

# Documenting Desegregation: Segregation in American Workplaces by Race, Ethnicity, and Sex, 1966–2003

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*Title VII of the 1964 Civil Rights Act made employment discrimination and segregation on the basis of race, ethnicity, or sex illegal in the United States. Previous research based on analyses of aggregate national trends in occupational segregation suggests that sex and race/ethnic employment segregation has declined in the United States since the 1960s. We add to the existing knowledge base by documenting for the first time male–female, black–white, and Hispanic–white segregation trends using private sector workplace data. The general pattern is that segregation declined for all three categorical comparisons between 1966 and 1980, but after 1980 only sex segregation continued to decline markedly. We estimate regression-based decompositions in the time trends for workplace desegregation to determine whether the observed changes represent change in segregation behavior at the level of workplaces or merely changes in the sectoral and regional distribution of workplaces with stable industrial or local labor market practices. These decompositions suggest that, in addition to desegregation caused by changes in the composition of the population of Equal Employment Opportunity Commission monitored private sector firms, there has been real workplace-level desegregation since 1964.*

The Civil Rights Act of 1964 prohibited employers from discriminating against and segregating employees on the basis of sex, race,

or ethnicity. Our descriptive knowledge as to the effectiveness of this defining legislation is limited. All our systematic knowledge about national change in the employment opportunities of women and race/ethnic minorities comes from surveys of individuals that describe employment in terms of occupations detached from their workplace context, the presumed site of discrimination and the target of antidiscrimination legislation.

The analysis of segregation is important not only because segregation was specifically targeted by the Civil Rights Act and associated legislation, but also because it is associated with linked employment inequalities such as wages

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and promotions (Kmec 2003a; Petersen and Morgan 1995; Tomaskovic-Devey 1993) as well as with the cementing of status expectations and distinctions (Ridgeway 1997; Tilly 1998).

The occupation-based literature suggests that since 1964, both women and minorities have had increased access to a wider set of occupations, and that there have been declines in occupational segregation. Occupation-based estimates, however, cannot distinguish change in the distribution of employment across firms from change in the distribution of employment within firms. Observed declines in national occupational segregation may simply reflect a shifting of employment to industries, regions, or firms with lower initial levels of segregation. If this is the case, there may have been no change in the behavior of employers, only a new distribution of employers with stable segregation practices.

In addition, occupation-based analyses give the potentially misleading appearance that change in sex and race/ethnic segregation is a national phenomenon. Because employment segregation is essentially a workplace process, it is likely that segregation levels and trends may vary substantially across communities and types of workplaces.

In this article, we pursue two linked research questions. First, what are the trends in segregation when measured at the establishment level? Second, how much of these trends is produced by industrial and regional shifts in the composition of the economy, and how much is a function of changes in integration within workplaces?

Since 1966, the Equal Employment Opportunity Commission (EEOC) has collected yearly data on the sex by race/ethnic composition of private sector employment as part of federal efforts to monitor compliance with the Civil Rights Act and similar legislation. These data have rarely been available to the research community.<sup>1</sup> In this article, we summarize

trends in private sector workplace segregation and desegregation using EEO-1 reports available from 1966 to 2003.<sup>2</sup> These survey-based reports contain establishment information on sex and race/ethnic distributions across major occupational groups. These data are unique in their ability to answer basic demographic questions about the pace and social location of change in workplace segregation.

We begin with a review of what is already known demographically about desegregation of the workforce in the United States since 1964. We then use EEOC workplace data to describe national trends in male–female, black–white, and Hispanic–white employment segregation since 1966.

Next we disaggregate these trends by industrial sector and region. This disaggregation accomplishes two goals. First, it makes clear for the first time that the pace of equal opportunity advancement in the United States is highly uneven, and that some social locations show limited social progress since 1966. Second, it allows us to see demographically whether the progress toward increased occupational similarity by sex, race, and ethnicity that previous research documents occurred in actual workplaces.

Finally, we include a regression-based disaggregation of time trends in male–female, black–white, and Hispanic–white segregation. These models allow us to produce estimates of segregation trends within the workplace, controlling for change in the industrial structure and geographic shifts in economic activity since 1966.

There is a sustained literature on national trends in occupational sex segregation, less literature on trends in black–white occupational segregation, and almost no literature on Hispanic–white occupational segregation. At this point, we know very little about the spatial and industrial distribution of establishment segregation, and essentially nothing over time. In fact, although speculation abounds, we know very little at all about workplace segregation (see the review and this conclusion in Reskin,

<sup>1</sup> Before the year 2000, these data were used only occasionally by academics (Adams 1972; Becker 1980; Leonard 1984; Smith and Welch 1984). To achieve access to these data, the first author became an unpaid employee of the U.S. Equal Employment Opportunity Commission. We anticipate that these data will become a major resource for the academic community in the future.

<sup>2</sup> These represent all reports from all years since 1966 that currently are available in machine-readable form at the EEOC. Data are missing for the years 1967–1970, 1974, and 1976–1977.

McBrier, and Kmec 1999).

### ***NATIONAL TRENDS IN OCCUPATIONAL SEGREGATION***

A comparison of multiple time series on sex segregation shows very little change between 1960 and 1970, a dramatic decline between 1970 and 1980, and little or no change between 1980 and 1990 (Baunach 2002; Carlson 1992; Jacobs 1989; Jacobsen 1994). Cotter, Hermsen, and Vanneman (2004) suggest a more nearly linear decline in occupational sex segregation from 1970 to 1990. Studies of national occupational sex segregation estimate about a 1 percent per year decline in occupational sex segregation between 1970 and the mid-1980s (Beller 1985; Jacobs 1989), with slower declines in the 1990s (Cotter et al. 2004; Jacobs 2001).<sup>3</sup>

There is much less research available on trends in race/ethnic segregation. King's (1992) time series on black-white occupational segregation is the longest. She estimates trends between 1940 and 1988 separately for men and women, showing that segregation increased for both between 1940 and 1960, then declined thereafter (see also Fossett, Galle, and Kelly 1986). For women, King estimates black-white occupational segregation declines from a very high base by 2.9 percent per year between 1960 and 1980. Among men, black-white occupational segregation declined from a lower base 1.5 percent per year between 1960 and 1980, flattening to a 0.6 percent decline per year between 1980 and 1988 (see also Carlson 1992).

Hispanic-white occupational segregation shows rapid declines of 1 percent per year for men and 2 percent per year for women across the 1970s, but is essentially flat across the 1980s and early 1990s (Catanzarite 2003).

The national trend data suggest that for all three forms of occupational segregation, the majority of the observed trend toward integration happened in the 1970s, during the peak period of regulatory enforcement (Bergmann 1996). For all three comparisons, integration

stalled or nearly stalled across the 1980s. Only for sex segregation do we have a time series that extends far into the 1990s, and it suggests some acceleration in desegregation during the 1990s, after the flat period of the 1980s.

### ***SECTORAL AND INDUSTRY SEGREGATION PATTERNS***

To our knowledge, no comprehensive studies have estimated trends in occupational sex or race/ethnic segregation by industry. Stearns and Coleman (1988) computed occupational segregation indices for 22 manufacturing industries in 1973 and 1982. Most industries display little or no change in sex segregation across the period, although a few show dramatic declines and a few small increases in segregation. This article suggests that there is considerable variation in sex segregation at the detailed industry level, and that trends in segregation may be industry specific.

A few studies have examined cross-sectional sectoral and industrial differences in occupational (Lorence 1992) and establishment (Cartwright and Edwards 2002; Petersen and Morgan 1995) sex segregation. These studies suggest that social services tend to be the most integrated, whereas personal services and wholesale trade are moderately segregated. Conflicting findings, however, are far more frequent. In the extractive sector, Lorence finds moderate segregation, whereas Cartwright and Edwards find high segregation. Cartwright and Edwards find durable manufacturing highly segregated and nondurable manufacturing only moderately segregated. Petersen and Morgan find both forms of manufacturing to be highly segregated. These three studies estimate producer services such as banking and insurance to be highly, moderately, or hardly sex segregated.

To our knowledge, Carrington and Troske (1998) provide the only race segregation industry estimates, yet their findings conflict depending on the dataset from which they draw. Durable manufacturing is highly segregated in a dataset of small firms, but moderately segregated in a sample of larger manufacturing firms. Nondurable manufacturing is exactly the opposite, showing more segregation in the large firm sample. These conflicting findings suggest variation in segregation within sectors, and possibly within industries.<sup>4</sup>

<sup>3</sup> Although the index of dissimilarity ( $D$ ) is computationally identical across studies, levels of  $D$  are strongly influenced by the number of categories available. Thus, we summarize trends in terms of percentage change in  $D$  rather than changes in absolute values.

Although little is known precisely about the levels or trends in industry-linked sex or race segregation, it is clear that the service sector industries have higher proportions of women among their employees (Goldin 1990). Charles and Grusky (2004) see the rise of the service industries as producing sex segregation through the cultural match between service provision and traditional female tasks (see also Hakim 2000). They argue that two fundamental tendencies exist in the creation of sex segregation. The first is a vertical dimension in which men tend to dominate the best jobs. The second is the horizontal sorting of women into nonmanual and service-oriented positions. Their argument is at odds with the literature reviewed earlier, which shows lower sex segregation in service-providing industries, but it is consistent with the higher representation of women in these industries. On a more theoretical level, because service industries tend to pay lower wages, previous researchers have expected that queuing (Reskin and Roos 1990) and social closure (Tomaskovic-Devey 1993) pressures may be lower in service industries, leading to both more female representation and lower segregation within these industries.

