterns of black managers and all non-black managers—i.e., white, Hispanic, and Asian managers. This difference lies mainly in the share of whites and blacks hired by these two groups of managers. First, the manager race coefficients in Table 4a, col. 5 indicate that the probability a new hire is white is between 3.7 and 4.4 percentage points lower under black managers than it is under non-black managers in the same store. Second, the coefficients in Table 4b, col. 5 indicate that the probability a new hire is black is between 3.5 and 4.0 percentage points lower under non-black managers than it is under black managers. In both cases, the estimated differences between black managers and each non-black group are significant at a one percent level of confidence, and the estimated differences among non-black managers are statistically insignificant.

Three points should be stressed about the fixed-effects estimates. First, they suggest that all non-black managers hire more whites and fewer blacks than do black managers. Second, hiring patterns on average are similar among all non-black manager groups; i.e., white, Hispanic, and Asian managers all hire roughly the same proportions of white, black, Hispanic, and Asian employees. Third, it is notable that black managers differ very little from the three non-black groups in the shares of Hispanics and Asians hired.

But there are caveats for the Hispanic and Asian results. First, we shall see below that the effect of manager ethnicity on the probability that a new hire is Hispanic becomes significant when we restrict the sample to locations with larges shares of Hispanics in the local population. Second, we note that in the analysis of Asian hires, the lack of significant manager race effects is due partly to a lack of precision. Indeed, we cannot rule out moderate effects. For example, the white manager coefficient in Table 4d, col.

5 suggests that the probability a new hire is Asian is 1.5 percentage points lower under a white manager than it is under an Asian manager in the same store; however, the 95 percent confidence interval for this estimate is between -0.1 and 3.1 percentage points.

Store-Specific Trends.— If trends in local demographics lead to parallel trends in the demographics of applicant pools for both managers and employees, then the fixed-effects model might over-estimate the causal effect of manager race on hiring patterns. The specification in column 6 of Tables 4a-4d addresses this concern by including store-specific trends as controls. The results of this specification are somewhat surprising. In almost all cases, the magnitudes of the manager race coefficients become *larger* rather than smaller, suggesting that if anything, the fixed-effects model *under-estimates* the causal effect of manager race. However, the differences between the estimates in columns 5 and 6 are generally quite small.

Figures 1a and 1b provide additional evidence that the estimates of the relationship between manager and employee race are not driven by trends in store demographics, and provide some insight as to why the column (6) estimates are larger in magnitude than those in column (5). These figures show trends in the white share of new hires (Figure 1a) and the black share of new hires (Figure 1b) before and after a change in manager.[15] Trends are shown for three cases: 1) a non-black manager is replaced by a black manager, 2) a black manager is replaced by a non-black manager, and 3) a non-black manager is replaced by a non-black manager. In all cases, the introduction of a new manager whose race differs from the outgoing manager results either in a clear intercept shift or in a break with the previous trend, rather than in a continuation of the current trend. Hence Figures 1a and 1b clearly show that manager race is not simply following the same trends as the race of new hires.

However, the graphs do raise another concern. It appears that non-black managers who hire increasingly more whites (Fig. 1a) and fewer blacks (Fig. 1b) over a four-month period are more likely to be replaced by black managers. One possible explanation of this pattern is that the company tries to maintain a certain level of diversity in their stores, and that this goal results in the replacement of non-

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[15] The figures are based on all stores where we observe two consecutive managers for at least four months each.

black managers with black managers in stores where there is a noticeable decline in the ratio of blacks to whites. But in a robustness test described below, we use regression analysis to examine whether the company's choice of a new manager may be influenced by the hiring patterns of the previous manager. We find that any such balancing effect is small and statistically insignificant.

B. Fixed-Effects Multinomial Logit Estimates

The multinomial logit results, which are shown in Tables 5 and 6, facilitate the comparison of hiring patterns across all four manager race groups. These results are remarkably similar to the binomial probit results. First, Table 5 shows the coefficients of the model (columns 1-6), and Wald tests assessing the overall similarity in hiring patterns between managers of different races (column 7). This table confirms that there are no significant differences in the hiring patterns of white, Hispanic, and Asian managers, but that the hiring choices of each non-black group differ significantly from those of black managers. Specifically, these differences between non-black managers and black managers lie in the ratios of black hires to hires of other races, and mainly in the ratio of black hires to white hires (column 1).

Next, Table 6 presents the predicted hiring probabilities for each manager race group.[16] Differences among white, Hispanic, and Asian managers are very small—the largest being the 1.3 percentage point difference between white and Asian managers in the share of Asians hired.[17] And black managers differ very little from the three non-black groups in the shares of Hispanics and Asians hired. Once again, the differences that stand out are those between non-black managers and black managers in the shares of blacks and whites hired. The estimates imply that when a black manager is replaced by a white, Hispanic, or Asian manager in a typical store, the share of new hires that is black falls by 3.8-4.8 percentage points. In all cases, this decline is offset mainly by an increase in the share that is white.

C. Geographic Differences in the Effects of Manager Race and Ethnicity

The estimates presented thus far are national averages, and hence they may obscure important

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[16] Predicted probabilities are calculated at the means of all store and month dummy variables.
[17] The ratios of Asians to whites and of Asians to blacks are higher under an Asian manager than under a white manager, but these differences are significant only at 9 and 13 percent confidence levels.

geographic differences in the effects of manager race and ethnicity on hiring patterns. We are able to perform clean tests of whether the effects of manager race vary by geographic location because the workplaces in our sample are all very similar except for their geographic locations. Here we report the results of two such geographic tests. First, we show that differences between non-black and black hiring patterns are particularly strong in the South. Second, we show that differences between Hispanic and white hiring patterns are large and statistically significant in locations with large Hispanic populations.[18]

Non-Black vs. Black Managers in the South.—We ask whether the differences between non-black and black hiring patterns are larger in the South. This question is important because the South is home to over half the nation's blacks (Frey, 2001), and because there is evidence that racial attitudes remain more divisive in the South than in the rest of the country. For example, the General Social Survey (1990-2000) reveals that in non-Southern states, 3.0 percent of blacks and 11.4 percent of whites favored laws against interracial marriage, but in the South, 5.7 percent of blacks and 23.0 percent of whites favored such laws.[19] Also, Kuklinksi, Cobb, and Gilens (1997) estimate that while 10 percent of non-southern whites react negatively to the idea of living next door to a black family, 42 percent of southern whites react negatively. And Dee (2005) finds that in the South, but not in other regions of the U.S., a student is more likely to be seen as disruptive or inattentive by a teacher if the teacher does not share the student's race.

To compare hiring patterns in the South to those in the rest of the country, we run separate fixed-effect probit regressions for the two sub-samples.[20] The regressions estimate the probability (1) that a new hire is white and (2) that a new hire is black. Table 7 shows the results. The tendency of non-black managers to hire more whites and fewer blacks than black managers is particularly strong in the South, and the differences between Southern and non-Southern states are quite significant.

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[18] We found no geographical differences in the effect of having an Asian manager on the probability that a new hire is Asian.

[19] Calculations made by the authors, and based on a sample of 8,351 from GSS surveys from the years 1990, 1991, 1993, 1994, 1996, 1998 and 2000.

[20] We define the South as: Arkansas, Alabama, Georgia, Florida, Louisiana, Mississippi, North Carolina, Tennessee, South Carolina, and Virginia.

When a non-black manager replaces a black manager in a non-Southern store, the predicted probability of a white hire increases from 54.4 to 57.1 percent, and the probability of a black hire falls from 16.9 to 14.4 percent. This amounts to a five percent increase in white employment, and a 15 percent decline in black employment. In Southern stores, the differences are much larger. When a non-black manager replaces a black manager in a Southern store, the probability of a white hire increases from 52.0 to 61.4 percent, and the probability of a black hire falls from 29.3 to 21.2 percent. This represents an 18 percent increase in white employment, and a 28 percent decline in black employment.[21]

Again, we use a graphical analysis to confirm that these estimates are not driven by demographic trends. Figures 2a and 2b show trends in the white share and black share of new hires for the sub-sample of Southern stores, and compare these trends for the cases where a non-black manager is replaced by a black manager to the cases where the order is reversed. Just as in the full-sample graphs, the introduction of a new manager whose race differs from the outgoing manager always results either in a clear intercept shift or in a break with the previous trend, rather than in a continuation of the current trend.

White vs. Hispanic Managers in Locations with Large Hispanic Populations.—Census data suggests that there is less assimilation of Hispanics and non-Hispanics in areas with larger Hispanic populations.[22] Regional variation in the assimilation of Hispanics and non-Hispanics might cause the effect of manager ethnicity to differ by geographic region. Hence we ask whether the effect of manager ethnicity is stronger in locations with larger Hispanic populations. Specifically, we examine the sub-sample of stores where the population share of Hispanics in the community is at least 30 percent.[23] These

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[21] For perspective, we note the predicted probabilities from a comparable probit regression that pools Southern and non-Southern stores. On average nationally, when a non-black manager replaces a black manager, the share of new hires that is white rises from 53.1 to 57.5 percent, and the share that is black falls from 19.1 to 15.4 percent. This amounts to an 8 percent increase in white employment, and a 19 percent decline in black employment.

