

Documenting Desegregation: EEO-1 Estimates of U.S. Establishment Sex and Ethnic Segregation 1966-2000

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Abstract

Previous research suggests that U.S. race/ethnic and sex based employment segregation has declined since the 1960s. This conclusion is based on analyses of aggregate national trends in occupational segregation. In this paper we track male-female, Black-white, and Hispanic-white segregation trends using private sector establishment level data collected by the U.S. Equal Employment Opportunity Commission. We disaggregate these trends by major industry distinctions, region of the country. The general pattern is that segregation declined for all three categorical comparisons between 1966 and 1980. After 1980 only sex segregation continued to decline markedly. We estimate regression-based decompositions in the time trends for workplace desegregation. These decompositions suggest that changes in industrial structure and the regional composition of employment account for about a third of observed desegregation for all three comparisons.

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The Civil Rights Act of 1964 prohibited employers from discriminating on the bases of sex or race/ethnicity. Remarkably we have very poor descriptive knowledge as to the effectiveness of these policy changes. Most of our knowledge on change in the employment opportunities of women and ethnic minorities comes from surveys of individuals that describe employment in terms of occupations, but not in terms of the presumed site of discrimination - workplaces. The occupation-based literature suggests that since 1964 both women and minorities have had increased access to better 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 employment shifting to industries or regions with lower levels of segregation to begin with. If this is the case, there may have been no change in the behavior of employers, just a new distribution of employers with stable discriminatory practices. In addition, the occupation based analyses that have dominated the literature give the potentially misleading appearance that change in sex and race/ethnic segregation is a national phenomenon. Since employment

segregation is essentially a workplace process it is likely that segregation levels and trends may vary substantially across communities and types of workplaces.

Since 1966 the Equal Employment Opportunity Commission (EEOC) has collected yearly data on the race/ethnic and sex 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.² In this paper we summarize trends in private sector workplace segregation and desegregation using the universe of over four million EEO-1 reports currently available for the years 1966-2000.³ 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 employment segregation.

We begin with a brief review of what is already known demographically about desegregation of the U.S. work force since 1964. We then use the EEO 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 has two goals. First it

² Prior to the year 2000 there was only occasional use of these data by academics (Arvil 1972; Becker 1980; Leonard 1984; Smith and Welch 1984). These data are protected by strict confidentiality provisions. In order to get access to these data Tomaskovic-Devey became an unpaid employee of the U.S. Equal Opportunity Commission. In recent years other researchers have received access to these data and there are now a series of papers in progress (e.g. Bendick et al 2000; Skaggs 2001; Cartwright and Edwards 2002; Kalev and Dobbin 2003; Robinson, Taylor, Tomaskovic-Devey, and Zimmer 2003). We anticipate that these data will become a major resource for the academic community in the near future.

³ These represent all reports from all years since 1966, which are currently available in machine-readable form at the Equal Employment Opportunity Commission. There are some missing years (1967-1970, 1974, 1976). For some analyses we use twenty percent random samples of a sub-sample of years to make file management easier.

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 no social progress since 1966. Second, disaggregating allows us to see demographically whether the progress toward increased occupational similarity by race/ethnicity and sex that previous research has documented occurred in actual workplaces. Finally, we include a formal disaggregation of time trends in male-female, Black-white, and Hispanic-white segregation. We use fixed effects models that introduce controls for measurement error in the EEO-1 data to produce estimates of the contribution of sectoral and geographical shifts in employment to observed desegregation trends.

WHAT WE THINK WE KNOW ALREADY

There is a sustained literature on national trends in occupational sex segregation, less on trends in Black-white occupational segregation, and almost none 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 conclusions in Reskin, McBrier, and Kmec 1999).

National Trends in Occupational Segregation

Almost all trend data are limited to national occupation based estimates of segregation. For example, Jacobs (1989) analyzed trends in sex segregation for

the entire country using aggregated Census and CPS data.⁴ For the period 1970 to 1986, *D*-values decreased from 67.6 to 57.3, a one percent per year decrease.⁵ Similarly, Beller (1984) finds a *D*-value of 68.1 for 1971 and 61.7 for 1981, also a one percent per year decrease. In a recent paper Jacobs (2001) shows a further decline to 53.9 in 1997, a slower decline of only half of a percent per year. A comparison of all the time series available on changes in sex segregation shows very little change in occupational sex segregation between 1960 and 1970, a dramatic decline between 1970 and 1980 and little or no change between 1980 and 1990 (Albeda 1986; Baunach 2002; Beller 1985; Blau 1988; Bianchi and Rytina 1986; Carlson 1992; Jacobs 1989; Jacobsen 1994). Jacobs (2001) suggests that national occupational sex segregation declined slightly across the 1990s.

There is much less research available on trends in racial segregation. King (1992) has the longest most consistent time series on Black-white occupational segregation. She estimates trends between 1940 and 1988 separately for men and women. She shows racial segregation increasing for both men and women between 1940 and 1960 and declining thereafter (see also Fossett, Galle, and Kelly 1986). For women King estimates occupational segregation declining from a very high base by 2.9 Percent per year between

⁴ It is well known that estimate segregation rises with increased occupational detail (Jacobs 2001). We describe trends generally across all studies, but report measures of segregation from studies that use high levels of occupational detail.

⁵ Although *D* is computationally identical across studies, levels of *D* are strongly influenced by the number of categories available. Thus we report trends in terms of percent change in *D* rather than changes in absolute values.

1960 and 1980.⁶ 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. Catanzarite (2003) produced the only time series data we have been able to find on Hispanic-white occupational segregation. She reports a drop in Hispanic-white occupational D values from 37 in 1972 to 33 in 1982, 35 in 1983, and 34 in 1993. For women the comparable Ds are 36 (1972) and 27 (1982, 1983, 1993). Thus Hispanic-white occupational segregation showed rapid declines of 1 percent per year for men and 2 percent per year for women across the 1970s, but were essentially flat across the 1980s and early 1990s.

The national trend data suggests that for all three forms of occupational segregation the majority of the observed trend toward integration happened in the 1970s. For all three comparisons declines stalled or nearly stalled across the 1980s. Only for sex segregation do we have a time series that extends far into the 1990s and that suggests some acceleration in desegregation during the 1990s after the flat period of the 1980s.

Sectoral and Industry Segregation Patterns

There are no comprehensive studies that we are aware of estimating trends in occupational sex or race/ethnic segregation by industry. Stearns and Coleman (1988) computed occupational segregation indices for twenty-two manufacturing industries in 1973 and 1982. These indices ranged from a low estimate of sex segregation in the Furniture industry of 28.2 in 1982 and a high D

⁶ For a white-nonwhite comparison, Carlson (1992) finds a change in occupation based D-values from 33.8 in 1970 to 25.6 in 1980, a decrease of 2.4 percent per year.

of 75.7 in the Petroleum industry in 1973. Most industries displayed little or no change in sex segregation across the period, although a few showed dramatic declines and a few small increases in segregation. Although far from comprehensive, this research suggests that there is considerable variation in segregation at the detailed industry level and trends in segregation appear to be industry specific.

There are a few studies that look at cross sectional sectoral and industrial differences in occupational (Lorence 1992) and establishment (Peterson and Morgan 1995; Cartwright and Edwards 2002) segregation.⁷ These studies suggest that social services tend to be the most integrated, while personal services and wholesale trade are moderately segregated. Conflicting findings, however, are far more frequent. In the extractive sector, Lorence finds moderate segregation while Cartwright and Edwards find high segregation. Cartwright and Edwards find durable manufacturing highly segregated while non-durable only moderately segregated. Peterson and Morgan found both forms of manufacturing to be highly segregated. These three studies estimated producer services, such as banking and insurance, to be highly, moderately, or hardly sex segregated.

Carrington and Troske (1998) provide the only race segregation industry estimates that we have been able to find, 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

⁷ There were also a series of studies that looked at occupational segregation computed at the industry level in a dual economy framework (Blankenship 1983; Bridges 1982; Hodson and England 1986). These studies looked at the influence of such factors as sex composition, product market competition, and capital investment on segregation.

manufacturing firms. Non-durable manufacturing is just the opposite, more segregated in the large firm sample. These conflicting findings suggest variations within sectors and possibly within industries. A more accurate analysis of trends or levels of segregation by industry begs for a comparison utilizing better data. The lack of comprehensive research and variation in findings suggests that we know very little about sex or racial segregation across industries. The period since 1964 was marked by substantial sectoral change in the U.S. economy. It is possible that industrial recomposition has strongly influenced trends in workplace status segregation. At present, we know little about either sectoral-level employment segregation trends.

Regional and Labor Market Segregation Patterns

Occupational sex and race segregation vary across places (Fossett, Gale, and Kelly 1986, Abrahamson and Singelmann 1987, King 1992, McCall 2001). The South historically has been more racially segregated than the U.S. as a whole. Slavery, indentured servitude, and a late transformation from an agricultural to industrial economy have all resulted in the South lagging behind other regions in decreasing racial segregation. The literatures on trends in regional occupational segregation report the greatest decline in both sex and race segregation in non-South regions between 1960 and 1970. For example, King (1992) tracking racial segregation among women shows a dramatic decline in segregation in the non-South regions between 1960 and 1970 and in the South between 1970 and 1980. Fossett, Galle, and Kelly (1986) speculate that this lag effect may be due to a later transition from an agricultural to industrial

economy. Abrahamson and Singelmann (1987) find that race segregation declines more dramatically with high population growth and that this pattern was particularly evident in the U.S. South. These two studies strongly suggest that desegregation may reflect changes in industrial and regional employment structure. It seems likely that regions might vary in their normative support for equal opportunity as well (Beggs 1995).

Further disaggregation, such as city or MSA level analysis, suggests there may be considerable variation in occupational sex segregation within regions (Abrahamson and Sigelmann 1987). For instance, Cotter, DeFiore, Hermsen, Kowalewski, and Vanneman (1997) using 1990 occupation data, estimated an index of dissimilarity for Raleigh, NC of 48 while Houston had an estimated D of 54. The observed range for these calculated indices of dissimilarity are between 45 and 55, so these two Southern cities are at opposite extremes of estimated occupational sex segregation. Similarly, two geographically close rust-belt cities Pittsburgh, PA and Columbus, OH had respective Ds of 54 and 48 (Cotter, et al. 1997). There is even considerable variance within states. Columbus, Ohio has one of the lowest calculated levels of occupational sex segregation, while Cleveland, Ohio has one of the highest (Cotter et al 1997). This variance could be a result of measurement and sampling error from the use of Census based occupational estimates. If true, however, there may be considerable local labor market variation in the degree and trends in segregation (see also Cohen and Huffman 2003).

