THE EFFECT OF DIVERSITY ON TURNOVER:

A LARGE CASE STUDY

by

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Abstract:

Using longitudinal data from over 800 similar workplaces, we examine how workplace diversity and employee isolation along the dimensions of gender, race and age affect employee turnover. Our design controls for much of the variation in job characteristics and labor markets that confound other studies of diversity. We use the non-linearity of diversity to distinguish its effect from the main effects of demographic groups and from isolation (being in a numerical minority). We examine how race, sex, and age diversity and isolation affect different groups. In addition to blacks and whites, we also examine the behavior of Asians and Hispanics.

We find no consistent evidence that diversity itself increases turnover. In contrast, isolation from co-workers and from customers is often associated with higher turnover.

Do employees care enough about the demographics of their co-workers to quit? A variety of theories suggest that diverse workplaces will have higher turnover and that isolated employees—those in the numerical minority—will have higher turnover. A subset of relational theories suggests that the effects of isolation may vary according to the race, gender, or age of the demographically isolated employee—although these theories provide conflicting hypotheses about which groups are most affected by isolation.[1] A small industry has arisen advising employers how to manage increasingly diverse workplaces, with an emphasis on reducing the friction among demographically diverse workers. In spite of the theoretical and practical importance of understanding the conditions under which employees thrive with diverse co-workers, relatively few studies have examined how workplace demographics affect behavioral outcomes such as employee turnover.

Convincing studies are rare in part because it is challenging to measure the effects of workplace diversity or demographic isolation on employees. The data for this study come from a very large service-sector employer with establishments throughout the United States.[2] An ideal experiment would 1) Have a large number of demographically varied workplaces, so that the effects of multiple measures can be estimated with some precision, 2) Control for location to capture differences in the local labor market, desirability of the workplace's physical location, customer characteristics, etc. (Ashenfelter and Hannan 1986), 3) Minimize confounding variation across workplaces in management practices and workplace and job characteristics (such as job content, promotion probabilities, wage levels, selection procedures, and training) that could affect turnover, and 4) Randomly assign different demographic mixes to each workplace. Although the employer did not randomize demographics, our design achieves the other desiderata. We detail these advantages below.

Importantly for testing theories of diversity, our workplaces have sufficient demographic variation so that we can estimate the nonlinear effects (such as diversity itself) separately from main effects (such as percent female or white). Importantly for testing theories of social roles and status, we have sufficient data to allow the effects of diversity and of isolation to differ across demographic groups. Both features of this dataset are rare in the literature.

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[1] We review these theories of social identity, similarity attraction, social categorization, historical roles and status, and other variants below.

Our findings are important for understanding theories of demographic similarity (e.g., Becker's theory of co-employee discrimination, similarity attraction, and others) and theories of social roles and status.

The considerable amount of rhetoric concerning workplace diversity has not been matched by large-scale studies of workplaces that could provide a factual basis. This study examines the effects of workplace demographic diversity on employee retention: Do many employees continue to prefer segregated workplaces four decades after passage of the Civil Rights Act of 1964?

Theory and Past Research

Theories of diversity in work groups can be grouped broadly into two categories with distinct predictions: theories of similarity attraction – where each group's role is symmetric – and theories of social roles – where groups are differentially affected according to their status rank.

For most Americans, "increasing diversity" means increasing the share of minorities and females in a workplace. This study focuses on the effect of diversity along the dimensions of age, race, ethnicity, and gender. Although many other dimensions might be relevant in the workplace, these dimensions are socially salient, measured in our dataset, and the target of persistent public debate and public policy.

The Effects of Diversity

Within the social sciences, the aphorism that "Birds of a feather flock together" has developed into a set of theories based on similarity-attraction, social identity, social categorization, and co-worker discrimination: People are attracted to those they resemble (Byrne, 1971; Tajfel and Turner, 1986; Turner, 1985; Becker, 1957). For example, both blacks and whites prefer a neighborhood that has their own group as half or more of the population (Massey & Denton, 1993, pp. 88-96). If these preferences also hold in workplaces, then exit rates will be lower in homogeneous groups.[3]

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[2] Due to confidentiality restrictions, we cannot describe the sector of the company or its history in more detail. We will refer to generic "workplaces." You should think of workplaces as outlets performing similar tasks in a chain of retail stores or restaurants.

[3] The same prediction is made by related theories of organizational demography (Pfeffer, 1983) and social categorization (Tajfel and Turner, 1986) and similar predictions come from older theories such as social contact (Allport 1954). Researchers have found attraction based on similarity in characteristics including hobbies, attitudes

Models of repeated interaction provide economic foundations for these predictions (e.g., Greif 1993). If people interact more often with those of their demographic group (both co-workers and mutual acquaintances outside the workplace), then we expect more cooperation in demographically similar groups. In addition, many jobs are found through social contacts rather than formal application procedures (Holzer, 1988). Demographically similar employees are, thus, more likely to have overlapping social networks. Reputations for unfriendly actions may be more likely to spread among those sharing a demographic group, and the group can more effectively sanction those who break group norms (Bernstein, 1992).

Workplaces also provide various public goods for employees—characteristics of the workplace that affect all employees. These goods range broadly and include minor items such as the choice of how loud to play the workplace's music, subtle norms of attire and language, and investments of time in forming friendships outside of the workplace and in helping others at work. If demographic heterogeneity increases the heterogeneity of preferences, then diversity lowers the average satisfaction with any mix of public goods. In general, any taste features that are correlated with demographics are easier to satisfy if demographics are less diverse. This effect can lead to employees sorting themselves into more groups with more homogeneous preferences (Tiebout, 1956). Conversely, lower sorting may reduce some public goods (Alesina, et al., 1999). Language is an example of a network externality: commonality is valuable. Diverse groups have more difficulty communicating, and communication difficulties can increase turnover (Price and Mueller, 1981). Even among native English speakers, racial (Lang, 1986) and gender (Tannen, 1990) diversity often make communication difficult.

People may also form an image of the appropriate place for someone like them to work. A proclivity to have a high opinion of yourself and your demographic group makes it natural to populate this image with similar colleagues. Employees may be less attached to a workplace with a demographic profile different from their own (Tsui et al., 1992, p. 554).

For this study, the key points of these theories are that people with similar demographic backgrounds are likely to be attracted to each other, trust each other more, believe they will

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(Byrne, 1971), age, education, religion, health, personality (Boyden et al., 1984), economic status (Byrne et al., 1966; Alesina and La Ferrara, 2000), and abilities (Senn, 1971).

receive more favorable treatment, and communicate more easily than would people with dissimilar backgrounds.[4] This set of forces suggests

> Hypothesis 1: Turnover is lower in workplaces with low diversity of gender, race, and age.

The young workers in our sample have not yet moved much beyond the confines of their homes, their neighborhoods, and their schools. For all groups, homes are usually racially homogeneous. For neighborhoods and schools, average diversity depends on the group: Spending time in racially diverse neighborhoods and schools is common for Asians, fairly common for blacks and Hispanics, and relatively uncommon for whites. For example, in 2000-2001, on average, whites attended high schools with a diversity index of 35 percent; for black and Hispanic students, diversity was near 60 percent; and, for Asian students, 69 percent (calculated from Frankenberg, Lee and Orfield, 2003). If this familiarity with diversity creates comfort, then we have:

> Hypothesis 2a: As racial diversity increases, white turnover will increase faster and Asian turnover will increase slower than will black or Hispanic turnover.

The younger people in our sample have spent more of their time with same-aged peers. Thus, if this familiarity breeds comfort, we have:

> Hypothesis 2b: Turnover among younger workers will increase with age diversity faster than will turnover among older workers.

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[4] The empirical record is scanty and mixed. O'Reilly et al. (1989), found that groups with a high coefficient of variation of tenure were the least socially integrated groups and the most likely to have members exit. These results are difficult to interpret causally, as turnover affects the distribution of tenure by reducing the number of low-tenure employees. Wiersema and Bird (1993) found that within the top management teams of Japanese firms, heterogeneity on age, team tenure, and the prestige of the university attended were significant correlates of high team turnover. At a much higher level of aggregation, a metropolitan area's diversity in income and race has predicted low self-reports of trusting attitudes (Alesina and La Ferrara, 2000). These articles, like this one, examine only one set of outcomes from diversity. To the extent demographic diversity increases diversity of information, creativity, and understanding of organizational stakeholders, it may increase workgroup effectiveness (Jehn, Northcraft and Neale, 1999).

4

Both men and women grow up surrounded by gender-mixed settings. Thus, we have no hypothesis about gender-specific effects of gender diversity.

Isolation

A subset of similarity theories predicts not just higher general turnover in more diverse workgroups, but higher turnover concentrated in the out-group: those in numerical minority. Diversity is a characteristic of a workplace. Isolation is a characteristic that describes how unusual an individual is within a workgroup. Intuitively, if a group is 90 percent female and highly cohesive on average, the few men may not be included in the portion of the group that is cohesive and has repeated interactions (Pfeffer 1983; Greif 1993). The theory of workplace public goods also suggests that the minority group is (all else equal) less likely to find the mix of public goods satisfying. These theories predict that

Hypothesis 3a: Turnover is higher among employees with few co-workers of their gender;

Hypothesis 3b: Turnover is higher among employees with few co-workers of their race;

and

Hypothesis 3c: Turnover is higher among employees whose co-workers have a different average age.