[22] For example, in communities where Hispanics make up at least 30 percent of the population, Hispanics are roughly 50 percent more likely than Hispanics elsewhere to speak no English (calculations made by the authors, based on the 1990 Census). Suro and Tafoya (2004) find similar patterns in the 2000 Census. For example, compared to Hispanics in minority-Hispanic neighborhoods, Hispanics in majority-Hispanic neighborhoods are 24 percent more likely to be foreign born, are 52 percent more likely to speak only Spanish, and are 54 percent less likely to speak only English.

[23] For ease of exposition, we report results for this sub-sample instead of reporting the coefficient on a variable interacting the Hispanic manager dummy with percent Hispanic in the community. The interaction term is indeed statistically significant, and suggests that the effect of manager ethnicity increases as the share of Hispanics in the

stores are located primarily in the southern parts of Texas, Florida, and California.

To maintain sufficient sample size, we do not restrict the sample to stores with one hire of each new race group; rather we examine all stores that have at least one Hispanic hire and one white hire. Further, because nearly all of the non-Hispanic managers in this sub-sample are white, we focus only on the differences between Hispanic and white managers.

The results of this analysis are shown in Table 8. In locations where Hispanics are less than 30 percent of the population, the hiring patterns of Hispanic and white managers are remarkably similar, and Hispanics account for roughly 10 percent of new hires on average. However, in stores where the local community is at least 30 percent Hispanic, we find that Hispanic managers hire significantly more Hispanics and fewer whites than do white managers.[24] Our estimates imply that when a Hispanic manager is replaced by a white manager in one of these stores, the share of new hires that is Hispanic falls roughly from 59 to 48 percent, and the share that is white rises from 22 to 32 percent. This represents a 17 percent decline in Hispanic employment, and a 45 percent increase in white employment.

Figures 3a and 3b show the graphical analysis of trends in hiring patterns for stores where the local community is at least 30 percent Hispanic. Once again, the patterns suggest that the estimated effect of manager race on hiring patterns cannot be attributed to trends in the demographics of the labor pool.

D. How Large are the Effects of Manager Race and Ethnicity on Hiring Patterns?

To help interpret the magnitudes of our results, we consider what happens to the racial composition of the average store when a black manager is replaced by a non-black manager. Because employee turnover is high, almost all employees will have been hired by the new manager within a year of a change in management.

The estimates in Table 7 therefore suggest that when a black manager is replaced by a non-black

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community increases. Hence, our choice of 30 percent Hispanic as the cutoff is somewhat arbitrary. The basic result that manager ethnicity has a larger effect on hiring patterns in locations with larger Hispanic populations is robust to other cutpoints.

[24] This sub-sample of stores is only a small fraction (roughly seven percent) of the national sample. This explains why the probit estimates based on the national sample showed only small and statistically insignificant differences between Hispanic and white managers.

manager, the employment share of blacks in non-Southern stores falls roughly from 16.9 percent to 14.4 percent within a year, and the share of whites rises from 54.4 percent to 57.1 percent. In a store of 40 employees, this change amounts to going from roughly 7 blacks and 22 whites to 6 blacks and 23 whites—in other words, replacing one black employee with one white employee. Now, from the viewpoint of someone (such as a district manager) who is observing just a small sample of stores, this change might either go unnoticed or appear insignificant. However, the change may appear more significant from the point of view of job seekers—and especially black job seekers. Indeed, the change amounts to a proportional decline of 15 percent in the number of blacks employed.

Moreover, we have seen that the effects of manager race are larger in Southern stores. In a typical southern store with a black manager and 40 employees, there are 12 black employees and 21 white employees on average. Our estimates suggest that replacing a black manager with a non-black manager would result in the replacement of three to four black employees with white employees. This amounts to a 28 percent decline in black employment, and a 17 percent rise in white employment.

Finally, in a store of 40 employees in a Hispanic neighborhood, replacing a Hispanic manager with a white manager would result in the replacement of roughly four out of 24 Hispanic employees with white employees. This is equivalent to a 17 percent decline in the number of Hispanics, and a 45 percent increase in the number of whites in the store.

IV. Robustness Tests

A. Linear Probability Model without Sample Restriction

Our estimation sample is restricted to stores that hire at least one new employee from each of the four main race groups. This sample restriction allows us to estimate all probit models using the same sample of stores, and is also necessary to estimate the multinomial logit model with store fixed effects. However, this restriction could introduce sample selection bias. By eliminating stores in which there is no change in the hiring probability for at least one race group, we may be dropping many stores in which a change in manager race has zero impact on hiring patterns.

To examine the implications of the sample selection, we use a linear probability model to

estimate all of the binomial choice equations on both the restricted and full samples. The results (reported in Appendix Table A1) are similar for both samples, and are substantively similar to the probit results.[25] This similarity suggests that our sample restriction does not have a significant effect on our estimates.

B. Tests for the Exogeneity of Changes in Manager Race

As mentioned earlier, the patterns in Figures 1a and 1b raise the concern that the company's choice of a new manager may be influenced by the hiring patterns of the previous manager. Specifically, it appears that non-black managers who hire increasingly more whites (Fig. 1a) and fewer blacks (Fig. 1b) over a four-month period are more likely to be replaced by black managers. This pattern suggests the company might use manager changes as a tool for maintaining workforce diversity. To be sure, the existence of such a policy would not undermine our conclusion that manager race can affect hiring patterns; indeed, such a policy would suggest the company exploits the "manager-race effect" to shape employment demographics. Still, such a policy would mean that the company deliberately fosters the changes in hiring patterns that we observe.

To investigate these possibilities more formally, we estimate probit models predicting the probability that the new manager is a given race, conditional on observing a change in management. In particular, we examine the effects of three covariates on the race of the new manager: (1) changes in hiring patterns over the preceding six-month period, (2) changes in employment demographics over the same six-month period, and (3) the ratio of employment share to local population share of each race group during the six-month period.[26] We control for the race of the departing manager, and we interact all of the variables that measure hiring and employment trends with dummy variables indicating the departing manager's race.

The results of these regressions are shown in Appendix Table A2. In all regressions, preceding

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[25] Still, we must remember that the results for both samples are identified off of stores with consecutive managers of different races, and that this may affect the generalizability of our results. For example, our estimates may not accurately predict the effect of replacing a white manager with a black manager in stores where a black manager is never observed.

[26] The sample we analyze includes all changes in management occurring at least six months after the beginning of our sample period (i.e. August 1, 1996 – July 30, 1998). We chose to focus on changes over six months rather than changes over longer periods in order to have a sufficiently large sample of new managers.

hiring and employment patterns have small effects on the race of the new manager, and none of the

effects is statistically different from zero.[27] These results support the conclusion that in stores where

manager changes are observed, the race of the new manager is reasonably independent of any recent

patterns in hiring or employment demographics.[28]

V. Why Does Manager Race Affect Hiring Patterns?

There are four primary reasons why a manager's race might affect the racial composition of new

hires. First, racially segregated social networks may be used by managers when recruiting new applicants

or by employees when looking for jobs. Second, if manager-employee similarity improves productivity,

then managers may hire racially similar employees for efficiency reasons. Third, managers may prefer to

supervise racially similar employees, or may be biased against racially dissimilar employees. Fourth,

employees may prefer to work for racially similar managers, or may be biased against racially dissimilar

managers.

While it is difficult to distinguish among these causes, additional analysis of our data provides

some suggestive findings. We find no evidence that our main results are driven either by networks or by

efficiency considerations, though the power of our tests to reject these explanations is not that high.

However, we do find evidence that the racial preferences of both managers and job-seekers may play a

role.

A. Neighborhoods and Hiring Networks

If managers use their own social networks to recruit employees, and if social networks tend to be

segregated by race and ethnicity, then these networks may lead managers to hire employees of the same

racial or ethnic group.[29] To explore the role of hiring networks in our data, we use information on the

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[27] For example, the largest of these estimates suggests that a 20 percent increase in the white employment share under a white manager (e.g. from 50 percent white to 60 percent white) would reduce the probability that the next manager is white by less than two percentage points.

[28] Additional analysis, using hazard models, showed that there is also no significant relationship between changes in employment demographics and the timing of managerial exits. These results provide further support for the conclusion that manager changes are exogenous to hiring patterns.

[29] This company has a strict formal policy that forbids managers from hiring their friends or acquaintances. Nevertheless, previous studies have argued that informal networks play an important role in hiring (e.g., Bayer et al.,

residential ZIP codes of managers and employees. While one's ZIP code is an imperfect proxy for one's

network of acquaintances, nevertheless residential areas and social networks do tend to overlap. Hence if

the social networks of managers are driving our results, we may find that managers tend to hire

employees who live in the manager's ZIP code.

