The Organizational Demography of Racial Employment Segregation[1]

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This article examines how workers respond to changes in the racial composition of their workplaces. An analysis of the job histories of new hires into multiple work groups within a single firm reveals path dependence in the effects of group composition on turnover. Exit rates are inversely related to the level of same-race representation at the time of organizational entry and increase when workers experience declines in same-race representation. However, turnover rates do not decline in response to increases in representation. The results suggest that initial token status can have a lasting impact on attachment and that increases in attachment in integrated groups occur through a cohort-replacement process. The turnover dynamics also imply that any gains in the representation of minority groups are very fragile. The challenge of workplace racial integration therefore lies not simply in eliminating discrimination in hiring, but also in managing the post-hire consequences of changes in group composition. Implications of the asymmetric effects of compositional change for the literature on organizational demography are also discussed.

The racial segregation of employment is a pervasive feature of the U.S. labor market and an important source of social inequality. Reskin, McBrier, and Kmec (1999) estimated that minorities are substantially

underrepresented in over half of U.S. establishments. Tomaskovic-Devey (1993), using a sample of jobs in North Carolina, estimated that almost 55% of blacks would have to switch jobs with whites to achieve complete integration. In a study of segregation across establishments, Bayard et al. (1999) found that a randomly selected black employee worked in an establishment with 22%–29% more black employees than a randomly selected white employee. Comparing whites and Hispanics, they found that Hispanics worked in establishments that were 32% more Hispanic. Employment segregation is in turn implicated in racial disparities in income and social advancement. Incumbents of jobs dominated by nonwhites receive lower pay (Tomaskovic-Devey 1993; Baron and Newman 1989; Bayard et al. 1999; Sorensen 1989) and have higher turnover rates and lower promotion rates (Barnett, Baron, and Stuart 2000) than incumbents of jobs dominated by whites.

Despite the importance of racial employment segregation, its causes have received surprisingly little attention in the sociological literature, particularly when compared to the voluminous literatures on the causes of sex segregation in employment (e.g., Reskin 1993) and of racial residential segregation (e.g., Massey and Denton 1993). This may reflect the fact that the levels of racial segregation in employment are less pronounced than levels of sex segregation in employment (King 1992) and levels of racial residential segregation (Becker 1980). However, the dynamics of racial employment segregation are an important subject of study, particularly since the racial and ethnic diversity of the American labor force has increased substantially in the past several decades (U.S. Bureau of the Census 2001). In light of the connections between employment segregation and inequality, it is important to understand the forces that affect the likelihood of creating racially integrated workplaces in the face of demographic change.

As a guide to this topic, the existing sociological theory and evidence on racial segregation suffers from two limitations. First, most sociological studies focus on racial segregation across occupations or jobs (Kaufman 2002; Semyonov et al. 2000; Fossett, Galle, and Kelly 1986), not establishments (Becker [1980] is an exception). One reason for this is that there has been little data available on racial segregation at the establishment or workplace level. Yet this emphasis is unfortunate, since it is within firms that work is organized and that many of the processes generating segregation play out (Baron and Bielby 1980; Reskin and Roos 1990). For example, an extensive literature has demonstrated that organizations play a crucial role in shaping the structure of sex segregation (Bielby and Baron 1986) and that the gender gap in wages virtually disappears once the segregation of men and women across establishments is taken into account (Petersen and Morgan 1995). In short, aggregated analyses of racial em-

ployment segregation that suggest relatively modest levels of segregation may conceal higher levels of segregation at the workplace level. Indeed, by surveying workers about the firm-level racial composition of their jobs, Tomaskovic-Devey (1993) found substantially higher levels of racial segregation than was found in occupational studies.

A second shortcoming of the existing literature on racial employment segregation is that theoretical explanations typically focus on "prehire" factors, such as supply and demand in the labor market and employer hiring practices (Reskin, McBrier, and Kmec 1999; Tomaskovic-Devey 1993; Kaufman 2002; Mouw 2002). In a strong version of this approach, Reskin et al. (1999, p. 338) argue that "the sex and race composition of establishments that are indifferent to a worker's race and sex and that use sex- and race-neutral recruitment methods should be roughly proportional to that of the supply of qualified workers in the labor pool." This claim only holds if one assumes that there are no "post-hire" dynamics that affect workplace composition. Group composition is the net result of both differential recruitment and differential turnover. While market forces and hiring practices may determine who is brought into the workplace, they are not the only determinants of who stays, so prehire explanations are best suited as accounts of differential recruitment patterns. In principle, the segregation of work groups can result from differential turnover rates alone. If these forces are strong enough, a demographically skewed workplace can arise even if an employer is perfectly neutral in its hiring practices and strives to bring in employees that perfectly mirror the racial composition of the local labor market.

This suggests that the prevailing emphasis on how prehire forces shape segregation should be complemented by an examination of post-hire dynamics. This article investigates an important type of post-hire demographic process, namely how turnover rates depend on demographic composition of work groups. Extensive research suggests that group composition has wide-ranging effects on individual and group outcomes (Mittman 1992). In particular, evidence from studies of work groups suggests that there is a negative relationship—in the cross-section—between group racial heterogeneity and individual attachment to the group (see Williams and O'Reilly [1998] for a review) and job satisfaction (Wharton, Rotolo, and Bird 2000; Mueller et al. 1999). From the standpoint of understanding the processes generating segregation, then, it is particularly important to understand the effects of group composition on turnover.

It is also important to understand how people respond to *changes* in the racial composition of their workplaces. Consider the challenges involved in transforming a segregated work group into a racially integrated one. Typically, it is not feasible to achieve demographic balance through a wholesale reallocation of employees across work groups. Integration

therefore has to occur in small increments. While well-intentioned employers may encourage such integration by changing recruitment patterns, such efforts will falter if the members of the underrepresented groups refuse to stay or if members of the formerly dominant group leave in large numbers. The potential difficulties involved in creating integrated workplaces are well illustrated by considering the analogous case of the barriers to neighborhood integration. Residential segregation is in part due to forces comparable to the prehire explanations emphasized in the literature on employment segregation: the persistence of widespread discrimination against blacks in housing markets (Massey and Denton 1993) and the reluctance of whites to move into neighborhoods with more than a modest representation of blacks (Farley et al. 1994). Yet extensive evidence also suggests that the process of change is itself volatile: one reason neighborhood integration remains elusive lies in the dynamics of resident's responses to changes in the racial composition of their neighborhoods, as captured in the notion of "white flight" (Schelling 1971; Granovetter 1978; Clark 1991; Crowder 2000). In Schelling's (1971) "tipping" model, for example, integration is very difficult to achieve due to the self-reinforcing dynamics of individual responses to small changes in neighborhood composition.

The challenge of workplace integration therefore lies not simply in eliminating discrimination in hiring, but also in managing the post-hire dynamics of changes in group composition. Yet existing research provides no answer to the question: How do workers respond to changes in the racial composition of their workplace? Existing studies of the relationship between group racial composition and turnover rely on cross-sectional comparisons *across* groups, and are therefore not directly informative about the consequences of compositional change *within* work groups. I investigate this issue through a quantitative case study of the relationship between changes in work group racial composition and worker turnover rates. Drawing on the personnel records of a single, large firm, I analyze the turnover rates of 1,673 new hires spread among 263 separate workplaces within the firm. These workplaces are small enough that their members interact regularly, meaning that the workplace's demographic composition is likely to be salient to its members. A unique feature of these data is that they are longitudinal, which means that the racial composition of each workplace can be continuously updated as it changes in response to the entrance and exit of employees of different races. To my knowledge, this is the first study to examine explicitly the link between employees' turnover behavior and changes in the racial composition of their workplace. These reactions turn out to be complex and suggest that the causes of racial employment segregation are better understood if post-hire dynamics are taken into account.

THE EXTENT OF WORKPLACE RACIAL SEGREGATION

Before turning to a discussion of the relationship between changes in workplace racial composition and turnover rates, I present some descriptive evidence on the extent of workplace racial segregation in the United States. Doing so serves two goals. First, since workplace racial segregation has received relatively little attention, the descriptive data help to establish the phenomenon. Second, data from representative samples of firms puts the analyses from the firm studied here in a broader context.

The existing evidence on the extent of workplace racial segregation in the United States is sparse, but the available studies suggest substantial segregation. Becker (1980) used data from the 1975 Equal Employment Opportunities Commission (EEOC) survey of private employers with more than 100 employees to compute measures of black-white workplace segregation. He found that the apparently low level of segregation at the national level concealed extensive heterogeneity across occupations in the degree of workplace segregation, with laborers and service occupations exhibiting high levels of segregation. For example, while whites made up 69% of laborers in the sample, the average black laborer in the sample worked in an establishment where only 42% of the laborers were white. Using matched employer-employee data from 1990, Carrington and Troske (1998) estimated Gini coefficients of black-white interfirm segregation, which can range from zero (perfect integration) to one (perfect segregation). In a sample of manufacturing establishments, they found high levels of segregation at the national level (Gini coefficient = 0.78) and more modest but still substantial segregation when computed within geographic areas (Gini coefficient = 0.60). Bayard et al. (1999), also using matched employer-employee data from the 1990 census, found little segregation by industry or (broad) occupational category, but extensive segregation by establishment. Among black men, the average proportion black in an establishment was 27.1% while for whites and Hispanics the corresponding proportions of black workers were 4.7% and 4.5% respectively. Black women were more highly segregated than men, with an average 35% black in the establishment versus less than 6% for whites and Hispanics. For both sexes, segregation was higher in firms with fewer than 50 employees than it was in large firms.

In table 1, I present estimates of the extent of racial segregation across firms in four U.S. cities: Atlanta, Boston, Detroit, and Los Angeles. The segregation indexes are computed from data from the employer survey administered as part of the Multi-City Survey of Urban Inequality (MCSUI; Holzer et al. 2000). The MCSUI employer sample consists of responses to a survey administered between June 1992 and May 1994 to approximately 3,200 employers in the four metropolitan areas. Properly

TABLE 1
INDEXES OF RACIAL SEGREGATION OF NONCOLLEGE EMPLOYEES IN THE MCSUI

| | NO. OF EMPLOYEES | | | | | |
	< 15	15–49	50–99	100–249	250+	OVERALL
Los Angeles:						
Dissimilarity ...	.634	.540	.514	.478	.440	.477
Theil	.514	.342	.295	.255	.243	.276
N Employers ...	197	190	106	155	100	748
Boston:						
Dissimilarity ...	.718	.560	.549	.574	.461	.487
Theil	.467	.329	.344	.355	.218	.253
N Employers ...	197	180	81	119	103	680
Detroit:						
Dissimilarity ...	.776	.649	.564	.556	.407	.441
Theil	.635	.449	.374	.338	.187	.218
N Employers ...	196	157	75	92	103	623
Atlanta:						
Dissimilarity ...	.628	.570	.475	.465	.367	.404
Theil	.452	.378	.290	.258	.201	.229
N Employers ...	191	182	90	90	94	647

NOTE.—Both indexes have a theoretical maximum value of 1 (perfect segregation) and a theoretical minimum value of 0 (no segregation). Indexes are computed according to Reardon and Firebaugh (2002). Four races are identified in the data: whites, blacks, Hispanics, and Asians. The data are weighted by the MCSUI sampling weights.

weighted, the data from MCSUI provide a representative sample of employers in the four cities covered. Along with a wide range of questions concerning their hiring practices,[2] respondents were asked to list the number of non-college-educated employees in each of four racial categories: white, black, Hispanic, and Asian. An advantage of the MCSUI employer data is therefore that it allows for the calculation of the multiracial segregation indexes recently proposed by Reardon and Firebaugh (2002), although the resulting estimates only apply to jobs that do not require a college education. Table 1 contains estimates of two different measures developed by Reardon and Firebaugh, namely multigroup measures of (a) the generalized dissimilarity index, and (b) the Theil information theory index. The generalized dissimilarity index gives the proportion of workers that would have to be reallocated to achieve an even representation across workplaces relative to the proportion that would have to be reallocated if firms were perfectly segregated. Thus an index of 0.5 indicates that half as many workers need to be reallocated compared to a situation of perfect segregation. The Theil index can be interpreted as one minus the ratio

[2] The survey was administered to the individual at each establishment who was responsible for hiring for jobs that did not require a college education.

of the average within-firm racial diversity to the diversity of the population as a whole. This measure equals one when there is no within-firm racial diversity despite diversity in the population.