As with the predictions of organizational diversity, theories of isolation have a mixed empirical record (contrast Riordan and Shore (1997) and Pelled (1996)).

Do Isolation Effects Vary across Groups?

The theories, reviewed above, that workers prefer similar co-workers ignore groups' distinctive historical roles and status. These theories treat a group that is 90 percent white identically to one that that is 90 percent black. A complementary set of theories emphasizes social roles, stereotypes, status, hierarchy, and norms based on characteristics such as age, race, and gender (Akerlof and Kranton, 2000; Eagly, 1987). In these theories, whites and blacks (for

example) both tend to treat blacks as holding lower status. Diversity now has a direction: different age, education, gender and racial groups have normative, stereotypical, and historically typical roles and status determined in part outside the workplace.

These theories suggest that diversity has different effects on different groups, but the rankings of effects across status groups are not consistent across theories. Whites, for example, may be more used to working in homogeneous settings than are other groups. The average white attended a high school that was 80 percent white, while Asian students on average attend schools that are only 22 percent Asian, with black and Hispanic isolation in between (calculated from Frankenberg, Lee and Orfield, 2003). Isolation may then cause whites more discomfort than it would women and minorities (Tsui et al., 1992). If these forces are powerful, we have:

Hypothesis 4a: Isolation increases turnover more for whites than for other racial groups.

In contrast, the effects of being a numerical minority or token may be mitigated for high-status groups because they do not face the expectations of failure and resulting extra scrutiny that a low-status token might face (e.g., Fairhurst and Snavely, 1983; Kanter, 1977). This reasoning suggests:

Hypothesis 4b: Isolation increases turnover less for men, for whites, and for older employees than for the complementary groups.

These hypotheses compete in part because past research is mixed. Tsui, et al. (1992) report that the presence of minorities lowers whites' commitment and intent to stay. As the authors note, this effect could be due to minorities being over-represented in undesirable jobs, and this omitted job characteristic, rather than minority co-workers, may lower whites' commitment. This interpretation is supported by their result that percent minority also reduces blacks' intention to stay with a substantively similar and statistically indistinguishable point estimate. In contrast, gender diversity has had similar effects on men and on women.

Because gender is a binary variable, the interaction of gender isolation times female is collinear with the other measures needed to test relational theories (gender diversity, female ×

6

gender diversity, female employee, female manager, and gender isolation). Thus, we can only test these hypotheses for race and age.

Other Dimensions of Diversity

Do the effects of isolation vary depending on who is in the other groups?

Some races may react differently to specific other races. Race-specific interactions may occur, for example, if communication gaps are largest between certain racial pairs or if discrimination or other sources of animosity are greater among certain racial pairs. Elvira, Zatrick and Cohen (1998) review these theories and evidence in more detail. For example, blacks historically have low status in American society. Hispanics also suffer from some discrimination and often come from a distinct culture. Moreover, language and accent barriers may further increase their social difference with non-Hispanics. Asians, in contrast, are sometimes stereotyped as the "model minority" (Wong, et al., 1998). Thus, we have:

Hypothesis 5a: White turnover is lower with Asian co-workers than with the other nonwhite groups.

The disparagement of blacks may not hold as strongly among Hispanics for several reasons. First, this employer required employees to choose only one race/ethnicity category., Thus, we expect a significant minority of Hispanics in our sample would also classify themselves as black, while some blacks in our sample also consider themselves Hispanic. In addition, many Hispanics think of themselves as of mixed race.   These forces yield:

Hypothesis 5b: Black turnover is lower with Hispanic co-workers than with whites;

and

Hypothesis 5c: Hispanic turnover is lower with black co-workers than with whites.
At the same time, some anecdotal reports have noted tension between blacks and Hispanics (e.g., Goering et al., 2002: 13), and Sacco and Schmidt (2005) did not find any difference in turnover rates for Hispanics depending on whether co-workers were white versus black.

Tokens

      Tokens are the numerical extreme of isolation. To the extent tokens face extra pressure and social isolation, isolation theories predict:

      Hypothesis 6a: Employees who are the only member of their sex, the only member of their race, the youngest or the oldest among their co-workers have above-average turnover.

      Being a token need not affect all groups in the same way. The sole man in a work group is unlikely to experience the sexual and other forms of harassment that a lone woman frequently faces, and he may face less intense stereotyping (Kanter, 1977; Fairhurst and Snavely, 1983). Thus, we have

      Hypothesis 6b: Male and white tokens do not experience the above-average turnover of other tokens.

      At the same time, if whites or males have had less experience as a minority, then being a token may be most stressful for these groups. This extra stress leads to an alternative:

      Hypothesis 6b′: Male and white tokens experience higher turnover than do other tokens.

Similarity along multiple dimensions

      The many isolation theories described above do not describe which demographic boundaries or sets of boundaries are most salient in American workplaces. Perhaps due to limited sample sizes, past research has examined demographic dimensions as independent dimensions without attention to interactions of race and sex. But the effects of having many similar co-workers may be most intense when it is compounded along more than one demographic dimension. People may bond more strongly when co-workers share multiple characteristics. While having some women around may matter for many women, having women of the same race may matter more. This theory predicts a testable interaction effect (co-workers of the same race and same sex):

Hypothesis 7: Employees who have co-workers that share multiple characteristics are less likely to turnover than employees with co-workers who share only one characteristic, and this effect is larger than would be predicted by the main effects on the characteristics individually.

Isolation from customers

Just as demographic distance among co-workers can affect the ease and comfort of their relationship, the distance between workers and potential customers can affect their relationship. A related literature explores the hypothesis that customers prefer to deal with demographically similar employees. One important study finds that newly hired low-wage workers who have direct contact with customers are more likely to match the demographics of those customers than are new hires who have no customer contact (Holzer and Ihlanfeldt, 1988). Similarly, restaurants hire workforces that approximate the demographics of their clients (Neumark, 1996). These employers act as if customers discriminate. For suburban-urban differences, see Holzer, Raphael and Stoll (2000). Whether customers do actually discriminate is a distinct question (see the citations in Leonard and Levine 2002). Although the evidence is mixed, and the practice can lead to employment discrimination litigation, many managers and management consultants advocate hiring a workforce that matches the demographics of potential customers in the belief that customers prefer to deal with demographically similar employees.

An important twist on this argument is that if customers are more comfortable with and have an easier time communicating with demographically similar employees, then the same effect should operate in reverse. That is, employees should experience lower psychic costs of serving demographically similar customers. These forces lead to

Hypothesis 8: Employees who are demographically dissimilar from potential customers are more likely to exit.

Data and Methods

The data are the complete personnel records from a large service-sector employer from February 1996 to October 1998. We analyze data on frontline workplace employees, excluding managers, assistant managers, and headquarters or international staff. Because we want workplace averages to be reliable measures, we drop workplaces with fewer than ten employees. Because we are interested in voluntary exits, we also drop workplaces that closed within our sample period.

We analyze retention for six months of over 70,000 workers hired or rehired into more than 120,000 employment spells between February 1996 and December 1997. Approximately 13 percent of the workforce had multiple employment spells. Our data cover more than 800 workplaces with at least 10 employees that were open during this period and stayed open until at least July 1998.

To construct community demographics, we use each workplace's ZIP code to identify Census tracts in its ZIP code or within two miles of the centroid of its ZIP code. We then merged 1990 Census data for this local region to each workplace to construct the proportion white, black, Hispanic, and Asian, surrounding each workplace. The 1990 Census asks questions on race (black vs. white, etc.) separately from ethnicity (Hispanic vs. non-Hispanic). In the Census, respondents can categorize themselves as both black and Hispanic or as both white and Hispanic. In contrast, the employer has mutually exclusive codes of white, black, and Hispanic (as well as Asian).

The Setting

The workplaces we study typically consist of 10 to 40 part-time employees with a full-time manager or assistant manager on duty. The employees work scattered shifts through the week, associating with a mix of the other employees on the payroll at that time. Frontline employees rotate through the several tasks in the workplace, spending some of their time dealing with customers and other time in support tasks.

Employees receive minimal training or orientation. At the same time, some self-selection may occur because of the popular image of this employer. Advertisements show a demographically diverse (though consistently young) group of customers. Managers (unlike new hires) do receive some training in managing a diverse workforce.

According to exit interviews, roughly 82% of exits from employment are quits, 10% are layoffs (typically due to end of seasonal work), and 8% are dismissals for cause. There is an unknown amount of misclassification in these categories (e.g., induced quits, dismissal due to absences that are truly a quit, and so forth). Hence we interpret the dependent variable as voluntary separations and briefly describe results with other measures of exits. The exits of the relatively isolated are more likely to reflect employee preferences than employer or manager preferences. After all, the workplace manager hired the people we observe. Differences in quit propensities or employer discrimination associated with race, ethnicity, age or sex would show up in the individual or group main effects, rather than in the diversity measures.

These workplaces are useful for studying the effects of changing demographics because employee turnover is very high. Roughly half of new hires left within four months of being hired (a rate typical of retail). Testing diversity theories with the sample of workers flowing into the organization avoids a problem that would arise if we started with the entire stock of employees: Retention is determined in part by the demographic mix of the workplace, but the demographic mix of still-present colleagues depends in part on the focal employees' demographics. We study new hires who have as yet had little chance to affect their colleagues' turnover.