We test this hypothesis using stores that have consecutive managers who reside in different ZIP

codes. We estimate two regressions. One compares the probability that a new hire lives in the same ZIP

code as the first manager for two groups of new hires—those hired by the first manager and those hired

by the second manager. The other compares the probability that a new hire lives in the same ZIP code as

the second manager for the same two groups.[30] We find that the probability a new hire lives in a

particular ZIP is only .1 to .2 percentage points higher if the hiring manager also lives in that ZIP (Table

9). This effect is extremely small and not statistically significant.[31]

To be sure, much of the literature on hiring networks emphasizes the networks of employees

rather than those of managers, and some studies have found that employees tend to refer similar others

(e.g. Fernandez et al., 2000; Muow, 2002). Employee referrals alone cannot cause manager race to be

correlated with hiring patterns, but if there is some tendency for managers to hire same-race employees,

then same-race employee referrals could amplify this tendency. However, additional regression analysis

reveals that the share of employees of race k at the time of a new hire is *negatively* related to the

probability that the new hire is of race k.[32] This is the opposite of what would be expected if same-race

employee referrals were an important determinant of hiring patterns in our data.

2005; Holzer, 1996; Granovetter, 1995); that such networks tend to be segregated by race (Marsden, 1987); and that minorities tend to lack access to hiring networks (Petersen et al., 2000; Moss and Tilly 2001).

[30] Approximately 95 percent of the manager changes in our data involve two managers from different ZIP codes. On average, less than five percent of employees live in the same ZIP code as their manager. Employees tend to live near the store instead—with 13 percent sharing the store's ZIP code.

[31] Since we find bigger differences in hiring patterns between non-black managers and black managers in the South, we also look to see if the tendency to hire from within one's own ZIP code is stronger in the South. The estimates for this sample are slightly larger (.3 to .5 percentage points), but still are not significantly different from zero.

[32] We analyzed the relationship between the racial composition of the workforce at the time of hire and the racial composition of new hires by estimating probit models with manager and store fixed effects. Results of this analysis are available from the authors upon request.

B. Productivity Effects of Manager-Employee Similarity

Managers might hire same-race employees because same-race relationships are more efficient. For example, racial and ethnic diversity may raise transactions costs or make communication difficult.[33] Or managers may find it more difficult to motivate employees of different race groups, making some mixed-race relationships less productive.[34]

To investigate whether efficiency considerations are driving our results, we use data on store monthly sales. Table 10 reports the results of a linear fixed-effects regression of log monthly sales on manager race, employment shares of each race group, and the interactions of these employment share variables with the black manager indicator. The coefficient on the interaction of the black manager indicator and the black share of employment is positive, suggesting that the relative productivity of black employees to white employees (the omitted group) is slightly higher under a black a manager than under a non-black manager. The positive coefficient is consistent with an efficiency motive for black managers to hire fewer whites and more blacks, and for non-blacks to do the opposite. However, the effect is small and not statistically significant.[35] Hence there is not strong support for an efficiency explanation of our results.[36]

C. Racial Preferences of Managers and Employees

Using the present data set, we have conducted a separate study that analyzes the effect of racial

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[33] Lang (1986) emphasizes this point in his model of "language discrimination".

[34] This hypothesis is suggested by the organizational behavior literature on racial "mismatch". Typical findings are that subordinates whose manager is a different race have lower job satisfaction (Wesolowski and Mossholder, 1997), that white subordinates with black supervisors report high role ambiguity and role conflict (Tsui and O'Reilly, 1989), and that same-race mentoring relationships last longer and provide more psychosocial support than do cross-race relationships (Thomas, 1990).

[35] The coefficient implies that when there is a five percentage point increase in the black share of employment that is offset by a decline in white employment, sales are .25 percent higher under a black manager than a white manager. Similar regressions that allow the effects to differ in the South (not reported in table) indicate that even in the South, sales are not significantly affected by manager-employee racial differences. We also ran comparable regressions examining the interaction of Hispanic manager with employee race shares for stores in high Hispanic locations. The coefficient on the interaction of Hispanic manager with percent Hispanic employees is negative and statistically insignificant. Hence, there is also no support for an efficiency explanation of the Hispanic results.

[36] Becker's (1971) theory of taste-based discrimination suggests that in competitive markets, employers who discriminate (by basing hiring choices on tastes and not on efficiency criteria/employee skills alone) should have lower profits. Hence the lack of a negative effect of manager-employee similarity on sales might be viewed as evidence of the absence of discrimination. However, perhaps it is more likely that the skill level of frontline employees is not an important determinant of sales at this company.

differences between manager and employee on employee rates of quits, dismissals, and promotions.[37]

This separate analysis suggests that the findings of the present study may be driven by the racial

preferences of both managers and employees.

Because dismissals and promotions are decisions made primarily by managers, we look at our

analysis of these outcomes for evidence implicating the racial preferences of managers. We find that

when their managers are racially dissimilar, both black and Hispanic employees are dismissed at higher

rates and promoted at lower rates (see Referee's appendix, table R1). Under a different-race manager,

blacks are 51 percent more likely to be dismissed and 61 percent less likely to be promoted, and

Hispanics are 18 percent more likely to be dismissed and 54 percent less likely to be promoted.[38] These

findings not only suggest that the racial preferences of managers can affect employment outcomes, but

moreover point toward specific explanations of the results of the present study.

The finding that black employees have less favorable dismissal and promotion outcomes under

non-black managers is consistent with two types of managerial bias: discrimination by non-black

managers against black employees, or favoritism by black managers toward black employees. We cannot

distinguish between these two possibilities. Nevertheless, either one could explain why the probability of

hiring a black employee is lower under non-black managers. Similarly, the finding that Hispanic

employees fare worse under non-Hispanic managers suggests either discrimination by non-Hispanic

managers against Hispanics or favoritism by Hispanic managers toward Hispanics. Again, either could

explain why Hispanic managers hire more Hispanic employees.

Quits are employee decisions, so we look at our quits analysis for evidence of employee

preferences. In particular, one part of this analysis uses quits to test whether job-seekers are choosing

their place of employment based on their racial preferences in managers. The results of this test suggest

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[37] The analysis is based on hazard models predicting the likelihood of an employee quitting, being dismissed, or being promoted as a function of racial differences between manager and employee. For methodological details, see (reference suppressed).

[38] Both estimates for blacks are statistically significant at p<.05. The estimate for Hispanic promotion rates is significant at p<.10, but the estimate regarding Hispanic dismissal rates is not statistically significant. Due to small sample sizes, it was not possible to precisely estimate geographic variation in the effects of manager-employee dissimilarity on dismissal and promotion rates.

that the findings of the present study could be driven by the racial preferences of a specific group—namely, white job-seekers.

To test for the preferences of job-seekers, we compare the effect of manager-employee race differences on the quit rates of two groups of employees—those who are still working for the managers who hired them and those who have received new managers. The key difference between these two groups is that those with new managers have not chosen to work for their manager. Hence if job-seekers are selecting where to work on the basis their racial preferences in managers, then the effect of manager-employee dissimilarity on quits should be larger for the group with new managers.

When we compare the effect of manager-employee race differences on quit rates for these two groups of employees, we find a significant difference in the estimates of the two groups for once race category—white employees (see Table R2). For white employees, the effect of having a non-white manager on quit rates is significantly larger (p= .07) when the manager in question is new. Among white employees who still have their hiring managers, whites with non-white managers are only 4.9 percent more likely to quit than whites with white managers. In contrast, among white employees who have received new managers, whites with non-white managers are 34.5 percent more likely to quit than whites with white managers.

These results suggest that many white employees who dislike working for non-white managers avoid working for such managers in the first place. And when such whites involuntarily find themselves working for a non-white manager, their quit rates increase substantially. Hence we conclude that the reluctance of many white employees to take jobs with minority managers may be at least partly responsible for our finding that black managers in general, and Hispanic managers in locations with lots of Hispanics, hire relatively low proportions of white employees.[39]

In sum, the weight of the evidence regarding quits, dismissals, and promotions suggests that the effects of manager race on hiring patterns may be driven by a combination of manager and employee

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[39] Consistent with our findings, the effects of manager-employee demographic differences on white quit rates and on the avoidance of minority managers by white employees are larger both in the South and in locations with large Hispanic populations.

preferences. With respect to managers, we are unable to distinguish whether our results may be driven by the bias of non-black managers against minority employees or by the favoritism of minority managers toward minority employees. However, the first interpretation is more consistent with the findings of audit studies and other experimental studies of hiring discrimination, which have found evidence of discrimination against black and Hispanic job-seekers.[40] With respect to employees, our analysis of quits suggests that many white job-seekers avoid working for minority managers. This conclusion is consistent with Stoll et al.'s (2004) finding that black hiring agents receive a larger proportion of job applications from blacks (and a smaller proportion from whites) than do white hiring agents.[41]

VI. Conclusion

As the U.S. labor force grows ever more diverse, it is increasingly important to understand how race and ethnicity affect employment outcomes. Using a new panel dataset, this study is the first to establish whether the race of the hiring manager has a causal effect on the race of new hires. It is also the first to look at this important question with respect to Hispanics and Asians. Our findings suggest that manager race is a significant determinant of the racial composition of new hires, though the primary determinants are the characteristics of the workplace and its location.