Lorence (1992) investigated variation in occupational sex segregation across 130 U.S. metropolitan areas in 1980. This research found that growth in the service sector was associated with declines in occupational sex segregation. He also found that variation in sex segregation across cities was strongly tied to variation in the industrial structure. Together these findings suggest that some part of the observed declines in employment segregation – at least for sex -- is likely to reflect change in industrial structure. It also suggests that regional differences in segregation may reflect differences in industrial structure, rather than, or in addition to, cultural-historical differences in sex and race relations.

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. Catanzarite focuses on Los Angeles, partially because it has the Hispanic concentration necessary for the creation of “brown-collar” jobs. She found that the flow of Hispanic immigrants into Los Angeles during the 1980s led to increased Hispanic-white occupational segregation. This finding is in contrast to the flat national trend she documents elsewhere (Catanzarite 2003). Catanzarite’s research suggests that ethnic segregation should be more variable across regions than should sex segregation and that we might also expect that the desegregation trajectory to vary across regions because of local factors such as ethnic immigration.

EEO-1 Data Opportunities and Limitations

Over twenty years ago Baron and Bielby (1980) instructed us to bring the firm back into inequality research. Their point was simple, but powerful. Most

stratification research ignored the organizational context in which actual inequality was produced and allocated. While their instruction was compelling, it 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 to organizational context. Data collection at the organizational level remains relatively rare.

Bielby and Baron (1984, 1985, 1986, 1987) were at the time unique in their access to high quality organizational data suitable for studying the distribution and covariates of sex segregated employment. They established that job-level sex segregation within establishments was consistently higher than estimates based on the distribution of men and women across Census occupational categories. Other studies using general samples of jobs within workplaces have reached similar conclusions (Tomaskovic-Devey 1993; Tomaskovic-Devey, Kalleberg, and Marsden 1995; Petersen and Morgan 1995).

The EEO-1 reports we describe below complement past data sources, since they document workplace level segregation in the private sector since 1966. There were over four million accumulated establishment observations by the year 2000, meaning there is plenty of data to disaggregate segregation levels and trends to the community and industry level. These data may even make it possible to follow the segregation trends in particular workplaces over time, nested in their corporate, industrial, and community contexts.

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 nine occupational categories—officials and managers, professionals, technicians, sales workers, office and clerical workers, craft workers, operatives, laborers, and service workers. This allows establishment-level estimates of occupational segregation by sex/race/ethnicity as well as more focused models on access to specific occupational categories. In this paper we focus on the most common measure of segregation -the index of dissimilarity (D), for male-female, Black-white, and Hispanic-white comparisons

One of the important methodological results of both the occupation based studies and Bielby and Baron's research is that as the level of job or occupational detail increases so does measured segregation. This has led to a consensus in the field that more detail in describing the employment context is generally preferable to less. The most serious shortcoming of the EEO-1 reports is that they collect race-sex distributions for specific workplaces at the aggregate level of major occupational groups (e.g. managers, professionals, etc). Taking this limitation into account we show in another paper that the EEO-1 estimates are generally reliable and valid relative to the alternative occupation and job-establishment data (Robinson, Taylor, Tomaskovic-Devey, Zimmer, Irwin 2003). This paper also concludes that these data are better for analyzing trends in segregation than for comparing cross-sectional levels, especially across industries. This is because measurement error in estimated segregation is 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. In the regression models we adjust for this source of measurement error by controlling observed occupational heterogeneity within establishments. Establishments with low occupational heterogeneity will also have low segregation because of greater dissimilarity between the EEO-1 occupational categories and actual divisions of labor.

The use of occupational measures in segregation analyses has been criticized by some researchers (Bielby and Baron 1986; Tomaskovic-Devey 1993). These researchers advocate using job level measures embedded in specific workplaces. The EEOC data allow us to look at specific workplaces but not job titles. This means we will underestimate the degree of job segregation relative to the actual level. We control for this source of measurement error in the regression decomposition models later in the paper.

Trends in 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 index of dissimilarity has had a long life in analyses of residential and employment segregation. One of the attractive attributes of this statistic is that it has a commonsense interpretation. The value of D is the percentage of people who would have to change jobs in order to have equal representation of status groups in a workplace. Thus it literally asks how far from equal distribution by sex or race/ethnicity is this workplace?

One of the most important reasons to use D is that prior research has used it more than any other measure. The little we already know about

employment desegregation from occupational studies and about size, industry and spatial variation in segregation from occupational and establishment based studies is most often based on the index of dissimilarity. D is also easy to compute:

$$D_{\text{ESTABLISHMENT}} = 100 * [.5(\sum |(n_1 / N_1) - (n_2 / N_2)|)]$$

where n_1 and n_2 refer to the number employed in status groups 1 and 2 in each occupational group and N_1 and N_2 refer to the number in status groups 1 and 2 employed by the whole establishment. Unfortunately, establishments that are entirely male or white will be excluded from the calculation of D by definition. When N_1 or $N_2 = 0$, D is undefined. This means we exclude from our calculation of segregation, the most segregated establishments. For this reason we begin by describing time trends for sex and race/ethnic homogenous workplaces.

Figure 1 reports time trends in the incidence of establishments with no men, women, whites, Black, or Hispanic workers between 1966 and 2000. From the beginning of the period there were almost no establishments with no men or no whites in them. Specifically, in 1966, one percent of establishments had no men in them and 0.5 percent had no whites. By 2000, only .5 percent of establishments had no men in them, while the proportion with no white had not changed appreciatively. Almost all EEO-1 reporting private sector establishments had men and whites in them across the whole period. In 1966, eleven percent of EEO-1 reporting establishments had no women in them. By 1972, only three percent were all male. By 1980, this figure had dropped to only one percent of workplaces, a number that did not change much after 1980. Thus, all white, all

male, or all female workplaces virtually disappeared among the population of private sector EEO-1 reporting establishments.

-Figure 1 about here -

A much higher proportion of establishments had no African American or Hispanic employees across the whole period. In 1966 47 percent of all reporting establishments contained no African American employees. The comparable number for Hispanic's was 71 percent in 1966. Thus we begin the civil rights period with very high levels of between workplace segregation. We cannot comment at this point what proportion of this exclusion reflects racially or ethnically homogenous community demography and what represents between establishment segregation in race and ethnically heterogeneous communities. We can see that completely exclusionary workplaces declined nearly linearly between 1966 and 2000. By 2000 only 21 percent of establishments lacked any Hispanic employees. Only 14 percent of workplaces contained no African American employees.⁸ Although not shown in the chart, by 2000 only 6.5 percent of all reporting establishments had no African American or Hispanic employees at all.

The lesson from Figure 1 is that, at least among private sector EEO-1 reporting establishments, sex and ethnically homogenous workplaces have almost disappeared since the Civil Rights Act of 1964. By 2000 all but 6.5 percent of workplaces included African American or Hispanic employees, and all

⁸ The dramatic drop in racially homogenous workplaces in the early 1980s reflects a change in reporting requirements instituted by the Reagan administration. After 1982 only firms with 100 or more employees who were not federal contractors reported to the EEOC, prior to 1982 smaller firms with 50-100 employees also reported. Smaller workplaces are more likely to be racially homogenous.

but one percent counted women among their workers. There are methodological implications of these trends for the interpretations of the index of dissimilarity in the following analyses. Since establishment Ds 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 this means the underestimation of real segregation will be higher early in the period than later. This methodological exclusion will also be more consequential for the calculation of Hispanic-white segregation, then Black-white segregation, and least consequential for tracking trends in sex employment segregation.

Figure 2 documents trends in the median level of establishment segregation using the index of dissimilarity computed for EEO-1 reporting private sector workplaces. Sex segregation declines linearly from a very high level of 78 in 1966 to 32 in 2000. Based on comparisons with estimates of D using jobs level data within establishments Robinson et al. (2003) conclude that D's using the EEO-1 data over 65 are likely to represent nearly total workplace segregation. Using such job-establishment data from California for the period around 1970 Bielby and Baron (1986) estimated nearly total sex segregation with a D value of 93.4. EEO-1 estimates for 1966 underestimate the trend toward sex desegregation because of the exclusion of 12 percent of establishments that were all male. Therefore, actual segregation trends are more dramatic than presented in Figure 1. Sex segregation declined by 1.2 percent per year

between 1966 and 2000. This is a substantially higher and more linear decline in sex segregation than was suggested by previous research focusing on occupational desegregation. Previous research suggested a 1 percent drop per year prior to 1980 and little change thereafter. The EEO-1 reports suggest much more progress toward sex equality in workplace location than have previous national occupation based studies.

-Figure 2 about here -

The pattern for Black-white segregation is somewhat consistent with previous research on occupational desegregation. We observe a 2.2 percent decline per year in Black-white workplace segregation between 1966 and 1980 and very slow change (0.6 percent per year) thereafter. Similarly, the available research on Black-white occupational segregation suggests a 2.4 percent per year decline prior to 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 the other two in 1966, with an initial level of $D=43.7$. Observed segregation declines only one percent a year between 1966 and 1980, half a percent a year across the 1980s, and 0.9 percent a year across the 1990s. Hispanic-white employment segregation in 2000 is 32.8, higher than either Black-white (30.5) or male-female (31.5). Following Catanzarite (2002) this may reflect pressures for increased

segregation arising from the large influx of Hispanic immigrants to the U.S. throughout the 1980s and 1990s.