The nature of the workplaces and work populations involved in this study should be kept in mind in thinking about possible effects. Consider the example of age diversity. The employees of this firm and this industry tend to be young. The relatively low pay and lack of promotional opportunities means we are not seeing older workers who have moved up the job ladder nor very many with good job alternatives.

Methods

We analyze turnover within the first six months of hire. We first use a nonparametric graphical analysis to look at differences in turnover rates for the various demographic groups at workplaces with different demographic mixes. This method is basically a smoothed histogram of turnover rates separately for men and for women at workplaces of different proportion female. Histograms are affected by bumps due to random factors. To avoid these misleading points, we use a locally weighted technique that smoothes the predicted values of turnover.[5]

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[5] Formally, we use the Stata lowess estimator with a tricube weighting scheme and a bandwidth of .15. Results were not sensitive to variations in the bandwidth. See Stata (2000, p. 173) for the specific methods and formulae.

To focus on changes over time at a workplace we then estimate a linear probability model with a fixed effect for each workplace. A Hausman test strongly rejects the random effects model in favor of the fixed effects model we present here. Any workplace or location specific omitted variable, such as local labor market conditions that is unchanging over the few years we observe is captured in the fixed-effect.

The sign, significance, and relative magnitude of all coefficients were unchanged in a fixed-effects (conditional) logit regression that included a separate intercept for each workplace, and in a continuous time hazard model with workplace fixed effects (the Cox proportional hazard model). As it is easier to read the magnitude of the coefficients with the linear probability model, we rely on that specification.

Because demographics change during an employees' tenure, our results may suffer modest attenuation as we measure demographics only at the date of hire. Below we discuss results that adjust for both demographics at hire date and (the partly endogenous) changes in demographics over time.

Measuring Diversity

We construct diversity indices for the race, gender, and age of the other employees in the workplace. For race and gender, we use a diversity index equal to the odds that two people selected at random from a workplace differ on race or gender (first used by E. H. Simpson, 1949). The diversity index is one minus the sum of the demographic shares squared (also known as 1 minus the Herfindahl Index):

Diversity index on race or gender $= 1 - \Sigma_i\, S_i^2$,

where S_i is the share of each gender or racial group i. This diversity index is zero with perfect homogeneity and is maximized when each group has an equal share of employment.[6]

Most past researchers have used the coefficient of variation on age or the standard deviation of age to measure age diversity. We prefer to use the standard deviation within the workgroup of the natural logarithm of age. This formulation assumes that proportional gaps in age are what lead to social distance.

As noted above, traditionally high-status groups such as men, whites, or older workers may react to minority status differently than lower-status groups such as women, blacks and

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[6] A maximally diverse workplace is not necessarily identical to one selected in a race or gender blind fashion because demographic shares of the relevant labor pools need not be equal.

Hispanics, and younger workers. To capture this, we interact the workgroup diversity measures with dummy variables for gender, race and age.

Finally, we examine the effect of tokenism: being the only man or woman, the only one of your race, or the oldest or youngest employee in the workplace that month.

Distinguishing Diversity from Main Demographic Group Effects

Diversity is often incorrectly assumed to necessarily increase with increasing minority or female share. Gender diversity reaches its maximum in a workplace that is half female. As the percent female increases further towards 100 percent, diversity falls to zero. While both the 50:50 and the female only workplaces both differ from the stereotypically male-dominated workplace, only the former is gender diverse.

To identify the effect of gender diversity requires observations both above and below 50 percent female. In most empirical work few if any workgroups have a female or nonwhite majority. In that situation, percent female or percent white and a measure of gender or racial diversity are collinear, and researchers cannot empirically disentangle whether the main effect or diversity mattered. This study has sufficiently rich data to distinguish the proportion of females and nonwhites from gender and racial diversity effects.

We define diversity as a nonlinear effect. To be clear, as the proportion female in a workplace increases from zero to half, both the main effect of percent female and the effect of diversity grow. As the proportion female increases from half to one, the effect of percent female continues to increase, but that of diversity falls. This is the non-linearity we use to identify the effect of diversity distinct from the main demographic effects.

Isolation

Isolation measures being in a numerical minority in a workgroup: the percent unlike the focal worker. Consider two examples: for females, gender isolation is the percent male; for Asians, racial/ethnic isolation is the percent non-Asian. For age we use the difference from workgroup mean log age, which is approximately the percentage difference of the individual's age from the mean age of the rest of workgroup.[7] To look at the interaction of age isolation and

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[7] Researchers in organizational behavior usually analyze a different indicator of isolation (d_{it}, known as "relational demography"), which equals the average Euclidean distance between how far each person in group g is from each other person on trait t:

13

age, we interact the absolute deviation of own log age minus the log of workgroup mean age with own age.

For race isolation, the measure Asian * %Asian can be rewritten as Asian * (1 - %white - %black - %Hispanic) = %Asian – Asian * %white – Asian * %black – Asian * %Hispanic. We can see that including the (Asian * %Asian) term alone implicitly implies the 3 race interactions Asian * %white, Asian * %black, Asian * %Hispanic have identical effects on Asian exits; that is, Asians care about working with other Asians, but are indifferent to the race of the non-Asians. To test Hypotheses 5a-c, that some groups are not indifferent to the mixture of races of co-employees not of their race, we include the 3 race interactions Asian * %white, Asian * %black, Asian * %Hispanic for Asians and the analogous triples for the other three groups and test whether the interactions differ.

Control Variables

We control for whether the individual is hired as a part-time employee (over a third of the sample) or temporary employee (over half the sample). Consistent with the low-wage, high-turnover status of these jobs, over 90 percent of the sample were hired as part-time or temporary employees. Many temporary workers later switched to permanent status, a choice not studied here. To capture seasonal and secular effects we also include 20 dummies for month of hire.

Control variables include an indicator variable for each employee's gender and for 6 categories for race or ethnicity (white, black, Asian, Hispanic, Native American, and unknown ethnicity). The race and ethnicity codes are the company's coding, and they create a set of

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$$d_{it} = 1/n_g [\Sigma_j (x_{it} - x_{jt})^2]^{1/2}, \quad j = 1 \text{ to } n_g,$$

where x_{it} is the focal person's measure of attribute t, x_{jt} is the measure for others in the group, t indexes the attributes (race, sex, and nationality, for example), and n_g is the number of members in the group (e.g., Tsui and O'Reilly, 1989; Chatman et al., 1998). The relational demography measure d_{it} can be rewritten as a nonlinear average of (1) the gap between person i on the trait and the mean of that trait in the group (x_{gt}), and (2) the standard deviation of the trait within the group (sd(x_{it})):

$$d_{it} = [|x_{it} - x_{gt}|^2 + sd(x_{it})^2]^{1/2}.$$

Conceptually, person i can differ by roughly 5 years of age for the relational demography measure d_{it} by (a) being 25 years old in a group where everyone else is 20; or (b) being the mean age of a group that has a standard deviation of age of 5 years. Being the mean age of a heterogeneous group may indicate weak norms (as discussed above), while being the outlier in an otherwise homogeneous group raises the likelihood that strong norms exist but are unfavorable to oneself. We prefer to enter the two effects of isolation ($[|x_{it} - x_{gt}|$) and of diversity (sd(x_{it})) separately, without assuming a particular functional form.

14

mutually exclusive and collectively exhaustive categories that (for simplicity) we refer to as "race." We control for the worker's age and its square.

We also control for the percentage of each gender and race and for the mean age for all workers in the workplace surrounding the individual (but not including the focal employee). When the numerical majority determines norms of an organization, then the typical behavior of any group (as measured in the individual effects) spills over when it becomes the majority. This yields the hypothesis that the effects of workplace-level proportion female, black, etc. will have the same sign as the individual-level coefficients. The same spill-over result could also occur because employees with low intentions to remain invest less in building relationships in the workplace; thus, their colleagues are also more likely to quit (as modeled by Glaeser et al. [2000]). Offsetting this effect, if promotions and other rewards are at least partly based on relative competition, then there may be one group of employees who do well and are less likely to quit, while their unsuccessful colleagues are more likely to leave.

Methodological Strengths

The usual downside of field research is having a limited number of observations, limiting the power of statistical tests. We examine over 800 workplaces and over 70,000 employees. Our total number of workgroups is roughly the total number of natural workgroups in *all* the field studies reviewed by Williams and O'Reilly (1998).

We reduce potentially confounding variation because we examine one very large multi-establishment employer. This employer actively seeks uniformity of process and product across establishments. This study design controls for most of the variation in job characteristics that confound other field studies of diversity. Examining almost-identical jobs is important because in most sectors of the economy the presence of women, blacks or Hispanics in a workplace or occupation is strongly correlated with the characteristics of the workplace and occupation.

Workplace demographics are also correlated with the local economy; for example, blacks are disproportionately concentrated in poorer neighborhoods than are whites. We examine longitudinal data permitting a set of workplace-specific intercepts to control for the locational differences that plague all previous field studies of workgroup diversity.

The data used in this study are unique among studies of organizational demography in having a sufficiently large sample size and sufficiently dispersed workgroup compositions to examine both diversity and the main effect of percent female, percent black, and percent

Hispanic. The data are rich and varied enough to allow us to distinguish a number of theoretically and empirically distinct measures of workplace demographics. We distinguish (1) the main (linear) effect of workgroup demographics; (2) diversity, identified as a non-linear effect of workplace demographic shares; (3) isolation, or being in a numerical minority of the workplace; and (4) the extreme of isolation, the effect of being a token individual at the workplace (for example, the only black or male).