Finally, institutional organizational theory points to industries as developing normative expectations concerning both the division of labor and the sex composition of typical jobs. In this framework, industry as an institutional field is the normative source of segregation expectations among employers (Beggs 1995; Milkman 1987; Tomaskovic-Devey and Skaggs 1999).

#### **REGIONAL AND LABOR MARKET SEGREGATION PATTERNS**

Occupational sex and race segregation also vary across regions (Abrahamson and Sigelman 1987; Fossett et al. 1986; King 1992; McCall 2001). The South historically has been more racially segregated than the United States as a whole. Slavery, Jim Crow, and a late transformation from an agricultural to an industrial economy all may have caused the South to lag behind other regions in decreasing racial seg-

regation. Stainback, Robinson, and Tomaskovic-Devey (2005) argue, instead, that the relatively strong segregation decline in the U.S. South after the Civil Rights Act of 1964 reflects the earlier implementation of state-level EEO laws restricting racial discrimination in employment before 1964 in the non-South. Further disaggregation suggests that there also may be considerable variation in occupational sex and race segregation within regions (Abrahamson and Sigelman 1987; Cohen and Huffman 2003; Cotter et al. 1997; McCall 2001).

The literatures on trends in regional occupational segregation report the greatest decline in race segregation in non-South regions between 1960 and 1970 and in the South between 1970 and 1980 (Abrahamson and Sigelman 1987; Fossett et al. 1986; King 1992). Looking at changes in occupational sex segregation across cities, Lorence (1992) finds that growth in the service sector is associated with declines in occupational sex segregation. He also finds that variation in sex segregation across cities is strongly tied to variation in the industrial structure. Together, these findings suggest that some part of the observed declines in employment segregation may reflect change in industrial structure. They also suggest that regional differences in segregation may reflect differences in industrial structure rather than, or in addition to, place-specific cultural-historical differences in sex and race/ethnic relations. It is likely that regions may vary in their normative support for equal opportunity as well (Beggs 1995; Skaggs 2001).

Catanzarite (2000) points out that the uneven distribution of minority groups across geography means that the likelihood of occupations developing into ethnic-typed employment locations is place specific. She focuses on Los Angeles, partly because it has the Hispanic concentration necessary for the creation of "brown-collar" jobs. Catanzarite finds that the flow of Hispanic immigrants into Los Angeles during the 1980s led to increases in Hispanic-white occupational segregation.<sup>5</sup> This finding is in contrast to the flat national trend she documents elsewhere (Catanzarite 2003).

<sup>4</sup> *Sectors* refer to aggregations of similar industries, such as durable manufacturing, whereas *industry* refers to specific product groups such as airplane manufacture.

<sup>5</sup> See also Jacobs and Blair-Loy (1996) for a discussion of occupational segregation by race in local labor markets.

Catanzarite's research suggests that ethnic segregation should be more variable across regions than sex segregation, and that we might also expect the desegregation trajectory to vary across regions because of local factors such as ethnic immigration.

## STRENGTHS AND LIMITATIONS OF EEO-1 DATA

Baron and Bielby (1980) instructed us 25 years ago to bring the firm back into inequality research. Their point was powerful. Most stratification research ignored the organizational context in which inequality was produced and allocated. Their instruction, however, was underwhelming in its influence, precisely because so much social and economic data were and still are collected from individuals with little or no regard for organizational context. Quantitative data collection at the organizational level remains relatively rare, and almost none is longitudinal (Reskin et al. 1999; see Kmec 2003b and Robinson et al. 2005 for summaries of the strengths and weakness of extant and potential data collection strategies).

The EEO-1 reports we utilize document workplace-level segregation in the private sector since 1966. Coverage is currently limited to establishments in private sector firms with 50 or more employees if the firms are federal contractors and 100 or more employees if the firms are not federal contractors. Before 1983, separate reports were required for contractor firms with 25 or more employees and noncontractor firms with 50 or more employees. By the year 2003, more than 4.5 million establishment observations had accumulated, meaning plenty of data exist for disaggregating segregation levels and trends to the community and industry level.

For each reporting establishment, the EEO-1 data contain sex-specific employment counts for five racial/ethnic groups (black, Hispanic, Asian/Pacific Islander, Native American/Alaskan Native, and white) across the following nine occupational categories: officials and managers, professionals, technicians, sales workers, office and clerical workers, craft workers, operatives, laborers, and service workers.<sup>6</sup> This allows establishment-level estimates of occupational segregation by

sex/race/ethnicity as well as more focused models on access to specific occupational categories. Firms are instructed that employees do not include temporary or casual workers, but do include leased employees as well as both part-time and full-time employees.

The EEOC does not audit the accuracy of these reports, but does promise confidentiality. Robinson et al. (2005) discuss the strengths and limitations of the EEO-1 reports for segregation analyses such as those undertaken in this article. They conclude that the quality of these data is at least as high as that of U.S. Census or Current Population Survey-based sources or other organizational surveys.

Bielby and Baron (1984, 1986) demonstrate that job-level sex segregation within establishments is consistently higher than estimates based on the distribution of men and women across Census occupational categories. One of the important methodological results of both the occupation-based studies and the research of Bielby and Baron is that as the level of job or occupational detail increases, so does observed segregation. This has led to a consensus in the field that more detail in describing the employment context is always preferable to less. The fact that EEO-1 data describe actual workplaces is a large advantage compared to occupation based estimates.

The EEOC data allow us to look at occupations, but not job titles, within specific workplaces. The use of occupational measures in segregation analyses has been criticized because of the loss of detail relative to job titles (Bielby and Baron 1986; Tomaskovic-Devey 1993). Robinson et al. (2005) show that EEO-1 data underestimate the degree of segregation relative to job-within-establishment estimates, but produce similar rank ordering of industries and workplaces. It is clearly worth remembering that these data shed no light on within-occupa-

<sup>6</sup> A simpler set of ethnic distinctions is used in Hawaii. In the analyses that follow, we exclude establishments in that state. We also exclude establishments in Alaska because they are few and thus cannot be grouped into meaningful labor market areas. We do not analyze all ethnic distinctions because of space and the lack of prior literatures. Clearly, much more should and can be done with these data.



tion, within-establishment segregation. We still are underestimating actual segregation.<sup>7</sup>

It seems to us that measurement error in estimated segregation using these aggregate occupational categories is likely to be dependent on the degree to which the nine occupational categories mimic the actual division of labor in a firm. This match will be better for some industries than others. Robinson et al. (2005) show that the underestimates of job-level segregation in these data do not misrepresent covariance with firm size or sex/race composition, but are associated with industry. For these reasons, they conclude that these data are better for analyzing trends in segregation than for comparing cross-sectional levels, especially across industries.

In the regression models that follow, we adjust for divisions of labor-derived error in the use of occupational categories by controlling for observed occupational heterogeneity within establishments. Establishments with lower occupational heterogeneity also will have lower segregation because of likely greater dissimilarity between the EEO-1 occupational categories and the actual divisions of labor in the respondent workplace.

In addition, EEO-1 data are limited by the exclusion of small firms from reporting requirements. Bielby and Baron (1984) show that sex segregation tends to be higher in smaller workplaces. Tomaskovic-Devey and Skaggs (1999) show that the association of higher sex segregation with small establishment size is primarily a function of the higher random probability of segregation as size declines. In the regression models that follow, we control for establishment size. This also controls for the influence on segregation trends of size-linked changes in 1983 reporting. Thus, we can with fair confidence describe trends in workplace desegregation that occur net of size, industrial, and spatial reconfigurations of the sample.