Although there appears to be remarkable convergence in segregation levels by 2000, it is important to remember that there were still many workplaces with no African-American or Hispanics in 1999. Thus, we underestimate D for Hispanic-white relative to African-American-White, and both relative to male-female segregation.⁹ We conclude that by 2000 these EEO-1 reporting private sector firms had higher Hispanic-white segregation than African-American segregation, and both were higher than male-female segregation. More simply, progress toward sex equality has been more dramatic and more sustained since the Civil Rights Act of 1964.¹⁰ After an initial burst of desegregation along race/ethnic lines, workplace segregation stalled at essentially 1980 levels for Black-white and Hispanic-white segregation. Finally, Hispanics are the most socially distant from whites in U.S. private sector workplaces that are part of firms with 100 or more employees or are federal contractors.

It is important to remember that these are aggregate national trends. While we think it is important to know what these trends are, there is substantial establishment-level variation in observed segregation in every year observed. Therefore these national trends may reflect desegregation in workplaces as a result of Civil Rights legislation and enforcement as well as changes in the spatial

⁹ We introduce controls for this source of sample selection in observed Ds in the regression decomposition of time trends that follows.

¹⁰ In the regression based decomposition models that follow we adjust for measurement error in D associated with the EEO-1 occupational categories. These models suggests that it is Black-white segregation which is the highest across the entire period, and Hispanic-white segregation the lowest.

or sectoral distribution of employment. We examine these three aspects of establishment location in the remainder of this paper because they were discussed frequently in previous research. Prior literature is quite thin, however, and not well developed theoretically or empirically. Thus we see the following analyses as providing the first description of heterogeneity in the desegregation process. We will use these analyses to answer the simple substantive question: What is the contribution of sectoral and spatial change in employment distributions to the observed trends in desegregation?

Trends within Major Industry Sectors

Previous research on sectoral trends in segregation and sectoral differences in the level of sex and race/ethnic segregation are mostly contradictory in their estimates. There is rough consensus in this literature that segregation is lower in the social service sector, while personal services and wholesale trade are more moderately segregated than other sectors.

-Figure 3 about here-

Figure 3 documents sectoral trends in sex employment segregation. There are striking sectoral differences in the levels of segregation that are relatively stable across the entire period. Sex segregation is consistently highest in construction and mining and lowest in retail trade. Transportation, communication, and utilities as well as durable manufacturing and wholesale trade are also highly sex segregated across the period. Sex segregation in the few agricultural establishments that are large enough to report tends to be high as well. Social and personal services, on the other hand, have relatively low

levels of sex segregation across the period. Non-durable manufacturing and producer service are consistently intermediate in their levels of sex segregation. Given the shift toward services and retail trade in the U.S. economy, it is possible that a good deal of the secular decline in segregation documented in Figure 2 resulted from shifts in the sectoral composition of the economy.

Each sector shows a decline in sex segregation since 1966 but these lines are not strictly parallel. The decline in the construction sector does not begin until after 1975 and seems to stop around 1990. While durable manufacturing and producer services show steady declines in sex segregation, transportation, communication, and utilities and non-durable manufacturing do not begin to decline until after 1971 and 1975, respectively. The three sectors with the lowest levels of sex segregation also show the least dramatic change. Sex segregation in social services barely changes across the period. Sex segregation in personal services declines only for the short period between 1980 and 1990.

Desegregation in retail trade while dramatic between 1966 and 1985, is nearly flat thereafter. These are dramatic differences in sectoral trajectories. They may reflect differences in internal or external pressures for equal opportunity between sectors or changes in the internal industry composition within sectors.

-Figure 4 about here-

Figure 4 displays the sectoral trends for Black-white segregation. Compared to Figure 3, there is much less sectoral variability in Black-white employment segregation than there is in sex segregation. Race segregation in the year 2000 was highest in agriculture, showing effectively no change from its

1966 level. Transportation, communications, and utilities were among the most race segregated workplaces in 1966. They dropped dramatically by 1971 and trended weakly upwards after 1971. Construction, wholesale trade, durable and non-durable manufacturing and social services ended the period with relatively high levels of Black-white segregation, all of them trending downward until about 1985 and then showing no declines thereafter. Social and personal services had relatively low levels of Black-white segregation in 1966, trending downward across the whole period, although much more dramatically before 1980. Retail trade has substantially lower Black-white segregation than the other sectors in the year 2000, with very dramatic declines between 1966 and 1985. Finally, producer services begin the period with the lowest level of Black-white segregation, but show no sustained declines after 1971.

-Figure 5 about here-

Figure 5 shows the same trends for Hispanic-white segregation. Sectors show even less differentiation than they did for Black-white segregation and many sectors show increased segregation across the period. Agriculture has the highest level of Hispanic-white segregation in 2000, up from 1966. Similar to the pattern for Black-white segregation, construction, wholesale trade, durable and non-durable manufacturing and social services all ended the period with relatively high levels of Hispanic-white segregation. Of these, only social services and wholesale trade show any secular declines in Hispanic-white segregation, and none after 1980 and 1985 respectively. In 1966 Hispanic-white segregation is lowest in producer services, but actually increases through 1990.

In 2000, Hispanic-white segregation is lowest in retail trade, as it was for sex and Black-white segregation, and declines across the entire post-1971 period.

Looking across sectors and focusing on current segregation levels there are some consistent patterns. Sex and race/ethnic segregation is lowest in retail trade. Wholesale trade and both durable and non-durable manufacturing also tend to be relatively highly segregated across all three comparisons. Race/ethnic segregation is highest in agriculture, while sex segregation is highest in construction and mining. Personal and producer services tend to be less segregated on all three dimensions than most goods producing sectors. Transportation, utilities and communication tend to have low levels of race/ethnic segregation, but higher levels of sex segregation. Conversely social services tend to have low levels of sex segregation and high levels of race/ethnic segregation. Clearly the economy-wide shift toward services is likely to have produced a good deal of the desegregation trends we have observed in U.S. society since the Civil Rights Act. Given the flat and uneven trends for race/ethnic segregation, most of the modest declines in Black-white and Hispanic-white segregation may have been produced by sectoral and industrial shifts in employment. We will examine this supposition more systematically later in this paper.

Trends within Census Regions

Prior literature leads us to expect higher levels of Black-white segregation in the south than the north, with an earlier onset of desegregation trends in the north. Prior research on sex segregation points out considerable diversity across

cites, but we know of no research that makes regional comparisons. This is the case for Hispanic-white segregation as well.

Figure 6 displays regional trends in sex segregation. All regions show the same linear decline in sex segregation between 1966 and 2000 and there are no striking regional distinctions in the degree of sex segregation. The West-South Central Region, which includes Arkansas, Louisiana, Oklahoma, and Texas, has the highest level of sex segregation. The other two southern regions, the East-South Central and the South Atlantic have the next highest across the period. Sex segregation is lowest in the Pacific region at the end of the period, but in New England and the Mid-Atlantic states early in the period. These three regions are consistently lower than all others. There is also a convergence in the degree of sex segregation across the period. In 1966 the most sex segregated region was 11 points higher than the least segregated. By the year 2000 this gap had fallen to less than four points.

-Figure 6 about here-

Figure 7 displays the regional trends in Black-white employment segregation. In 1966 race segregation is also highest in the West-South Central region. The other two southern regions are joined by the East North Central (OH, IL, IN, MI, WI) with initial high levels of race segregation. By 2000 the West-South Central has dropped to the middle of the regional distribution and the other two southern regions to the lowest level of racial segregation. New England had the lowest level of Black-white segregation in 1966, but showed the least change over the period, ending the period with the highest levels of Black-white

segregation. The other regions begin the period at intermediate levels and end the period in the middle of the distribution. All of the regions show initial large declines in Black-white employment segregation, followed by relatively stagnant levels after 1980. There is also a regional convergence in the degree of black/white segregation. In 1966 the most segregated region was 23 points higher than the least segregated. By the year 2000 the contrast was only 6 points.

-Figure 7 about here-

Regional trends in Hispanic-white segregation are much more distinct. Segregation is highest in the East-South Central region ((KY, TN, AL, MS) across the period, but also shows strong declines across the entire period in this 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. This stalled desegregation pattern might be attributed to increase Hispanic immigration across this period and to the 1986 passage of the Immigration Reform and Control Act which is said to have increased hostility toward Hispanic labor (Catanzarite 2002).

-Figure 8 about here-

The West-South Central (AK, LA, OK, TX) shows a remarkable decline in Hispanic-white segregation across the period, dropping from the second highest region to the third lowest. The other regions all have intermediate levels and show declines in Hispanic-white segregation across the period. Again, there is a general pattern of regional convergence in segregation. The gap between the

most and least segregated regions fell from 21 points in 1966 to 12 in 2000. On the other hand, this gap in the year 2000 for Hispanic-white segregation is double what we see for Black-white segregation and three times higher than the regional differences in sex segregation in that year.

Although there are recognizable regional differences in the levels of Hispanic-white, Black-white and sex segregation there are not very dramatic differences by region in the trends. Hispanic-white segregation drops modestly and linearly in most regions. In all regions, Black-white segregation drops dramatically between 1966 and 1980 and then barely at all. Sex segregation drops dramatically and nearly linearly in all regions across the period.

Models and Measures

We use regression analyses to decompose time trends into components that represent sectoral and geographical shifts in employment. In these models we regress Male-female, Black-white and Hispanic-white segregation on a series of control variables for sample selection and errors in measurement and fixed effects for state and sector. D is measured as above:

$$D_{\text{ESTABLISHMENT}} = 100 * [.5(\sum |((n_1 / N_1) - (n_2 / N_2))|)]$$

where n_1 and n_2 refer to the number employed in status groups 1 and 2 in each occupational group and N_1 and N_2 refer to the number in status groups 1 and 2 employed by the whole establishment.

While we did not see strong regional differences in employment in the descriptive analyses, it is possible that when we examine shifts in employment at the state or local labor market level that 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. There is, however, substantial evidence in the descriptive material to suggest that the general sectoral 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.

Our basic strategy is to regress the observed Ds on time and then control through fixed effects modeling for sectoral and regional shifts in employment. For sector we experimented with three models. The first entered dummy variables for the same eleven sectors we have been analyzing. We then repeated this with two digit Standard Industrial Codes, and then again with three digit codes. For all three dependent variables explained variance increased significantly as industrial detail expanded. Thus we report decompositions of time trends based on three-digit industry fixed effects. We repeat the same analysis for sector moving from region, to state, and finally to commuting zones. We report state-level fixed effects in this paper because they marginally improved over accounting only for regional employment shifts and we did not have commuting zones available. A later version of the paper will test to see if commuting zones significantly improve model fit.