We also examine how diversity and isolation affect different demographic groups (men vs. women, whites vs. other races, etc.) differently. The literature on racial diversity focuses almost exclusively on blacks and whites (Reskin et al., 1999, p. 357), in spite of the fact that the racial and ethnic palette in this country is a broad and varied one. We have enough whites, blacks, Hispanics and Asians to examine each group.

While the study has many strengths, it remains a case study of one large employer in the retail and services sector in a time of relative labor-market tightness. We discuss below limitations on generalizing to other employers, sectors, or times.

Results

Summary statistics are presented in Table 1. Although the sample is two thirds white, almost a quarter of the workplaces have a nonwhite majority. Such workplaces are typically quite diverse, with fewer than 10 percent having a majority of employees who are a single nonwhite group. The workforce is 71 percent female, and about 5 percent of the workplaces have a male majority.

The mean age of employees in our data is only 22 years. The standard deviation of log(age) is 6 percent, a very small figure. Most employees in these workplaces are within a few years of age 22. Thus, any employees in their thirties or older may have low labor-market attachment or be reentering the labor market; either could reverse the usual negative effect of age on turnover.

We observe workplaces over practically the entire range of gender and race diversity. With two sexes, the maximum of the gender diversity index is .5 and with our five ethnic/racial groups, the maximum racial diversity index is .8. In our study, the observed maximums are .5 and .795 respectively. Mean gender diversity is .36, and mean racial diversity is .39. In the absence of comparable diversity measures for other U.S. establishments, we can only say that we

16

believe these establishments are unusually diverse in terms of gender and race, and unusually homogenous in terms of age.

Regression Results

Table 2 presents the main results of the paper, estimates of the probability of turnover six months after hire or rehire with fixed effect (not shown) for each workplace and each month. To adjust for common shocks to a workplace, in addition to including the workplace fixed effects we adjust standard errors for clustering by the workplace×month.[8]

Column 1 presents the baseline results with standard controls for individual and workplace characteristics, and for the mean race, sex, and age composition of each workplace. Compared with whites (the omitted racial category), blacks have slightly higher turnover while Hispanics and Asians have slightly lower turnover. As expected, both part-time and temporary seasonal workers are more likely to leave. Women, in contrast, are more likely to stay than are men. All these coefficients are strongly statistically significant.[9] Consistent with most samples, age predicts lower turnover in this sample. These results are not due to differences in starting wages or in workplace size, which are directly controlled for.[10] The usual results that turnover falls with wages and rises with establishment size prevail here as well.

The heartening news here is that, in the linear specification, employee's quit behavior is not very responsive to the demographic composition of a workplace. The workplace demographic variables -gender proportions, race proportions and mean age- do not have statistically significant relations to turnover.

Diversity

We estimate the effects of diversity on particular groups in Column 2. In results not shown, the main effects of gender diversity, race diversity and age diversity are small and not

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[8] This correction solves the problem of correlated error terms that is also addressed by hierarchical models (Stata 2005: 275-280). Our clustering correction permits arbitrary between-cluster correlations; thus, it corrected for autocorrelated errors in a store's time series due to having largely the same workers in adjacent months at a workplace.

[9] In contrast, in most studies black and white turnover rates are similar, and women quit more than men. As others have found (e.g., Blau and Kahn 1981), controlling for job characteristics typically reduces or eliminates the gender gap in quitting.

[10] Across demographic groups hired in a given workplace during the same month, there were no economically meaningful differences in starting wages.

statistically significant (providing no support for hypothesis 1). That non-result masks the varying effects of diversity on some groups.

Men's turnover rate is unaffected by gender diversity; that is, the main effect of Diversity index for Gender is not statistically significant. Women, in contrast, leave diverse workplaces more often than workplaces with high shares of men or high shares of women; the coefficient of Female*(Diversity Index for Gender) is .17 (p< .01). This is almost the only result consistent with the hypothesis that diversity promotes turnover.

Diversity has no effect on whites (that is, the main effect of Diversity index for Race in column 2 is small and not statistically significant). For the other groups, turnover is *lower* in more diverse workforces, and diversity reduces turnover most heavily for Hispanics (coefficient on Hispanic * Diversity index for Race = -.25, P< .01). That is, if one could hold everything constant while increasing the diversity index by .25 (about two standard deviations), this model predicts Hispanic turnover would decrease by 6 percentage points (about a tenth of the mean). Overall these results give no support for hypothesis 2a that diversity would increase turnover for whites the most and Asians the least; instead diversity has no effect on whites and reduces turnover for Hispanics the most.

When diversity changes, the demographics of the workplace also change. In most cases raising diversity implies increasing the share of Asians, Hispanics, or blacks. In this specification, the main effects of the proportion Asian, Hispanic, and black all predict higher turnover. Thus, the linear main effects (which increase turnover) work in the opposite direction of the non-linear diversity effect (which reduces turnover).

There is no strong evidence that age diversity matters more for the young than the old (Hypothesis 2b). The coefficient on log(Age)*sd(log(Age)) in column 4 is not statistically significant.

Isolation

Column 3 of Table 2 adds the measures of isolation (being in a numerical minority). Being relatively isolated by gender has no consistent relation with retention, in contrast to hypothesis 3a. For women, the isolation and diversity effects largely offset each other when the women are in the majority. The total of the several effects are best viewed in Figure 1. When men are a majority, female turnover rates decline. In contrast, male turnover rates are highest when women are a large majority.

Perhaps the most robust result in this study is that racial isolation predicts higher turnover, consistent with hypothesis 3b. Even here, the effect size is modest: a 32 percent reduction in colleagues of the same race (one standard deviation across workplaces) raises turnover at 6 months by about 2.6 percentage points.

Once again, to correctly interpret these coefficients, bear in mind that as isolation changes other racial shares must change as well. The full effect of isolation is the sum of the isolation effect, the diversity effect, and the shifts in the main effect on those races that rise or fall to increase diversity. To take one numerical example, if the white share is .7 and the black share is .3, diversity is modest and turnover is modest. If the nonwhite share remains at .3 but becomes an even mixture of the blacks, Asians and Hispanics, turnover rises slightly. This increase in turnover is not due to diversity per se, but is because the main effects on Asian and Hispanic predict above-average turnover. We present graphs against each of these alternatives.

Figure 2 uses the coefficients from Table 2, column 3 to graph the total effect of changes in racial composition combining the individual effect, the main effect (percent white, etc.), the diversity effect, and the diversity effect interacted with each group (black × racial diversity, etc.). Whites leave more often in situation where there are fewer whites, but diversity has little effect on that result (Figure 2a). Blacks leave more often when blacks are rare, and that result is slightly stronger if non-blacks are highly diverse than if they are all whites (Fig. 2b). Hispanics, unlike the other groups, do not show any isolation effect; instead, turnover is lowest with a mixture of Hispanic and others (Fig. 2c). Finally, Asians' turnover does not depend much on the Asian share in the workplace; at the same time, Asian turnover is lower with white colleagues than with an evenly mixed set of colleagues (Fig. 2d). As is apparent, the magnitude of these effects is modest.

Age isolation has a larger effect on turnover, but it is not that predicted by hypothesis 3c (that people exit when their age is far from the mean age of their workplace). The main effect on age isolation (Table 2, col. 3) shows that increases in isolation *reduces* turnover.

This result masks some variation of the effects of age isolation, with stronger effects on younger and older employees than on those with average age (Table 2, col. 4, whose coefficients generate Fig. 3). When the mean age moves from 22 to 28, isolation increases for 22-year-old workers and their predicted turnover rate rises slightly from 68.5 to 70.5% (change not statistically significant). At the same time, the same increase in mean age from 22 to 28 reduces

age isolation for 28-year-old workers, but their predicted turnover rate also rises from 57.1 to 62.7%. Overall we have no support for hypothesis 4b that isolation increases turnover less for high-status groups (men, whites, and older employees).

Finally, age diversity has no effect on turnover (again, see Figure 3).

Extensions: Other Dimensions of Diversity

Do the Effects of Isolation Vary by Group?

Because the specification in Table 2, col. 4 examines racial isolation in general (that is, "percent not my race"), it constrains the effects of isolation on whites, blacks, Hispanics and Asians to be equal. Table 3 includes all the variables in the specification of Table 2, column 4, but allows racial isolation to affect each race differently As noted above, the race isolation effect (Table 2, col. 3) was .081, meaning that 10% more people not of a focal employee's race led to almost 1% more turnover. Interestingly, this effect is somewhat stronger for Hispanics than for the other groups, with a coefficient on Hispanic * %Hispanic equal to -0.187 ($p < .01$); the test of difference from $-1 \times$ the overall isolation effect of 0.081 is also significant at the 1% level; table 3, col. 1). (It is not possible to estimate white * %white due to perfect collinearity with the variables already included.)

Do the Effects of Isolation Vary Depending on who is in the Other Groups?

We next turn to the hypotheses that the detailed racial composition of co-workers not of your race matters. (hypothesis 5a-c). Are all co-workers not of your race lumped together in terms of their effect on turnover? Column 2 of Table 3 allows each race to affect each other race differently.