First, we find significant differences between the hiring patterns of non-black managers and black managers. We find that all non-black managers—i.e., whites, Hispanics, and Asians—hire more whites and fewer blacks than do black managers. These differences between non-black and black managers are especially large in the South. Second, we find a significant difference in the hiring patterns of Hispanic

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[40] In particular, audit studies by Turner et al. (1991) and Bendick et al. (1994) find that black research assistants posing as job applicants ("testers") get fewer job offers than do white testers with similar qualifications who apply for the same jobs. Kenney and Wissoker (1994) find similar results for Hispanics. In another experimental study, Bertrand and Mullainathan (2004) find that resumes with black-sounding names obtain fewer interview offers than identical resumes with white-sounding names. Most audit studies cannot analyze the role of manager race or preferences in such discrimination—either because there is no data on manager traits, or because there is not enough variation.

[41] Stoll et al. interpret their result as suggesting that having blacks in visible positions of authority *increases* the rate at which *blacks* apply for jobs. They suggest that the presence of black managers may signal to potential black applicants that they are less likely to suffer from discrimination or a hostile environment. Our results are not inconsistent with such behavior by black job-seekers. However, our analysis of quit rates suggests that the behavior of white job-seekers is at least as relevant. We would thus stress an alternate interpretation of Stoll et al.'s results: Having a black hiring agent *decreases* the rate at which *white* job-seekers apply for and accept jobs.

and white managers in locations where Hispanics make up at least 30 percent of the population. In these areas, Hispanic managers hire more Hispanics and fewer whites than do white managers.

Additional analysis provides some suggestive evidence about why manager race has an effect on hiring patterns. This evidence suggests that our main results may be driven by the racial preferences of both managers and employees. Our strongest finding here is that many white job-seekers apparently avoid working for minority managers.

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TABLE 1. WORKPLACE AND COMMUNITY DEMOGRAPHICS

	Workplace		Community	
	Mean	**Std. Dev.**	**Mean**	**Std. Dev.**
Race/Ethnicity				
White	60.4%	21.7%	73.4%	19.1%
Black	14.5%	12.1%	8.9%	10.9%
Hispanic[*]	13.2%	12.9%	7.5%	9.7%
Asian/Pacific Islander	10.2%	9.6%	6.3%	7.7%
Native American	0.4%	0.7%	0.3%	0.4%
Other/Unknown	1.3%	1.4%	3.6%	5.2%

Notes: Workplace statistics are based on stores' average daily employment shares from Feb. 1, 1996-July 31, 1998, for all stores in the estimation sample. Community statistics are from the 1990 Census and are based on all Census tracts within two miles of the center of each store's ZIP code. [*] In the Census, respondents can categorize themselves as both black and Hispanic or as both white and Hispanic, whereas the employer has mutually exclusive codes of white, black and Hispanic. In this table, the Census figures for whites and blacks refer to non-Hispanics, while the Hispanic figures refer to Hispanics of all races.

TABLE 2. DEMOGRAPHIC COMPOSITION OF MANAGERS AND FRONTLINE WORKERS

	Company employees: Estimation sample		Company employees: All retail stores		All Retail (CPS)	
	Managers	Frontline workers	Managers	Frontline workers	Managers [***]	Frontline workers
Race/Ethnicity:						
White	86.2%	60.1%	86.7%	67.5%	81.0%	72.6%
Black	5.9%	15.1%	4.9%	13.8%	6.6%	12.7%
Hispanic [*]	4.6%	13.2%	5.2%	10.5%	6.9%	10.0%
Asian/Pacific Isle. [**]	2.4%	9.8%	2.3%	6.9%	5.0%	4.1%
Native American	0.1%	0.4%	0.2%	0.3%	0.6%	0.7%
Other/Unknown	0.8%	1.3%	0.7%	1.1%	--	--
Gender:						
Female	77.7%	69.4%	79.5%	72.9%	50.1%	66.3%
Average Age:	30.0	22.2	30.3	22.1	39.4	32.5

Notes: Company statistics are based on company-wide daily employment shares, averaged over the sample period from February 1, 1996 to July 31, 1998. Retail statistics are based on the monthly CPS, from Feb. 1996-July 1998.

[*] In the CPS, respondents can categorize themselves as both black and Hispanic or as both white and Hispanic, whereas the employer has mutually exclusive codes of white, black and Hispanic. In this table, the CPS figures for whites and blacks refer to non-Hispanics, while the Hispanic figures refer to Hispanics of all races.

[**] Unlike our employer, the CPS lumps "other" races together with Asians and Pacific Islanders.

[***] Whereas "managers" in our analysis include only those with the job title "store manager", our CPS-based statistics for managers include anyone in a managerial or supervisory position.

TABLE 3. AVERAGE RACE & ETHNIC COMPOSITION OF NEW HIRES BY MANAGER RACE & ETHNICITY

	Manager Race				
Employee Race	White	Black	Hispanic	Asian	All Managers
White	**58.3%**	44.8%	42.1%	48.6%	56.3%
Black	18.5%	**30.9%**	20.9%	16.2%	19.3%
Hispanic	12.7%	13.5%	**27.0%**	13.7%	13.6%
Asian	9.0%	9.3%	8.7%	**19.4%**	9.3%
Native Amer./other	1.5%	1.5%	1.3%	2.1%	1.5%

Notes: Statistics based on estimation sample: All individuals hired between February 1, 1996 and July 31, 1998 at stores that hired at least one new employee of each race during this sample period. N>100,000 new hires.

	(1)	(2)	(3)	(4)	(5)	(6)
Hiring manager is black[1]	-0.135**	-0.103**	-0.108**	-0.105**	-0.044**	-0.052**
	(0.027)	(0.021)	(0.020)	(0.020)	(0.012)	(0.013)
Hiring manager is Hispanic[1]	-0.162**	-0.056*	-0.062**	-0.056*	-0.005	-0.014
	(0.034)	(0.028)	(0.024)	(0.024)	(0.012)	(0.014)
Hiring manager is Asian[1]	-0.098*	0.021	-0.004	0.001	-0.007	-0.012
	(0.041)	(0.031)	(0.025)	(0.025)	(0.014)	(0.020)
Population % black		-0.691**	-0.669**	-0.675**		
		(0.082)	(0.076)	(0.076)		
Population % Hispanic		-1.219**	-0.964**	-0.978**		
		(0.144)	(0.097)	(0.096)		
Population % Asian		-1.278**	-0.959**	-0.960**		
		(0.168)	(0.090)	(0.090)		
Population % other		-0.656**	-0.584**	-0.580**		
		(0.190)	(0.166)	(0.166)		
Median household income (in $10,000)			-0.023**	-0.023**		
			(0.004)	(0.004)		
Population within 2 miles (in 100,000's)			-0.073**	-0.073**		
			(0.008)	(0.008)		
Location==Open Mall[1]			0.047*	0.045		
			(0.023)	(0.023)		
Location==Street[1]			0.043*	0.042*		
			(0.020)	(0.020)		
Location==Strip[1]			0.058**	0.058**		
			(0.016)	(0.016)		
Month dummies	--	--	--	Yes	Yes	Yes
Store dummies	--	--	--	--	Yes	Yes
Store-specific trends	--	--	--	--	--	Yes
Number of hires	>100,000	>100,000	>100,000	>100,000	>100,000	>100,000
Number of stores	>700	>700	>700	>700	>700	>700

Notes: Table reports marginal effects. Parentheses contain Huber-White robust standard errors, corrected for within-store clustering.
[1] Table reports change in probability that a new hire is white for a discrete change of dummy variable from 0 to 1.
Omitted manager race is white. Omitted location type is mall. * significant at 5%; ** significant at 1%.