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

Sample selection. First, D by definition excludes workplaces that are homogenous 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 in the early years where a higher proportion of workplaces are sex or ethnically homogenous. Since this is a form of selection bias in our estimates we first compute the probability of being a homogenous workplace as a function of group employment size, year, industry, size, and state. These logistic regressions are interesting in their own right and are discussed in the next section. We also use these logistic regressions to produce an estimated probability of being excluded 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.

Random segregation. The smaller the workplace the higher the level of expected segregation because as employment size declines the baseline probability of segregation rises (Tomaskovic-Devey and Skaggs 1999). Firms with fewer incumbents have a higher baseline probability of segregation, even in cases where there are no gender preferences in assignment (Mayhew 1984). For example, firms with only one incumbent are, by default, sex segregated. To account for random sources of segregation, we include a measure we call the random segregation ratio (RSR), which measures the baseline probability that a workplace is integrated.

$$\mathbf{RSR = 100 * [(n-1)/(n+1)]}$$

Here n indexes total employment size. For firms with one incumbent, the probability of integration is zero. For two incumbents, the structural probability is 33.3 $[100 \cdot (2-1)/(2+1)]$ and 82 for ten incumbents. As illustrated, the probability rises very quickly with increased job size. Strictly speaking, these are the probabilities that firms are not segregated as a function of job size alone. We estimate the intercept for desegregation trends (i.e., estimated D in 1966) when this ratio is zero.

Establishment Size(ln). EEO-1 reports, because they use occupational groups within establishments rather than job titles to collect status distribution information, will tend to underestimate true job level segregation in the workplace and this underestimate will rise logarithmically with establishment size (Robinson, Taylor, Tomaskovic-Devey, Zimmer and Irwin 2003). The error-introduced underestimation of segregation that arises from using occupational groups, rather than job titles, will be greater the larger the workplace. We use the natural log of total employment size as a control for this source of error and estimate the intercept for desegregation trends (i.e., estimated D in 1966) with $(\ln)\text{Size}$ at its 1966 mean.

Occupational heterogeneity. Measurement error in estimated segregation is also dependent on the degree to which the nine occupational categories used to report to the EEOC actually mimic the firm level division of labor. In the regression models, we adjust for this source of measurement error by controlling for observed occupational heterogeneity within establishments. Establishments with low occupational heterogeneity will also have low segregation because of an

increased disjunction between the EEOC occupational categories and actual divisions of labor. For example, an occupationally heterogeneous workplace might 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 to distribute people across. A firm with all 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 so have higher segregation in practice. We use the Gibbs-Martin index of heterogeneity to control for this source of underestimation in segregation (Gibbs and Martin 1962):

$$H = 1 - \sum_{i=1}^9 (p_o^2)$$

Where p_o is the percent of total establishment employment in each occupation squared and then summed across all nine occupations. A more occupationally heterogeneous establishment has a higher baseline probability of segregation, and so this is a control for variability across workplace in the error introduced by occupational aggregation. We estimate the intercept for desegregation trends when heterogeneity is at its maximum ($H = 88$).

We begin by estimating three models of sample selection by regressing male-female, Black-white, and Hispanic-white homogenous organizations upon time, the status composition of the workplace, the random probability of segregation, (ln)establishment size, occupational heterogeneity, state fixed effects, and three digit industry fixed effects. Our regression models for changes in segregation begin with a model that regresses D on year. Second models

control for sample selection and the three sources of measurement error outlined above. Subsequent models add fixed effects for state and three-digit industry.

We display the decomposition results graphically.

Regression Decomposition of Desegregation

We took a 20 percent sample every five years starting with 1966 and 1972, and then in five-year increments after and including 1975. This led to a sample of 239,324 establishments. Table 1 shows the first stage of our analysis. We performed 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). As shown in Figure 1, homogeneity rarely occurs for males or whites.

Looking at the first column of the table, we can see that the odds of gender homogeneity decrease with time. The odds in 2000 are only 6 percent of what they were in 1966, the baseline year. Random segregation and occupational heterogeneity have only weak effects here, whereas increases in establishment size reduce the odds of gender homogeneity, as we would expect. Gender homogeneity effects across industry fall into two categories: higher odds of homogeneity compared to durable manufacturing among older, declining industries (agriculture, forestry & fishery; mining; construction; transportation, communication & utilities) and lower odds of homogeneity among newer, growing 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

gender homogeneity are small and positive, which tells us that the odds of gender homogeneity in establishments is marginally higher in all regions compared to the Pacific region.

Black/white homogeneity also declines over time, but not as much as gender homogeneity. The measurement error controls behave in the same way as in the previous model as do the industry effects. The largest contrast is in the regional effects. Odds of Black/white homogeneity are about twice those of the Pacific region in New England, West North Central region, and the Mountain region, whereas the same odds are substantially lower than the Pacific region in the South Atlantic, East South Central and West South Central regions. These results are not surprising given the geographic distribution of the Black population in the US.

In the last column, Hispanic/white homogeneity is modeled. The time trend is again similar to the other two types of homogeneity as are the effects of the measurement error controls. Industry effects are generally weak across the board. However, the regional effects are substantial and quite a bit stronger than those in the other two models. Establishments in regions other than the Mountain region, have much higher odds (2.23-40.02) of Hispanic/white homogeneity than the Pacific region. This makes sense for the regions where there are few Hispanic residents, such as New England. However, what is surprising here is that the odds of homogeneity are highest in one area where many Hispanics live --the East South Central region. Here homogeneity is likely not being driven by a lack of Hispanic workers, but by some kind of exclusion.

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

Explanatory Variables	Type of Homogeneity		
	No Females or No Males (n=4785)	No Blacks or No Whites (n=52696)	No Hispanics or No Whites (n=98090)
Year			
1971	0.70	0.66	0.59
1975	0.50	0.59	0.46
1980	0.29	0.50	0.36
1985	0.14	0.48	0.31
1990	0.08	0.42	0.24
1995	0.09	0.37	0.17
2000	0.06	0.33	0.11
Baseline Probability of Segregation (x100)	0.98	0.97	0.97
Gibbs & Martin Index (x100)	0.97	0.99	0.99
Ln (Establishment Size)	0.43	0.38	0.43
Industry			
Agriculture, Forestry & Fishery	1.34*	2.49	0.89*
Mining	8.08	1.90	1.72
Construction	2.21	0.64	1.01*
Non-Durable Manufacturing	0.55	0.92	1.17
Transportation, Communication & Utilities	2.18	0.55	1.07
Wholesale Trade	0.57	0.58	0.94
Retail Trade	0.14	0.58	0.87
Producer Services	0.16	0.57	0.83
Social Services	0.30	0.69	1.14
Personal Services	0.30	0.40	0.65
US Region			
New England	1.12*	1.63	7.34
Mid-Atlantic	1.52	0.79	6.06
East North Central	1.20	1.07	8.98
West North Central	1.45	2.03	10.91
South Atlantic	1.25	0.22	11.16
East South Central	1.55	0.30	40.02
West South Central	1.62	0.39	2.23
Mountain	1.12	2.07	0.94
Model Chi-Square (df)	19170(28)	57612(28)	83796(28)

N=239324

* Effect is NOT statistically significant at the 0.05 level.

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 due to not being in the models due to undefined D values.

Table 2 shows the regression decomposition of establishment sex segregation. The first model includes only the time trend, which explains 15 percent of the variation in the gender Ds. The second model includes the controls for measurement error in D and the selection probability of establishment homogeneity, which contribute an addition 28 percent of explained variation. Third, we add three-digit industry fixed effects and the R-square increases by 0.16. The fourth model should be compared to the second, with the addition of state fixed effects adding nothing to the explanation of the gender Ds. The last model includes all variables.

The model that best captures what is happening here is model 3. We can see that the time trend is as shown in Figure 2, gender D's decline steadily over the period from 1966 to 2000. By comparing the year coefficients in model 1 and model 3, we can see that about one third of the decrease over time is due to sectoral shifts in employment and measurement error. Therefore, it appears that establishment gender segregation is strongly linked to industry shifts in the economy.

Black/white segregation exhibits a similar pattern in some respects, as shown in Table 3. Again, we choose model 3 to interpret. About one third of the decrease in segregation over time is due to sectoral shifts and measurement

error. Again, the fixed effect for state adds nothing to our understanding of Black/white Ds. What is different here is that there is little additional explanatory power added with industry with only a 0.02 addition to R-square.

For Hispanic/white segregation, the picture changes a bit. In Table 4, the models that add industry and state effects individually each add an additional 0.02 to R-square. These effects appear not to overlap because when they are both added the last model the R-square increases 0.04. Model 5 then is the one we interpret. Again, the decline in D over time is reduced by about one third, but this time it is due to measurement error, as well as industry *and state* location of establishments. The effect of state is not surprising given the dynamic nature of the Hispanic population over this time frame. The Hispanic population has grown in the US and has moved into new regions. This is in contrast to the relative stability of the Black population geographically.

A consistent finding across these models is that larger establishments have lower segregation of all three types. This may be due to the more bureaucratized nature of job recruitment and placement in large establishments as well as the increased measurement error relative to job level segregation associated with the use of occupational groups. Another consistent finding is that the addition of the measurement error controls explains a large percentage of the variation in Ds. In models not shown here, we find that this is due almost exclusively to the introduction of the occupational heterogeneity control variable. This variable is correlated with industry, therefore the industry fixed effects are a

Table 2. Fixed-Effect Regression Models of Establishment Sex Segregation

Explanatory Variables	Models				
	(1)	(2)	(3)	(4)	(5)
Year					
1971	-6.24	-1.79	-1.29	-1.83	-1.32
1975	-10.87	-5.52	-5.05	-5.56	-5.08
1980	-17.44	-10.84	-10.54	-10.88	-10.59
1985	-22.97	-14.98	-13.96	-15.00	-14.01
1990	-26.67	-18.06	-17.03	-18.05	-17.09
1995	-30.73	-21.39	-19.54	-21.38	-19.62
2000	-33.70	-23.51	-21.59	-23.44	-21.66
Baseline Probability of Segregation (x100)	--	0.15	-0.57	0.14	-0.57
Gibbs & Martin Index (x100)	--	0.74	0.54	0.74	0.54
Ln (Establishment Size)	--	-4.75	-4.36	-4.80	-4.37
Probability of Establishment Sex Homogeneity (x100)	--	0.68	-0.36	0.65	-0.37
Industry (3-Digit SIC)	--	--	Fixed	--	Fixed
State	--	--	--	Fixed	Fixed
Intercept	69.95	28.75	--	--	--
R-Square	0.15	0.43	0.59	0.43	0.60
Change in R-Square	--	0.28	.16	0.00	0.17

N=234539

* Effect is NOT statistically significant at the 0.05 level.