## TRENDS IN WORKPLACE SEX AND RACE-ETHNIC SEGREGATION SINCE 1966

We use the index of dissimilarity ( $D$ ) as our primary tool for documenting U.S. employment desegregation since 1966. The value of  $D$  represents the percentage of people who would need to change jobs for equal representation of status groups in a workplace. Thus, it literally tells us how far this workplace is from an equal distribution by sex or race/ethnicity. Because  $D$  is computed at the establishment level and then summed across establishments, it is quite appropriate for trend analyses. The index of dissimilarity is computed across occupations within establishments as follows:

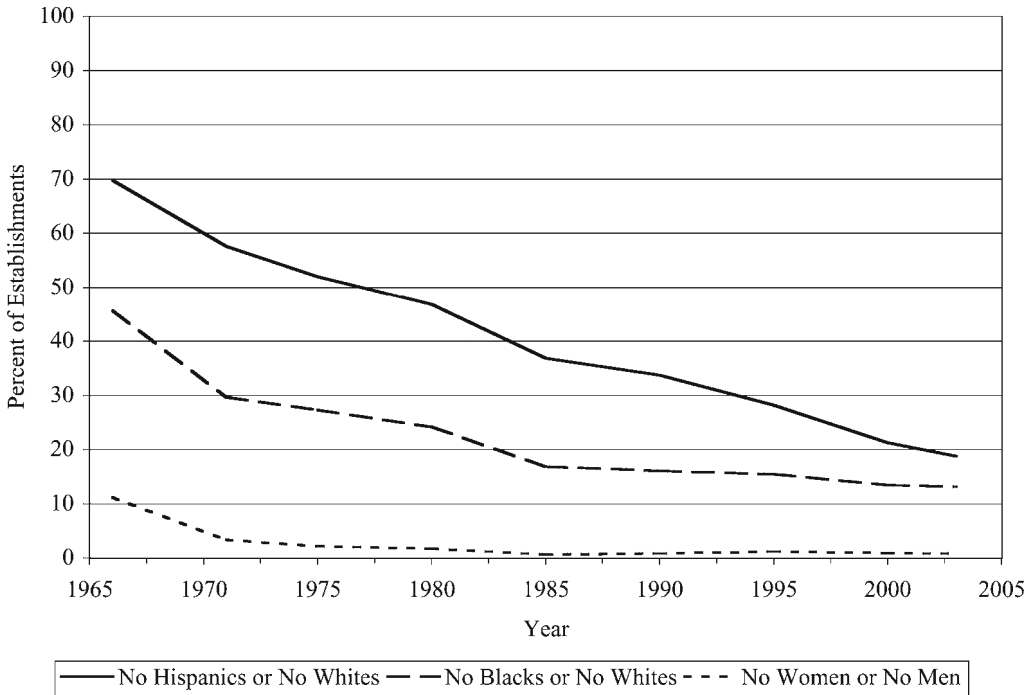
*Index of Dissimilarity ( $D$ ) =*

$$\left( \frac{1}{2} \sum_{oe=1}^{N_{oe}} |P_{oex} - P_{oey}| \right) \times (100), \quad (1)$$

where  $P_{oex}$  and  $P_{oey}$  are the proportions of group  $x$  and  $y$ , respectively, within an occupation in an establishment.

The index of dissimilarity and most other summary measures of segregation have been criticized for being margin dependent (Charles and Grusky 2004; Grusky and Charles 1998). That is, the level of segregation measured by  $D$  is partially dependent on the occupational distribution in the observed workplaces. In studies of national economies, often with an aim to control for national or temporal differences in occupational structure when comparing national levels of segregation, margin dependence is a potentially serious problem (Charles and Grusky 2004). We believe the margin dependence of  $D$  for our samples of workplaces presents a different threat to inferences. Workplaces with broader and more equal occupational coverage tend to have higher measured segregation. These workplaces tend to be those that contain significant employment in all or most major occupational categories. Thus, workplaces whose divisions of labor map poorly onto the standard occupational categories will have lower measured segregation. We see this as a problem of measurement error in divisions of labor akin to having occupational-level rather than job-level data. In our formal modeling, we directly control for occupational heterogeneity at the workplace level to account for this source of measurement error.

<sup>7</sup> Robinson et al. (2005) find that EEO-1-based estimates of segregation produce absolute values on the index of dissimilarity of about the same level as those produced by detailed ( $n = 360$ ) occupation-based analyses. Thus, the loss of detail produced by using only nine occupational categories is roughly counterbalanced by the gain in detail attained from having workplace-level data.



**Figure 1.** Sex, Race, and Ethnic Homogeneous EEO-1 Establishments, 1966–2003

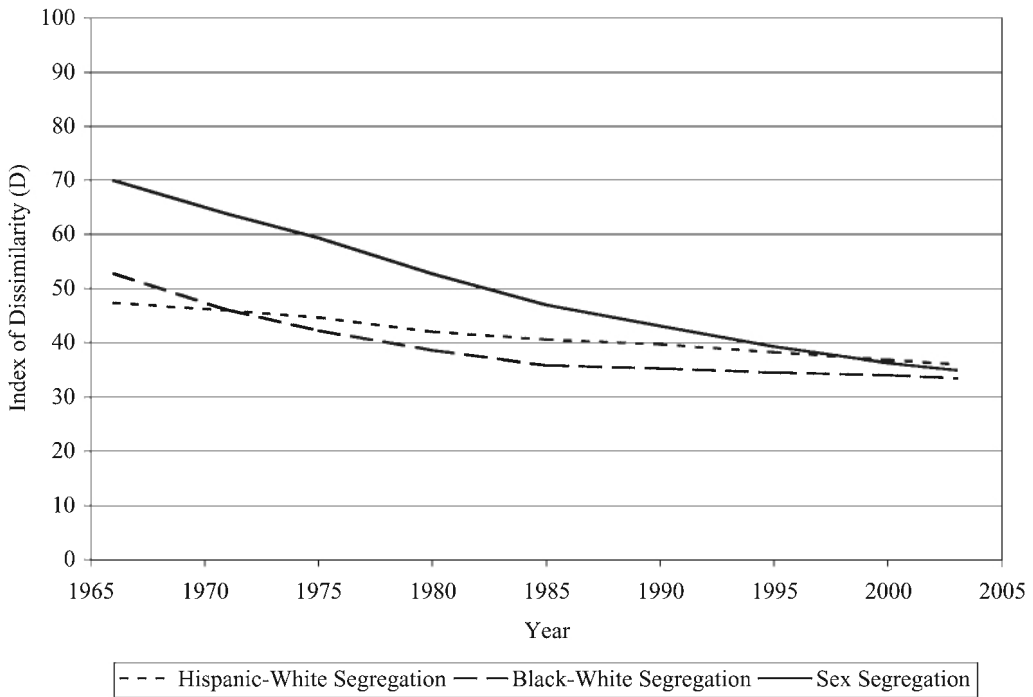
Figure 1 reports 1966–2005 time trends in the percentage of EEO-1 establishments that are sex homogeneous, that contain white or black employees but not both (racial homogeneity), and that contain white or Hispanic workers, but not both (ethnic homogeneity).<sup>8</sup>

In 1966, 11 percent of EEO-1-reporting establishments are sex homogeneous. By 1980, this figure drops to only 1 percent of workplaces, a number that does not change much since 1980. A much higher proportion of establishments have no black or Hispanic employees across the whole period. In 1966, 45.6 percent of all reporting establishments are racially

homogeneous. The comparable number for Hispanics in 1966 is 71 percent. Thus, we begin the post–Civil Rights Act period with very high levels of between-workplace segregation. We cannot comment at this point on what proportion of this exclusion reflects racially or ethnically homogeneous community demography and what part represents between-establishment racial segregation within ethnically heterogeneous communities. The lesson from Figure 1 is that, at least among private sector EEO-1-reporting establishments, sex and ethnically homogeneous workplaces have almost disappeared since the Civil Rights Act of 1964.

Although not reported in Figure 1, from the beginning of the period, almost no establishments are without any men or whites. Specifically, in 1966, 1 percent of establishments have no men and 0.5 percent have no whites. By 2003, only 0.5 percent of establishments have no men, whereas the proportion with no whites does not change appreciably. By 2003, only 18.7 percent of establishments are without any Hispanic employees and 13.1 percent of workplaces have no black employees. In 2003, only 5.4 percent of all reporting establishments have no black *or* Hispanic employees.

<sup>8</sup> The dramatic drop in homogeneous workplaces between 1980 and 1985 reflects a change in reporting requirements instituted by the Reagan administration. After 1982, only firms with 100 or more employees that were not federal contractors reported to the EEOC, whereas before 1982, smaller firms with 50 to 100 employees also reported. Smaller workplaces are more likely to be racially homogeneous. In the multivariate analysis, the inclusion of a measure for establishment size effectively controls for this change in reporting coverage.



**Figure 2.** EEO-1 Establishment-Level Dissimilarity Indices (*D*) for Hispanic–White, Black–White, and Sex Segregation, 1966–2003

These trends have methodological implications for the interpretations of the index of dissimilarity in the following analyses. Because establishment *D*'s exclude all sex or race/ethnic homogeneous workplaces by definition, this measure of segregation underestimates total segregation by excluding between-workplace segregation from its calculation. Because these types of workplaces rapidly decline over the period, the underestimation of real segregation is higher early in the period than later. This methodological exclusion is more consequential for the calculation of Hispanic–white segregation, followed by black–white segregation, and least consequential for tracking trends in sex employment segregation. In the regression decomposition that follows, we model this definitional exclusion as a type of sample selection bias.<sup>9</sup>

Figure 2 documents trends in the mean level of establishment segregation using the index of dissimilarity computed for EEO-1-reporting

private sector workplaces. Sex segregation declines nearly linearly from a very high level of 70 in 1966 to 35 in 2003. On the basis of comparisons with estimates of *D* using job-level data within establishments, Robinson et al. (2005) conclude that the use of EEO-1-estimated *D*'s exceeding 65 is likely to represent nearly total workplace segregation. The EEO-1 estimates for 1966 also underestimate sex desegregation trends because they exclude 11 percent of establishments that were sex homogeneous. Therefore, actual desegregation trends are even more dramatic than presented in Figure 2.

Our estimates show that sex segregation declines by 1.4 percent per year between 1966 and 2003, 1.8 percent between 1966 and 1980,

This approach makes some sense for sex segregation, under the assumption that all local labor markets across all periods have at least some women who might be employed in reporting firms. It does not make sense for either black–white or Hispanic–white segregation because in all periods there are some local labor markets with no or almost no African Americans or Hispanics in the EEO-1 labor force.