	(1)	(2)	(3)	(4)	(5)	(6)
Hiring manager is white[1]	-0.121**	-0.089**	-0.091**	-0.088**	-0.035**	-0.048**
	(0.021)	(0.018)	(0.018)	(0.017)	(0.008)	(0.011)
Hiring manager is Hispanic[1]	-0.075**	-0.046*	-0.041*	-0.041*	-0.039**	-0.046**
	(0.020)	(0.022)	(0.019)	(0.019)	(0.009)	(0.013)
Hiring manager is Asian[1]	-0.106**	-0.093**	-0.081**	-0.081**	-0.040**	-0.049**
	(0.017)	(0.016)	(0.015)	(0.015)	(0.013)	(0.016)
Population % white		-0.592**	-0.618**	-0.621**		
		(0.067)	(0.068)	(0.068)		
Population % Hispanic		-0.705**	-0.880**	-0.872**		
		(0.106)	(0.103)	(0.103)		
Population % Asian		-0.458**	-0.621**	-0.630**		
		(0.112)	(0.085)	(0.085)		
Population % other		-0.513**	-0.563**	-0.573**		
		(0.132)	(0.121)	(0.120)		
Median household income (in $10,000)			0.019**	0.019**		
			(0.004)	(0.004)		
Population within 2 miles (in 100,000's)			0.033**	0.033**		
			(0.005)	(0.005)		
Location==Open Mall[1]			-0.054**	-0.053**		
			(0.014)	(0.014)		
Location==Street[1]			-0.003	-0.003		
			(0.018)	(0.018)		
Location==Strip[1]			-0.027	-0.028		
			(0.014)	(0.014)		
Month dummies	--	--	--	Yes	Yes	Yes
Store dummies	--	--	--	--	Yes	Yes
Store-specific trends	--	--	--	--	--	Yes
Number of hires	>100,000	>100,000	>100,000	>100,000	>100,000	>100,000
Number of stores	>700	>700	>700	>700	>700	>700

Notes: Table reports marginal effects. Parentheses contain Huber-White robust standard errors, corrected for within-store clustering.
[1] Table reports change in probability that a new hire is black for a discrete change of dummy variable from 0 to 1. Omitted manager race is black.
Omitted location type is mall. * significant at 5%; ** significant at 1%. Wald test of equality of column (5) coefficients: $chi^2 (2)= 1.53$; $Pr(>chi^2) = 0.464$.

TABLE 4C. PROBIT ESTIMATES OF THE EFFECT OF MANAGER RACE ON THE PROBABILITY THAT A NEW HIRE IS HISPANIC

	(1)	(2)	(3)	(4)	(5)	(6)
Hiring manager is white[1]	**-0.137****	**-0.032****	**-0.028****	**-0.026****	**-0.005**	**-0.004**
	(0.023)	(0.012)	(0.010)	(0.010)	(0.007)	(0.010)
Hiring manager is black[1]	**-0.082****	**-0.037****	**-0.029****	**-0.028****	**-0.008**	**-0.005**
	(0.011)	(0.011)	(0.010)	(0.010)	(0.008)	(0.011)
Hiring manager is Asian[1]	**-0.079****	**-0.040****	**-0.031****	**-0.031****	**-0.005**	**-0.006**
	(0.013)	(0.013)	(0.010)	(0.010)	(0.010)	(0.015)
Population % white		-0.741**	-0.676**	-0.674**		
		(0.081)	(0.068)	(0.067)		
Population % black		-0.746**	-0.750**	-0.748**		
		(0.100)	(0.092)	(0.090)		
Population % Asian		-0.607**	-0.700**	-0.700**		
		(0.103)	(0.079)	(0.078)		
Population % other		-0.267	-0.313*	-0.308*		
		(0.145)	(0.123)	(0.121)		
Median household income (in $10,000)			0.001	0.002		
			(0.002)	(0.002)		
Population within 2 miles (in 100,000's)			0.031**	0.031**		
			(0.003)	(0.003)		
Location==Open Mall[1]			-0.001	0.000		
			(0.015)	(0.015)		
Location==Street[1]			-0.019*	-0.019*		
			(0.008)	(0.008)		
Location==Strip[1]			-0.005	-0.005		
			(0.007)	(0.007)		
Month dummies	--	--	--	Yes	Yes	Yes
Store dummies	--	--	--	--	Yes	Yes
Store-specific trends	--	--	--	--	--	Yes
Number of hires	>100,000	>100,000	>100,000	>100,000	>100,000	>100,000
Number of stores	>700	>700	>700	>700	>700	>700

Notes: Table reports marginal effects. Parentheses contain Huber-White robust standard errors, corrected for within-store clustering.
[1] Table reports change in probability that a new hire is Hispanic for a discrete change of dummy variable from 0 to 1. Omitted manager race is Hispanic.
Omitted location type is mall. * significant at 5%; ** significant at 1% .

TABLE 4D. PROBIT ESTIMATES OF THE EFFECT OF MANAGER RACE ON THE PROBABILITY THAT A NEW HIRE IS ASIAN

	(1)	(2)	(3)	(4)	(5)	(6)
Hiring manager is white[1]	**-0.097****	**-0.028**	**-0.029**	**-0.028**	**-0.015**[‡]	**-0.022****
	(0.024)	(0.018)	(0.017)	(0.016)	(0.008)	(0.007)
Hiring manager is black[1]	**-0.057****	**-0.017**	**-0.019**	**-0.019**	**-0.012**	**-0.015**
	(0.010)	(0.014)	(0.014)	(0.013)	(0.008)	(0.007)
Hiring manager is Hispanic[1]	**-0.061****	**-0.030***	**-0.029***	**-0.031****	**-0.007**	**-0.005**
	(0.010)	(0.013)	(0.012)	(0.012)	(0.008)	(0.008)
Population % white		-0.514**	-0.519**	-0.519**		
		(0.043)	(0.048)	(0.047)		
Population % black		-0.590**	-0.567**	-0.565**		
		(0.050)	(0.053)	(0.052)		
Population % Hispanic		-0.558**	-0.556**	-0.554**		
		(0.054)	(0.058)	(0.057)		
Population % other		-0.290**	-0.273*	-0.274*		
		(0.101)	(0.107)	(0.107)		
Median household income (in $10,000)			0.004*	0.004*		
			(0.001)	(0.001)		
Population within 2 miles (in 100,000's)			-0.004	-0.004		
			(0.003)	(0.003)		
Location==Open Mall[1]			0.010	0.010		
			(0.012)	(0.012)		
Location==Street[1]			-0.005	-0.004		
			(0.007)	(0.007)		
Location==Strip[1]			-0.028**	-0.027**		
			(0.005)	(0.005)		
Month dummies	--	--	--	Yes	Yes	Yes
Store dummies	--	--	--	--	Yes	Yes
Store-specific trends	--	--	--	--	--	Yes
Number of hires	>100,000	>100,000	>100,000	>100,000	>100,000	>100,000
Number of stores	>700	>700	>700	>700	>700	>700

Notes: Table reports marginal effects. Parentheses contain Huber-White robust standard errors, corrected for within-store clustering.
[1]Table reports change in probability that a new hire is Asian for a discrete change of dummy variable from 0 to 1. Omitted manager race is Asian.
Omitted location type is mall. [‡] significant at 10%; * significant at 5%; ** significant at 1%.
Wald test for joint significance of column (5) coefficients: chi^2 (3)= 5.30; Pr(>chi^2) = 0.151.

Change in race of hiring manager:	Change in log odds that new hire is race 1 vs. race 2						Wald Test Chi2 (Pr>chi2)
	White vs. Black	White vs. Hispanic	White vs. Asian	Black vs. Hispanic	Black vs. Asian	Hispanic vs. Asian	
White to Black	-0.274**	-0.095	-0.112	0.179*	0.162*	-0.018	21.82**
	(0.059)	(0.072)	(0.074)	(0.075)	(0.073)	(0.079)	(0.000)
White to Hispanic	0.039	-0.013	-0.096	-0.053	-0.136	-0.083	2.26
	(0.068)	(0.067)	(0.077)	(0.089)	(0.093)	(0.088)	(0.520)
White to Asian	0.053	-0.009	-0.163‡	-0.044	-0.217	-0.173	3.33
	(0.094)	(0.106)	(0.095)	(0.121)	(0.142)	(0.120)	(0.343)
Black to Hispanic	0.313**	0.081	0.016	-0.232*	-0.297**	-0.065	13.89**
	(0.086)	(0.089)	(0.101)	(0.106)	(0.115)	(0.109)	(0.003)
Black to Asian	0.327**	0.104	-0.051	-0.223*	0.378*	-0.155	9.24*
	(0.110)	(0.127)	(0.118)	(0.139)	(0.157)	(0.143)	(0.026)
Hispanic to Asian	0.014	0.023	-0.067	0.009	-0.081	-0.089	0.46
	(0.115)	(0.126)	(0.118)	(0.150)	(0.165)	(0.145)	(0.093)

Notes: Based on multinomial logit regressions predicting the race of a new hire. Controls include month dummies and store fixed effects. Parentheses contain robust standard errors, adjusted for clustering on store. Final column reports Wald test of H$_o$: No change in hiring pattern. N > 100,000 new hires. ‡ significant at 10%; * significant at 5%; ** significant at 1%

TABLE 6. PREDICTED PROBABILITIES OF RACE OF NEW HIRES BY MANAGER RACE

Race of New Hire	Race of Manager			
	White	Black	Hispanic	Asian
White	.641	.597	.639	.638
Black	.171	.209	.163	.161
Hispanic	.111	.114	.112	.109
Asian	.078	.081	.086	.091

Notes: Simulations based on multinomial logit predicting the race of a new hire. Controls include month dummies and store fixed effects. N > 100,000 new hires.