The overall estimates from MCSUI suggest a moderate level of racial segregation across workplaces. Pooling across all sampled employers in a region, the dissimilarity measure ranges between 0.40 in Atlanta and 0.49 in Los Angeles. This implies, for example, that approximately 40% of noncollege employees in Atlanta would have to be reallocated across employers in order to equalize racial representation across employers (relative to the proportion that would have to be reallocated if there were perfect segregation). In Los Angeles and Boston, almost half of the non-college employees would have to be reallocated. Overall segregation appears more modest when measured by the Theil index, however, with index values ranging between 0.22 and 0.28. However, this modest overall level of segregation is partially due to the concentration of employment in large firms. Evidence for this can be seen in the strong relationship between employer size and the degree of racial segregation. The estimates in table 1 reveal that in all four cities, segregation is considerably higher among employees employed in smaller firms and declines as firm size increases. Among small firms with fewer than 15 employees, the generalized dissimilarity index ranges from a low of 0.63 in Atlanta to a high of 0.78 in Detroit, while the Theil index ranges from 0.45 to 0.65 in the same cities. Segregation levels decline as employer size increases and are substantially lower for firms with more than 250 employees.

In summary, the MCSUI data suggest that there is substantial racial segregation in employment in major cities in the United States, particularly among small employers. When aggregated to the level of the (non-college) labor force, the overall level of segregation may appear modest, although not trivial. However, the overall segregation level is driven by the fact that large firms account for a large proportion of the employees and segregation levels appear lower among large firms. Large employers may be less segregated because they are subject to more regulations and oversight regarding hiring practices. However, since most large firms are composed of numerous, smaller work units, the overall measure of segregation may overestimate the extent to which different races come into contact with each other in their day-to-day work environment.

ACCOUNTS OF RACIAL EMPLOYMENT SEGREGATION: PREHIRE FACTORS

Prevailing accounts of racial employment segregation emphasize factors that operate prior to organizational entry, in particular, labor market

supply and demand forces (Tomaskovic-Devey 1993; Reskin et al. 1999; Kaufman 2002). Supply-side explanations see the distribution of individuals across jobs and workplaces as the outcome of an underlying demographic distribution of human capital and skills. From this perspective, employment segregation is the result of different skill requirements across jobs and of systematic racial differences in human capital. In particular, segregation in the educational system and other factors contribute to differences in the distribution of skills by race (Farkas and Vicknair 1996), leading to higher racial segregation in jobs with greater general skill and training requirements (Kaufman 1986, 2002; Tomaskovic-Devey 1993). An alternative supply-side explanation points to the role of pervasive residential segregation and its implications for the matching of workers to jobs (Holzer 1991; Moss and Tilly 2001; Mouw 2002). Historical patterns of migration and contemporary neighborhood segregation processes lead to the creation of local labor markets that vary in racial composition. If employers rely on local labor pools, workplaces will reflect this uneven racial distribution. Mouw (2002) estimated that approximately 10% of the observed workplace segregation of blue-collar employees in the MCSUI data is caused by residential segregation.

Demand-side explanations for racial employment segregation emphasize hiring discrimination by employers. Statistical discrimination arguments suggest that the segregation of employment reflects differences in the average productivity of different races in particular jobs. In the presence of such group differences, it can be efficient for employers to reduce screening costs by using easily observable indicators, such as race, to sort prospective employees on the basis of expected productivity (Aigner and Cain 1977). Whether or not such group differences in productivity actually exist, evidence suggests that employers act as if they do (Moss and Tilly 2001; Bielby and Baron 1986). Racial stereotypes may extend to expectations about appropriate and inappropriate jobs and tasks for different races (Moss and Tilly 2001; Kaufman 2002). Segregation may also be a result of overt racism on the part of employers (Neckerman and Kirschenman 1991) and of resistance by whites to the entry of other races (Lieberson 1980).

An alternative demand-side approach focuses on the hiring practices used by employers. Segregation may be reproduced through the use of informal hiring practices, particularly hiring through employee social networks. Personal networks play an important role in the job search process (Granovetter 1995) and tend to be highly segregated by race (Marsden 1987). Moss and Tilly (2001) argued that formalized employment practices are more likely to lead to changes in workforce composition. Mouw (2002) estimated that approximately 10% of the observed workplace segregation of blue-collar employees in the MCSUI data can be attributed to the

combination of informal hiring practices and racial homophily in social networks. Using a case study of hiring in one firm, Petersen, Saporta, and Seidel (2000) found that while ethnic minorities were not disadvantaged in the screening phase, they lacked access to the referral networks used by the firm and hence were less likely to reach the screening phase. Studying a firm that provided good jobs relative to the local labor market, Fernandez and Fernandez-Mateo (2003) found that network hiring contributed to the overrepresentation of Asians in the firm, relative to both the pool of people who could be expected to apply for the jobs and the pool of actual applicants.

Despite the theoretical emphasis on prehire forces, most empirical studies of racial employment segregation use post-hire data—that is, data characterizing the existing stock of employees.[3] For example, Kaufman (2002) uses data from the 1990 U.S. census to investigate the effects of labor market supply and demand forces on the distribution of black and white men and women across cells defined by the intersection of occupation and industry. Similarly, Tomaskovic-Devey (1993) uses data on the composition of jobs (within firms) to test supply- and demand-side arguments. However, the observed distribution of the races across jobs or occupation-industry cells results not only from differences in the likelihood of entry by different demographic groups, but also from differences in turnover rates. Empirically, this means that tests of prehire theories are better carried out with data on hiring (Petersen et al. 2000; Fernandez and Sosa 2003; Fernandez and Fernandez-Mateo 2003); theoretically, this suggests that accounts of the racial segregation of employment should incorporate factors affecting turnover rates.

GROUP COMPOSITION AND TURNOVER

An extensive literature in sociology and industrial psychology suggests that while turnover rates are in part a function of supply and demand forces in the labor market, voluntary turnover also depends on how people respond to their work environments (Price and Mueller 1981; Mowday, Porter, and Steers 1982; Lincoln and Kalleberg 1986; Pfeffer 1983; Huselid 1995). This work has shown that both the formal and informal structures of organizations affect voluntary turnover rates through their effects on organizational commitment and job satisfaction. Focusing on elements of formal organizational structure, for example, Lincoln and Kalleberg (1986) found that organizational commitment levels were higher in U.S. and

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[3] Fernandez and Sosa (2003) make the same point with respect to the sex segregation of employment.

Japanese manufacturing plants that had adopted corporatist control practices (such as participatory work structures). Huselid (1995) found turnover rates to be lower among organizations that had adopted high performance work practices. The research stream initiated by Price and Mueller (1981; see Price [2001] for a review) also emphasizes the impact of such structural factors as job routinization, pay, and promotion opportunities on organizational commitment and job satisfaction.

Voluntary turnover also responds to those elements of the informal structure of organizations that result from patterns of social interaction among employees. Research has shown that job satisfaction and organizational commitment are influenced by the degree of social support from peers and supervisors, role conflict, autonomy, and distributive justice (Price 2001). Organizational demography research (Pfeffer 1983) has in turn argued that such outcomes are strongly influenced by the demographic composition of work groups. A large number of studies indicate that demographic heterogeneity, particularly with respect to easily observable characteristics, lowers individual attachment to the group and thus increases turnover rates (Williams and O'Reilly 1998). Several studies look specifically at the impact of racial diversity in work groups and generally find that higher levels of diversity predict lower attachment. Studying 151 work groups in three different organizations, Tsui, Egan, and O'Reilly (1992) found that people working in teams with greater racial diversity had lower levels of psychological commitment to the organization, less intent to stay, and higher rates of absence from work. In a study of 45 teams in three firms, Pelled, Eisenhardt, and Xin (1999) found that racial diversity increased reported emotional conflict in the team. In a study of job satisfaction and organizational commitment among teachers, Mueller et al. (1999) found that the effects of racial composition on these outcomes were mediated by the respondents' assessment of the degree of social support from colleagues and role conflict. Racial heterogeneity in work groups also appears to be related to lower reported job satisfaction (Wharton, Rotolo, and Bird 2000).

Organizational demographers typically invoke one of two social psychological mechanisms to explain why racial heterogeneity in groups leads to lower attachment (Williams and O'Reilly 1998). Social categorization and similarity/attraction theories emphasize different mechanisms, but for both the crucial driver of attachment is the extent to which group members have opportunities for same-race contact. Social categorization theory argues that people construct social identities by using salient social categories to define others as either similar to or different from themselves (Turner et al. 1987). The resulting in-groups and out-groups become a fundamental dimension along which individuals compare themselves to others. The desire to maintain high levels of self-esteem leads to enhance-

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ments in the evaluation of others who are perceived to be similar to oneself (the in-group) and a devaluation of those who are different (the out-group) (Tajfel and Turner 1986). Consistent with this argument, research suggests that the experimental activation of social boundaries leads people to view in-group members as more honest, trustworthy, and cooperative than members of the out-group (Tajfel 1982). As Flynn, Chatman, and Spataro (2001) put it, "People who are demographically different . . . will be perceived by their colleagues more negatively, on average, and those who are demographically similar to others . . . will be perceived by their colleagues more positively, on average." Since race is a salient social category in the contemporary United States, higher levels of same-race representation in a work group should be associated with more positive sentiments toward coworkers and greater job attachment.

While social categorization theory emphasizes avoidance of the out-group, similarity/attraction arguments suggest that group composition is important because it shapes the ability of people to generate friendship ties within the group. The similarity/attraction principle (Berscheid and Walster 1978) suggests that people are attracted to and more apt to like others who are similar to them along some salient dimension. People with similar demographic characteristics, for example, are more likely to have had similar experiences, which increases the likelihood that they will positively reinforce one's own beliefs. Extensive research on homophily shows that people tend to be friends with similar others (e.g., Lazarsfeld and Merton 1954; Marsden 1987; see McPherson, Smith-Lovin, and Cook [2001] for a review). Race is a particularly important dimension of homophily. Marsden (1987) reports that only 8% of respondents in the General Social Survey report discussing important matters with a person of another race. Lincoln and Miller (1979) found racial homophily in personal networks in five different workplaces, and found that friendship ties were more likely to be racially homophilous than instrumental ties. Ibarra (1995) also found substantial racial homophily in worker's personal networks, although underrepresented minorities exhibited less homophily than the members of the majority.[4] The importance of homophily in intimate relations is suggested by Ibarra's (1995) finding that minorities

[4] As this result suggests, racial homophily is in part a product of constraint (McPherson, Smith-Lovin, and Cook 2001), since the unequal population sizes of the different races in the United States and their broader segregation in society creates limited opportunities for social contact between members of different races (Blau 1977). While this means that much of the observed homophily may be generated by chance, friendship patterns are more homophilous than would be expected by chance, even after controlling for the unequal distribution of the races through social structure (Shrum, Cheek, and Hunter 1988).

were more likely to develop social support networks that spanned outside the work group.

As Popielarz and McPherson (1995) argue, the principle of homophily works in two ways with respect to the relationship between group composition and turnover. If a person has the opportunity to develop same-race ties within the work group, such personal attachments will likely increase commitment to stay and lower turnover. Yet if, in the search for same-race friends, a person must reach outside the group, such ties are likely to pull him or her away from the group. Popielarz and McPherson (1995) show that such processes operate among voluntary associations, and they suggest that it is an important source of the striking degree to which voluntary associations are demographically homogeneous (McPherson and Smith-Lovin 1987). "Group homogeneity results from the fact that members who are typical of the association stay in the group longer, while atypical members leave the group at a higher rate" (Popielarz and McPherson 1995, p. 699). Although friendship is likely a more important determinant of group attachment in voluntary associations than in work groups, personal networks play an important role in work groups, both in affecting psychological satisfaction with the job and as conduits for information about new job opportunities that might lead to exit (Fernandez, Castilla, and Moore 2000).