<sup>9</sup> We did consider simply setting *D* to be 100 in cases of sex or ethnic homogeneous establishments.



and 1.5 percent between 1980 and 2003. These workplace estimates suggest a substantially larger and more linear decline in sex segregation than suggested by previous occupation-based research (except for Cotter et al. 2004). Previous research suggests a 1 percent drop per year before 1980 and little change thereafter. The EEO-1 reports suggest much more progress toward sex equality in the workplace than did previous national occupation-based estimates.

The pattern for black–white segregation is more consistent with previous research on occupational desegregation. We observe a 2.0 percent decline per year in black–white workplace segregation between 1966 and 1980, and a very slow decline (0.6 percent per year) thereafter. Similarly, the available research on black–white occupational segregation suggests a 2.4 percent decline per year before 1980 and a flatter but still declining level of segregation after 1980.

The time series for Hispanic–white segregation in Figure 2 suggests an aggregate pattern different from both male–female and black–white employment segregation. Estimated Hispanic–white segregation is lower than for the other two in 1966, with an initial  $D$  of 47.4. Observed segregation declines 0.8 percent per year between 1966 and 1980, 0.5 percent per year across the 1980s, and 0.9 percent per year across the 1990s.

Although there appears to be a remarkable convergence in segregation levels, it is important to remember that there still were many workplaces with no blacks or Hispanics in 2003. Thus, we underestimate Hispanic–white employment segregation relative to black–white segregation, and both relative to male–female segregation. On the other hand, measurement error in estimated segregation seems to be more extreme for sex segregation, leading to larger underestimates.<sup>10</sup> Regardless of the exact segregation level, progress toward sex equality is more dramatic and more sustained than race/ethnic desegregation since the Civil Rights Act of 1964. After an initial burst of desegregation

along race/ethnic lines, workplace segregation stalled at essentially 1980 levels for black–white and Hispanic–white segregation.

There is substantial establishment-level variation in observed segregation for every year observed. These national trends may reflect desegregation in workplaces as a result of civil rights legislation and enforcement as well as changes in the spatial or sectoral distribution of employment. We examine these aspects of establishment location in the remainder of this article. We see the following analyses as providing the first systematic description of workplace heterogeneity in the desegregation process.

### **TRENDS WITHIN MAJOR INDUSTRY SECTORS AND REGIONS**

We examine segregation levels and trends for 11 industrial sectors: agriculture, construction, mining, nondurable manufacturing, durable manufacturing, transportation–communication–utilities, wholesale trade, retail trade, producer services, social services, and personal services. Each sector shows a decline in sex segregation since 1966, but these lines are not strictly parallel.<sup>11</sup> The decline in the construction sector does not begin until after 1975 and stalls around 1990. Durable manufacturing and producer services show steady declines in sex segregation, whereas transportation, communication, utilities, and nondurable manufacturing do not begin to decline until after 1971 and 1975, respectively. The three sectors with the lowest levels of sex segregation (retail trade, social services, and personal services) also show the least dramatic change. In general, sex segregation is lower in the emerging service sector (retail trade, producer services, social services, and personal services) than in the traditional production sectors of the economy.

There is much less sectoral variability in black–white employment segregation than in sex segregation. However, the sectoral trajectories are discontinuous compared with the nearly linear declines in sex segregation across sectors. There are strong declines in black–white

<sup>10</sup> In the regression-based decomposition models that follow, we adjust for measurement error in  $D$  associated with the EEO-1 occupational categories. Estimates adjusted for selection and measurement error presented in Figure 3 suggest that sex segre-

gation remains the highest across the entire period and Hispanic–white segregation the lowest.

<sup>11</sup> See Supplemental Table 1 on the *ASR* Web site for estimated sector segregation levels and trends.

segregation beginning in 1966, but in all sectors, these declines stall in the 1980s. Mining, construction, durable manufacturing, and non-durable manufacturing appear to be resegregating after 1995. Again, in general, race segregation is lower in the service sector, although social service race segregation is higher than race segregation in the other service sectors.

There is very little change in Hispanic–white segregation in the traditional sectors (agriculture, construction, mining, nondurable manufacturing, durable manufacturing, transportation–communication–utilities, and wholesale trade) of the economy since 1966, with only construction showing substantial declines in segregation. Agriculture has the highest level of Hispanic–white segregation in 2003, with a substantial increase since 1966. Similar to the pattern for black–white segregation, construction, wholesale trade, durable and nondurable manufacturing, and social services all ended the period with relatively high levels of Hispanic–white segregation. In 1966, Hispanic–white segregation is lowest in producer services, but actually increases through 1990. For most of the period, Hispanic–white segregation is lowest in retail trade, as it is for sex and black–white segregation, for which it shows a decline across the entire post-1971 period.

An examination of 2003 segregation levels across sectors shows some consistent patterns. Sex and race/ethnic segregation is lowest in retail trade. Wholesale trade and both durable and nondurable manufacturing tend to be relatively highly segregated across all three comparisons. Race/ethnic segregation is highest in agriculture, whereas sex segregation is highest in construction and mining. Retail trade, personal services, and producer services tend to be less segregated in all three status distinctions than most goods-producing sectors. Transportation, utilities, and communication tends to have low levels of race/ethnic segregation, but high levels of sex segregation. Conversely, social services tends to have low levels of sex segregation and higher levels of race/ethnic segregation. The economy-wide shift toward low-segregation services likely produced some of the desegregation trends we observe in U.S. society since the Civil Rights Act. We

model this source of change in the regression analyses that follow.

We also examine trends within census regions.<sup>12</sup> All regions show similar linear declines in sex segregation between 1966 and 2003, and there are no striking regional distinctions in the degree of sex segregation. In all regions, black–white segregation drops dramatically between 1966 and 1980, then hardly at all. Black–white segregation drops most dramatically in the southern regions. In fact, by 2003 the East South Central and South Atlantic regions have the lowest levels of black–white employment segregation. Mid-Atlantic and Northeast states have the lowest levels of black–white segregation in 1966, but show the least change over the period. Hispanic–white segregation drops modestly in most regions, at least through 1980. It is highest in the East South Central region across the period, but also shows strong declines across the entire period in that region. The Mountain states and the Pacific region have the lowest levels of Hispanic–white segregation across the period, but they decline more modestly and turn essentially flat after 1985 and 1980, respectively.

### MODELS AND MEASURES

We use regression analyses to estimate national time trends, controlling for sample selection, measurement error, and industrial and geographic shifts in employment, leaving a residual time trend, which we interpret as a within-organization rather than a between-organization change in segregation.<sup>13</sup>

There is substantial evidence in the descriptive material to suggest that the general sec-

<sup>12</sup> Supplemental Table 2 on the *ASR* Web site provides these estimates.

<sup>13</sup> Strictly speaking, these are estimates of within-industry, within-place change controlled for measurement error and size shifts in the composition of reporting establishments, and thus also could represent the growth of new organizations in local labor markets within industries. Even in such cases, we treat these changes in local organizational populations as true organizational change. Future research with these data might examine how much change results from new divisions of labor within existing organizations, as compared with different divisions of labor in new firms.

toral shift in the economy toward services and away from manufacturing and extractive sectors will be a significant source of the observed desegregation in U.S. workplaces. Although we do not find dramatic regional differences in employment trends in the descriptive analyses, it is possible that if we examine shifts in employment at the local labor market level we will find that some of the observed desegregation in U.S. workplaces since 1966 represents the movement of employment toward less segregated labor markets. Our basic strategy is to regress observed  $D$ 's on time and then control for sectoral and regional shifts in employment, with fixed effects for industry and local labor market. We report decompositions of time trends based on three-digit industry and local labor market fixed effects.<sup>14</sup>

We see three potential sources of error in the observed desegregation trends: sample selection, occupation-based underestimates of job segregation, and variation across firms in the appropriateness of the nine EEO-1 occupational categories.

**SAMPLE SELECTION PROBABILITY.** First,  $D$ , by definition, excludes workplaces that are homogeneous for any comparison category. For all-male (female) or all-white (black, Hispanic) workplaces,  $D$  is undefined. Thus, we underestimate true segregation with  $D$ , especially for the early years in which a higher proportion of workplaces are sex or ethnically homogeneous. Because this is a form of selection bias in our estimates, we first compute the probability of a workplace being homogeneous as a function of employment size, year, industry, region, and estimated random probability of workplace homogeneity. These logistic regressions, interesting in their own right, are discussed in the next section. We use these logistic regressions to produce an estimated probability of exclusion from the sample and use that as a control variable in the decomposition regressions. When estimating the true intercept for desegregation trends (i.e., estimated  $D$  in 1966), we do so

when the probability of exclusion from the sample is zero.<sup>15</sup>

**OCCUPATIONAL HETEROGENEITY INDEX.** Measurement error in estimated segregation also is dependent on the degree to which the nine occupational categories used in reporting to the EEOC mimic actual firm-level divisions of labor. Firms use job titles, not occupational groups, to make internal social and task distinctions (Strang and Baron 1990). The EEOC data capture workplace-level, between-occupation segregation, but miss within-workplace, within-occupation job segregation. Thus, the EEOC data will always underestimate true segregation, but that measurement error will vary across workplaces. We reason that this measurement error is higher when workers are observed in fewer of the nine EEOC occupational categories. Establishments with low occupational heterogeneity also will have low segregation because of an increased disjunction between the EEOC occupational categories and actual divisions of labor. An occupationally homogeneous workplace may have substantial employment in all nine occupational categories. As such, it has an increased chance of displaying high levels of segregation because there are more positions across which people can be distributed. A firm with all its employment in only one occupational category will have no observed segregation in the EEO-1 data. In the real world, however, this firm might make numerous job distinctions within that one occupational category and thus have high segregation in practice.