Black exits are particularly rapid when co-workers are white or Asian, with effects roughly twice as large as the average isolation effect (and difference $p < .01$). In contrast, Hispanic colleagues do not increase black employees' exit rate. Similarly, Hispanics leave stores with many whites or Asians, but are not statistically significantly more likely to leave stores with co-workers who are black. Asians leave more often when co-workers are white. In contrast, the high exit rates of blacks and Hispanics in the presence of Asians is not reciprocated, although precision on these estimates is low. That is, the F-test strongly rejects the hypothesis that white, black and Hispanic co-worker effects on Asians are the same. At the same time, the standard

error on both the black and Hispanic co-worker effects are roughly half the white effect. Thus, it is difficult to be sure that both are less than the white effect. Unfortunately, it is not possible to examine which groups lead to white exits due to perfect collinearity with the variables already included. There is evidence that blacks prefer Hispanic to white co-workers (supporting hypothesis 5b), and that Hispanics prefer black to white co-workers (supporting hypothesis 5c). Asians leave due to the presence of Whites. We can also read the table emphasizing the effects of workplace average demographics. Both Hispanics and Blacks are more likely to leave workplaces with more Asians. All of the minority groups, Blacks, Hispanics and Asians, are more likely to quit whiter workplaces. In this sense, diversity faces an uphill battle.

Tokens

Tokens are (by definition) maximally distinct from the rest of the workplace. If isolation has increasing costs on the isolated individuals, theories of isolation and relational demography predict the highest turnover for tokens. Theories of norms suggest that white, male, and oldest tokens may not experience all the negative effects that female, racial minority, and young tokens do.

Inspection of the nonparametric graphs (figures 1, 2 and 3) does not show any dramatic increase of exit rates when the share of same-race or same-sex colleagues moves toward zero. In Table 2, our regression with workplace fixed effects, the effects on turnover of being a token are presented in Column 4. No race or gender tokens had statistically significant distinctive quit rates. (Too few workplaces had only one woman to estimate this coefficient.) The age extremes are less visibly tokens than the only black or male. Nevertheless, the youngest had below-average turnover.

These results provide no evidence that being a token – the extreme of isolation – predicts low retention (in contrast to hypothesis 6a). For high-status groups (males and whites) we had offsetting predictions of protection due to higher status (hypothesis 6b) or extra effects due to unfamiliarity with being a token (hypothesis 6b'). We provide no support for one of these effects dominating, although it is possible they are both true and offsetting.

At the same time, this setting is a difficult one to study token status. We measure token status at the date of hire; it is likely that many tokens did not remain the only person of their group for very long. At an extreme in the demographic distribution, tokens tend to be transient. Additionally, most of the employees in these stores work rotating part-time shifts. Thus, when

isolation is high (for example, 2 men working in a store of 30 women), during most of their shifts each man will probably be the only male working in the store. As we do not have shift-level data, we cannot measure the share of time a person is the only representative of their group.

Isolation along Multiple Dimensions

Given the relatively consistent effects of race and gender isolation described above, it is interesting to look at the effects of isolation along multiple dimensions (hypothesis 7). In fact, race and gender isolation do show a negative interaction, as predicted by hypothesis 7. A ten percentage point increase in the share of white women (the most common gender×race group) at a workplace reduces a white woman's turnover by about one half a percentage point (Appendix A, col. 1). This effect is beyond the effects of increasing the proportion white and the proportion female.

The results are not only for white women. If we rerun the analysis with a variable measuring the proportion of the workforce sharing each worker's race and gender, the estimated effect is roughly the same size (Appendix A, col. 2).

Isolation from Customers

Our next tests examine the effects of isolation from customers. For three of the four racial groups, the higher the share of the same race or ethnicity in the community, the lower is turnover (Table 4). The effects are statistically significant for blacks and Hispanics, but not for whites. For Asians the effect is weakly positive, but it is not statistically significant. The results on blacks and Hispanics support hypothesis 8 that isolation from potential customers increases exits – at least for some groups: Black and Hispanic employees are less likely to quit in heavily black and Hispanic communities, respectively.

The results for blacks indicate that 10 percentage points more blacks in the community reduces black turnover in the first six months by almost 1 percentage point. The effect is about half again larger for Hispanics. In an organization with almost two thirds of workers exiting within 6 months, the effects for both groups are economically rather small. Recall that these results incorporate a fixed effect for each workplace; thus, they are not due to different labor markets that blacks and whites are typically located in.

One might suspect that these results need not be solely due to black and Hispanic employee comfort around similar customers. Minority employees have to travel further to jobs

in communities with few minorities. That is, whites were almost twice as likely (14 percent) to live in the same ZIP code as their workplace than were blacks (7.6 percent). Rates for Hispanics (10 percent) and Asians (11 percent) were intermediate. It is possible then that minorities may have more dismissals due to lateness and absences (the main causes for dismissals at this employer).

In fact, the effects of living near the workplace do not appear to drive our results. Living in the same ZIP code as the workplace had no effect on turnover rates. Controlling for whether an employee lived in the same ZIP code as the workplace as well as an interaction of that measure and race had no effect on the importance of the community percent black and percent Hispanic on turnover rates of blacks and Hispanics. (Results are available on request.)

Robustness Checks

Local labor market shocks might affect both workplace demographics and exit rates. For example, if labor markets tighten more rapidly in one region than the national average, the employer might hire less-advantaged groups, and turnover rates will rise. If racial minorities are over-represented among the disadvantaged, such labor market tightening will make it appear that rising minority shares increase turnover.

To control for this possibility we permitted each of our local labor markets (defined as the first four digits of a ZIP code) to have a location-specific trend in turnover rates. In results not shown, permitting several hundred local trends had no important effect on the results.

As noted above, we replaced the logits on 6-month retention with Cox proportional hazard rate models that permit the equivalent of workplace fixed effects. Again, results were very similar to those presented in the tables.

Because it may sometimes be difficult to separate dismissals from quits, we analyze all separations. At the same time, our theories largely address voluntary exits. Thus, we replicated our analysis using quits as identified in an exit interview as the dependent variable. Whether you include all exits or only those coded as quits, our major conclusions are unchanged. In fact, it is possible some exits reported as "quits" were, in fact, involuntary; for example, induced by the threat of being fired, but this appears to be of little consequence for our work. The analysis of both explicitly labeled quits and of all turnover yield similar results.

Discussion

Methodological Implications

This study's setting holds constant a vast number of factors that plague field studies. We examine an organization which as a matter of corporate policy seeks to replicate the same workplace with the same practices, policies, and working conditions across almost every U.S. city and large town. Job requirements are uniformly minimal, and in nearly all cases turnover is the result of a voluntary decision to quit. This paper then shows how the individual decision to quit depends on workplace demographics, controlling by corporate design for many other work conditions.

We include a workplace fixed effect that captures persistent features of the labor market, including customers, regional management, etc. Researchers should be concerned about omitted workplace and labor market characteristics. Comparing the effects of percent female on female turnover with and without fixed effects demonstrates the importance of the workplace fixed effects. Moving from 50 to 5 percent male reduces female turnover by over 10 percentage points in a nonparametric analysis (the largest effect size) but by only about 3 percentage points in the fixed-effect regression. Omitted workplace or location characteristics are likely to confound cross-sectional studies.

Diversity is both multidimensional and complex. A key finding of this study is that results using only one or two of these many measures can give misleading results.

In most datasets, one demographic group is numerically a minority in all workgroups. For example, in studies of managers in the United States, women and nonwhites have almost always been in the minority. It is not possible with such data to separately and convincingly identify the main effect of reducing the minority's isolation (increasing percent minority) and of increasing diversity. For example, hiring more blacks into a majority-white workplace reduces black isolation, increases white isolation, and increases diversity. When the separate effects cannot be causally identified, it is crucial that researchers describe their results appropriately; nevertheless, most researchers emphasize only one reading of their estimates.

We have also unpacked an often-used measure of diversity, the relational demography measure that indicates how far away a focal worker is from each co-worker in terms of demographic characteristics (Pfeffer, 1983). This measure turns out to be a complicated average

of diversity within the workgroup and the distance between the focal worker and the workgroup mean.

Finally, the different effects of isolation on men and on women emphasize the importance of not imposing equal coefficients on different groups.

Limits on Generalizability

Results from this organization may not generalize to other organizations, or even to all organizations within this sector. For several reasons, the effects we estimate here may be larger than in most other workplaces. First, low training, little deferred compensation, and low unemployment rates keep exit costs low. Modest effects that in other settings might lead to litigation or other methods of voicing disputes may lead to exit in this setting. In addition, because many accessible and comparable jobs are available, turnover becomes a sensitive indicator of perceived differences across jobs. To be concrete, most of these workplaces are located in shopping centers where employees have an easy time finding out about nearby job opportunities and where the costs of shifting jobs (especially during the period we study) were low. In addition, the low educational requirements and modest diversity training may also contribute to larger effects here. The lack of strong organizational culture and low expected tenure implies that demographic characteristics may be more salient than in organizations that make the new employer, not demographic identities, salient.