In summary, whether the emphasis is on avoidance of people of a different race (as in social categorization theory) or on attraction to similar others (as in similarity/attraction theory), organizational demography research suggests that differences in turnover rates can be attributed to the racial composition of the group. The greater the same-race representation, the lower the turnover rate.

THE EFFECTS OF CHANGES IN RACIAL COMPOSITION

Movement toward workplace racial integration typically requires incremental changes in the composition of work groups. The existing research in organizational demography is however largely silent on the question of how changes in group composition affect attachment and turnover. This is to a large extent because prior studies rely on cross-sectional comparisons across work groups (Williams and O'Reilly 1998). It is tempting to draw conclusions about the consequences of compositional change from these cross-sectional comparisons, but this would be a mistake. Doing so would require making the strong assumption that there is no path dependence in the effects of racial composition. At least with respect to one demographic characteristic (team tenure), however, evidence suggests that there is path dependence in the effects of group demography, such

that people in identical groups behave differently if they have different demographic histories (Sørensen 2000).

The hazards of cross-sectional research result from the fact that groups with identical demographic distributions may have arrived at those distributions in any of a number of different ways. Figure 1 presents a hypothetical example contrasting three groups with six members each. The groups vary in their racial composition at the first time point but have the same composition at the second time point, at which point they are evenly divided between the two races. Consider the experience of the three individuals represented by the square in the lower-left-hand corner in each group. Assume that these people experience their group's demographic change between the first time point and the second; the person in group A experiences a decline in same-race representation, while the person in group C experiences an increase. A cross-sectional study at the second time point of the relationship between group composition and turnover would predict that these three individuals should, other things being equal, have the same likelihood of turnover, since the composition of the three groups is the same. Yet this assumes that the process of change has no direct effect on individual attachment and that it does not moderate the effect of group composition. If past histories are relevant but not measured, however, individual unobserved heterogeneity results. Any comparison of otherwise identical individuals across the three groups has to take into account the possibility that the process of demographic change may affect attachment above and beyond any cross-sectional effects of demographic composition (Sørensen 2000).

Further consideration of the example in figure 1 raises the interesting question of whether growth and decline in same-race representation have symmetric effects. Consider again the two identical individuals in group A and group C. If attachment is a positive function of same-race representation, then we would expect a higher level of attachment at the first time point for the person in group A, relative to the person in group C. However, the comparison at the second time point suggests that they should have the same level of attachment. In order to generate this result and still allow for path dependence, we would have to assume that the effect of a decline in same-race representation is the same as the effect of an increase. The person in group A becomes more unhappy (less attached) as same-race representation falls, and the person in group C becomes happier (more attached) as same-race representation increases. Existing theories of organizational demography appear to imply this symmetric pattern. Both social categorization theory and similarity/attraction suggest that attachment should be a positive function of same-race representation in the work group. While these theories do not articulate an explicit theory of the change process, it is reasonable to infer that this implies that in-
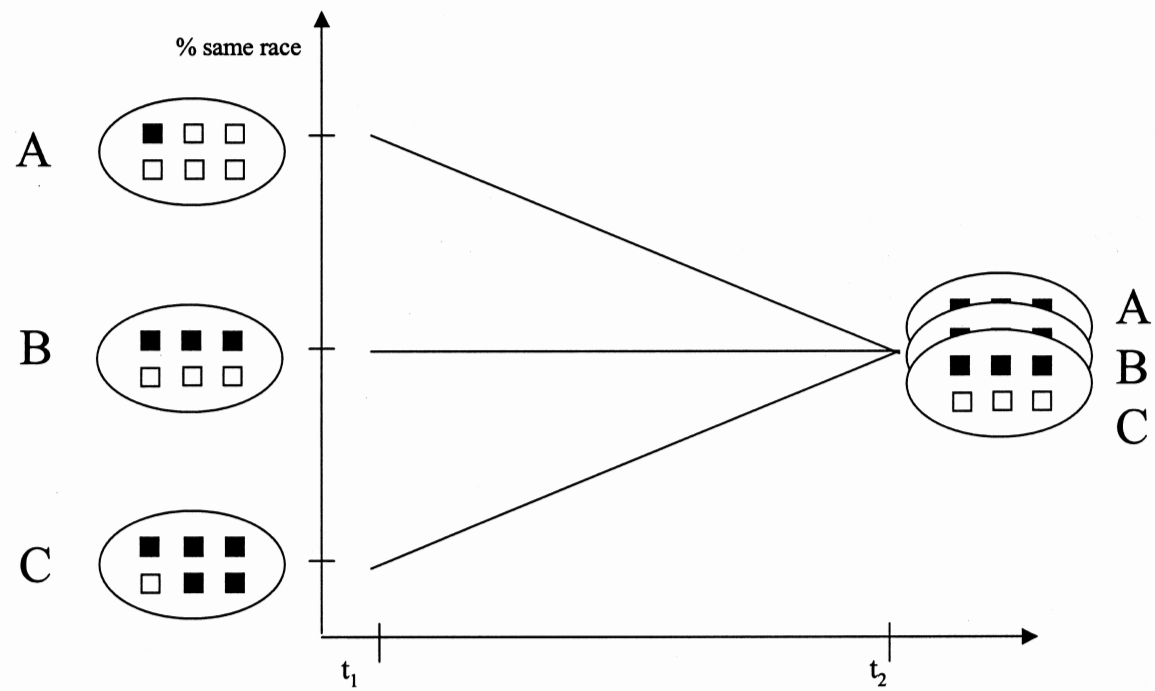
FIG. 1.—Hypothetical paths of change in group composition

creases in same-race representation should heighten attachment (and lower turnover), and decreases should lower attachment (and raise turnover).

It is not obviously true, however, that increases and decreases in same-race representation should have symmetric effects. An instructive alternative expectation about the effects of change comes from tipping models of neighborhood residential segregation. Tipping or threshold models (Schelling 1971; Granovetter 1978) center on a discontinuous function relating the racial composition of a neighborhood and a person's willingness to stay in the neighborhood.[5] People will stay in the neighborhood as long as same-race representation remains above a minimum tolerance level. But once same-race representation falls below the tolerance level, people exit. People considering moving into a neighborhood will only do so if the racial composition satisfies or exceeds their tolerance level.

Schelling's analysis of this model shows quite clearly that seemingly small differences in tolerance thresholds between the races can lead to high levels of segregation, even if most whites and blacks are willing to live in more integrated neighborhoods. A key result is that an integrated equilibrium is very difficult to achieve and very unstable. Small changes in neighborhood racial composition can lead to an accelerating process where the departure of members of one race leads to their replacement by members of another race, followed by the departure of additional people of the first race, and so on. Evidence suggests that differences in neighborhood preference do exist among the races (Farley et al. 1994) and that the racial differences in preferences even exceed those required to set in motion Schelling's tipping process (Clark 1991). Moreover, these racial preferences for same-race representation in neighborhoods are not limited to blacks and whites. In a study of whites, blacks, Hispanics, and Asians in Los Angeles, Clark (1992) found that all four racial groups exhibited in-group preferences in neighborhood composition.

One reason the Schelling model leads to high levels of segregation lies in its assumptions about the shape of individual preference functions. While the model assumes that there is a minimum level of same-race representation that must be met, there is no upper limit to the same-race representation that people will tolerate. In short, there are no preferences toward desegregation. The absence of an upper limit means that people are willing to live in a neighborhood that is fully segregated, even if they would have accepted a nonzero proportion of the other race. Consistent

[5] In Schelling's (1971) model of neighborhood racial segregation, people are assumed to have a maximum tolerance level with respect to the presence of another race. Since Schelling (and others) operates with a two-race model (whites and blacks), the threshold can also be cast as a minimum tolerance level with respect to same-race representation.

with this finding, in a study of Detroit respondents, Farley et al. (1994) found that the vast majority of whites and blacks were willing to move into a neighborhood composed almost exclusively of their own race.

Furthermore, notice that in the Schelling model, segregation results even though there is no assumed benefit to increases in same-race representation *above* the threshold. People will leave the neighborhood if same-race representation falls below the threshold, but there is no necessary assumption that their attachment to the neighborhood grows with increases above the threshold. The Schelling model therefore has interesting implications for our expectations surrounding the effects of changes in racial composition. First, as long as the threshold is met, increases in same-race representation may have no impact on willingness to stay. Second, declines in same-race representation are more likely to generate turnover, since only declines can lead to a failure to satisfy the threshold. Assume, for example, that people only join a workplace if the extent of same-race representation in the workplace meets or exceeds their minimally acceptable level. Further increases in same-race representation have no impact on the acceptability of the workplace: the threshold has already been met. Declines in same-race representation, however, may drive the proportion below the threshold and induce the employee to look elsewhere for work. This suggests the importance not only of examining the consequences of demographic change but, more important, of distinguishing between the effects of increases and decreases in same-race representation.

DATA AND METHODS

I examine the relationship between changes in group racial composition and turnover through a quantitative case study of multiple work groups in a single firm. The primary reason for studying a single firm is that studying the effects of compositional change requires over-time data on entire work groups. Short of doing a prospective study on a representative sample of organizations, this forces a reliance of archival data such as personnel records. Such data are difficult to assemble on a large scale. Instead, I exploit the richness of data that results from focusing on a single firm to explore a broader set of empirical processes than have been examined in past research (see Fernandez et al. [2000] and Petersen et al. [2000] for similar strategies). However, a drawback of this approach is that relying on evidence from a single firm limits the empirical generalizability of the results.

I analyze the job histories of a cohort of new hires into the retail branches of a large multidivisional financial services institution. Access to the data was provided on the condition that no identifying information

on the firm be revealed. The data come from annual personnel files provided by the company for the period January 1, 1996–May 31, 1999. These files cover all employees in the firm's U.S. operations, which are quite wide ranging. One of the advantages of personnel records is that they are quite comprehensive; they contain, for example, data on the exact timing of entry and exit of all employees from the company over the time period covered. However, there are also disadvantages associated with drawing on personnel records. One drawback is that I cannot measure employees' subjective assessments of their working conditions. This means that many of the variables identified in the sociological literature on voluntary turnover cannot be included in the models estimated below. Some of these variables, such as social support from colleagues, role conflict, organizational commitment, and job satisfaction, are conceptualized as intervening variables that mediate the relationship between group composition and turnover (Mueller et al. 1999). Their exclusion therefore does not bias estimates of the relationship between racial composition and turnover.

A second drawback of relying on personnel records is that it is difficult to measure many of the formal elements of job and organizational design that affect job satisfaction, commitment, and turnover. It is not clear that such variables should be seen as intervening between racial composition and turnover, so a failure to include such measures may introduce bias if they are correlated with racial composition. However, prior research provides no strong reasons to suspect that organizational design factors are correlated with racial composition. More important, the design of the sample effectively holds job and organizational design constant across workgroups, making it unlikely that the failure to measure these elements introduces bias. Because the work groups chosen for study are all part of the same firm and, more important, are all engaged in the same basic tasks, there is likely little variation in organizational practices across the branches studied.

The nature of the data set forces two (related) decisions: how to select work groups within the firm and which employees to study. In selecting work groups, we want to insure that there is the possibility of some minimal level of workplace interaction between the group's members, since organizational demography arguments presuppose social interaction between group members. In light of this, the firm's retail branches are an attractive research setting. The firm assigns each retail location a unique organizational code, ensuring that employees assigned the same branch code are physically colocated. The retail branches are modest in size (with a mean of approximately 12 full-time equivalent employees in the sampled branches) and are focused around a common set of tasks aimed at providing service to retail financial service customers.