In the regression models, we adjust for this source of measurement error by controlling for observed occupational heterogeneity within establishments. We use the Gibbs–Martin index of heterogeneity to control for this source of underestimation in segregation (Gibbs and Martin 1962):

*Index of Heterogeneity* =

$$1 - \left( \sum (P_{oe1-9}^2) \right) / (T_e^2) \times (100), \quad (2)$$

<sup>14</sup> We use 1990 commuting zones as described in Tolbert and Sizer (1996). Commuting zones are aggregations of contiguous counties defined in terms of county-to-county flows of residence to workplace commuting. Thus, they describe labor markets.

<sup>15</sup> Descriptive statistics for the full sample are presented in Supplemental Table 3 on the *ASR* Web site.

where  $(\sum(P_{oe1-9}^2))$  is establishment employment in each occupation squared and then summed across all nine occupations, and  $(T_e^2)$  is total establishment employment squared. We estimate the intercept for desegregation trends when occupational heterogeneity is at its observed maximum ( $H = 89$ ). At this level of heterogeneity, the impact of measurement error in the mismatch of the occupational categories used by the EEOC to actual divisions of labor is at its theoretical minimum.<sup>16</sup> Because these are occupational units, not actual jobs, we still are likely to be underestimating true segregation even after this adjustment.

**ESTABLISHMENT SIZE (LN).** The EEO-1 reports, because they use occupational groups within establishments rather than job titles to collect status distribution information, tend to underestimate true job-level segregation in the workplace, and this error rises logarithmically with establishment size (Robinson et al. 2005). This underestimation of segregation that arises from using occupational groups rather than job titles will be greater the larger the workplace. This is a potential source of error in our desegregation trend analyses because in 1983, the size rules for EEO-1 data collection change, and establishments with fewer than 100 employees (50 in the case of a federal contractor) no longer report. There is also a secular decline in average establishment size after 1985. We use the natural log of total employment size as a control for measurement error, reporting change and compositional change, and estimate the 1966 intercept for desegregation trends (i.e., estimated  $D$  in 1966) with  $(\ln)$  size at its 1966 mean.

Reskin et al. (1999) conclude that establishment size is positively correlated with the employment of women and racial minorities. They suggest that larger establishments can make room for women and racial minorities without directly challenging the jobs reserved for privileged groups. A positive relationship also exists between organizational size and the

development of personnel offices, formalization, and job differentiation (Konrad and Linnehan 1995). Other research shows that formalization reduces sex segregation (Tomaskovic-Devey 1993; Tomaskovic-Devey, Kalleberg, and Marsden 1996; Tomaskovic-Devey and Skaggs 1999) and the influence of sex composition on the pay gap (Anderson and Tomaskovic-Devey 1995; Elvira and Graham 2002; Pfeffer and Cohen 1984), whereas it increases women's access to managerial and supervisory jobs (Hultin and Szulkin 1999; Reskin and McBrier 2000). Net of formalization, Tomaskovic-Devey et al. (1996) find that there is an additional decrease in sex segregation in very large workplaces. They suggest that this may represent the enhanced visibility of large firms. Job title proliferation in large firms also may increase segregation (Baron and Bielby 1986; Strang and Baron 1990), but it is precisely this type of segregation that the EEO-1 reports cannot detect. Thus, although we use size primarily as a control variable, we also suspect that larger size may reduce segregation for substantive reasons around formalization and visibility.

Our regression models for changes in segregation begin with a model that regresses  $D$  on year. The second model controls for the three sources of measurement error outlined earlier: sample selection, occupational heterogeneity, and establishment size. The final model adds fixed effects for three-digit industry and local labor market.

Random sampling from a large database such as the EEO-1 reports is a practical means of handling its magnitude and does not reduce the reliability of the results. For this reason, we took a 20 percent sample for 1966 and 1971, then in 5-year increments for 1975 to 2000, and finally for 2003 (the last year of available data). This led to a sample of 276,749 establishments. Table 1 shows the first stage of our analysis, in which we focus on sample selection issues. We perform dichotomous logistic regression with three dependent variables, one for each type of establishment homogeneity (no females or males, no blacks or whites, no Hispanics or whites).

#### ODDS OF ESTABLISHMENT SEX AND RACE/ETHNIC HOMOGENEITY

Table 1 reports the logistic regression of sex and race/ethnic homogeneity upon time, with con-

<sup>16</sup> The average observed occupational heterogeneity drops from 59 in 1966 to 53 in 2003, reflecting the increasing mismatch between an occupational scheme designed during an industrial era and an increasingly service-dominated economy.

**Table 1.** Sample Selection (Logistic Regression) Models of Establishment Homogeneity (Odds Ratios Reported)

	Type of Homogeneity		
	No Females or No Males (n = 5,133)	No Blacks or No Whites (n = 57,372)	No Hispanics or No Whites (n = 104,543)
Year (1966 reference)			
1971	.771	.717	.651
1975	.531	.629	.475
1980	.342	.515	.368
1985	.179	.500	.312
1990	.149	.439	.242
1995	.142	.401	.170
2000	.110	.339	.110
2003	.105	.326	.089
Random Integration Ratio	.972	.961	.960
Occupational Heterogeneity Index	.966	.997	.999
Ln (Establishment Size)	.463	.366	.424
Industry (Durable Manufacturing reference)			
Agriculture, Forestry & Fishery	1.506	2.513	.726
Mining	9.962	1.903	1.779
Construction	2.799	.609	1.016ns
Non-Durable Manufacturing	.554	.845	1.170
Transportation, Communication & Utilities	2.358	.478	.995ns
Wholesale Trade	1.624	.546	.915
Retail Trade	1.501	.537	.830
Producer Services	1.185	.529	.825
Social Services	.429	.637	1.147
Personal Services	.315	.378	.609
US Region (Pacific reference)			
New England	1.098ns	1.675	8.550
Mid-Atlantic	1.590	.821	7.174
East North Central	1.230	1.117	10.722
West North Central	1.478	2.164	12.735
South Atlantic	1.325	.230	12.145
East South Central	1.583	.318	46.374
West South Central	1.530	.416	2.556
Mountain	1.149ns	2.272	1.056ns
Model $\chi^2$ (df)	20908(29)	66527(29)	100957(29)

Note: ns = effect not significant at .05 level, all other results are statistically significant at or below .001 level.

trols for measurement error, industry, and region. We also include a measure for the random probability of homogeneity associated with the size of the organization.<sup>17</sup> We first summa-

rize the effects of the control variables for all models. Very small organizations are more likely to be sex and race/ethnic homogeneous. A one-unit increase in the random integration ratio reduces the odds of sex homogeneity by 3 percent and race/ethnic homogeneity by 4 percent.

<sup>17</sup> The smaller the workplace, the higher the level of expected segregation (Mayhew 1984). Firms with fewer incumbents have a higher baseline probability of segregation, even in cases that involve no group preferences in assignment. To account for random sources of segregation, we include a measure we call

the random integration ratio (RIR), which measures the baseline probability that a workplace is integrated:  $RIR = 100 * [(N-1)/(N+1)]$  (for further discussion, see Tomaskovic-Devey and Skaggs 1999).



Occupational heterogeneity has essentially no influence on race/ethnic homogeneity, but a one-unit increase in occupational heterogeneity is associated with a 3 percent decrease in the odds of sex homogeneity. The EEOC occupational categories are more closely tied to between-firm sex segregation than they are to race/ethnic segregation. Increases in establishment size dramatically reduce the odds of sex and race/ethnic homogeneity.

The first column of Table 1 shows that the odds of sex homogeneity decrease drastically with time. The odds of an establishment being sex homogeneous in 2003 are only 10 percent of what they were in 1966, the baseline year. Sex homogeneity effects associated with industry fall into two broad categories. Relative to durable manufacturing, we see higher odds of sex homogeneity among old economy industries (mining, construction, transportation, communication, and utilities) and lower odds of homogeneity among new economy industries (wholesale trade, retail trade, producer services, social services, personal services). Such effects are not surprising given the traditionally male-dominated nature of the occupations in the older industries. Regional effects on sex homogeneity are positive, indicating that the odds of establishment sex homogeneity are higher in all regions than in the Pacific region. In New England and the Mountain region, these differences are not statistically significant. The mid-Atlantic and East and West South Central regions stand out as having much higher odds of containing sex homogeneous establishments than other regions.