Table 3. Fixed-Effect Regression Models of Establishment Black/White Segregation

Explanatory Variables	Models				
	(1)	(2)	(3)	(4)	(5)
Year					
1971	-6.94	-5.89	-5.43	-6.02	-5.79
1975	-10.56	-9.43	-8.80	-9.67	-9.34
1980	-14.12	-12.01	-11.35	-12.38	-12.12
1985	-16.54	-12.65	-11.95	-13.06	-12.81
1990	-17.24	-12.55	-11.95	-13.00	-12.92
1995	-18.43	-12.78	-12.26	-13.31	-13.37
2000	-18.89	-12.55	-12.08	-13.17	-13.33
Baseline Probability of Segregation (x100)	--	-0.21	-0.23	-0.27	-0.42
Gibbs & Martin Index (x100)	--	0.65	0.62	0.65	0.61
Ln (Establishment Size)	--	-4.25	-4.66	-4.44	-5.29
Probability of Establishment Sex Homogeneity (x100)	--	0.11	0.09	0.08	0.01
Industry (3-Digit SIC)	--	--	Fixed	--	Fixed
State	--	--	--	Fixed	Fixed
Intercept	52.86	53.19	--	--	--
R-Square	0.05	0.38	0.40	0.38	0.40
Change in R-Square	--	0.33	0.02	0.00	0.02

N=186628

* Effect is NOT statistically significant at the 0.05 level.

Table 4. Fixed-Effect Regression Models of Establishment Hispanic/White Segregation

Explanatory Variables	Models				
	(1)	(2)	(3)	(4)	(5)
Year					
1971	-2.09	-0.09*	0.35*	-2.07	-1.87
1975	-3.30	-0.43*	0.20*	-3.41	-3.10
1980	-5.68	-1.03	-0.36*	-5.01	-4.76
1985	-7.15	-0.79	-0.06*	-5.39	-5.15
1990	-8.06	-0.18*	0.52*	-5.66	-5.55
1995	-9.51	0.33*	0.83	-6.45	-6.64
2000	-11.33	0.61	1.16	-7.48	-7.75
Baseline Probability of Segregation (x100)	--	0.07*	0.02*	-0.14	-0.21
Gibbs & Martin Index (x100)	--	0.68	0.64	0.68	0.64
Ln (Establishment Size)	--	-2.40	-2.81	-5.06	-5.70
Probability of Establishment Sex Homogeneity (x100)	--	0.23	0.22	0.03	0.00*
Industry (3-Digit SIC)	--	--	Fixed	--	Fixed
State	--	--	--	Fixed	Fixed
Intercept	47.89	1.89	--	--	--
R-Square	0.02	0.36	0.38	0.38	0.40
Change in R-Square	--	0.34	0.02	0.02	0.04

N=141234

* Effect is NOT statistically significant at the 0.05 level.

second part of the industry effect. Thus shifts in industrial composition influence desegregation trends for two reasons – the move to services is both a move to less segregated workplaces and to workplaces whose internal divisions of labor are less well described by the EEO-1 occupational categories.

We use the results of the regression estimates to decompose total temporal change in segregation into two components –compositional change in employment location and a residual. The residual probably is a better estimate of true social change in workplace organizational practices –the intended goal of

Equal Employment Opportunity legislation. For all three comparisons about one-third of observed declines in segregation reflect changes in the size, industrial or state distribution of employment. All three comparisons show significant residual change in employment segregation, although this estimate of within workplace social change is much higher for sex segregation than for either Black-white or Hispanic-white segregation.

Table 5. Regression based decomposition of 1966-2000 desegregation into compositional and residual change components.						
	Male-female		Black-white		Hispanic-white	
	D	%	D	%	D	%
Total	33.70	100.0	18.89	100.0	11.33	100.0
Residual Change	21.59	64.1	12.08	63.9	7.75	68.4
Compositional Change	12.11	35.9	6.81	36.1	3.58	31.6

Figure 9 displays our estimated of time trends in EEO-1 based segregation after regression based adjustment for sample selection, measurement error associated with occupational structure and establishment size and industrial and state shifts in employment. We calculate the 1966 intercepts in this figure from the model 2 intercept, plus the predicted D when the Gibbs-Martin index is at it's maximum (88) and presumably measurement error in the use of EEO-1 occupational categories at it's minimum, average 1966 establishment size, and sample selection and size based predicted segregation are zero. These estimates are quite a bit different that the observed trends in Figure 2. The 1966 intercepts are uniformly higher, reflecting the adjustment for underestimated segregation using the EEO-1 occupational categories. In addition, for all three segregation indices the slopes are less dramatic, reflecting

that size, industrial, and geographic change in the EEOC reporting establishments created much of the observed decline in segregation in Figure 2.

-Figure 9 about here-

Hispanic-white segregation is the lowest of the three across the whole period, although it also displays the least decline. Between 1966 and 1980 Hispanic-white segregation declines by less than one percent a year (0.7 percent), turning nearly flat from 1980 to 1990 with a 0.2 percent per year decline, and accelerating to a meager 0.5 percent per year across the 1990s. In contrast, Male-female segregation is higher but declines more consistently across time, one percent per year before 1990 and 0.8% between 1990 and 2000. Estimated Black-white segregation is very high across the period and shows almost all of its decline prior to 1980. The rate of decline before 1980 is 0.9% a year, dropping to 0.07 percent in the 1980s and still lower 0.02 during the 1990s.

Conclusions

Prior to this paper the academic community could say with confidence very little about actual 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 suggested that both male-female and Hispanic-white segregation declined through about 1980 and was relatively flat thereafter. The same literature on Black-white segregation suggested declines through 1980 followed by increased segregation between 1980 and 1990. Our

estimates suggest that prior literature was not only incomplete, it was actually misleading.

Sex segregation declines strongly across the entire period. This decline is robust, happening in all regions and sectors. The decline is not strongly tied to specific time periods declining for about 1% per year after adjustments for measurement error and sectoral and regional employment shifts across the entire period. To the extent that there has been widespread progress in equal opportunity in employment it seems to be most clear for sex desegregation. In addition, the shift to a service economy has produced a substantial absolute decline in sex segregation.

Black-white desegregation began earlier than sex or Hispanic-white desegregation, but is much more uneven across regions and sectors. Most strikingly, Black-white desegregation stops during the 1980s and declines little in the 1990s. Occupation-based estimates of increased Black-white segregation are not confirmed in these workplace based estimates. The supposition that equal opportunity progress stalled around 1980 is generally supported, although some sectors stopped earlier (wholesale trade, producer services, non-durable manufacturing), some later (retail trade, transportation-utilities, mining) and some show very little decline at all (agriculture, durable manufacturing). The results for Black-white segregation are consistent with the argument that African American equal opportunity is politically mediated (Cancio et al 1989; Collins 1989), although the shift to a service economy has reduced Black-white segregation as well.

If this conclusion can be suggested for Black-white segregation, it would seem even more plausible for Hispanic-white segregation. The time trends in Hispanic-white segregation are much less dramatic, even in the peak enforcement years of the 1970s. Hispanic desegregation essentially stops during the 1980s. Across sectors Hispanic desegregation is even more uneven than Black-white desegregation. Hispanic-white segregation actually increases in producer services and agriculture and after 1980 only continues to decline in retail and mining.

The regression-based adjustments of time trends make clear that a about a third of the observed desegregation of U.S. employment reflects changes in sectoral composition, rather than actual within workplace change in status distributions. While the hypothesis that there has been real workplace desegregation remains plausible, it is important to be aware that the shift toward services, which had lower segregation to begin with, is an important source of that change.

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 some of the temporal change in segregation. In fact, after adjusting for sectoral shifts in employment there is essentially no national desegregation pattern for Hispanic-white employment. When state fixed effects are added to the model the modest decline we report in Figure 9 becomes apparent. This suggests that Hispanic-white desegregation is going on within

states, but that Hispanic employment is rising in states and industries with relatively high levels of segregation.

What is clear from this paper is that we know very little about the dynamics of employment segregation. We can now say with some confidence that there has been real desegregation since 1966 and that a good portion of it represents change in the spatial and especially industrial distribution of jobs. The regression models suggest that contemporary segregation is still quite high but that there is some evidence that real workplace change in status segregation may have happened. The paper also suggests that gender segregation has declined strongly and in most contexts, but that race-ethnic desegregation is temporally, spatially and industrially uneven.