In contrast,, several factors could lead the effects we estimate here to be smaller than in most other workplaces. The importance of social forces may be lower in a high-turnover setting. For example, most employees are not going to be around long enough to become bitter that the promotion they were expecting went to a member of a group favored by ascribed characteristics. Moreover, these workplaces have unusually visible employee demographics because they are open to the public. Potential employees who dislike diversity can readily discover the approximate demographics of the workplace by walking in. This employee self-selection would leave only those most comfortable with diversity in diverse workplaces. It is curious that we observe people quitting in response to something they could easily have known before starting the job. In a companion paper (Suppressed, 2005) we examine whether employees whose manager shifts from the same to a different race or gender are more likely to quit; interestingly, we do not find that turnover among those who chose to work with a demographically different

manager differed much from turnover rates among those who initially had a demographically similar manager.

In contrast to the workplaces previously examined by most studies of tokens, prime-aged white men are a relatively small minority of the retail and food services sectors and of the employer analyzed in this paper. Thus, these theories may not apply because these sectors do not have norms of racially homogeneous "organization men."

We are most comfortable applying our results to the low-wage service sector.[11] Worklife as experienced in this sector carries implications for understanding the attitudes of the workforce well beyond the 18 percent of the U.S. workforce employed in retail and restaurants in any particular week. This sector is a common entry point into the workforce. It is where many people are first socialized into workplace norms and where they will form their first direct impression of diversity in the workplace.

Conclusion

We have three main results. The first is that diversity does not consistently predict high turnover (in contrast to H1 and H2). Across the seven categories (age, men, women, whites, blacks, Asians, and Hispanics), diversity only has a statistically significant or large effect of increasing turnover in one case: women dislike gender diversity. These results provide no consistent support for theories of ethnolinguistic fragmentation, organizational demography, or related theories.

The second is that isolation, unlike diversity, is often a useful predictor of retention. Consistent with theories of similarity attraction and of relational demography, isolation by gender (at least for men) and by race predicts higher turnover (supporting hypothesis 3a in part, and 3b). Similarly, retention rates are higher for blacks and Hispanics who work in communities with many residents of their race (supporting hypothesis 8). In contrast, results on age isolation directly oppose the standard hypothesis that isolation predicts higher turnover (hypothesis 3c). In fact, as the average age of a workplace rises over time, newly hired older workers have higher turnover.

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[11] Much previous research on diversity has concentrated on a small number of samples with accessible data: top management teams, university staffs, and (in laboratory studies) college students. Thus, as in the current study, it is unclear how well their results generalize.

The final main result is that gender, racial, and age tokens are not more likely to quit (in contrast to hypothesis 6); in fact, the youngest worker in the workplace stays longer than similarly-aged colleagues who are not the youngest in their workplace. That is, isolation may have nonlinear effects, but they do not show up as discretely higher turnover rates for the only man, black, Hispanic, or Asian or for the youngest or oldest in a workplace. It is reasonable to suspect self-selection at work.

While many of our results provide no support for pre-existing theories, from a policy perspective they are encouraging: most employees in this sector are not overly concerned with the age or gender composition of their workplace. At the same time, there still appears to be good reason for concern about the effects racial isolation. Augmenting past theory, we find that racial isolation from potential customers – not just co-workers – predicts higher turnover.

Because this company clones stores and because we control for fixed effects for each workplace, the company and we control for most factors that might affect quits. It is difficult to see what else could create the high turnover for racially isolated employees besides employee preference; which Becker defined as co-employee discrimination. At the same time, we cannot unravel when the higher turnover is due to the focal employee's preference, when it is the workgroup's preference, and when it is both. We acknowledge that proof by residual is inherently weak; at the same time, it is hard to imagine another causal path other than (some) workers' desires for colleagues of a similar race. Recognizing that people may not candidly admit they discriminate , further research that linked attitudinal measures with behavioral measures of the type studied here would to delineate the role of preferences in explaining this relationship.

We are currently following up this study to examine how turnover and other outcomes such as hiring and promotions are affected by similarity to an employee's current manager, past managers, and customers. Those results will help flesh out our understanding of this case study. Ultimately, research is needed in many sectors if we are to understand how diversity affects employees and organizations.

In the low-wage service sector where our employees work, turnover rates are so high that changes in diversity are not the main driver of turnover costs. But turnover is costly, and learning to manage a diverse workforce can bring tangible benefits.

Economists' traditional prediction is that employees' preferences to work near similar others will lead to segregation (Becker, 1957). In a world where complete segregation is both illegal and often unsustainable for an enterprise (in that the workforce is so diverse), the problem for managers is that each new hire raises isolation for some groups at the same it decreases isolation for others. Managers must learn to help employees thrive in a world of racial diversity – a prescription that is easier to state than to implement.

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Figure 1: Gender & Predicted Turnover

Results from Table 2, Column 3
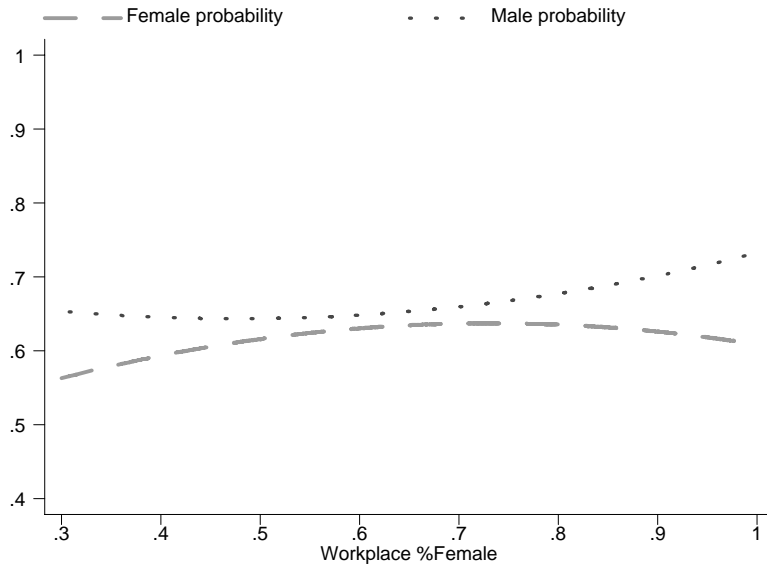
Note: The lower average level of the female turnover rate and the difference in the curvature of the male and female relations are both statistically significant at the 1 percent level.

Figure 2: Predicted turnover as a function of the racial mix of others in the workplace

2a: White Turnover Rates
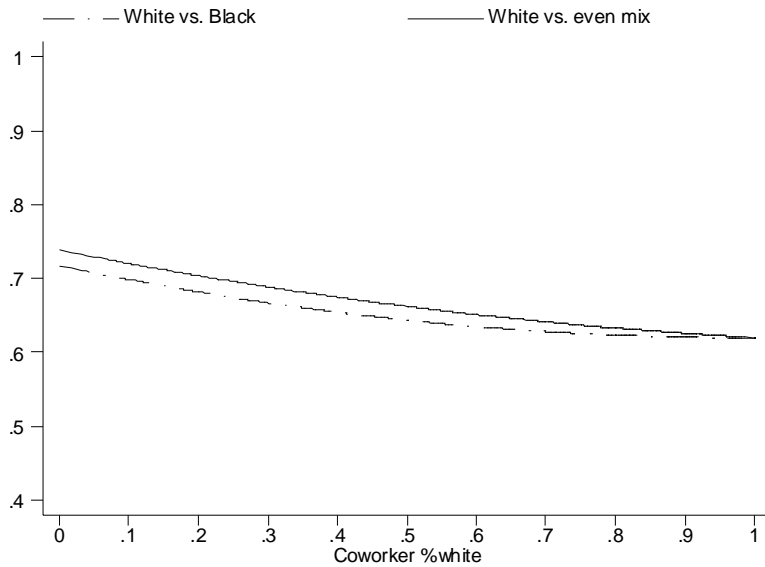
Note: In white vs. black, turnover rates are predicted if all non-whites are black. In white vs. mix, all non-whites are evenly distributed among blacks, Hispanics, and Asians. All figures are drawn using the coefficients from Table 2, col. 3.

2b: Black Turnover Rates
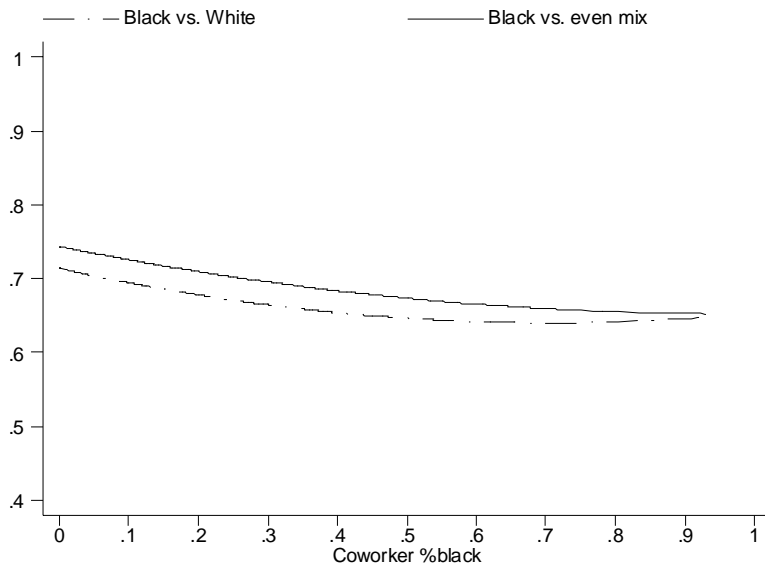
Note: In black vs. mix, all non-blacks are evenly distributed among whites, Hispanics, and Asians.