The firm was founded well before 1996, so a second limitation of the personnel records is that the job histories of employees hired before 1996 are left-truncated; in particular, one cannot know the demographic composition of an employee's work group before the onset of the data. For this reason, I selected for analysis all employees hired into branches after January 1, 1996. New hires were only included if this was their first job at the firm. For these employees, I can measure the demographic composition of the workplace continuously from the time of entry into the firm until they leave the firm or the data is censored in mid-l999.

Only permanent hires were included for the turnover analysis; those hired for temporary assignments were excluded (but included in the calculation of compositional measures). These data selection rules resulted in a data set covering 1,673 employees from 263 distinct branches. Given that many of these people are hired into entry-level jobs in the firm, there is a fair amount of turnover, with the median time until exit being 31.6 months. I defined turnover as occurring when employees left the firm as a whole. In this company, employees could also transfer out of the retail branch into other parts of the firm; these spells were censored, as this type of turnover is less clearly a product of low attachment to the group. Furthermore, involuntary turnover events (such as when an employee was dismissed for misconduct) were treated as censored events; in other words, the analysis focuses on the determinants of voluntary turnover.

MEASURES

A distinct advantage of this data set is that it contains the demographic characteristics not only of the focal employees who are tracked from the time of hire, but also of all other employees at the branch, regardless of the date of hire. I can therefore continuously measure the demographic composition of the branches from the time a sampled employee is hired into the branch until the time of exit or censoring. The demographic variables are time-varying covariates that are updated every time someone joins or leaves a branch, including the departure of persons hired before 1996.

An important issue is the appropriate measurement of diversity. Many of the cross-sectional studies in organizational demography research use group-level diversity measures, such as Blau's index of heterogeneity or entropy-based measures. However, group-level measures are problematic in the study of compositional change when there are more than two racial groups, because they obscure the fact that changes in diversity can have different implications for different racial groups, depending on their initial representation and the nature of the changes in each racial group's rep-

resentation. When there are multiple racial groups present, group-level measures cannot capture changes in the central factor of interest, the opportunity for same-race contact. One response to this problem is to use an individual-level "relational diversity" measure that captures the extent to which a person is of a different race from the other employees in the branch. For example, Tsui, Egan, and O'Reilly (1992) use the square root of the mean Euclidean distance between the focal individual and all other team members. This measure has the desirable property that it varies within groups according to the race of the individual and responds in predictable ways to the level of same-race representation. Closer inspection of the relational diversity measure reveals, however, that in the case of race it reduces to the square root of the proportion of the branch employees who are of a different race than the focal employee.[6] Since there do not appear to be any strong reasons for assuming that this variable should assume this nonlinear functional form, I simply use a measure that is the proportion of the work group that is of the same race as the focal employee.

I control for a variety of individual and branch-level characteristics that might be related to turnover rates. The personnel records that were made available contain a limited number of individual characteristics, which are summarized in table 2. For each individual, I include dummy variables for sex and race. The firm's personnel records classify employees into five racial categories: white, black, Hispanic, Asian, and other. However, since there are so few employees in the "other" category, I have used a four-category race variable throughout by combining Asian and other. I also control for the year in which employees were hired and for (log) annual salary and scheduled hours worked. The latter two variables can vary from year to year. I experimented with controls for job category and age, but these had no statistically significant impact on turnover rates, or on the effects of other variables.

At the branch level, the primary controls are for geographic location, average scheduled hours of branch employees, and branch size. The firm's branches are located in six different urban areas in different regions of the United States. For confidentiality reasons, the exact geographic locations cannot be disclosed, so in presenting the results, I use uninformative labels to distinguish between regions. In interpreting the data and results one should keep in mind that the "regions" refer to metropolitan

[6] The relational diversity measure is defined as the square root of $[\sum (S_i - S_j)^2]/n$. Since racial categories are nominal, Tsui, Egan, and O'Reilly (1992) treat distance as binary, such that $(S_i - S_j) = 1$ if two people are of different races and 0 if they are of the same race. In that case, the numerator is simply the count of the number of people who are of the same race as person i.

TABLE 2
DESCRIPTIVE STATISTICS FOR SAMPLED EMPLOYEES AT
TIME OF ENTRY

	Mean	SD
Male	.343	.475
Black	.201	.401
Hispanic	.216	.411
Asian and other	.188	.391
Log salary	10.004	.458
Scheduled hours	34.079	7.380
Age	29.170	8.231
Branch manager	.013	.111
Personal/business banker	.301	.459
Teller	.540	.499
Other job titles	.146	.353

areas. I also include dummy variables in the statistical models to control for geographic differences in baseline turnover rates. Branches vary in the extent to which employees work part-time, so I control for the average number of scheduled hours. Branch size is measured in terms of the number of full-time equivalent employees. This was computed by weighting each employee according to how many hours they were scheduled to work relative to a full-time schedule. If employees were scheduled to work 35 or more hours, this ratio was set to 1. Since branch size varies over time, I control for changes in branch size by first including a measure of branch size at the time of entry into the branch and then computing a change score for each subsequent time point, which is the difference between the current branch size and the size at the time of entry. Because the effects of increases and decreases in branch size may not be symmetric, I use a spline specification and estimate separate coefficients for increases in branch size (current employment is higher than at the time of entry) and decreases (current employment is lower).

All demographic measures are based on full-time equivalent employees. This means, for example, that a white person who works half-time is counted as half of a white person. The demographic measures should capture the opportunity for interaction with a fellow employee with a particular demographic characteristic. Lacking data on the actual work schedule of each employee, it seems appropriate to weight each co-worker by the probability of contact during any hour during a full work week.

METHODS

I analyze turnover rates using continuous-time event-history methods, since information on the exact dates of entry and exit from the branches is available. To account for duration dependence in the turnover rate, I use a piecewise constant specification (Blossfeld and Rohwer 1995). The piecewise constant model is a flexible specification that allows the baseline hazard rate to vary between specified intervals. After some experimentation, I settled on time pieces at 3, 6, 9, 12, 15, and 21 months. The estimates suggest that the turnover rate increases gradually over the first 15 months of employment and then stabilizes. To adjust for the fact that new employees are sampled from the same branches, I present robust standard errors that account for clustering by branch. (All models were also reestimated using Cox proportional hazard rate models, which led to the same pattern of results.)

RESULTS

Branch Segregation

Table 3 presents evidence on the racial composition of the branches in the firm studied compared to the racial composition of the local labor markets in which the branches are located. The data on branches in table 3 represent the average representation of each race across branches within a region. Thus the average branch in the region A is 43% white, 7% black, 14% Hispanic, and 36% Asian. The second row within each region presents the racial distribution of the closest matching census occupation, bank tellers, using county-level data from the 1990 census.[7] (A county is included if a branch is located in that county.) In general, table 3 suggests that this firm's racial distribution is fairly representative of its local labor market. There are slight differences within region, but they are not substantial and likely reflect aggregation issues and the uneven distribution of branches over counties.

The analysis of the MCSUI data in table 1, however, led to the suspicion that apparent integration at the firm level may conceal segregation across work groups. This appears to be the case here; the aggregate distribution of branch employees in a region conceals segregation across branches with region. Table 4 presents the same segregation indices as calculated in table 1, but now computed across branches within regions.[8] The generalized dissimilarity indices range between 0.41 and 0.63, while the Theil index

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[7] Almost 55% of the new hires are classified as tellers by the firm.
[8] This analysis is based on the composition of the branches at the first time a sampled employee enters the branch. Each branch only appears once.

TABLE 3

RACIAL DISTRIBUTIONS OF BRANCHES AND LOCAL LABOR MARKETS

Region	% White	% Black	% Hispanic	% Asian and Other	Total
A:					
Initial branch composition	43	7	14	36	100
Labor market	48	7	19	26	100
B:					
Initial branch composition	42	12	41	4	99
Labor market	47	15	36	2	100
C:					
Initial branch composition	72	7	15	6	100
Labor market	65	18	11	6	100
D:					
Initial branch composition	33	34	8	25	100
Labor market	40	36	10	14	100
E:					
Initial branch composition	56	20	18	6	100
Labor market	51	25	16	8	100
F:					
Initial branch composition	93	5	0	2	100
Labor market	85	8	4	3	100

NOTE.—*Initial branch composition* is the average proportion of each race across branches, computed the first time a new hire entered the branch. *Labor market* is the average proportion of each race in census occupation 383 ("bank tellers") in the counties in which the branches are located. Data are from the 1990 census.

ranges between 0.24 and 0.38. The bootstrapped standard errors suggest that the segregation indices are significantly greater than zero.[9] Given that the average branch size in this data is approximately 12 employees, segregation levels are lower than the corresponding levels for firms with less than 15 employees in the MCSUI data. Nonetheless, with an overall

[9] I also tested for segregation by cross-tabulating race and branch assignment (within region) and estimating log-linear models of the association between branch and race. In five of the six regions, this hypothesis was decisively rejected. The racial composition of branches varies significantly within almost all regions, excepting region F.

TABLE 4
Indexes of the Racial Segregation of Employees

Region	N Branches	Dissimilarity	Theil
A	59	.423	.252
		(.035)	(.031)
B	25	.588	.382
		(.048)	(.049)
C	34	.515	.307
		(.046)	(.048)
D	11	.412	.237
		(.050)	(.044)
E	121	.503	.307
		(.022)	(.022)
F	13	.633	.319
		(.114)	(.061)
Overall ...	263	.534	.363
		(.016)	(.018)

Note.—Both indexes have a theoretical maximum value of 1 (perfect segregation) and a theoretical minimum of 0 (no segregation). Indexes are computed according to Reardon and Firebaugh (2002). Nos. in parentheses are bootstrap SEs, based on 500 replications.

dissimilarity index of 0.53, racial segregation within this firm is substantial.[10]

Shifting from the characteristics of the branches to the characteristic of the individuals sampled, table 5 presents the racial distribution of new hires separately for each of the six regions studied. There is substantial heterogeneity across regions in hiring patterns: a cross-tabulation of region by race of new hire yields a highly significant Pearson χ^2 of 511, with 15 degrees of freedom. In three of the regions, the majority of hires are from one group, but in only one of these is the majority of new hires white. In the remaining regions, hiring is also concentrated, with two races accounting for almost 70% of new hires.

Figure 2 and table 6 present information on the demographic landscape that greets new employees in these branches at the time of hire. I start by considering the number of employees (including the new hire) who are the same race as the newcomer at the time of entry. Figure 2 graphs the frequency distribution of this variable for the four different races identified

[10] These data do not allow more detailed examination of the reasons for this segregation. It is possible, for example, that the branches match the segregation in their local labor markets, if those markets are measured at a more detailed level. In other words, segregation in the workplace may reflect the mapping of branches into segregated neighborhoods. However, Mouw (2002) estimated, using MCSUI data, that only 10% of the observed racial segregation across firms could be explained by residential segregation.

TABLE 5
Race Distribution of New Hires

	RACE OF NEW HIRE				
REGION	White	Black	Hispanic	Asian and Other	Total
A:					
N	125	30	55	174	384
%	33	8	14	45	100
B:					
N	38	24	99	6	167
%	23	14	59	4	100
C:					
N	147	38	59	37	281
%	52	14	21	13	100
D:					
N	19	27	4	17	67
%	28	40	6	25	100
E:					
N	272	214	143	78	707
%	38	30	20	11	100
F:					
N	61	3	1	3	68
%	90	4	1	4	99
Total:					
N ...	661	336	361	315	1,673
% ...	40	20	22	19	100

in the data (by definition, the value of this variable cannot fall below one). The distribution for whites is strikingly different than for the other races. If a new employee is white, it is very unlikely that he or she will be the only white person working at the branch. Only two whites (out of a total of 661 white hires) join a branch and find themselves the only white employees. The distributions are substantially more skewed for the three other races. For example, 14% of blacks join branches and find themselves the only black employee. Similar proportions of Hispanics (11%) and Asians (14%) have the same experience.