TABLE 7. BLACK VS. NON-BLACK MANAGERS IN THE SOUTH

Predicted Probability that a new hire is:	South		Non-South	
	White	**Black**	**White**	**Black**
Nonblack Manager	0.614	0.212	0.571	0.144
Black Manager	0.520	0.293	0.544	0.169
Difference	0.094**	-0.081**	0.027*	-0.025**
	(0.020)	(0.014)	(0.013)	(0.009)

Notes: Based on probit regressions predicting probability that a new hire is white (black). Regressions include store and month dummies and store-specific trends. Parentheses contain robust standard errors, adjusted for clustering on store. N > 100,000. South is defined here as states that were part of the Confederacy, except Texas. These states are: Arkansas, Alabama, Georgia, Florida, Louisiana, Mississippi, North Carolina, Tennessee, South Carolina, and Virginia. * significant at 5%; ** significant at 1%.

TABLE 8. HISPANIC VS. NON-HISPANIC MANAGERS IN HIGH HISPANIC LOCATIONS

Predicted Probability that a new hire is:	High-Hispanic Locations		Low-Hispanic Locations	
	White	**Hispanic**	**White**	**Hispanic**
White Manager	0.320	0.483	0.570	0.101
Hispanic Manager	0.219	0.595	0.574	0.102
Difference	0.101**	-0.112**	0.004	0.001
	(0.038)	(0.052)	(0.011)	(0.006)

Notes: Based on probit regressions predicting probability that a new hire is Hispanic. Regressions include store and month dummies. Parentheses contain robust standard errors, adjusted for clustering on store. N > 100,000. High-Hispanic locations defined here as locations with at least 30 percent of local population Hispanic. * significant at 5%; ** significant at 1%.

TABLE 9. PROBIT ESTIMATES OF THE PROBABILITY THAT AN EMPLOYEE LIVES IN A GIVEN ZIP CODE AS A FUNCTION OF WHETHER HIRING MANAGER ALSO LIVES IN THE ZIP CODE.

	employee lives in zip code 1	employee lives in zip code 2
Employee hired by manager who lives in zip code 1	0.0018 (0.0018)	
Employee hired by manager who lives in zip code 2		0.0011 (0.0017)
Constant term	0.0347 (0.0009)	0.0361 (0.0008)

Notes: Based on sample of the two managers with the largest number of hires in each store, for stores with at least two managers in which the second manager lives in a different zip code from the first manager. Regressions include store fixed effects. N>50,000 new hires; >600 stores.

TABLE 10. LINEAR REGRESSION ESTIMATES OF THE EFFECT OF RACE & ETHNIC SIMILARITY ON SALES

Manager is Black	-0.029 (0.017)
Manager is Hispanic	-0.017 (0.010)
Manager is Asian	-0.025 (0.013)
% Employees who are black	0.023 (0.030)
% Employees who are Hispanic	0.013 (0.036)
% Employees who are Asian	0.106** (0.034)
Mgr. Black * % Employees black	0.047 (0.050)
Mgr. Black * % Employees Hispanic	0.066 (0.044)
Mgr. Black * % Employees Asian	-0.054 (0.096)

Notes: Dependent variable is log of monthly sales. Controls include manager age and sex, manager experience, a dummy for manager of "other" race and % hires who are "other", a dummy indicating if the manager is an assistant manager, share of new hires with no company experience, total monthly employment, a dummy variable for each of the 30 months in the sample, a dummy variable for each store in the sample, and a trend variable for each store in the sample. Omitted manager race and employee race category is white. Parentheses contain robust standard errors, adjusted for clustering on store. N > 20,000 store-months.

***Notes*:** Based on sample of all manager changes for which our data contain at least one hire every two months from four months before a manager change to four months after the change. Cases where a black manager is replaced by a black manager are not graphed due to small sample size.

FIGURE 2A. TRENDS IN WHITE SHARE OF NEW HIRES IN THE SOUTH
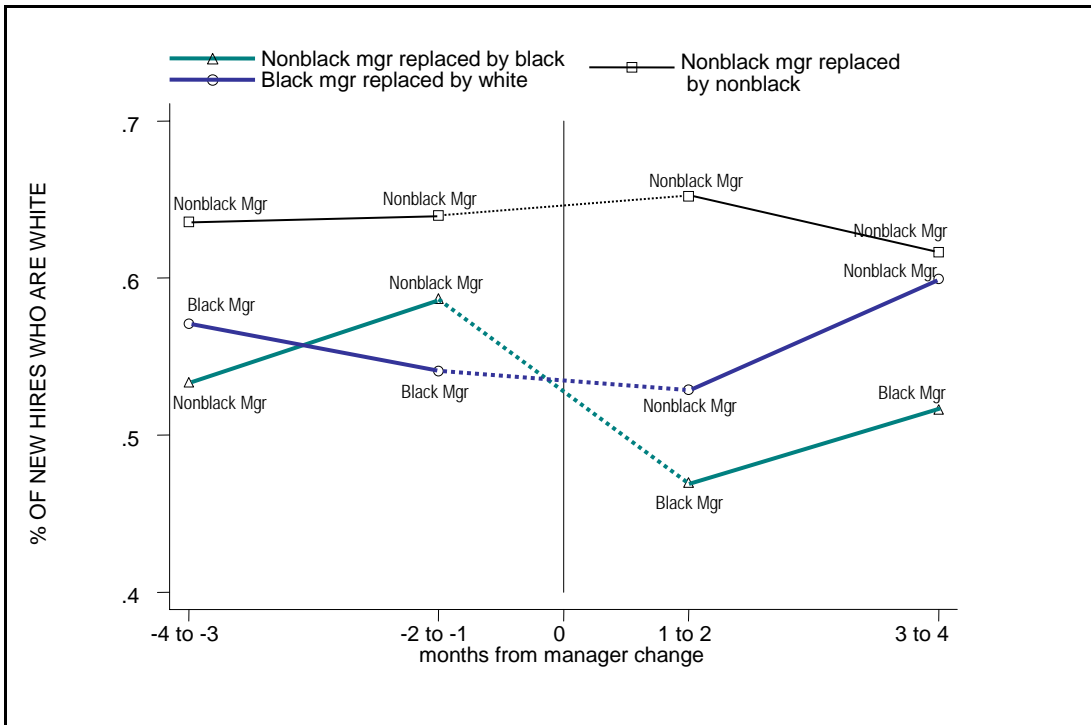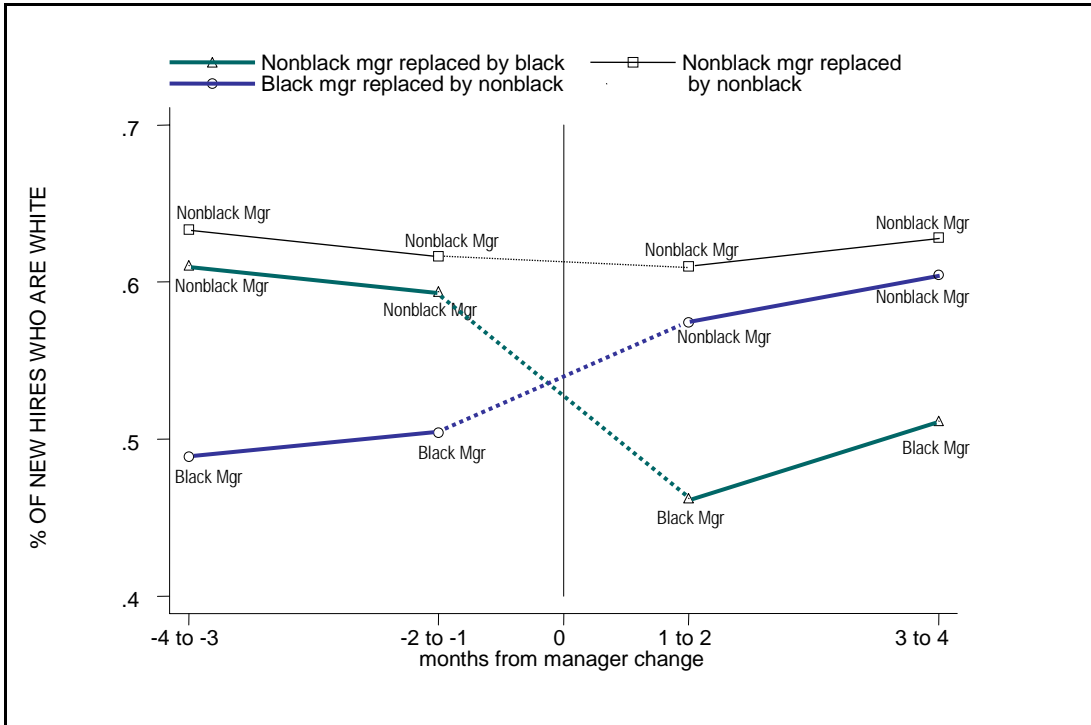
FIGURE 2B. TRENDS IN BLACK SHARE OF NEW HIRES IN THE SOUTH

Notes: Based on sample of all manager changes for which our data contain at least one hire every two months from four months before a manager change to four months after the change. Cases where a black manager is replaced by a black manager are not graphed due to small sample size.