Black–white homogeneity also declines over time, but not as dramatically as sex homogeneity, dropping to 33 percent of the 1966 odds by the year 2003. Relative to durable manufacturing, only agriculture and mining have higher black–white establishment homogeneity. The lowest incidence of racial homogeneity is found in the personal service sector (.378), followed by the transportation and communication sectors, in which the average odds of black–white homogeneity are less than half as great as in durable manufacturing. There is no clear correspondence between old and new economy sectors in the incidence of black–white establishment homogeneity. Rather, all sectors have lower homogeneity than agriculture and mining, and the two manufacturing sectors have higher

homogeneity than the remaining sectors. The largest contrast is in the regional effects. The odds of black–white homogeneity are about two times those of the Pacific region in New England (1.675), the West North Central region (2.164), and the Mountain (2.272) region, whereas the same odds are substantially lower than the those of the Pacific region in the South Atlantic (.230), East South Central (.318), and West South Central (.416) regions. These results reflect, at least in part, the geographic distribution of the black population in the United States.

In the last column, Hispanic–white homogeneity is modeled. The time trend again is similar to that for the other two types of homogeneity. By the year 2003, the odds of Hispanic–white homogeneity are 9 percent of their 1966 level. This reflects the strong growth in the size of the Hispanic workforce as well as any desegregation in hiring patterns. Industry effects are generally weak, with only mining displaying markedly higher odds of Hispanic–white homogeneity than the other sectors. Personal service shows the lowest odds of Hispanic–white homogeneity, as it did for both sex and black–white comparisons as well. The regional effects, however, are substantial and quite a bit stronger than in the other two models. Establishments in regions other than the Mountain region have much higher odds (2.559–46.357) of Hispanic–white homogeneity than the Pacific region. This makes sense for the regions that have few Hispanic residents, such as New England. However, it is surprising that the odds of homogeneity are highest in one area with many Hispanics residents: the East South Central region. Here homogeneity likely is not being driven by a lack of Hispanic workers, but by some kind of exclusion.

In the next step of our analysis, we take the predicted probability of establishment homogeneity and include it as a control variable in the models of establishment segregation. This will control for any sample selection bias attributable to undefined *D* values.

*REGRESSION DECOMPOSITION OF DESEGREGATION*

Table 2 shows the regression decompositions of establishment segregation. The first model includes only the time trend. The second model includes the controls for measurement error in

Table 2. Regression Models of Establishment Sex, Race and Ethnic Segregation

Explanatory Variables	Workplace Segregation Models								
	Sex (n = 271,616)			Black-White (n = 219,353)			Hispanic-White (n = 172,254)		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Year (1966 reference)									
1971	-6.155	-1.828	-2.017	6.675	-6.048	-5.810	-1.366	-.136ns	-1.317
1975	-10.592	-5.294	-5.398	10.514	-9.599	-9.359	-2.741	-.313ns	-2.552
1980	-17.220	-10.738	-10.773	4.171	-12.050	-12.009	-5.347	-1.199	-4.253
1985	-22.938	-14.934	-14.329	6.876	-12.851	-12.864	-6.808	-.819	-4.632
1990	-26.818	-18.245	-17.336	17.401	-12.560	-12.765	-7.706	-.169ns	-4.824
1995	-30.628	-21.465	-19.776	18.192	-12.684	-13.043	-9.154	.179ns	-5.850
2000	-33.662	-23.729	-22.013	18.670	-12.329	-12.801	-10.516	.678	-6.607
2003	-34.952	-24.624	-22.928	19.231	-12.522	-12.939	-11.392	.699	-7.012
Sample Selection Probability	—	.652	-.048	—	.146	.083	—	.228	.043
Occupational Heterogeneity Index	—	.737	.553	—	.640	.604	—	.671	.635
Ln (Establishment Size)	—	-4.622	-5.660	—	-4.224	-5.269	—	-2.391	-5.609
Industry (3-Digit SIC)	—	—	Fixed Effect	—	—	Fixed Effect	—	—	Fixed Effect
Commuting Zone	—	—	Fixed Effect	—	—	Fixed Effect	—	—	Fixed Effect
Intercept	69.90	42.75	—	52.72	31.56	—	47.36	8.243	—
R <sup>2</sup>	.161	.447	.604	.050	.383	.421	.020	.361	.417

Note: ns = effect not significant at .05 level, all other results are statistically significant at or below .001 level.

$D$  and the sample selection probability. In the third model, we add three-digit industry and commuting zone fixed effects.

From 1966 to 2003, observed sex segregation (Model 1) drops 35.0 points. Remarkably, 16 percent of the total variation in sex segregation is accounted for simply by time. There is a dramatic and widespread decline in sex segregation after 1966. Sex segregation adjusted for temporal shifts in industry, local labor market employment, sample selection, and measurement error drops 22.9 points (Model 3). By comparing the year coefficients in Models 1 and 3, we can see that about one third of the observed decrease in sex segregation over time is attributable to these shifts in the employment composition of the private sector economy.

Establishments with high predicted probabilities of being sex homogeneous have higher observed sex segregation (Model 2), but lower estimated sex segregation net of industry (Model 3), yet this latter effect is substantively small ( $\beta = -.06$  in Model 3). Thus, both sex homogeneity and sex segregation are strongly tied to industry. When occupational heterogeneity rises one unit, sex segregation increases about half a unit (.55). As organizational size increases, observed sex segregation decreases as well.

Black-white segregation exhibits a similar pattern in some respects. Observed black-white segregation drops 19.2 points between 1966 and 2003. After adjusting for temporal shifts in sources of sample section, measurement error, industry, and local labor markets, we observe a decline of 12.9 points. Again, about one third of the decrease in segregation over time is attributable to compositional shifts in the economy. The difference here relative to the sex segregation estimates is that relatively little unique explanatory power is added by industry and local labor market fixed effects. Black-white segregation rises slightly with an increased sample selection probability. As with the models for sex segregation, black-white segregation declines as establishment size rises and increases with increased occupational heterogeneity.

For Hispanic-white segregation, the picture changes still more. From 1966 to 2003, we observe an 11.4 point drop in Hispanic-white segregation. After adjustment for sample selection and measurement error (Model 2), there is essentially no change in Hispanic-white segregation between 1966 and 2003. This reflects

the strong decrease in workplaces with no Hispanics after 1966. That is, increased Hispanic representation in the labor force has been particularly influential in producing observed desegregation trends (Figure 2). After control is imposed for local labor market changes in the private sector economy, the decline in Hispanic-white segregation is 7.0 points. This 7.0-point decline happens entirely within local labor markets. Hispanic-white segregation declines are profoundly local.<sup>18</sup>

A consistent finding across these models is that larger establishments have lower segregation of all three types. Another consistent finding is that the addition of the measurement error controls explains a large percentage of the cross-sectional and temporal variation in segregation. In models not shown here, we find that this is attributable primarily to the introduction of the occupational heterogeneity control variable. This variable is strongly associated with industry because establishments in the same industry tend to have similar divisions of labor.<sup>19</sup> Thus, shifts in industrial composition influence desegregation trends for two reasons: the move to services is a move to both less segregated workplaces and workplaces whose internal divisions of labor are less well described by the EEO-1 occupational categories.<sup>20</sup>

Table 3 shows the results of these regression estimates used to create period-specific trends in observed desegregation and in estimated within-workplace segregation. Observed segregation change is based on Model 1 year coef-

<sup>18</sup> Although Model 3 includes fixed effects for both industry and local labor market, supplementary analyses demonstrate that this entire effect is a function of the labor market fixed effect.

<sup>19</sup> When we regress a fixed effect for industry upon occupational heterogeneity, we get an  $R^2$  of .39 across the entire period and an  $R^2$  of .41 for a single year (2000). The industry fixed effect contributes more to the total explained variance than any measurement error variable. The Gibbs-Martin index of heterogeneity ( $H$ ) was the most influential of the measurement error variables.

<sup>20</sup> For example, in 2000, the mean occupational heterogeneity in durable manufacturing is 64.1, whereas in retail it is only 38.7. The mean occupational heterogeneity in 1966 is 59, but drops to 53 by 2003 as the economy becomes increasingly service oriented.

**Table 3.** Decomposition of 1966–2003 Desegregation into Observed Change and Estimated Within Workplace Change

	1966– 2003	1966– 1971	1971– 1980	1980– 1990	1990– 2003
<b>Sex Segregation</b>					
Total Observed Change <sup>a</sup>	34.95	6.16	11.07	9.60	8.13
% Observed Change Per Year	1.07	1.40	1.50	1.35	1.02
Total Estimated Within Workplace Change <sup>b</sup>	22.93	2.02	8.75	6.57	5.59
% Workplace Change Per Year	0.70	0.46	1.13	0.85	0.61
Compositional Change as % of Total Observed Change	34.40	67.18	20.92	31.55	31.28
<b>Black–White Segregation</b>					
Total Observed Change <sup>a</sup>	19.23	6.68	7.50	3.23	1.83
% Observed Change Per Year	0.77	1.97	1.37	0.60	0.28
Total Estimated Within Workplace Change <sup>b</sup>	12.94	5.81	6.20	0.76	0.17
% Workplace Change Per Year	0.52	1.72	1.11	0.14	0.02
Compositional Change as % of Total Observed Change	32.71	12.96	17.29	76.47	90.71
<b>Hispanic–White Segregation</b>					
Total Observed Change <sup>a</sup>	11.39	1.37	3.98	2.36	3.69
% Observed Change Per Year	0.55	0.49	0.81	0.47	0.59
Total Estimated Within Workplace Change <sup>b</sup>	7.01	1.32	2.93	0.57	2.19
% Workplace Change Per Year	0.34	0.47	0.60	0.11	0.33
Compositional Change as % of Total Observed Change	38.47	3.59	26.33	75.84	40.59

<sup>a</sup> Based on Models 1 of Table 2.<sup>b</sup> Based on Models 3 of Table 2.

ficients from Table 2. The estimate of within-workplace change uses year coefficients from Model 3. Estimated change in workplace organizational practices—the intended goal of Title VII of the 1964 Civil Rights Act—is probably the better estimate of the influence that this legislation and the associated Civil Rights movement pressure had on workplace desegregation. All three comparisons show significant real (i.e., residual) change in employment segregation. The estimate of total observed change between 1966 and 2003 is much higher for sex segregation (averaging a drop of 1.07 percent per year) than for either black–white (0.77 percent per year) or Hispanic–white (0.55 percent per year) segregation. Hispanic–white workplace employment segregation changes the least. Our estimates of within-workplace change are smaller, reflecting the influence of industrial and other economy shifts in desegregation trends.