The modal experience is not racial isolation at entry, however. Table 6 contains data on the extent of same-race representation that greeted new employees, broken down by region. When a new white employee joins a branch, the average number of white employees (including herself) is 7.9; in other words, the new employee has close to seven full-time equivalent white colleagues. Overall, a new white employee joins a branch where 72% of the employees are white. Only in regions A and D do new white employees encounter workplaces where less than two-thirds of the branch
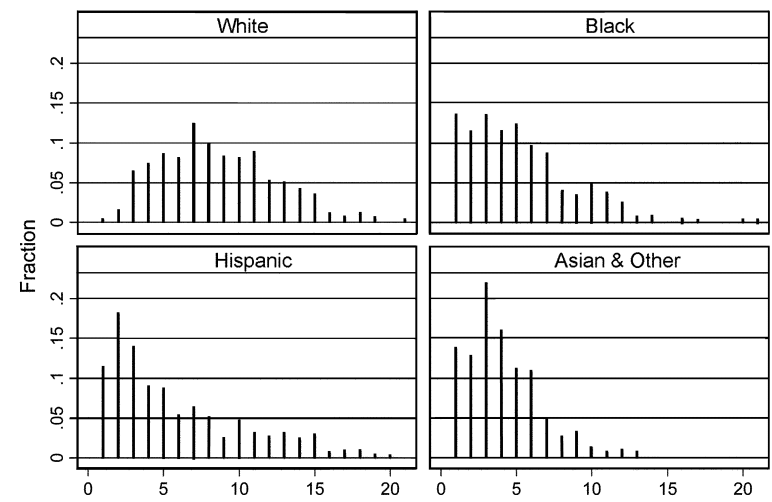
FIG. 2.—Number of same-race employees at time of hire, by race

TABLE 6
Racial Composition Effects during Tenure of New Employees

	Race of New Hire				Mean Branch Size
Region	White	Black	Hispanic	Asian and Other	
A:					
% same race at hire	54.5	25.7	27.0	53.2	
Mean change in % same race	−1.5	1.7	.7	2.0	8.9
B:					
% same race at hire	67.4	33.6	68.7	18.5	
Mean change in % same race	−6.2	3.0	.0	1.1	12.4
C:					
% same race at hire	77.7	25.4	37.5	20.8	
Mean change in % same race	−2.5	2.2	1.9	1.9	12.1
D:					
% same race at hire	49.5	50.3	24.2	34.8	
Mean change in % same race	−4.6	5.8	5.4	−1.5	8.8
E:					
% same race at hire	73.6	38.6	30.2	20.0	
Mean change in % same race	−1.4	.0	1.3	.3	13.0
F:					
% same race at hire	92.0	13.2	12.7	8.3	
Mean change in % same race	−1.7	1.9	2.1	−.5	10.7
Total:					
% same race at hire	71.6	36.4	41.4	39.1	
Mean change in % same race	−2.1	1.1	1.0	1.3	11.6

Note.—*% same race at hire* represents the percentage of full-time employees of the same race as the new employee (including the new employee) at the time of hire. *Mean change in % same race* represents the weighted mean change in percentage of full-time employees of the same race since the employee's time of entry; weights are the proportion of the employee's total duration that is spent at a given level of change in composition.

is white. It is very rare ($< 5\%$) for white employees to encounter workplaces where less than one-third of the workplace is white.

As would be expected given their representation among bank tellers as an occupation (table 3), the average experience of nonwhites upon entering a branch is to find their race in the minority. In only three (of 18 possible) cases do nonwhites on average find themselves entering a branch where their race is in the majority: Asians in region A are hired into branches with an average of 53% Asians; Hispanics in region B are hired into branches with an average of 69% Hispanics; and blacks in region D join branches that are half black on average. In all other cases, nonwhites enter branches where their own race is less than 40%. Yet the segregation across branches is apparent if we consider the fact that average same-race representation is generally higher than the corresponding represen-

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tation of the race in the labor market (table 3). Segregation is also apparent in the fact that, for example, in region B, both white and Hispanic new hires tend to enter branches that dominated by their own race (68% and 69%, respectively).

Table 6 also presents information on the average change in same-race representation experienced by the new employees in the sample during their tenures. The degree of same-race representation fluctuates during an employee's tenure as other employees enter and exit the branch. The average change scores were computed by calculating changes in same-race representation relative to the level of same-race representation at the time of hire, and weighting these changes by the proportion of the employee's tenure spent at each level of change. The most striking pattern in table 6 is the difference between the average experience of white hires compared to nonwhite hires. On average, the white hires studied experience a decline in same-race representation during their tenure. With only one exception (Asians in region D), nonwhites generally are exposed to increases in same-race representation. The magnitude of these changes is modest. Nonetheless, the racial composition of the branches is changing over the time period studied as the share of whites declines.[11]

Determinants of Turnover

I now turn to consider the impact of branch racial composition and demographic change on turnover rates. Table 7 contains a set of baseline models of the effects of the control variables and different measures of racial composition. The first model includes only control variables. There are no significant race differences in baseline turnover rates after controlling for other employee, job, and branch characteristics.[12] Turnover rates decline with salary, and increase with the proportion that works full-time. Change in branch size has asymmetric effects: net increases in branch size do not significantly impact turnover rates, but net declines do. In interpreting this coefficient, one must keep in mind that the spline

[11] Separate estimates of log-linear models suggest that the structure of racial segregation across branches does not change significantly over the time period studied, indicating that the pace of change is slow.

[12] Given the regional differences in racial composition present in the data, I tested for the presence of significant interaction effects between employee race and region. This generates a total of 20 interaction effects. The vast majority of these were not significant. The significant interactions corresponded to the few race-by-region combinations in table 7 where there are six or fewer employees. The inclusion of these interaction effects did not have a substantive effect on the conclusions of the models presented below. Since their inclusion is not substantively motivated, and complicates presentation considerably, I have omitted them from the estimated models.

TABLE 7
BASELINE PIECEWISE-CONSTANT HAZARD RATE MODELS OF THE EFFECTS OF BRANCH
RACIAL COMPOSITION ON TURNOVER

Variable	1	2	3	4
Tenure:				
0–3 months	−1.446	−.950	−1.168	−1.471
	(2.145)	(2.177)	(2.163)	(2.155)
3–6 months	−.693	−.197	−.416	−.719
	(2.120)	(2.154)	(2.138)	(2.127)
6–9 months	−.337	.160	−.059	−.364
	(2.139)	(2.172)	(2.157)	(2.147)
9–12 months	−.078	.418	.199	−.108
	(2.119)	(2.152)	(2.137)	(2.126)
12–15 months	.307	.801	.583	.277
	(2.133)	(2.166)	(2.151)	(2.140)
15–21 months	−.170	.324	.104	−.200
	(2.136)	(2.169)	(2.155)	(2.143)
21+ months	.074	.566	.348	.040
	(2.141)	(2.175)	(2.161)	(2.150)
Male	.108	.102	.102	.103
	(.098)	(.099)	(.099)	(.098)
Black	.219	.095	.099	.144
	(.137)	(.144)	(.144)	(.139)
Hispanic	−.175	−.295	−.290	−.237
	(.147)	(.153)	(.152)	(.148)
Asian and other	−.079	−.181	−.186	−.117
	(.146)	(.150)	(.152)	(.145)
Region:				
B	−.563**	−.492*	−.493*	−.472*
	(.210)	(.205)	(.204)	(.211)
C	−.338	−.332	−.337	−.281
	(.180)	(.179)	(.177)	(.187)
D	−.339	−.337	−.336	−.352
	(.279)	(.270)	(.271)	(.274)
E	−.252	−.239	−.247	−.208
	(.172)	(.171)	(.171)	(.175)
F	−.753**	−.657*	−.670*	−.581
	(.289)	(.298)	(.292)	(.317)
Year of hire:				
1997	.187	.188	.185	.187
	(.105)	(.105)	(.105)	(.104)
1998	−.081	−.088	−.089	−.097
	(.180)	(.179)	(.179)	(.181)
1999	−.202	−.201	−.205	−.234
	(.726)	(.726)	(.726)	(.726)
Log annual salary	−.580**	−.606**	−.608**	−.601**
	(.214)	(.215)	(.215)	(.213)
Scheduled hours	−.004	−.003	−.003	−.003
	(.013)	(.013)	(.013)	(.013)

TABLE 7 (*Continued*)

Variable	1	2	3	4
Branch mean scheduled hours	.064*	.064*	.065*	.065*
	(.027)	(.027)	(.027)	(.027)
Branch size at time of hire (N_0)	−.018	−.019	−.001	−.023
	(.017)	(.017)	(.019)	(.018)
Net change in branch size since hire:				
Negative ($[N_t − N_0]$ if $N_t < N_0$) ...	−.136**	−.141**	−.123**	−.142**
	(.034)	(.034)	(.035)	(.034)
Positive ($[N_t − N_0]$ if $N_t > N_0$)	.073*	.069*	.087**	.067*
	(.030)	(.031)	(.031)	(.031)
Proportion same race		−.417*		
		(.191)		
No. employees of same race			−.036*	
			(.016)	
Racial diversity ($1 − \sum p_i^2$)				.551*
				(.262)
Log likelihood	−1,158.9	−1,156.6	−1,156.5	−1,156.6

* $P < .05$, two-sided t-tests.
** $P < .01$.

variable measuring declines is strictly nonpositive; as the branch declines in size and moves further from the size at the time of entry, this variable declines. Multiplying the negative coefficient estimate by the negative values of the variable means that the further the current branch size is below the size at the time of entry, the higher the turnover rate.

The remaining models in table 7 investigate the impact of three different time-varying measures of racial composition: the proportion of employees who are the same race; the number of employees who are the same race; and, for comparison to previous research, the group-level racial diversity, measured using the Blau index of racial diversity.[13] In all three cases, the estimates suggest that employees have lower turnover rates to the extent that they work in groups where their race is well represented. Based on the estimates in model 3, a fellow co-worker of the same race lowers the turnover rate by approximately 4% ($\exp[−0.036] = 0.96$).[14] To get a sense of the implications of this for the different races, consider the differences in the average percentage employees of the same race in table 6. The estimates from model 2 imply that the group composition causes a 1.16

[13] With four racial categories, the Blau index ($1 − \sum p_i^2$) ranges between 0 and 0.75, with the maximum achieved when all races are equally represented.

[14] I tested for token effects (Kanter 1977) by including a dummy variable for individuals who were the only representative of their race at the time of hire. Tokens, as defined in this way, did not have significantly different turnover rates.

times higher turnover rate for the average black hire relative to the average white hire; the corresponding figures are 1.14 and 1.15 for Hispanics and Asians.[15] These figures are arrived at by considering the average across all regions. In some regions, the aggregate racial differences are substantially larger due to the more extensive segregation of the branches.

The models in table 7 consider the effects of contemporaneous racial diversity. However, the racial composition of the branches fluctuates over time in response to entry and exit by employees. Table 8 examines the effects of the departure and arrival of other employees on the focal employee's turnover rate, controlling for time-varying compositional effects and the control variables in table 7. The measures are the number of (full-time equivalent) employees who leave or join the branch at the beginning of a spell, by race. An interesting pattern emerges in these estimates. First, people are not equally sensitive to all departures. If a person of the same race leaves the branch (for employment elsewhere, or through a transfer to another part of the firm), the turnover rate of the focal employee increases. Departures by a person of a different race, on the other hand, have no impact on the focal employee's turnover rate.[16] Second, the estimates in the second model show that arrivals of new employees also have a differential impact on turnover, depending on the race of the new co-worker. Turnover rates increase if the new co-worker is of a different race than the focal employee, but the addition of a same-race co-worker has no effect. Finally, the third model in table 8 tests for the presence of interactions of these two effects with race. There do not appear to be any significant differences: all racial categories respond in the same way to the departure of someone of their own race, and to the arrival of people of a different race.