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FIGURE 3A. TRENDS IN WHITE SHARE OF NEW HIRES IN HIGH-HISPANIC LOCATIONS
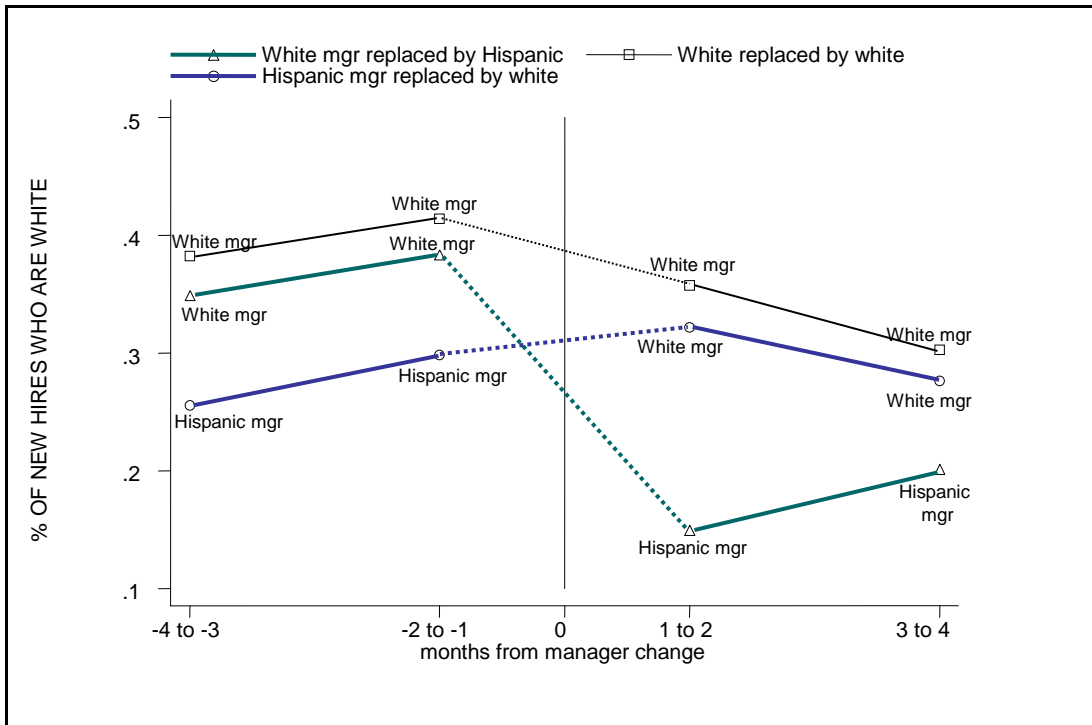
FIGURE 3B. TRENDS IN HISPANIC SHARE OF NEW HIRES IN HIGH-HISPANIC LOCATIONS
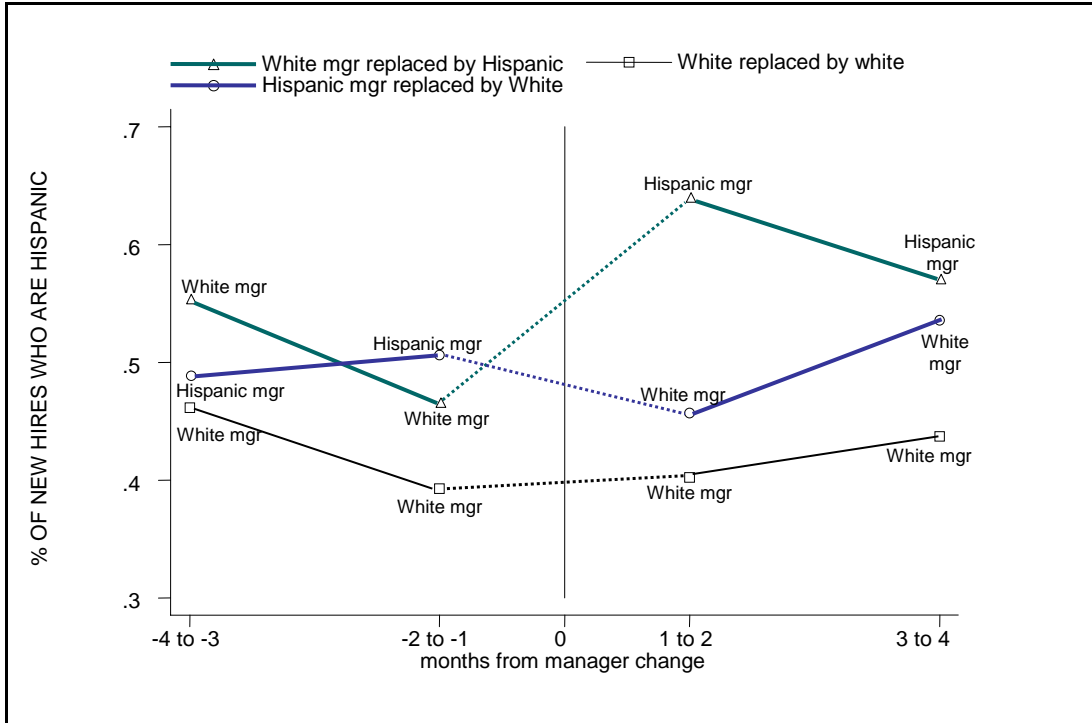
Notes: Based on sample of all manager changes for which our data contain at least one hire every two months from four months before a manager change to four months after the change. Cases where a Hispanic manager is replaced by a Hispanic manager are not graphed due to small sample size.

TABLE A1. FIXED EFFECTS LINEAR PROBABILITY ESTIMATES OF THE EFFECT OF MANAGER RACE ON THE PROBABILITY THAT A NEW HIRE IS A GIVEN RACE

A. Sample: Estimation sample for probit and multinomial logit regressions

	Dependent variable is dummy variable = 1 if new hire is:			
	White	Black	Hispanic	Asian
Hiring manager is white	--	-0.041**	-0.008	-0.024
		(0.010)	(0.010)	(0.014)
Hiring manager is black	-0.037**	--	-0.012	-0.023
	(0.010)		(0.011)	(0.015)
Hiring manager is Hispanic	-0.006	-0.050**	---	-0.016
	(0.010)	(0.012)		(0.014)
Hiring manager is Asian	-0.006	-0.055**	-0.011	--
	(0.012)	(0.016)	(0.014)	

B. Sample: All retail stores of the employer

	Dependent variable is dummy variable = 1 if new hire is:			
	White	Black	Hispanic	Asian
Hiring manager is white	--	-0.045**	-0.007	-0.021
		(0.007)	(0.008)	(0.010)
Hiring manager is black	-0.043**	--	-0.007	-0.021
	(0.008)		(0.009)	(0.011)
Hiring manager is Hispanic	-0.005	-0.052**	---	-0.014
	(0.008)	(0.010)		(0.011)
Hiring manager is Asian	-0.001	-0.058**	-0.009	--
	(0.009)	(0.012)	(0.011)	

Notes: All regressions include store fixed effects and dummy variables for each of the 30 months in the sample. Parentheses contain robust standard errors, adjusted for clustering on store. * significant at 5%; ** significant at 1%;

TABLE A2. PROBIT ESTIMATES OF THE EFFECT OF EMPLOYEE DEMOGRAPHICS ON THE PROBABILITY THAT A NEW MANAGER IS A GIVEN RACE

Dependent variable: Prob (New manager is white)

	(1)	(2)	(3)
Old manager white	0.132** (0.038)	0.184** (0.038)	0.121 (0.079)
%change in %white hires	-0.010 (0.031)		
%change in %white hires * old manager white	0.004 (0.033)		
%change in %white employment		-0.047 (0.083)	
%change in %white employment * old mgr. white		-0.042 (0.102)	
% white hires/% white local population			0.026 (0.060)
% white hires/% white local pop. * old mgr. white			-0.024 (0.066)

Dependent variable: Prob (New manager is black)

	(1)	(2)	(3)
Old manager black	0.015 (0.048)	0.016 (0.044)	0.025 (0.064)
%change in % black hires	0.003 (0.005)		
%change in % black hires * old mgr. black	-0.009 (0.030)		
%change in % black employment		-0.006 (0.013)	
%change in % black employment * old mgr. black		0.014 (0.030)	
% black hires/% black local population			0.001 (0.001)
% black hires/% black local pop. * old mgr. black			-0.016 (0.020)

Dependent variable: Prob (New manager is Hispanic)

	(1)	(2)	(3)
Old manager Hispanic	0.203** (0.073)	0.129* (0.053)	0.092 (0.061)
%change in % Hispanic hires	-0.004 (0.012)		
%change in % Hisp. hires * old manager Hisp.	0.099 (0.055)		
%change in % Hispanic employment		-0.004 (0.017)	
%change in % Hisp. employment * old mgr. Hisp.		-0.018 (0.057)	
% Hispanic hires/% Hispanic local population			-0.003 (0.002)
% Hisp. hires/% Hisp. local pop. * old mgr Hisp.			-0.004 (0.009)

Dependent variable: Prob (New manager is Asian)

	(1)	(2)	(3)
Old manager Asian	-0.024 (0.036)	0.001 (0.041)	-0.013 (0.031)
%change in % Asian hires	0.005 (0.004)		
%change in % Asian hires * old manager Asian	0.030 (0.029)		
%change in % Asian employment		0.014 (0.008)	
%change in % Asian employment * old mgr. Asian		-0.002 (0.031)	
% Asian hires/% Asian local population			0.000 (0.001)
% Asian hires/% Asian local pop. * old mgr. Asian			0.006 (0.006)

Notes: N>700 for column 1; N>1000 for columns 2 & 3. Sample includes all changes in management occurring between August 1, 1996-July 30, 1998. All changes are changes from 6 months prior to the manager change. Additional control variables include 30 dummies indicating the month in which the manager change occurred.