These desegregation trajectories are, however, highly variable by period. In the initial Civil Rights period (1966–1971), black–white segregation declines 2 percent per year, and almost all that decline happens within workplaces (87

percent) rather than as a function of compositional change (13.0 percent). During this same period, there is a strong 1.4 percent per year decline in sex segregation, but it is largely (67.2 percent) a function of compositional change in EEOC-reporting establishments. This early period shows the slowest rate of Hispanic–white desegregation (0.49 percent a year), although most of that (96.4 percent) happens within workplaces.

Across the 1970s, all three forms of segregation show strong desegregation tendencies, and the vast majority of these shifts happen within workplaces. Our estimate of within-workplace desegregation is 1.1 percent per year for both sex and black–white segregation in the 1970s. Hispanic–white within-workplace segregation declines at half that rate (0.60 percent per year), but this decade shows the strongest Hispanic–white desegregation of any period.

There is a slowing down of sex desegregation across the 1980s and since 1990, but observed desegregation remains above 1 percent a year, although about one third of that in both periods is produced by composition shifts in private sector firms reporting to the EEOC. In the 1980s

and after 1990, black–white desegregation slows considerably, and what does occur is almost entirely produced by compositional shifts in the EEOC-reporting private sector. Hispanic–white desegregation also stalls after 1980, although there is some evidence of increased within-workplace desegregation after 1990.

Figure 3 displays our estimated time trends in EEO-1-based segregation for both observed and within-workplace change. To produce these estimates, we adjust the 1966 intercepts to take into account sample selection and measurement error. Specifically, we calculate the 1966 intercepts in this figure from the Model 2 intercept, plus the predicted  $D$  when the Gibbs–Martin index is at its observed maximum (89) (and presumably measurement error in the use of EEO-1 occupational categories is at its minimum), average 1966 establishment size, and when sample selection is zero. We treat the 1966 intercepts as our best guess as to the actual average level of segregation in 1966. We suspect that they still are underestimates of the actual segregation level.<sup>21</sup> The observed line is calculated as the Model 1 year coefficients subtracted from this 1966 intercept estimate. The adjusted line is calculated in the same way using the Model 3 year coefficients.

These estimates are quite different from the observed trends in Figure 2. The 1966 intercepts are uniformly higher, primarily reflecting the adjustment for underestimated segregation using the EEO-1 occupational categories and the sample selection exclusion associated with homogeneous organizations. Substantively, for all three demographic comparisons, the slopes of the segregation indices are less dramatic after adjustment for compositional shifts in the sample.

Although it has the most dramatic downward trajectory, observed male–female segregation is the highest of the three across the entire period.

If there had been no compositional changes in the economy between 1966 and 2003, sex segregation still would have remained very high, with an estimated  $D$  of 65. If we focus on the adjusted sex segregation line, it is clear that there was very little workplace change before 1971, a dramatic within-workplace decline in segregation through 1980, and a more modest, but still sustained, drop after 1980.

Although high, adjusted black–white segregation is lower than sex segregation across the entire period and shows almost its entire decline before 1980. Across the 1970s, the average rate of decline for the adjusted estimate is 1.4 percent per year, dropping to a negligible 0.14 percent decline in the 1980s and 0.02 percent after 1990. The adjusted line is much more flat than the observed change, suggesting that most white–black desegregation since 1980 was produced by shifts in the composition of the private sector EEOC-reporting economy rather than actual workplace change.

Hispanic–white segregation is the lowest of the three across the whole period, although it also displays the least decline. After adjustment for sectoral and labor market shifts in the economy, there is very little workplace change in Hispanic–white segregation after 1980.

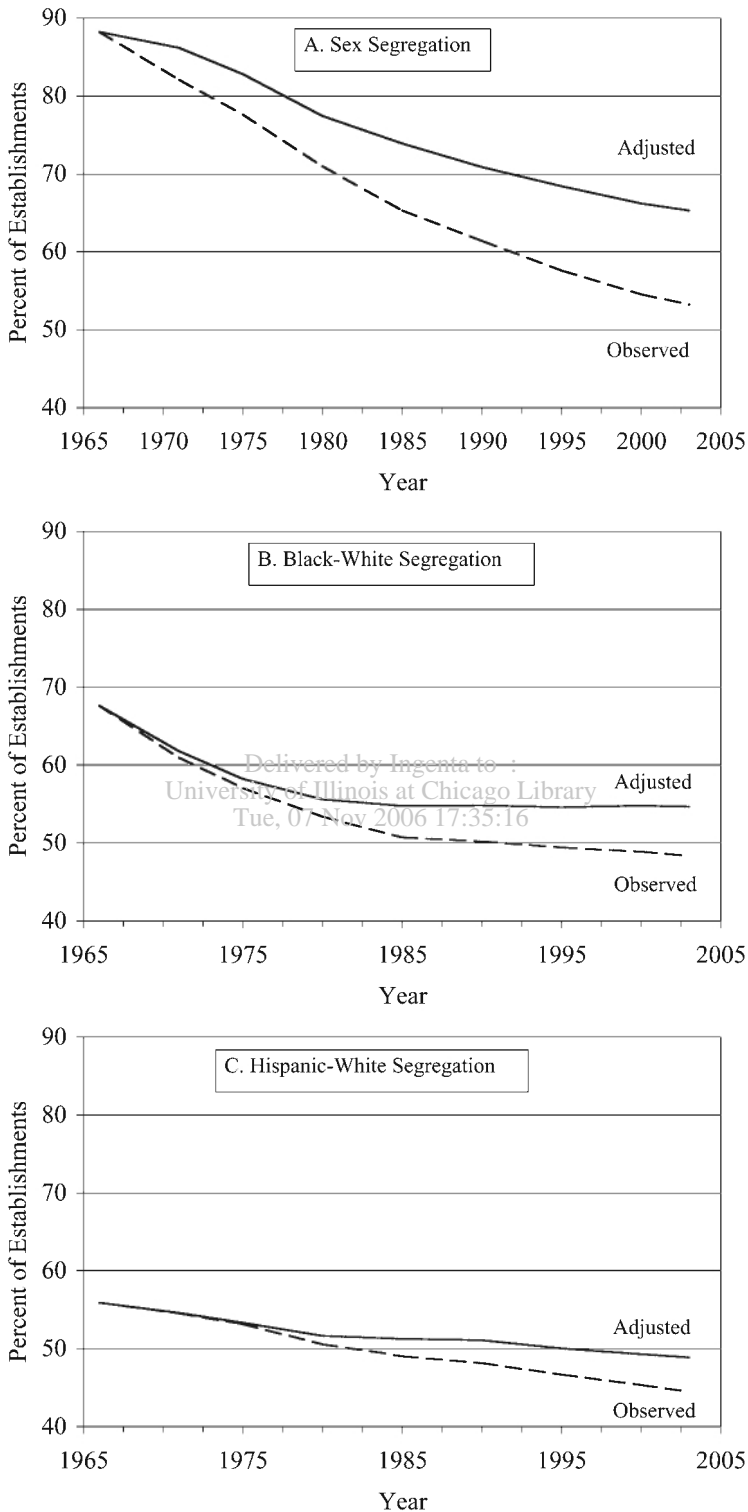
## CONCLUSIONS

The academic and policy communities have had some well-founded reservations about our knowledge of desegregation in U.S. workplaces. We have known for two decades that occupational data were potentially misleading, but have had no alternative for estimating changes in status distinctions in employment. The prior literature on occupational segregation suggests that all three forms of segregation (male–female, black–white, and Hispanic–white) declined through about 1980 and were relatively flat thereafter. Our estimates allow us to speak more confidently about actual workplace desegregation, at least in private sector workplaces that report to the U.S. Equal Employment Opportunity Commission.

Sex segregation declines strongly after 1966, although before 1971, almost the entire decline is created by compositional shifts in the economy. Both observed and estimated within-workplace sex segregation declines dramatically and consistently after 1971, although there is some

<sup>21</sup> We base this conclusion on comparisons with Bielby and Baron (1986), who observe jobs within workplace  $D$  levels of sex segregation to be about 94 for circa 1970, 6 points higher than our measurement error–adjusted 1966 estimate. We have no job level estimates of black–white or Hispanic–white segregation for that period, and thus can only assume that they are similarly underestimated in these data.