These effects are not easy to interpret directly, given that the models also control for the contemporaneous racial composition. To better understand the implications of these estimates, keep in mind that all the covariates of interest are measured on a time-varying basis. Compare two identical people in two otherwise identical branches, one of whom experiences a same-race departure at time t, and the other of whom does not. The model controls for the current (time t) percentage of employees

[15] The figures were calculated using the average percentage same race for new hires from table 5, and the coefficient estimate from model 2 in table 6. For the black/white comparison, e.g., $\exp(.36 \times -.417)/\exp(.72 \times -.417) = 1.16$.

[16] Readers have suggested that this result is consistent with the operation of network hiring processes, whereby those same-race colleagues who leave the work group recruit their former coworkers to their new place of employment. This presents an alternative to the attachment-based explanation offered here. However, the network hiring account does not appear able to account for the fact that turnover rates increase in response to the entry of new coworkers of a different race.

TABLE 8
Piecewise-Constant Hazard Rate Models of the Effects of Entry and Exit
by Other Employees on Turnover

Variable	1	2	3
Black	.115	.113	.071
	(.143)	(.143)	(.167)
Hispanic	−.296	−.290	−.283
	(.151)	(.153)	(.174)
Asian and other	−.165	−.162	−.143
	(.149)	(.150)	(.175)
Proportion same race	−.590**	−.439*	−.447*
	(.207)	(.215)	(.211)
Departures at start of spell:			
Same race	.152**	.147**	.136*
	(.049)	(.052)	(.064)
Different race	−.025	−.066	
	(.053)	(.061)	
Arrivals at start of spell:			
Same race		−.063	
		(.063)	
Different race		.136*	.085
		(.057)	(.109)
Black × same-race departures			.057
			(.138)
Hispanic × same-race departures			−.059
			(.100)
Asian and other × same-race departures			−.042
			(.201)
Black × different-race arrivals			.026
			(.127)
Hispanic × different-race arrivals ...			.033
			(.136)
Asian and other × different-race arrivals			−.004
			(.142)
Log likelihood	−1,151.9	−1,148.9	−1,149.7

Note.—All models include the full set of control variables included in the models in table 7.
* $P < .05$, two-sided t-tests.
** $P < .01$.

who are the same race as the focal employee. If these two groups have the same percentage of employees of a given race at time t and only one of the groups has experienced a same-race turnover event, it must be the case that the group that has experienced the turnover event has experienced a decline in the percentage of that race. In short, we are comparing groups A and B in figure 1. By a similar logic, the effect of different race arrivals reflects declines in same-race representation. This suggests that

these effects reflect the impact of decreases in same-race representation. By contrast, the events that imply increases in same-race representation—the departure of different-race coworkers and the arrival of same-race employees—do not have a significant effect on turnover rates. In short, the effects of increases and decreases are not symmetric.

The models in table 8 capture the effects of transitory events—specific arrivals to and departures from the branch. Over time, these events accumulate: the racial composition at any point in time after group founding is the product of differential entry and exit by the races. I explore the consequences of cumulative change in racial composition in table 9. To identify the effects of cumulative change, I separate the time-varying contemporaneous racial composition into three components: (1) a time-invariant measure of the racial composition at the time of hire, (2) a time-varying measure that is the difference between the current and initial composition if and only if the current percentage same-race is lower than the initial percentage and zero otherwise, and (3) a time-varying measure that is the difference between the current and initial composition if and only if the current percentage same-race is higher than the initial percentage, and zero otherwise. The latter two components amount to using a spline specification to separate the effects of cumulative changes that are negative from the effects of cumulative changes that are positive.

The estimates in table 9 provide further evidence that the effects of changes in racial composition depend on the direction of change. Several things are worth noting. First, initial conditions matter: turnover rates are lower if people are hired into branches where they are well represented. The effects are of similar magnitude to the effect of contemporaneous composition in table 7. Second, turnover increases in response to demographic changes that cause the same-race representation to fall below the level present at entry. For example, an employee who experiences a five percentage point cumulative decline in same-race representation has an expected turnover rate that is 1.08 times higher than if the racial composition had not changed. Increases in same-race representation, on the other hand, do not have a significant relationship with the turnover rate. Finally, this pattern of effects is shared by all four racial groups. The last three models in table 9 test for race interactions with the three components of change in racial composition; none of these models exhibit significant improvements in fit.

The asymmetric effects of increases and decreases in same-race representation observed in tables 8 and 9 are difficult to square with the standard theories of organizational demography. Both social categorization and similarity/attraction arguments suggest that more same-race representation is better, and less is worse. This appears to be true as a statement about *levels* (witness the effect on same-race representation at the

TABLE 9
PIECEWISE-CONSTANT HAZARD RATE MODELS OF THE EFFECTS OF CUMULATIVE CHANGES IN RACIAL COMPOSITION SINCE ENTRY ON TURNOVER

Variable	1	2	3	4
Black	.125	.238	.115	.155
	(.152)	(.349)	(.167)	(.165)
Hispanic	−.264	−.123	−.173	−.254
	(.159)	(.339)	(.167)	(.177)
Asian and other	−.140	−.038	−.116	−.257
	(.152)	(.364)	(.168)	(.175)
Same-race departures at start of spell	.121*	.123*	.122*	.119*
	(.051)	(.051)	(.051)	(.051)
Different-race arrivals at start of spell	.100*	.100*	.101*	.099
	(.051)	(.051)	(.052)	(.051)
Initial proportion of people of same race (P_0)	−.407*	−.271	−.396	−.434*
	(.207)	(.403)	(.206)	(.210)
Net change in proportion same race:				
Negative ($[P_t - P_0]$ if $P_t < P_0$)	−1.611*	−1.615*	−1.783*	−1.556*
	(.713)	(.712)	(.827)	(.709)
Positive ($[P_t - P_0]$ if $P_t > P_0$)	.532	.515	.466	.089
	(.937)	(.940)	(.944)	(1.558)
Black $\times$ P_0		−.189		
		(.558)		
Hispanic $\times$ P_0		−.270		
		(.577)		
Asian and other $\times$ P_0		−.164		
		(.659)		
Black $\times$ $(P_t - P_0)$ if $P_t < P_0$			−.621	

Hispanic × $(P_t - P_0)$ if $P_t < P_0$		(1.588)	2.714 (1.952)	
Asian and other × $(P_t - P_0)$ if $P_t < P_0$			.454 (2.023)	
Black × $(P_t - P_0)$ if $P_t > P_0$				-.660 (2.061)
Hispanic × $(P_t - P_0)$ if $P_t > P_0$				.275 (2.039)
Asian and other × $(P_t - P_0)$ if $P_t > P_0$				2.270 (1.917)
Log likelihood	-1,148.1	-1,148.0	-1,147.0	-1,146.2

NOTE.—All models include the full set of control variables included in the models in table 7.
* $P < .05$, two-sided t-tests.
** $P < .01$.

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time of entry), but incorrect as a statement about *change*. When it comes to change in same-race representation and attachment, the results suggest that less is worse, but more is neither better nor worse.

This pattern is consistent with, but not demonstrative of, the notion that turnover occurs when the racial composition of the group falls below some threshold level (Schelling 1971). The threshold explanation is difficult to test. While individual thresholds presumably vary in a number of idiosyncratic ways, they likely also have a systematic component due to common contextual factors. For example, the racial composition of the local labor market may serve as a standard against which the racial composition of the workplace is compared. If the local labor market helps to define the threshold, then a crude way to test the threshold story is to see whether turnover rates increase once the representation of a race falls below its representation in the local labor market. I present such a test in table 10, using the census data on the percentage of bank tellers of a given race in the county where a branch is located. The first model in table 10 simply includes a dummy variable for whether the employee's race constitutes a smaller proportion of the branch than it does of the local labor market. The second model interacts this dummy variable with the negative cumulative change variable from table 9. As is apparent, being below the threshold—as defined in this crude way—does not appear to have a significant effect on turnover. This does not rule out a threshold explanation, but does suggest that people are not simply comparing their branch to the local labor market average.

DISCUSSION

This article has used a unique data set to answer a simple empirical question: How do people respond to changes in the racial composition of their workplaces? As I have argued, the answer to this question is central to understanding the dynamics of racial employment segregation. The central finding is that the effects of group racial composition on turnover are path dependent. Groups have demographic histories, and these histories have consequences for individuals. This path dependence is not anticipated by standard explanations in the literature on organizational demography. Social categorization theory and similarity/attraction or homophily theories imply that attachment should increase among workers who experience increases in same-race representation. This does not appear to be the case. Turnover does respond to declines in same-race representation, however, suggesting that employees are more sensitive to losses. Phrased more starkly, things can only get worse: changes in same-race representation can only lead to declines in attachment.

TABLE 10
PIECEWISE-CONSTANT HAZARD RATE MODELS OF THE EFFECT OF BRANCH RACIAL
COMPOSITION RELATIVE TO THE LOCAL LABOR MARKET

Variable	1	2
Black	.075	.068
	(.155)	(.154)
Hispanic	−.326	−.328*
	(.167)	(.167)
Asian and other	−.211	−.209
	(.161)	(.160)
Same-race departures at start of spell	.126*	.124*
	(.051)	(.051)
Different-race arrivals at start of spell	.099	.094
	(.051)	(.051)
Initial proportion of people of same race		
(P_0)	−.536*	−.538*
	(.231)	(.232)
Net change in proportion same race:		
Negative ($[P_t − P_0]$ if $P_t < P_0$)	−1.862*	−2.776*
	(.742)	(1.172)
Positive ($[P_t − P_0]$ if $P_t > P_0$)	.386	.570
	(.966)	(.974)
Branch same-race proportion is below		
market proportion	−.148	−.067
	(.124)	(.137)
Branch below × $(P_t − P_0)$ if $P_t < P_0$		1.390
		(1.247)
Log likelihood	−1,147.4	−1,146.7

NOTE.—All models include the full set of control variables included in the models in table 7.
* $P < .05$, two-sided t-tests.
** $P < .01$.

The sociological mechanisms generating this asymmetric pattern of path dependence are less clear, however. One concern is that since the estimates are based on data from a single firm, these results may be an idiosyncratic feature of the firm studied. Ultimately, the generality of these findings can only be established through further research. However, the recruitment and personnel policies of this firm appear representative of the practices of large U.S. corporations. The firm has a well-developed, formalized human resources function and has long been subject to the reporting requirements of the EEOC. One might suspect that a firm willing to share its personnel records would do so because it had undertaken particular initiatives (e.g., relating to workplace integration) and wished to assess their performance. However, there were, to my knowledge, no specific initiatives undertaken by the firm during the study period designed to change the racial composition of the branches studied here. Moreover, I

secured the personnel data through a broader initiative by the firm designed to allow a wide range of social science researchers relatively unfettered access to all of the company's operations.

The observed pattern of path dependence is consistent with the behavioral assumptions underlying threshold models of neighborhood segregation (Schelling 1971). The lack of evidence for the threshold account in table 10 may simply reflect the crude nature of the test. It seems likely that thresholds vary across individuals, for a variety of reasons, such as previous interracial contact, personality traits, and ideology. Ideally, one would measure attitudes about the racial composition of the workplace, much in the style of the tests of neighborhood preferences by Farley et al. (1994) and Clark (1991). This would be difficult, however, since one would ideally collect these measures prior to entry into the workplace, and then follow people forward in time to measure their group attachment or turnover. Nonetheless, studies of neighborhood preferences suggest that people have preferences about "what kind of neighborhood" they want to live in, independent of any knowledge of the identities of the people living there. Future research should examine whether the same is true of workplaces.