2c: Hispanic Turnover Rates
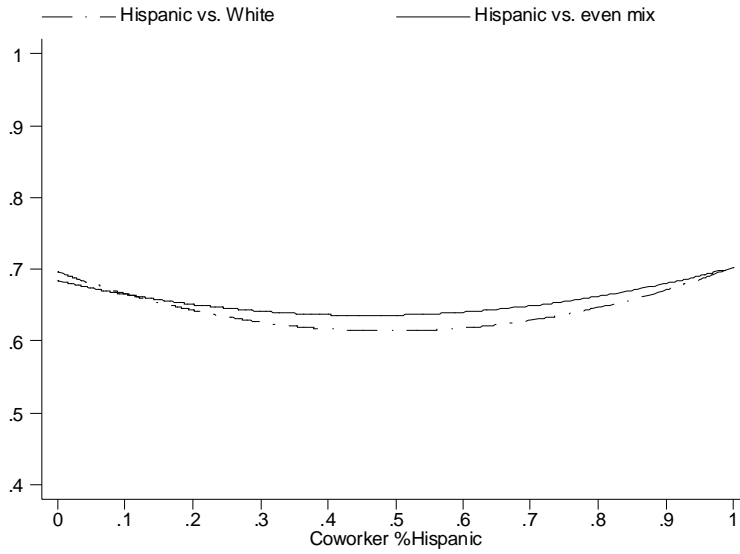
Note: In Hispanic vs. mix, all non-Hispanics are evenly distributed among whites, blacks, and Asians.

2d: Asian Turnover Rates
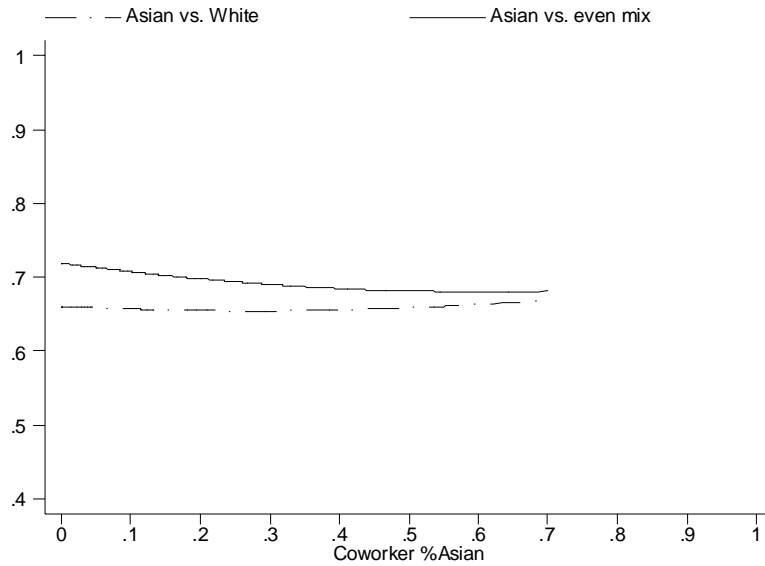
Note: In Asian vs. mix, all non-Asians are evenly distributed among whites, blacks, and Hispanics.

Figure 3: Age Diversity and Turnover within 6 Months

Based on coefficients in Table 2, col. 4.

Note: Age at time of hire refers to the focal worker. Mean and sd(ln(age)) refer to the age distribution of the rest of the workplace at the date of hire.

Table 1: Summary Statistics

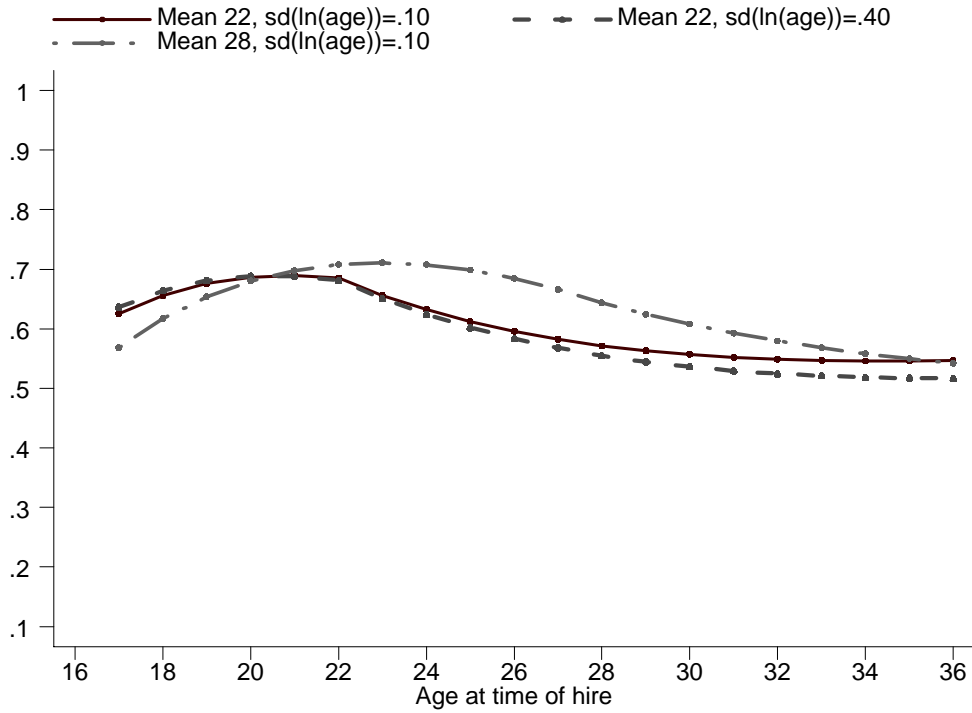|	Mean	Std. Dev.	Min	Max
Turnover within 6 months of hire	.64			
Baseline demographics				
Female	0.708			
White	0.655			
Black	0.160			
Hispanic	0.100			
Asian/ Pacific Islander	0.068			
Native American	0.004			
Unknown ethnicity	0.013			
Age at time of hire	22.33	6.69	15	80
Part time employee	0.346			
Temp/seasonal employee	0.611			
Workplace Means				
Workplace %Female	0.735	0.126	0.139	1.000
Workplace %White	0.696	0.227	0.000	1.000
Workplace %Black	0.128	0.135	0.000	0.929
Workplace %Hispanic	0.097	0.135	0.000	1.000
Workplace %Asian	0.063	0.080	0.000	0.704
%Native American & unknown	0.017	0.030	0.000	0.585
Workplace Mean Age	24.14	2.14	18.46	41.44
Workplace Diversity				
Diversity index for Gender $= 1-[(\%female)^2 + (\%male)^2]$	0.358	0.123	0.000	0.500
Diversity index for Race $= 1-[(\%White)^2+(\%Black)^2+ (\%Hispanic)^2+(\%Asian)^2]$	0.390	0.206	0.000	0.795
Workplace sd(Log Age)	0.268	0.060	0.078	0.585
Isolation				
Workplace %(not my sex)	0.383	0.240	0.000	1.000
Workplace %(not my race)	0.414	0.317	0.000	1.000
|log(Age) - log(Workplace Mean Age)|	0.219	0.153	0.000	1.324
Tokens				
Token Man in Workplace	0.003			
Token White in Workplace	0.00005			
Token Black in Workplace	0.008			
Token Hispanic in Workplace	0.007			
Token Asian in Workplace	0.009			
Token Native American in Workplace	0.003			
Youngest in Workplace	0.068			
Oldest in Workplace	0.003			
Interactions				
Female×(Diversity Index for Gender)	0.244	0.190	0.000	0.500
White×(Diversity Index for Race)	0.219	0.223	0.000	0.795
Black×(Diversity Index for Race)	0.079	0.195	0.000	0.789
Hispanic×(Diversity Index for Race)	0.051	0.166	0.000	0.789

Asian×(Diversity Index for Race)	0.033	0.132	0.000	0.783
log(Age)×sd(log(Age))	0.824	0.197	0.235	2.211
log(Age)×|log(Age)-log(Workplace Mean Age)|	0.679	0.529	0.000	5.716

Notes: Percentages for a workplace do not include the focal individual. N>70,000 new hires at over 800 workplaces. Variables with "%," "Mean," "SD" or "Index" in their name are computed at the workplace level. Dummy variables do not report SD, min. or max.