**Figure 3.** Observed and Adjusted (On the Basis of Model 3, Table 2) Trends in Male–Female, Black–White, and Hispanic–White Workplace Segregation

*Note:* The 1966 levels are adjusted for measurement and selection error on the basis of Model 2, Table 2.

slowing down after 1980. This decline is robust, happening in all regions and sectors. To the extent that there has been widespread national progress in equal employment opportunity, it seems to be most clear for sex desegregation. Of course, sex segregation starts at very high levels, so there was considerable room for improvement. In addition, the shift to a service economy produces a substantial portion of the observed decline in sex segregation.

Charles and Grusky (2004) analyzing cross-national and cross-temporal occupation by sex contingency tables conclude that there are horizontal and vertical dimensions to sex segregation. The horizontal dimension is the tendency of women to be overrepresented in nonmanual service occupations, whereas the vertical dimension is the tendency of men to get the better jobs within nonmanual and manual occupational structures. Although we did not investigate their models directly, our results suggest that the growth of service industries actually has reduced sex segregation because they are internally less segregated than other industries.

Black-white desegregation begins earlier than sex or Hispanic-white desegregation, but is uneven across regions and industrial sectors. Most strikingly, black-white workplace desegregation essentially stops after 1980. The observation in the occupation-based literature that equal opportunity progress stalls at about 1980 is generally supported, although there is also some disturbing evidence of resegregation after 1995 in old economy sectors (mining, construction, durable and nondurable manufacturing). We think there is still much to be learned about the temporal, industrial, and regional context of black-white workplace segregation.

The shift to a service economy reduces black-white segregation only marginally. Because the most integrated sector in 2003 is retail trade, this desegregation shift is not likely to produce strong earnings growth for the African American population. There is a clear irony in the result that integration is strongest in low-wage sectors of the economy. Of course, this is exactly the result predicted by queuing (Reskin and Roos 1990) and social closure theories (Tomaskovic-Devey 1993). Pressures for exclusion should be weaker where jobs are less desirable.

The time trends in Hispanic-white segregation are much less dramatic, even in the peak

enforcement years of the 1970s. National Hispanic-white desegregation essentially stops during the 1980s, although it appears to pick up again after 1990. Across sectors and regions, Hispanic desegregation is even more uneven than black-white desegregation. Hispanic-white segregation shows very little change in the traditional sectors (agriculture, construction, mining, nondurable manufacturing, durable manufacturing, transportation-communication-utilities, and wholesale trade) of the economy since 1966, with only construction showing substantial declines in segregation. Hispanic-white segregation actually increases in agriculture across the post-Civil Rights period. Because Hispanic rights were never the intention of EEO laws nor a strong component of the Civil Rights movement, weaker shifts are not surprising. At the same time, the rapid and regionally specific growth in the Hispanic population probably has created new opportunities for employment segregation in many places and industries.

Spatial variation in ethnic groups was much more consequential for predicting race and ethnic homogeneity in workplaces than it was for predicting segregation levels within them. We believe that we have only just scratched the surface of the spatial dynamics of segregation. Future research might pay particular attention to the influence of both the size and growth of different demographic groups on workplace segregation and inequality. McCall (2001) reports that sex and race segregation varies locally in a complex web of class and status processes. Her work suggests that future analyses of local dynamics need to treat these various labor forces as linked in the local economy through processes of competition, complementarity, or both.

Regional differences in segregation are apparent, but not as dramatic as sectoral differences. Only for Hispanic-white segregation do regional shifts in employment help explain much of the temporal change in segregation. In fact, after adjustment for sample selection and measurement error, there is essentially no national desegregation pattern for Hispanic-white employment. When labor market fixed effects are added in the subsequent model, the modest decline we report in Table 3 and Figure 3 becomes apparent. This suggests that Hispanic-white desegregation *has* occurred

within local labor markets, but that Hispanic employment is rising in workplaces with relatively high levels of segregation.

The weak trends in Hispanic–white segregation are not surprising. Although Hispanics were legally granted the same rights as women and African Americans under the 1964 Civil Rights Act, they are socially different in many ways. Being Latino is potentially associated with multiple cultural markers: immigrant, illegal, non-English-speaking, and ethnic. In addition, the Latino population is growing and diffusing across the United States, leading to many more opportunities for new contact with non-Latino populations and new patterns of incorporation into the economy. Although we are convinced that it is appropriate to begin our understanding of workplace segregation and desegregation by looking at trends since the Civil Rights Act of 1964, there are many reasons to regard that political and legal moment as much less consequential for Hispanic Americans than for women and African Americans.

Understanding Latino segregation shifts probably requires a unique set of explanations, perhaps along the lines suggested by Catanzarite (2000, 2003), that focus on local immigration flows and the resulting tensions between new and old status groups.

The contrast between sex and black–white segregation trends is instructive as well. Although African Americans were the primary target of the 1964 Civil Rights Act, women may have been the primary beneficiaries. The strong decline in both race homogeneous workplaces and black–white segregation, starting in 1966, suggests real Civil Rights era progress toward more equal race relations in workplaces. That progress stopped about 1980 suggests that African American progress was predicated upon political action, which at least at the national level stalled with the election of Ronald Reagan in 1980. In another article, we have shown that black–white desegregation is strongly tied to political era; stalling after Ronald Reagan became president, federal enforcement efforts waned, and legislative initiatives stopped (Stainback et al. 2005). Political and legal pressure for gender equality, which did not start effectively until the 1970s, continued through the 1990s, as did sex desegregation (Stainback, 2006). Continued convergence in education and labor force experience between men and women

may play some role as well. We see this article as far from definitive in this regard, and think that there is room for much research on the political and labor market context of workplace desegregation for all groups.

Our use of EEO-1 establishment reports allows us to say with greater confidence that real workplace desegregation has occurred since 1966. The regression models suggest that contemporary segregation still is quite high as well. This article also suggests that sex segregation has declined strongly in most contexts, but that race-ethnic desegregation is temporally, spatially, and industrially uneven.

It is important to remember that all the estimates in this article are limited to the part of the private sector economy that is required to report to the EEOC. These are firms with at least 100 employees (50 employees if they are federal contractors). They are essentially the population of private sector organizations that confront a federal equal opportunity regulatory environment. Because prior research shows higher sex and race homogeneity and segregation in smaller workplaces, this regulatory selection means that our estimates are likely lower than the true scores for the entire private sector economy because small firms are excluded. Desegregation in the entire private sector is likely to be lower than it is among EEO-reporting firms both because excluded firms are not in the regulatory environment and because they are likely to be smaller.

In 2003, employment segregation remains quite high for all groups. After adjustment for measurement error and sample selection, sex segregation has an index of dissimilarity estimated to be 53.3 in 2003. Because this still probably is an underestimate, since job title detail is lacking, we can be confident that well more than half of all workers would have to switch jobs to create a sex-neutral employment distribution. Black–white segregation in 2003 is only marginally lower, with an estimated  $D$  of 48.4. Again, given the underestimate of segregation from the lack of job title detail, more than half of all African Americans probably would need to switch jobs to create completely desegregated private sector employment. Hispanic–white segregation is only marginally lower in 2003 ( $D = 44.5$ ).

The availability of EEO-1 reports on private sector establishment level of employment since

1966 offers the research community many avenues for expansion on this article. Descriptive work can be extended to include other ethnic groups and sex within race comparisons; distribution of groups to specific desirable occupational destinations such as manager, professional, or craft work; and more specific industries or places. These data are ideally suited for researchers' use to explore more fully the contours of employment segregation within industrial, spatial, organizational, and temporal contexts. We suspect that explanatory models used to develop the implications of horizontal versus vertical segregation mechanisms, institutional fields, community norms and politics, and firm practices and environments for equal opportunity dynamics all are promising avenues for future theorizing and research with these data. They clearly are promising for the field in general as well.

In a real sense, this article has answered only a basic question: Has there been any workplace progress in segregation since 1966? Although the answer is affirmative, the results are far from reassuring. The Civil Rights Act was aimed at improving the status of African Americans in the United States, but it was far from uniform in its influence. After 1980, it seems to have led to no new improvements. Women have benefited more continuously. We clearly need to develop theories and models that examine the similarities and differences in these two trajectories. Finally, Latino progress is weak and not strongly tied to the temporal pattern of Civil Rights legislation. One of the disturbing implications of this article is that aggregate race/ethnic equal opportunity employment progress in the United States stopped a quarter of a century ago, after less than a quarter century of progress.

One message from this article for those still waiting for equal opportunity to diffuse across the United States is that unless substantial shifts occur in political pressure and employment practices, future progress is unlikely. The conclusion for sex desegregation is clearly more optimistic because the combination of real workplace desegregation and sectoral shifts has continued to produce declines through 2003. Of course, continued integration must be produced by something, and until we know why gender segregation has continued to decline since the stalling of race/ethnic progress, we cannot assume this trend will continue. In the absence of additional political pressure for equal oppor-

tunity in U.S. workplaces, it is quite possible that desegregation for all groups will converge toward current levels and then remain stable. More than 40 years after the Civil Rights Act, it is clear that the march toward employment equality is far from over.

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