A somewhat different explanation for the asymmetric effects of losses and gains in same-race representation can be derived from the psychology of decision making. Voluntary turnover reflects a decision-making process in which the employee assigns a value to the current job relative to an alternative. If we assume that the racial composition of the workplace affects the value assigned to the job (e.g., through the positive affect created by friendship with coworkers), then changes in composition can influence this valuation. Standard models of rational decision making would suggest that prospective losses and gains in value should weigh equally in decisions. However, robust empirical evidence suggests that decision makers are much more sensitive to losses than to gains (Tversky and Kahneman 1991). Kahneman, Knetsch, and Thaler (1990) found that the losses in utility associated with giving up a valued good outweighed the perceived benefits of receiving the same good. As in the case of tipping theories of segregation, loss aversion suggests that turnover will increase in response to declines in same-race representation but be less sensitive to increases. This type of explanation is consistent with existing explanations of demographic effects such as similarity/attraction theory, in the sense that those theories need only be modified to specify a different functional relationship between changes in composition and attachment.

The apparent path dependence of the relationship between group racial composition and turnover has a number of substantive and methodological ramifications. Substantively, two implications stand out. First, the empirical results suggest the presence of an imprinting effect whereby the

level of same-race representation at the time of entry has a lasting and consequential impact on attachment. As a consequence, entry cohorts become a salient source of differentiation between group members. Research in organizational socialization (Wanous 1992) suggests that the period immediately following organizational entry plays a critical role in defining an employee's relationship to the organization and his or her coworkers. This may be particularly true for people who join workplaces where they are a racial minority. Kanter's (1977) work suggests that (numerical) minorities in demographically skewed groups come to occupy tightly circumscribed roles due to the behavioral and normative expectations of the majority group. The visibility of the token (or near-token) status increases the social pressure experienced by its occupants. The results presented here suggest that the problems encountered by tokens are not solved by simply increasing their representation in the group; people may continue to feel like tokens well after representation has improved. Subsequent hires from the underrepresented group may lead to increases in that group's average attachment, but the mechanism behind this change is a cohort-replacement process, not an increase in the attachment of the tokens.

Second, the sensitivity of employees to declines in same-race representation point to a basic obstacle in trying to remedy workplace segregation through hiring. Consider the simple example of group 1 in table 11. Here I have computed the average effect of same-race representation on the turnover rate in a hypothetical group with 12 members and (for simplicity) two races.[17] In the first period, the group consists of 10 whites and 2 blacks. In this situation, the predicted turnover rates for blacks would, ceteris paribus, be 1.31 times the turnover rate for whites. Now imagine that the employer is proactive and tries to change workplace composition by hiring members of the underrepresented race. In the second period, this results in a decline in the number of whites and a corresponding increase in the number of blacks. The remaining whites experience this as a decline in representation, so the multiplier of the turnover rate due to compositional effects increases. The average turnover rate for blacks changes only slightly, because the original cohort retains the same multiplier while the new black employee has a lower multiplier than the original cohort. The impact of path dependence is revealed in the estimates for the third period. Here I assume that—despite the employer's good intentions—one of the original black employees has departed and been replaced by a white. In this situation, the multiplier of the turnover rate for whites reverts to its original level. The average multiplier for the two

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[17] I use the estimated parameters from model 1 in table 9. One should treat these estimates with caution since they derive from a case study of a single firm.

TABLE 11
IMPLICATIONS OF HYPOTHETICAL PATHS OF CHANGE IN GROUP COMPOSITION FOR
MULTIPLIERS OF THE TURNOVER RATE

| | WHITES | | BLACKS | | |
| | | | | | |
PERIOD	N	Mean Multiplier	N	Mean Multiplier	MULTIPLIER RATIO
Group 1:					
1	10	.71	2	.93	1.31
2	9	.81	3	.92	1.14
3	10	.71	2	.98	1.38
Group 2:					
1	7	.79	5	.89	1.13
2	6	.90	6	.89	.99
3	5	1.03	7	.83	.81

NOTE.—"Mean multiplier" refers to the multiplicative effect on the hazard rate due to the effects of group racial composition. It is computed by considering the effects of cumulative changes in group composition based on parameter estimates in table 9, model 1. In time periods 2 and 3, multipliers are computed separately for different entry cohorts and averaged within racial groups. For simplicity, the effects of transitory changes in group composition (e.g., departures by same-race colleagues) are ignored.

blacks in the group, however, increases. This results from the fact that the black hired in the second period has now experienced a decline in same-race representation and the fact that the magnitude of the coefficient for declines in same-race representation is substantially larger than the coefficient for the effect of initial same-race representation. As a consequence, if one looks at the relative turnover rates of blacks and whites in the final column, the disparity is greater in the third period than it was in the first. This suggests that gains in the representation of a single race can be very fragile.

The second group in table 11 illustrates the consequences of seemingly small fluctuations around equal representation. In this example, we move from a group dominated slightly by one group in the first period (seven whites, five blacks) to one dominated slightly by the other group in the third period (five whites, seven blacks). In small groups, where turnover by one individual can have a substantial impact on the proportional representation of different races, such fluctuations can be difficult to avoid. As a result of these changes, whites experience an increase in the multiplier of the turnover rate, from 0.79 to 1.03, while the multiplier for blacks declines more modestly. As a result, the black/white ratio in predicted turnover rates (other things being equal) shifts from 1.13 to 0.81: blacks are now substantially less likely to leave than whites. Moreover, the path dependence of the process is apparent in a comparison of whites in the third period and blacks in the first period. Despite the fact that the two races both account for five of the 12 group members in the respective

periods, the multiplier of the turnover rate is substantially higher for whites in the third period relative to the multiplier for blacks in the first period. Depending on the subsequent pattern of hiring, this example suggests that a condition of near integration may "tip" and lead to segregation. Integration is very fragile as well.

The results of this study also have several implications for the design of future research. First, studies of the effects of group composition on turnover (and other individual and group outcomes) must examine the effects of demographic change explicitly and not rely on cross-sectional comparisons across groups. As exemplified by the hypothetical groups in figure 1, groups with the same composition at a point in time may have very different dynamics because they have reached that point in different ways. The path-dependent character of the effects of group composition means that the implicit Markov assumption of cross-sectional research must be rejected: past states are not irrelevant (Sørensen 2000). This is apparent from the examples in table 11. Models that rely only on cross-sectional comparisons will likely suffer from unobserved heterogeneity, because an individual's attachment to the group depends not only on the contemporaneous composition of the group but also on how the current make-up compares to the conditions at the time of organizational entry.

For students of racial employment segregation, an important methodological implication of this study is the need to study segregation processes at the work group level. This is true both in terms of attempts to understand the processes that generate segregation and in terms of trying to estimate the degree of racial segregation. Many of the post-hire processes that generate differential turnover rates depend on the dynamics of social interaction in the workplace. In some cases, workplace interaction may primarily take place between people who share the same job title, but in a large number of work environments people with different job titles interact on a regular basis. Work groups are therefore in many cases the most suitable unit of observation for studies of post-hire dynamics. Furthermore, attempts to measure the extent of racial employment segregation must be sensitive to the aggregation issues created by using employers or firms as the unit of analysis. The observed degree of racial employment segregation appears to attenuate as the size of the workplace increases, as evidenced by the figures in table 1. However, large firms that appear to have relatively low levels of segregation at the firm level may be more segregated at the work group level within firms. Thus the racial composition of the firm studied in this article appears at first glance to reflect the local labor market well, but closer inspection revealed substantial segregation across workplaces. Since large firms account for a large share of employment in the U.S. labor market, firm-level segregation

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measures may underestimate the extent to which different races are segregated from each other in their daily work environments.

CONCLUSION

I have argued that racial employment segregation should be understood as the outcome of demographic processes within organizations, and that a richer understanding of the causes of racial segregation across workplaces can be achieved through attention to the post-hire processes that generate differential turnover rates. Almost four decades after the passage of legislation designed to end employment discrimination, the racial segregation of employment remains a persistent source of inequality in the U.S. labor market. In trying to understand this phenomenon, labor market sociologists have focused primarily on the processes that match workers and jobs, in particular the actions taken by employers at the point of hire. This stream of research has shed great light on the subtle and indirect ways in which various hiring methods and criteria lead to unequal employment opportunities for different races. Yet a strong emphasis on the hiring process also has its costs, as it deflects attention from the impact of post-hire processes that generate turnover. The racial composition of a workplace at a particular moment is the outcome of a history of flows across the organizational boundary as workers of different races join and leave the organization at varying rates. Studies of hiring must therefore be complemented by studies of turnover, and these studies must be sensitive to the histories of demographic change in organizations. Similarly, employers wishing to achieve and maintain integrated workplaces could benefit from focusing on managing the turnover process. Many of the drivers of voluntary turnover are employees' subjective assessments of the quality of their work environment, such as social support from colleagues, which derive in large part from the dynamics of interaction with coworkers (Mueller et al. 1999). This suggests that employers can try to manage the turnover process by endeavoring to create supportive work environments.

While those interested in remedying workplace segregation need to look beyond hiring to consider the drivers of turnover, they should not overlook hiring. Hiring and turnover are interdependent. Hiring decisions play a crucial role not simply because they change the composition of the inflow of employees, but also because they affect the outflow. Turnover increases in response to declines in same-race representation, which come about through the hiring of someone of a different race than the employee who departed. In the top panel of table 11, for example, progress in one period, in terms of increasing the representation of an underrepresented group,

is undone by the hiring decision in the next period. This interdependence between hiring and turnover is a source of the fragility of integration, which suggests that hiring needs to be thought of in terms of its potential impact on turnover rates.

The complicated nature of these dynamics suggests that employers have limited control over the demographic composition of the workplace. Even organizations that are explicitly committed to integration may encounter great difficulty in achieving racial balance (Stinchcombe, McDill, and Walker 1968). Success in managing the informal structure of organizations is often elusive. The parallels to the integration of schools are instructive, if not heartening. While policy makers have made substantial—if incomplete—progress in integrating public schools, the formal integration of schools often obscures a high degree of informal segregation of friendship networks within schools (Hallinan and Williams 1989; Moody 2001). The fact that differential turnover rates are a function of ongoing social processes in the workplace complicates the task of achieving integration considerably. It suggests that there may be limits to the ability of employers to manage these processes, and that successful integration will require the development of new approaches to managing workplace dynamics.

REFERENCES

Aigner, Dennis J., and Glen G. Cain. 1977. "Statistical Theories of Discrimination in Labor Markets." *Industrial and Labor Relations Review* 30:175–87.

Barnett, William P., James N. Baron, and Toby E. Stuart. 2000. "Avenues of Attainment: Occupational Demography and Organizational Careers in the California Civil Service." *American Journal of Sociology* 106:88–104.

Baron, James N., and William T. Bielby. 1980. "Bringing the Firms Back In: Stratification, Segmentation, and the Organization of Work." *American Sociological Review* 45:737–65.

Baron, James N., and Andrew E. Newman. 1989. "Pay the Man: Effects of Demographic Composition on Prescribed Wage Rates in the California Civil Service." Pp. 107–30 in *Pay Equity: Empirical Inquiries*, edited by Robert T. Michael, Heidi I. Hartmann, and Brigid O'Farrell. Washington, D.C.: National Academy Press.

Bayard, Kimberly, Judith Hellerstein, David Neumark, and Kenneth Troske. 1999. "Why Are Racial and Ethnic Wage Gaps Larger for Men Than for Women? Exploring the Role of Segregation Using the New Worker-Establishment Characteristics Database." Pp. 175–203 in *The Creation and Analysis of Employer-Employee Matched Data*, edited by John C. Haltiwanger et al. Amsterdam: Elsevier Science.

Becker, Henry Jay. 1980. "Racial Segregation among Places of Employment." *Social Forces* 58:761–76.

Berscheid, Ellen, and Elaine Hatfield Walster. 1978. *Interpersonal Attraction*. Reading, Mass.: Addison-Wesley.

Bielby, William T., and James N. Baron. 1986. "Men and Women at Work: Sex Segregation and Statistical Discrimination." *American Journal of Sociology* 91: 759–99.

Blau, Peter M. 1977. *Inequality and Heterogeneity*. New York: Free Press.