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Figure 1. Gender or Race/Ethnic Homogenous Establishments, 1966-1999

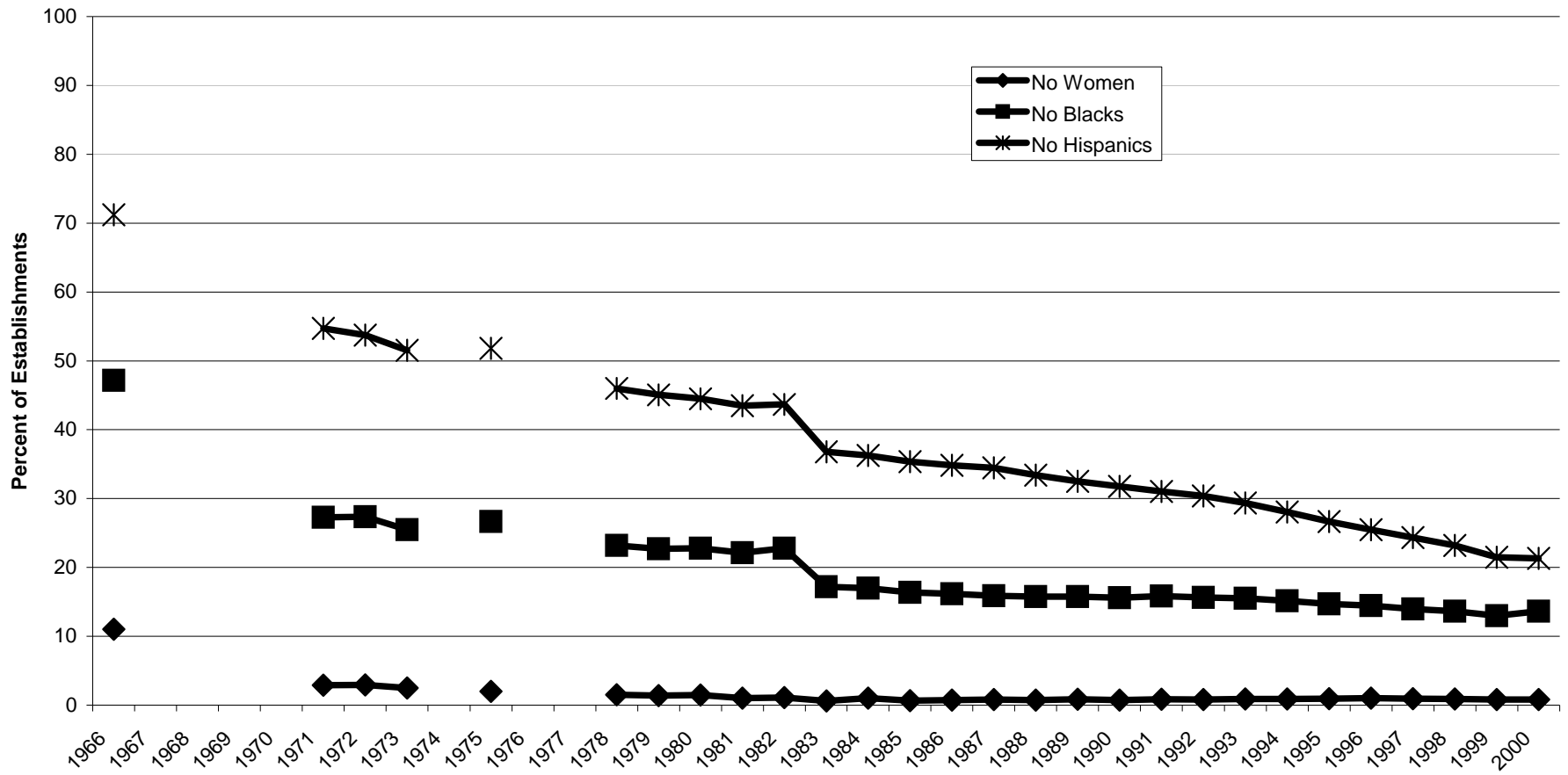


Figure 2. EEO-1 Establishment-level Dissimilarity Indices, 1966-2000

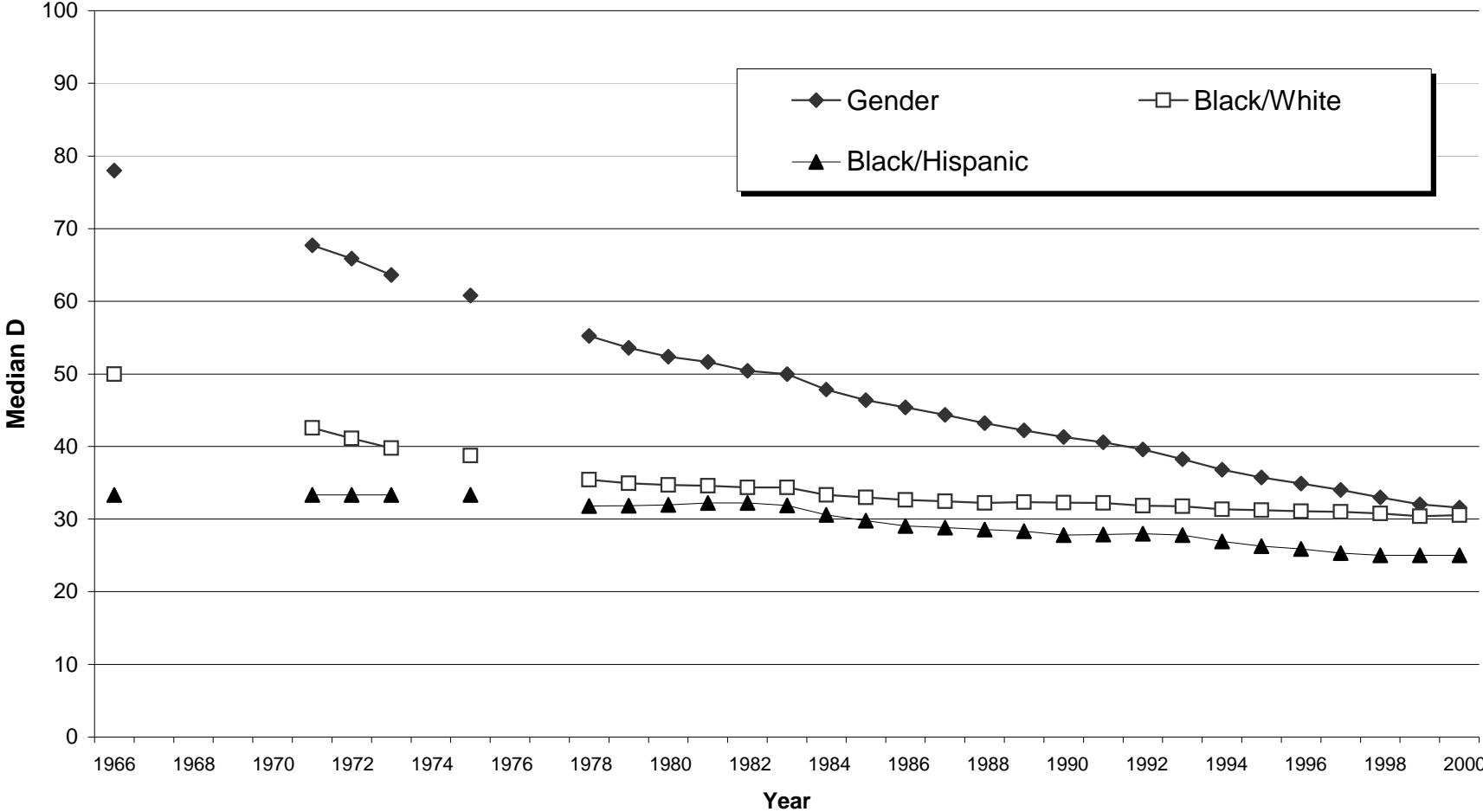


Figure 3. Trends in EEO-1 Sex Segregation by Sector, 1966-2000