Table 2: Linear Fixed Effects Regressions Predicting Turnover within 6 Months

	(1) Baseline	(2) Diversity	(3) Isolation	(4) Age Interactions + Tokens
Age at time of hire	-0.002**	-0.001**	-0.004**	-0.018**
	(0.000)	(0.000)	(0.000)	(0.002)
Age squared (centered at mean, coefficient multiplied by 100)	-0.001**	-0.001**	0.001**	-0.003**
	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.032**	-0.098**	-0.180**	-0.193**
	(0.003)	(0.011)	(0.043)	(0.046)
Black	0.041**	0.104**	0.010	0.008
	(0.004)	(0.011)	(0.020)	(0.021)
Asian	-0.017**	0.038**	-0.055*	-0.057*
	(0.006)	(0.014)	(0.022)	(0.024)
Hispanic	-0.029**	0.089**	-0.007	-0.010
	(0.005)	(0.014)	(0.022)	(0.023)
Native American	0.032	0.062*	0.000	0.000
	(0.021)	(0.031)	(0.000)	(0.000)
Unknown Ethnicity	0.009	0.039	0.000	0.000
	(0.012)	(0.027)	(0.000)	(0.000)
Part-time	0.019	0.018	0.016	0.010
	(0.010)	(0.010)	(0.010)	(0.010)
Temp/Seasonal	0.092**	0.091**	0.090**	0.086**
	(0.010)	(0.010)	(0.010)	(0.010)
Starting hourly wage	-0.010**	-0.011**	-0.012**	-0.011**
	(0.002)	(0.002)	(0.002)	(0.002)
Workplace total employment	0.001**	0.001**	0.001**	0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Workplace %Female	0.048	0.115	0.097	0.085
	(0.029)	(0.063)	(0.064)	(0.064)
Workplace %Black	-0.033	-0.016	-0.003	0.002
	(0.036)	(0.054)	(0.054)	(0.054)
Workplace %Asian	0.079	0.106	0.111	0.110
	(0.052)	(0.074)	(0.073)	(0.073)
Workplace %Hispanic	0.052	0.073	0.074	0.079
	(0.048)	(0.063)	(0.063)	(0.063)
Workplace % Other (Native Amer. + Unknown)	0.007	0.045	-0.074	-0.076
	(0.086)	(0.101)	(0.097)	(0.096)
Workplace Mean Age	0.001	0.001	0.009**	0.017**
	(0.002)	(0.002)	(0.002)	(0.002)
Diversity index for Gender = 1-[(%female)^2 + (%male)^2]		**-0.042**	**-0.143**	**-0.167**
		(0.068)	(0.084)	(0.088)
Diversity index for Race **= 1-[(%White)^2+(%Black)^2+(%Hispanic)^2+(%Asian)^2+(%Other)^2]**		**0.028**	**-0.044**	**-0.049**
		(0.045)	(0.046)	(0.046)
Workplace sd(Log Age)		**0.007**	**-0.024**	**0.610**
		(0.071)	(0.072)	(0.361)
Female*(Diversity Index for Gender)		**0.172**	**0.321**	**0.342**
		(0.028)	(0.077)	(0.082)
Black*(Diversity Index for Race)		**-0.149**	**-0.027**	**-0.019**
		(0.022)	(0.031)	(0.032)
Asian*(Diversity Index for Race)		**-0.132**	**-0.030**	**-0.031**
		(0.029)	(0.035)	(0.037)
Hispanic*(Diversity Index for Race)		**-0.246**	**-0.123**	**-0.121**
		(0.027)	(0.035)	(0.036)

Table 2 (continued)	(1) Baseline	(2) Diversity	(3) Isolation	(4) Age Interactions + Tokens
Gender Isolation = %(Not my sex)			**-0.069***	**-0.083***
			(0.034)	(0.036)
Race Isolation = %(Not my race)			**0.081****	**0.083****
			(0.015)	(0.016)
Age isolation = |log(Age) - log(Workplace Mean Age)|			**-0.288****	**-4.203****
			(0.013)	(0.185)
log(Age)*sd(log(Age))				**-0.203**
				(0.115)
log(Age)*|log(Age)-log(Workplace Mean Age)|				**1.275****
				(0.060)
Token Man in Workplace				**-0.041**
				(0.030)
Token White in Workplace				**-0.178**
				(0.205)
Token Black in Workplace				**-0.001**
				(0.016)
Token Asian in Workplace				**-0.008**
				(0.017)
Token Hispanic in Workplace				**-0.009**
				(0.019)
Youngest in Workplace				**-0.039****
				(0.007)
Oldest in Workplace				**-0.007**
				(0.024)
R-squared	0.04	0.04	0.04	0.05

Notes: Each model includes fixed effects for each workplace and for each starting month. Percentages for a workplace do not include the focal individual and are defined at the time of hire. Standard errors (in parentheses) are adjusted for clustering at level of store and month. Sample size is over 800 stores and over 70,000 new hires. * significant at 5%; ** significant at 1%.

Table 3: Interaction coefficients for each race and the proportion of each other race in the store.

Linear Fixed Effects Regressions Predicting Turnover within 6 Months

	Model 1 Constraining race * %other race to be the same for all other races	Model 2 Full set of Race * Other race
Black	0.065**	-0.085**
	(0.007)	(0.024)
Hispanic	-0.012	-0.125**
	(0.009)	(0.048)
Asian	-0.00007	-0.210**
	(0.008)	(0.029)
Workplace %Black	0.073	0.122*
	(0.052)	(0.053)
Workplace %Hispanic	0.165*	0.185**
	(0.069)	(0.070)
Workplace %Asian	0.149*	0.211**
	(0.061)	(0.062)
Black* % not black	0.131**	
	(0.027)	
Black* %white		0.171**
		(0.029)
Black * %Hispanic		-0.035
		(0.047)
Black * %Asian		0.226**
		(0.058)
F-test that the three coefficients above differ from the coefficient on black* %not black from Model 1		17.92 (0.000)
Hispanic * %not Hispanic	0.187**	
	(0.032)	
Hispanic * %white		0.251**
		(0.034)
Hispanic * %black		0.061
		(0.052)
Hispanic * %Asian		0.149*
		(0.066)
F-test that the three coefficients above differ from the coefficient on Hispanic * %not Hispanic from Model 1		13.87 (0.000)
Asian * % not Asian	0.116*	
	(0.052)	
Asian * %white		0.144**
		(0.055)
Asian * %black		-0.023
		(0.066)
Asian * %Hispanic		0.059
		(0.076)
F-test that the three coefficients above differ from the coefficient on Asian * %not Asian from Model 1		9.20 (0.000)

Standard errors in parentheses. [+] significant at 10%; * significant at 5%; ** significant at 1%. Regressions include all of the controls in Table 2, Column 4. The F test examines whether the effects of employees not this person's race differ among the three other races. It tests model 1 versus model 2 for each race; that is, can we constrain the three coefficients in each row of model 2 to equal the coefficient in the first column]? The F statistics have degrees of freedom (2, >70,000). Sample drops Native Americans and Unknowns.

Table 4: Interaction coefficients for each race and the proportion of own race in the community.

Linear Regression with Workplace Fixed Effects Predicting Turnover within 6 Months

	Coefficient and (Std. Error)
White × Community %White	-0.026
	(0.031)
Black × Community %Black	-0.091*
	(0.043)
Hispanic × Community %Hispanic	-0.154*
	(0.074)
Asian × Community %Asian	0.044
	(0.051)
F(4, >70,000) of 4 interactions, above	3.95
(Prob>F)	0.0033

Standard errors in parentheses. * significant at 5%; ** significant at 1%. Regressions include all of the controls in Table 2, Column 4. Community variables are computed from the workplace's ZIP code plus all Census tracts within 2 miles. Some workplaces are grouped for fixed-effects. Community main effects on %race are spanned by the workplace fixed effects.

Appendix A: Effects of the Share that is a Workers' Race and Gender

Linear fixed effects regressions predicting turnover within 6 months

	(1)	(2)
Female	-0.177**	-0.174**
	(0.046)	(0.046)
Black	-0.014	-0.003
	(0.026)	(0.026)
Asian	-0.070	-0.059
	(0.038)	(0.038)
Hispanic	-0.045	-0.034
	(0.029)	(0.029)
Workplace %Female	0.104	0.101
	(0.059)	(0.059)
Workplace %Black	0.014	0.025
	(0.046)	(0.046)
Workplace %Asian	0.113	0.123
	(0.066)	(0.066)
Workplace %Hispanic	0.083	0.092
	(0.055)	(0.055)
Diversity index for Gender = $1-[(\%female)^2 + (\%male)^2]$	-0.132	-0.119
	(0.084)	(0.085)
Diversity index for Race	-0.067	-0.066
= $1-[(\%White)^2+(\%Black)^2+(\%Hispanic)^2+(\%Asian)^2]$	(0.042)	(0.042)
Female×(Diversity Index for Gender)	0.319**	0.303**
	(0.082)	(0.082)
Black×(Diversity Index for Race)	0.016	0.014
	(0.044)	(0.044)
Asian×(Diversity Index for Race)	0.004	0.002
	(0.050)	(0.050)
Hispanic×(Diversity Index for Race)	-0.076	-0.079
	(0.047)	(0.047)
|Female - Workplace %Female|	-0.102**	-0.105**
	(0.035)	(0.036)
|White - Workplace %White|	0.048*	0.044*
	(0.020)	(0.020)
|Black - Workplace %Black|	0.028	0.013
	(0.016)	(0.017)
|Asian - Workplace %Asian|	0.017	0.002
	(0.027)	(0.027)
|Hispanic - Workplace %Hispanic|	0.041*	0.027
	(0.019)	(0.019)
|log(Age) - log(Workplace Mean Age)|	-4.211**	-4.213**
	(0.173)	(0.173)
(White female)×(Workplace %White females)	**-0.045****	
	(0.010)	
Workplace % Same Race & Gender as employee		**-0.053****
		(0.015)
R-squared	0.05	0.05

Notes:
Other controls as in Table 2, including fixed effects for each workplace and for each starting month. Standard errors in parentheses. Sample size is over 800 workplaces and over 70,000 new hires.
* significant at 5%; ** significant at 1%