TABLE R1. ESTIMATES FROM WEIBULL HAZARD MODELS OF QUITS, DISMISSALS, AND PROMOTIONS

	QUITS		DISMISSALS		PROMOTIONS	
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
Employee is Black	1.009	1.080	3.128**	2.071**	0.395**	1.002
	(0.025)	(0.082)	(0.170)	(0.320)	(0.060)	(0.505)
Employee is Hispanic	0.922**	0.821*	1.597**	1.319	0.716*	1.567
	(0.029)	(0.073)	(0.107)	(0.240)	(0.115)	(0.716)
Employee is Asian	0.727**	0.841	1.172*	0.960	0.521**	0.599
	(0.026)	(0.114)	(0.094)	(0.257)	(0.096)	(0.437)
Employee age at time of hire	2.606**	2.642**	1.069	0.995	150.490**	137.086**
	(0.130)	(0.143)	(0.114)	(0.116)	(88.298)	(80.806)
(Employee age)^2	0.969**	0.968**	0.997	1.000	0.819**	0.823**
	(0.002)	(0.002)	(0.004)	(0.005)	(0.022)	(0.022)
(Employee age)^3	1.000**	1.000**	1.000	1.000	1.003**	1.003**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
(Employee age)^4	1.000**	1.000**	1.000	1.000	1.000**	1.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Employee is Female	0.923**	0.942**	0.494**	0.492**	1.119	1.049
	(0.017)	(0.021)	(0.021)	(0.024)	(0.125)	(0.142)
Employee is married	0.800**	0.802**	0.697**	0.697**	1.022	1.015
	(0.031)	(0.031)	(0.064)	(0.064)	(0.164)	(0.163)
Employee has prior company experience	0.484**	0.485**	0.397**	0.396**		
	(0.012)	(0.012)	(0.024)	(0.024)		
Employee is part-time when hired	1.795**	1.783**	0.637**	0.636**	0.086**	0.087**
	(0.115)	(0.114)	(0.081)	(0.081)	(0.029)	(0.029)
Employee has temp/seasonal status when hired	2.174**	2.173**	0.945	0.941	0.058**	0.059**
	(0.140)	(0.139)	(0.119)	(0.119)	(0.020)	(0.020)
Current manager is black	1.069	1.017	1.088	1.393*	0.737	0.421*
	(0.051)	(0.064)	(0.115)	(0.190)	(0.218)	(0.179)
Current manager is Hispanic	0.998	1.001	1.164	1.322*	1.529	0.883
	(0.052)	(0.065)	(0.136)	(0.179)	(0.422)	(0.342)
Current manager is Asian	0.995	0.941	0.903	1.018	1.121	0.783
	(0.066)	(0.072)	(0.130)	(0.163)	(0.353)	(0.316)
Current manager's age	1.056**	1.058**	1.148**	1.129**	1.006	0.989
	(0.019)	(0.020)	(0.045)	(0.046)	(0.110)	(0.111)
(Current manager's age)^2	0.999**	0.999**	0.998**	0.998**	1.000	1.000
	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)	(0.002)
Current manager is female	1.161**	1.176**	1.026	1.023	1.282‡	1.227
	(0.029)	(0.030)	(0.057)	(0.057)	(0.172)	(0.177)
Current manager is new (not hiring manager)	1.049	1.048	0.739**	0.738**	1.448**	1.449**
	(0.033)	(0.032)	(0.053)	(0.052)	(0.172)	(0.172)
Manager is different sex		1.041‡		0.995		0.894
		(0.023)		(0.046)		(0.120)
Employee is at least 20% older than mgr.		1.059		0.736‡		0.992
		(0.085)		(0.135)		(0.355)
Employee is at least 20% younger than mgr.		1.000		1.175*		1.094
		(0.035)		(0.096)		(0.184)
Employee white, manager not white		**1.070**		**0.803‡**		**1.754‡**
		(0.055)		(0.093)		(0.570)
Employee black, manager not black		**0.941**		**1.514****		**0.391***
		(0.071)		(0.229)		(0.189)
Employee Hispanic, manager not Hispanic		**1.161‡**		**1.180**		**0.462‡**
		(0.104)		(0.215)		(0.213)
Employee Asian, manager not Asian		**0.866**		**1.180**		**0.955**
		(0.118)		(0.319)		(0.698)
Observations	>100,000	>100,000	>100,000	>100,000	>100,000	>100,000

Notes: Hazard ratios from Weibull proportional hazard model with gamma distributed frailty. Additional controls (coefficients not shown): average store employment; average share of store's employees that is black, Hispanic, Asian, other, & female; location type (mall, street); 30 dummies indicating month of hire; and dummies indicating the 5-digit ZIP code where the store is located. Columns (3a) & (3b) control for city dummies instead of ZIP code dummies, but also include controls for residential population within two miles of store's ZIP; median household income of local population; fraction of local population that is black, Hispanic, Asian, & other. Robust standard errors in parentheses, adjusted for clustering on employee. ‡significant at 10%; * significant at 5%; ** significant at 1% (based on test that the hazard ratio is different from one).

Tests for joint significance and equality of coefficients across race groups:

- *Quits, Column (1b)*: Wald Test could not reject equality of coefficients on "Employee white, manager not white" and "Employee Hispanic, manager not Hispanic" (p=.483), and these two coefficients are jointly significant at p=.034. When whites with non-white managers and Hispanics with non-Hispanic managers are pooled, the coefficient on the indicator for this group differs significantly from the coefficient on "Employee black, manager not black" (p=.052).

- *Dismissals, Column (2b):* Wald Test could not reject equality of coefficients on "Employee black, manager not black" and "Employee Hispanic, manager not Hispanic" (p=.281), and these two coefficients are jointly significant at p=.019. The coefficients on "Employee black, manager not black" and "Employee Hispanic, manager not Hispanic" both differ significantly from the coefficient on "Employee white, manager not white" (p=.005, p=.102, respectively).

- *Promotions, Column (3b)*: Wald Test could not reject equality of coefficients on "Employee black, manager not black" and "Employee Hispanic, manager not Hispanic" (p=.794), and these two coefficients are jointly significant at p=.071. The coefficients on "Employee black, manager not black" and "Employee Hispanic, manager not Hispanic" both differ significantly from the coefficient on "Employee white, manager not white" (p=.034, p=.050, respectively).

- Qualitatively similar results are obtained from a Cox proportional hazard model that includes a fixed effect for each workplace, but does not correct for unobserved individual frailty.

	Hazard Ratio (Std. Error)	Chi^2 (prob>chi^2)
White Empl * Manager is different race * Hiring manager	1.049 (0.058)	3.30‡ (0.069)
White Empl * Manager is different race * New manager	1.345* (0.178)	
Black Empl * Manager is different race * Hiring manager	0.954 (0.075)	0.30 (0.582)
Black Empl * Manager is different race * New manager	0.834 (0.199)	
Hispan Empl * Manager is different race * Hiring manager	1.138 (0.102)	0.08 (0.779)
Hispan Empl * Manager is different race * New manager	1.174 (0.154)	
Asian Empl * Manager is different race * Hiring manager	0.880 (0.121)	0.47 (0.492)
Asian Empl * Manager is different race * New manager	0.820 (0.134)	
Employee Older than Manager * Hiring manager	1.073 (0.090)	1.54 (0.214)
Employee Older than Manager * New manager	0.844 (0.157)	
Employee Younger than Manager * Hiring manager	1.029 (0.037)	0.58 (0.445)
Employee Younger than Manager * New manager	0.956 (0.080)	
Manager is different sex * Hiring manager	1.040‡ (0.023)	0.07 (0.790)
Manager is different sex * New manager	1.060 (0.068)	
Observations	>100,000	

Notes: Hazard ratios from Weibull proportional hazard model with gamma distributed frailty. Control variables as in Table R1, col. (1b) plus all interactions of manager race, gender and age, and employee race, gender and age indicators with the indicator that the manager is new. Robust standard errors in parentheses, adjusted for clustering on employee. ‡ significant at 10%; * significant at 5%; ** significant at 1% (based on test that the hazard ratio is different from one). Final column reports Wald test of equality for each pair of hazard ratios.