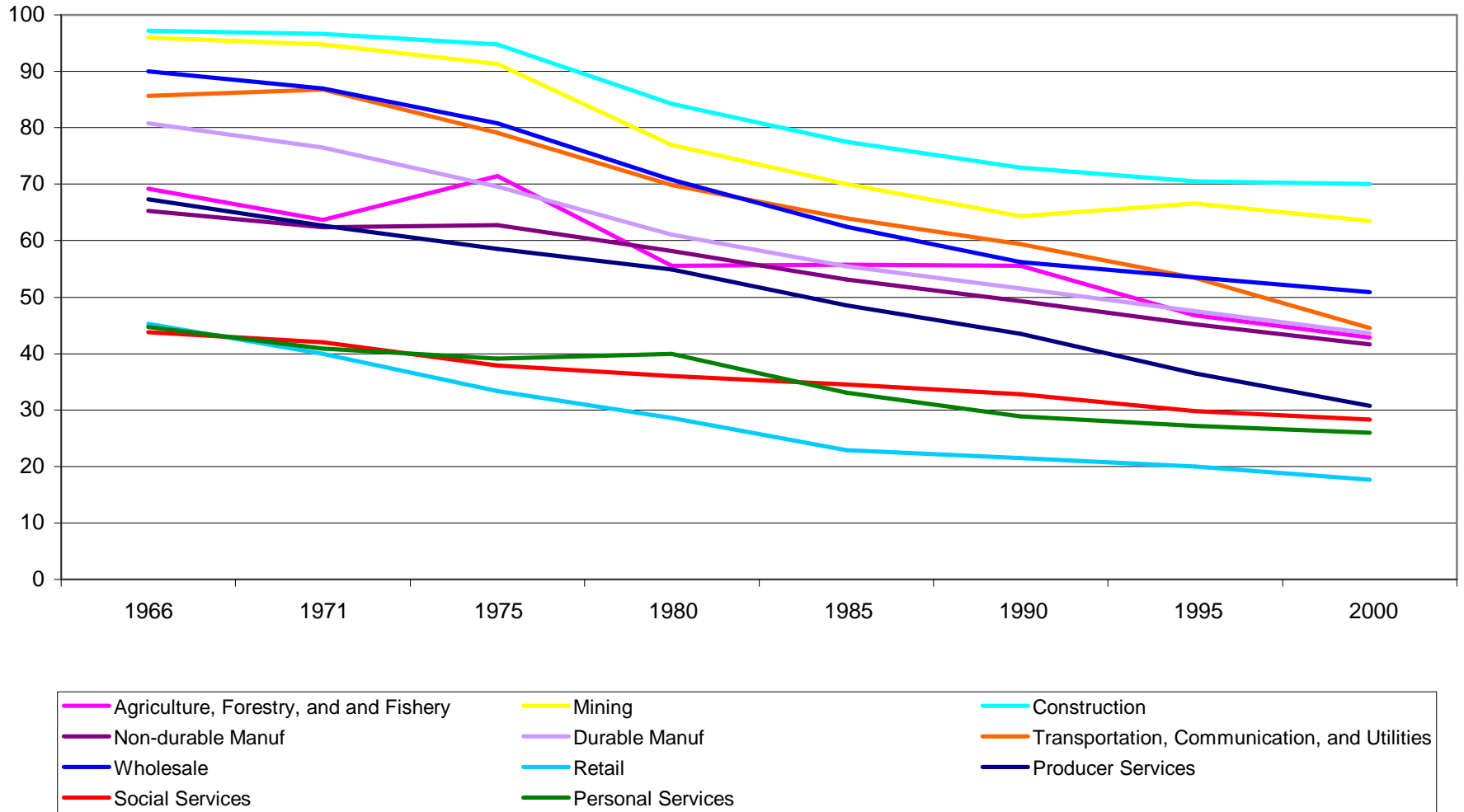


Figure 4. Trends in EEO-1 Black/White Segregation by Sector, 1966-2000

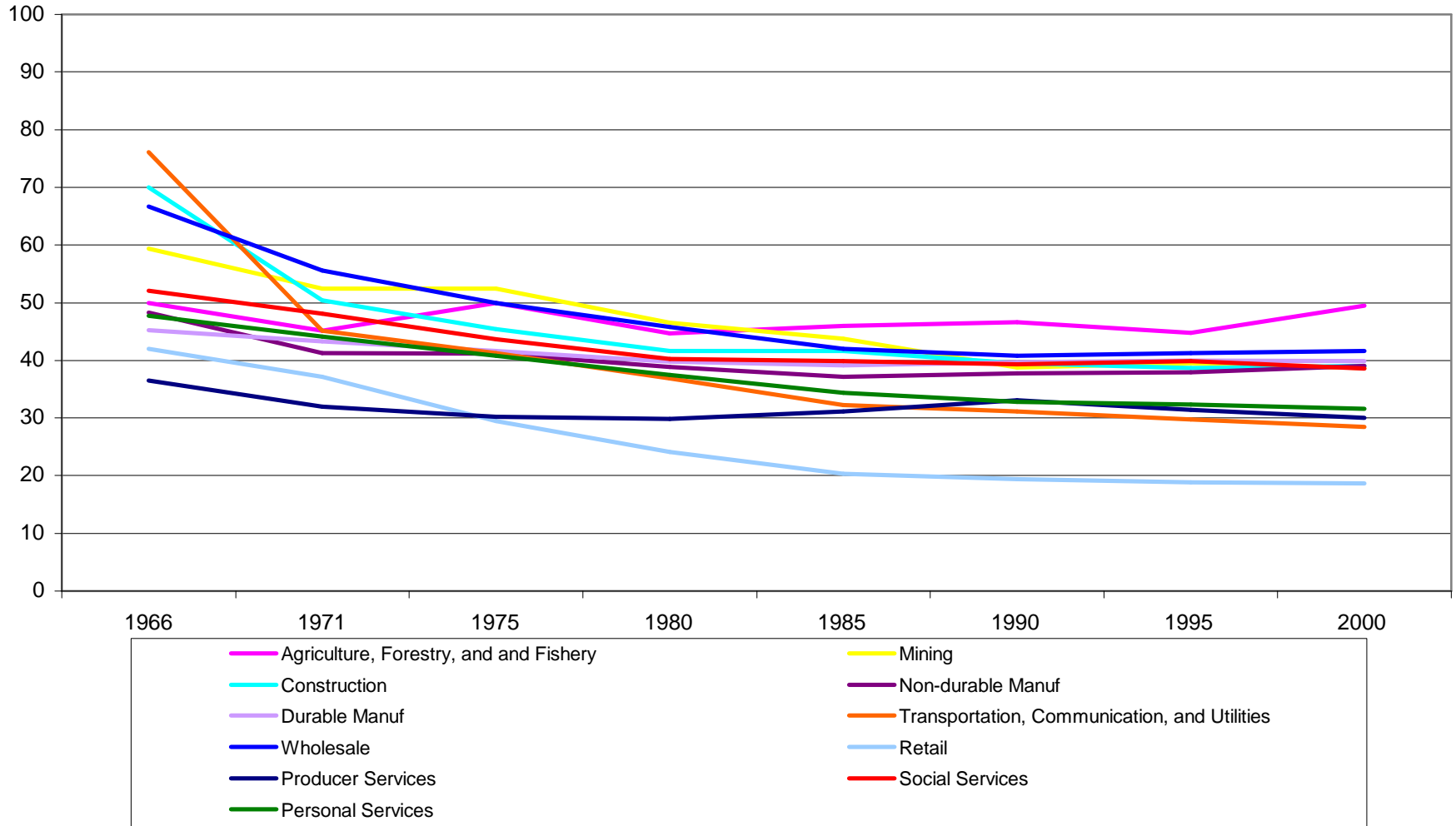


Figure 5. Trends in Hispanic/White EEO-1 Segregation by Sector, 1966-2000

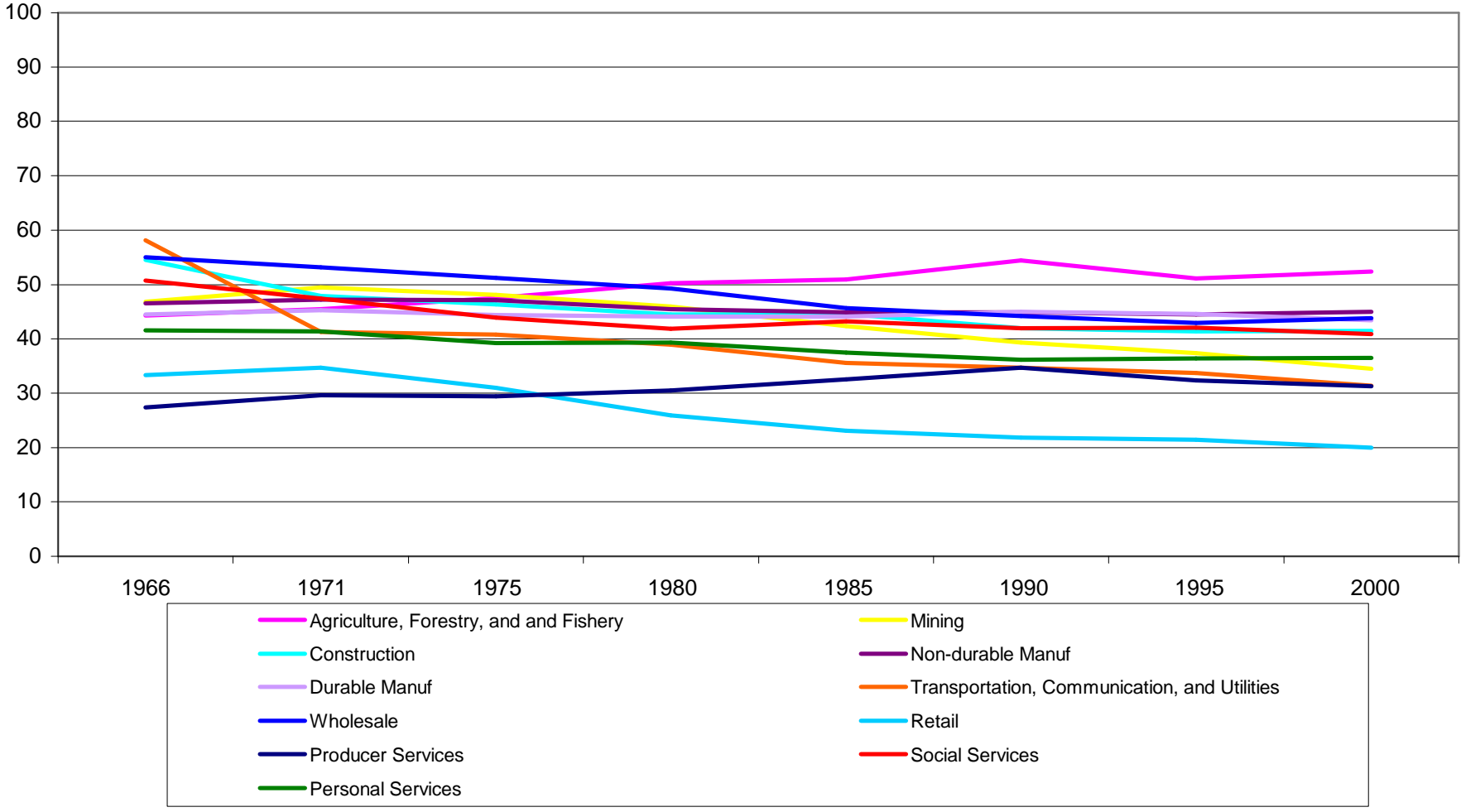


Figure 6. Trends in EEO-1 Sex Segregation by Region, 1966-2000.