Blossfeld, Hans-Peter, and Götz Rohwer. 1995. *Techniques of Event History Modeling: New Approaches to Causal Analysis*. Mahwah, N.J.: Lawrence Erlbaum Associates.

Carrington, William J., and Kenneth R. Troske. 1998. "Interfirm Segregation and the Black/White Wage Gap." *Journal of Labor Economics* 16:231–60.

Clark, W. A. V. 1991. "Residential Preferences and Neighborhood Racial Segregation: A Test of the Schelling Segregation Model." *Demography* 28:1–19.

———. 1992. "Residential Preferences and Residential Choices in a Multiethnic Context." *Demography* 29:451–66.

Crowder, Kyle. 2000. "The Racial Context of White Mobility: An Individual-Level Assessment of the White Flight Hypothesis." *Social Science Research* 29:223–57.

Farkas, George, and Keven Vicknair. 1996. "Appropriate Tests of Racial Wage Discrimination Require Controls for Cognitive Skill." *American Sociological Review* 61:557–60.

Farley, Reynolds, Charlotte Steeh, Maria Krysan, Tara Jackson, and Keith Reeves. 1994. "Stereotypes and Segregation: Neighborhoods in the Detroit Area." *American Journal of Sociology* 100:750–80.

Fernandez, Roberto M., Emilio J. Castilla, and Paul Moore. 2000. "Social Capital at Work: Networks and Employment at a Phone Center." *American Journal of Sociology* 105:1288.

Fernandez, Roberto M., and Isabel Fernandez-Mateo. 2003. "Networks, Race and Hiring." Manuscript. MIT, Sloan School of Management.

Fernandez, Roberto M., and Lourdes Sosa. 2003. "Gendering the Job: Networks and Recruitment at a Call Center." Manuscript. MIT, Sloan School of Management.

Flynn, Frank J., Jennifer A. Chatman, and Sandra E. Spataro. 2001. "Getting to Know You: The Influence of Personality on Impressions and Performance of Demographically Different People in Organizations." *Administrative Science Quarterly* 46:414–42.

Fossett, Mark A., Omer R. Galle, and William R. Kelly. 1986. "Racial Occupational Inequality, 1940–1980: National and Regional Trends." *American Sociological Review* 51:421–29.

Granovetter, Mark. 1978. "Threshold Models of Collective Behavior." *American Journal of Sociology* 83:1420–43.

———. 1995. *Getting a Job*, 2d ed. Chicago: University of Chicago Press.

Hallinan, Maureen T., and Richard A. Williams. 1989. "Interracial Friendship Choices in Secondary Schools." *American Sociological Review* 54:67–78.

Holzer, Harry J. 1991. "The Spatial Mismatch Hypothesis: What Has the Evidence Shown?" *Urban Studies* 28:105–22.

Holzer, Harry, Joleen Kirschenman, Philip Moss, and Chris Tilly. 2000. *Multi-City Study of Urban Inequality, 1992–1994*. [Computer file. 2d ICPSR version. Mathematica (Atlanta), University of Massachusetts (Boston), Survey Research Laboratory/University of Michigan, Detroit Area Study and Institute for Social Research (Ann Arbor), Survey Research Center, University of California, Survey Research Program (Los Angeles) producers, 1998. Inter-university Consortium for Political and Social Research, distributor.

Huselid, Mark A. 1995. "The Impact of Human Resources Management Practices on Turnover, Productivity and Corporate Financial Performance." *Academy of Management Journal* 38:635–72.

Ibarra, Herminia. 1995. "Race, Opportunity, and Diversity of Social Circles in Managerial Networks." *Academy of Management Journal* 38:673–703.

Kahneman, Daniel, Jack L. Knetsch, and Richard Thaler. 1990. "Experimental Tests of the Endowment Effect and the Coase Theorem." *Journal of Political Economy* 48:1325–48.

Kanter, Rosabeth M. 1977. *Men and Women of the Corporation*. New York: Basic Books.

Kaufman, Robert L. 1986. "The Impact of Industrial and Occupational Structure on Black-White Employment Allocation." *American Sociological Review* 51:310–23.

———. 2002. "Assessing Alternative Perspectives on Race and Sex Employment Segregation." *American Sociological Review* 67:547–72.

King, Mary C. 1992. "Occupational Segregation by Race and Sex, 1940–1988." *Monthly Labor Review* 115:30–37.

Lazarsfeld, Paul F., and Robert K. Merton. 1954. "Friendship as a Social Process: A Substantive and Methodological Analysis." In *Freedom and Control in Modern Society*, edited by M. Berger. New York: Van Nostrand.

Lieberson, Stanley. 1980. *A Piece of the Pie: Blacks and White Immigrants since 1980*. Berkeley and Los Angeles: University of California Press.

Lincoln, James R., and Arne L. Kalleberg. 1986. "Work Organization and Workforce Commitment: A Study of Plants and Employers in the U.S. and Japan." *American Sociological Review* 50:738–60.

Lincoln, James R., and Jon Miller. 1979. "Work and Friendship Ties in Organizations: A Comparative Analysis of Relational Networks." *Administrative Science Quarterly* 24:181–99.

Marsden, Peter V. 1987. "Core Discussion Networks of Americans." *American Sociological Review* 52:122–31.

Massey, Douglas S., and Nancy A. Denton. 1993. *American Apartheid: Segregation and the Making of the Underclass*. Cambridge, Mass.: Harvard University Press.

McPherson, J. Miller, and Lynn Smith-Lovin. 1987. "Homophily in Voluntary Organizations: Status Distance and the Composition of Face-to-Face Groups." *American Sociological Review* 52:370–79.

McPherson, J. Miller, Lynn Smith-Lovin, and James M. Cook. 2001. "Birds of a Feather: Homophily in Social Networks." *Annual Review of Sociology* 27:415–44.

Mittman, Brian S. 1992. "Theoretical and Methodological Issues in the Study of Organizational Demography and Demographic Change." *Research in the Sociology of Organizations* 10:3–53.

Moody, James. 2001. "Race, School Integration, and Friendship Segregation in America." *American Journal of Sociology* 107:679–716.

Moss, Phillip, and Chris Tilly. 2001. *Stories Employers Tell*. New York: Russell Sage.

Mouw, Ted. 2002. "Are Black Workers Missing the Connection? The Effect of Spatial Distance and Employee Referrals on Interfirm Racial Segregation." *Demography* 39: 507–28.

Mowday, Richard T., Lyman W. Porter, and Richard M. Steers. 1982. *Employee-Organization Linkages: The Psychology of Commitment, Absenteeism, and Turnover*. New York: Academic Press.

Mueller, Charles W., Ashley Finley, Roderick D. Iverson, and James L. Price. 1999. "The Effects of Group Racial Composition on Job Satisfaction, Organizational Commitment, and Career Commitment." *Work and Occupations* 26:187–219.

Neckerman, Kathryn M., and Joleen Kirschenman. 1991. "Hiring Strategies, Racial Bias, and Inner-City Workers: An Investigation of Employer's Hiring Decisions." *Social Problems* 38:433–47.

Pelled, Lisa H., Kathleen M. Eisenhardt, and Katherine R. Xin. 1999. "Exploring the Black Box: An Analysis of Work Group Diversity, Conflict, and Performance." *Administrative Science Quarterly* 44:1–28.

Petersen, Trond, and Laurie Morgan. 1995. "Separate and Unequal: Occupation-Establishment Segregation and the Gender Wage Gap." *American Journal of Sociology* 101:329–65.

Petersen, Trond, Ishak Saporta, and Marc-David Seidel. 2000. "Offering a Job: Meritocracy and Social Networks." *American Journal of Sociology* 106:763–816.

Pfeffer, Jeffrey. 1983. "Organizational Demography." Pp. 299–357 in *Research in Organizational Behavior*, vol. 5. Edited by L. L. Cummings and Barry M. Staw. Greenwich, Conn.: JAI Press.

Popielarz, Pamela A., and J. Miller McPherson. 1995. "On the Edge or In Between: Niche Position, Niche Overlap and the Duration of Voluntary Memberships." *American Journal of Sociology* 101:698–720.

Price, James L. 2001. "Reflections of the Determinants of Voluntary Turnover." *International Journal of Manpower* 22:600–624.

Price, James L., and Charles W. Mueller. 1981. "A Causal Model of Turnover for Nurses." *Academy of Management Journal* 24:543–65.

Reardon, Sean F., and Glenn Firebaugh. 2002. "Measures of Multigroup Segregation." *Sociological Methodology* 32:33–68.

Reskin, Barbara F. 1993. "Sex Segregation in the Workplace." *Annual Review of Sociology* 19:241–70.

Reskin, Barbara F., Debra B. McBrier, and Julie A. Kmec. 1999. "The Determinants and Consequences of Workplace Sex and Race Composition." *Annual Review of Sociology* 25:335–61.

Reskin, Barbara F., and Patricia A. Roos. 1990. *Job Queues, Gender Queues: Explaining Women's Inroads into Male Occupations*. Philadelphia: Temple University Press.

Schelling, Thomas. 1971. "Dynamic Models of Segregation." *Journal of Mathematical Sociology* 1:143–86.

Semyonov Moshe, Yitchak Haberfeld, Yinon Cohen, amd Noah Lewin-Epstein. 2000. "Racial Composition and Occupational Segregation and Inequality across American Cities." *Social Science Research* 29:175–87.

Shrum, Wesley, Neil H. Cheek, and Saundra M. Hunter. 1988. "Friendship in School: Gender and Racial Homophily." *Sociology of Education* 61:227–39.

Sorensen, Elaine. 1989. "Measuring the Effect of Occupational Sex and Race Composition on Earnings." Pp. 49–69 in *Pay Equity: Empirical Inquiries*, edited by Robert T. Michael, Heidi I. Hartmann, and Brigid O'Farrell. Washington, D.C.: National Academy Press.

Sørensen, Jesper B. 2000. "The Longitudinal Effect of Group Tenure Composition on Turnover." *American Sociological Review* 65:298–310.

Stinchcombe, Arthur L., Mary Sexton McDill, and Dollie R. Walker. 1968. "Demography of Organizations." *American Journal of Sociology* 74:221–29.

Tajfel, Henri. 1982. *Social Identity and Intergroup Relations*. Cambridge: Cambridge University Press.

Tajfel, Henri, and John C. Turner. 1986. "The Social Identity Theory of Intergroup Behavior." In *Psychology of Intergroup Relations*, edited by S. Worchel and W. G. Austin. Chicago: Nelson-Hall.

Tomaskovic-Devey, Donald. 1993. *Gender and Racial Inequality at Work*. Ithaca, N.Y.: ILR Press.

Tsui, Anne, Terri D. Egan, and Charles A. O'Reilly. 1992. "Being Different: Relational Demography and Organizational Attachment." *Administrative Science Quarterly* 37:549–79.

Turner, John C., Michael A. Hogg, Penelope J. Oakes, Stephen D. Reicher, and Margaret S. Wetherell. 1987. *Rediscovering the Social Group: A Self-Categorization Theory*. Oxford: Basil Blackwell.

Tversky, Amos, and Daniel Kahneman. 1991. "Loss Aversion in Riskless Choice: A Reference-Dependent Model." *Quarterly Journal of Economics* 106:1039–61.

U.S. Bureau of the Census. 2001. *Statistical Abstract of the United States*. Washington, D.C.: U.S. Bureau of Commerce.

Wanous, John P. 1992. *Organizational Entry: Recruitment, Selection, Orientation, and Socialization of Newcomers*. Reading, Mass.: Addison-Wesley.

Wharton, Amy S., Thomas Rotolo, and Sharon R. Bird. 2000. "Social Context at Work: A Multilevel Analysis of Job Satisfaction." *Sociological Forum* 15:65–90.

Williams, Katherine Y., and Charles A. O'Reilly III. 1998. "Demography and Diversity in Organizations: A Review of 40 Years of Research." *Research in Organizational Behavior* 20:77–140.