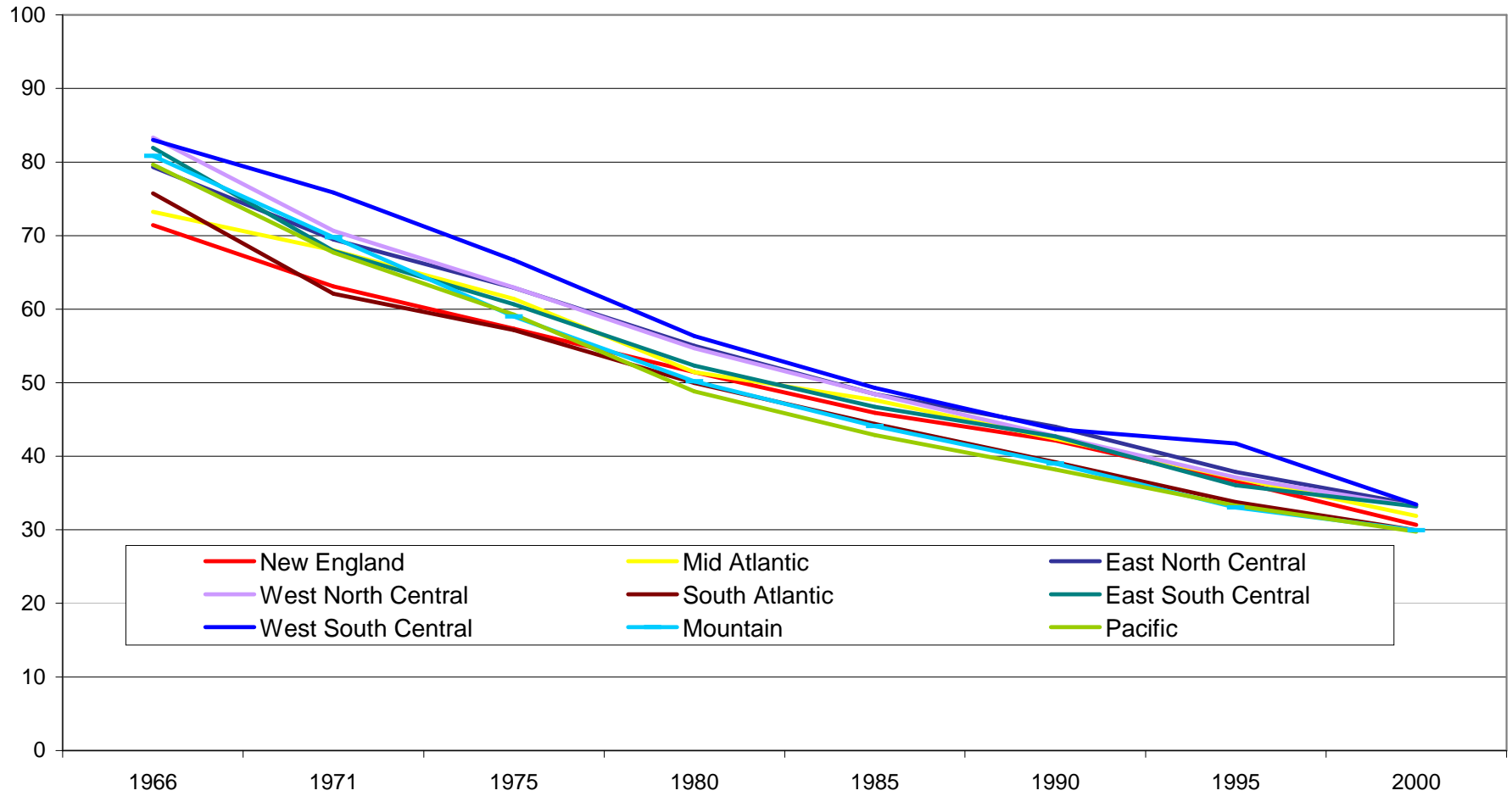


Figure 7. Trends in Black/White EEO-1 Segregation by Region

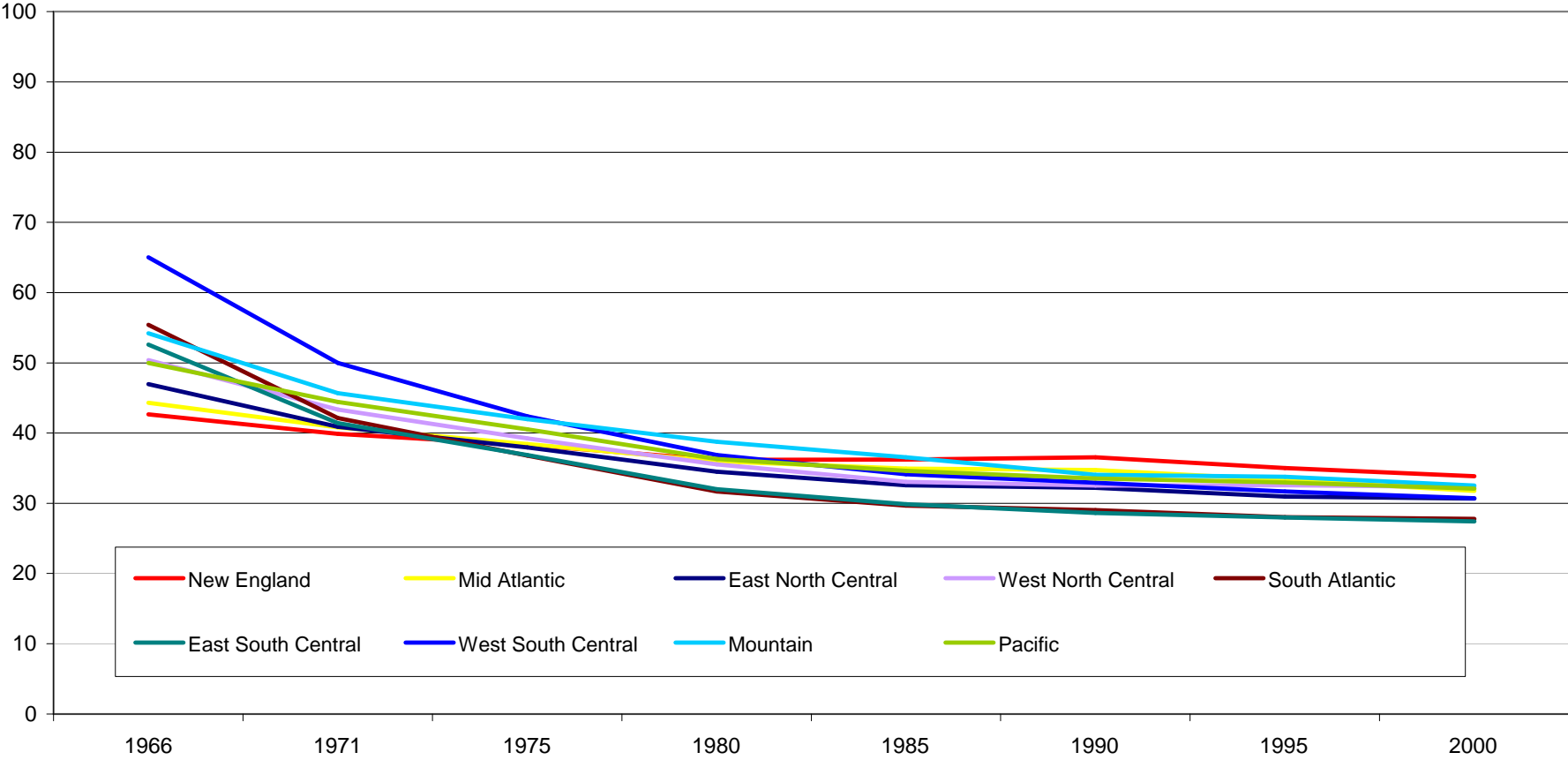


Figure 8. Trends in Hispanic/White EEO-1 Segregation by Region

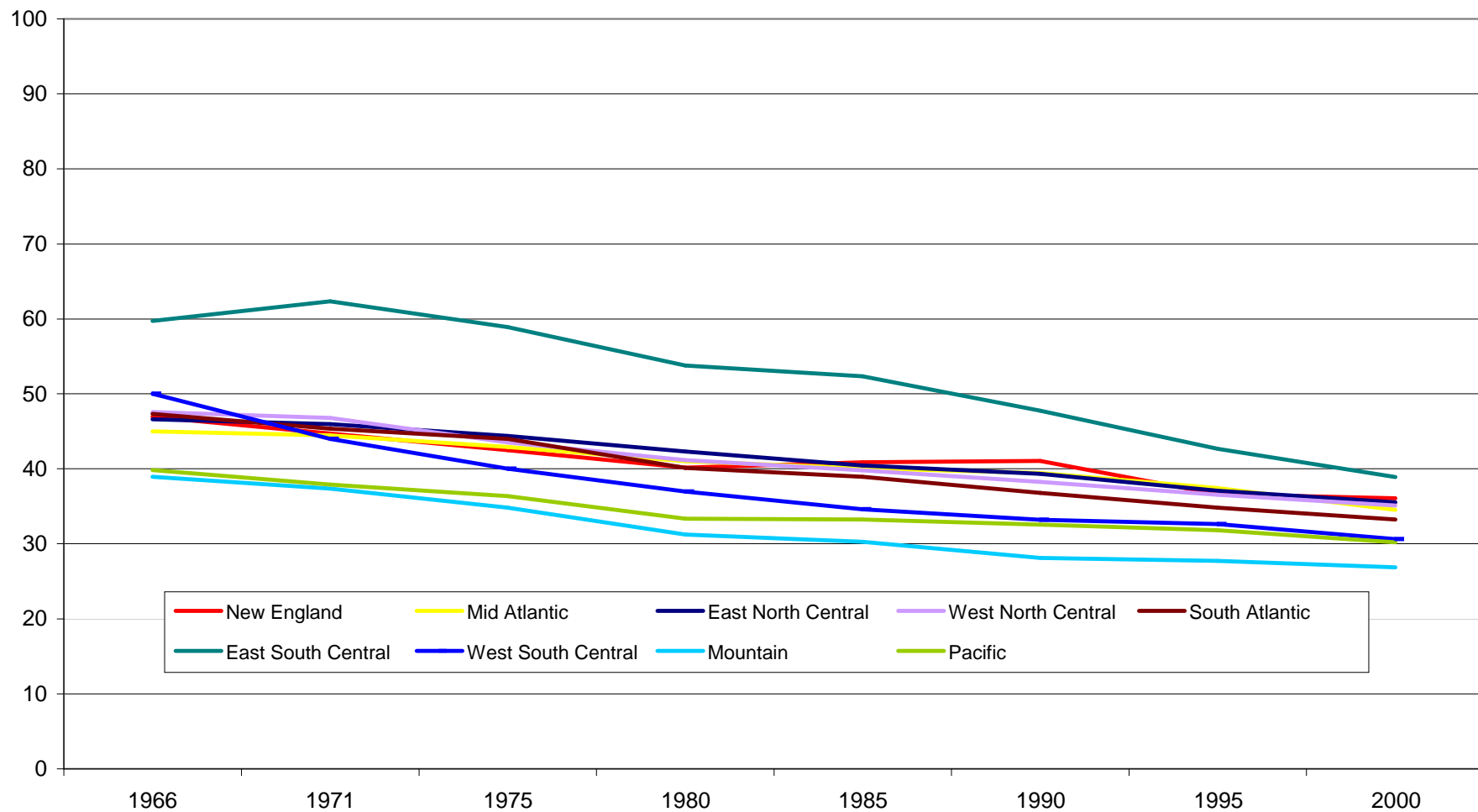


Figure 9. Estimated Time Trends in Sex, Black-white and Hispanic-white Employment Segregation, Best Fitting Model EEO-1 reports, 1966-2000

