

## **Still Stalled?**

Occupational Gender Desegregation 1950-2010

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### **Abstract**

This paper examines trends and patterns in occupational gender segregation over six decades, from the 1950s to the 2000s. It identifies two distinct periods: first a period from 1960 to 1990 of relatively rapid integration of occupations and a period after 1990 of diminishing declines in segregation. In short, while the level of occupational gender segregation fell steadily in the 1960s, 1970s and 1980s, it declined much more slowly in 1990s and little if any in the 2000s. While most of the desegregation in the early period can be attributed to changing sex composition of occupations, in the later period most of the desegregation comes from shifts in occupational structure. These diminishing declines are observed regardless of the measure of segregation or occupational classifications, and broadly across race, class, and cohorts.

## **Introduction**

### *A Stalled Revolution?*

Several sources have suggested a broad slowing in progress toward gender equality in the 1990s (Cotter, Hermsen and Vanneman, 2004; England 2010). A review of recent studies on trends in a variety of indicators suggests this slowing of progress, though as Cohen, Huffman and Knauer (2009) note not always explicitly -- on earnings (Blau and Kahn, 2006; O'Neil, 2003), professional and managerial employment (Stone, 2007; Percheski, 2008), managerial representation/segregation (Cohen and Huffman, 2007; Cohen, Huffman and Knauer, 2009), effects of managerial gender composition on desegregation (Huffman, Cohen and Pearlman, 2010), effects of motherhood on employment (Boushey, 2008), the rate of gains in education (Goldin, Katz, & Kuziemko, 2006) integration of college majors (England and Li, 2006) and gender role attitudes (Cotter, Hermsen and Vanneman, 2011; van Egmond, *et al.* 2011). The interpretation of these trends and changes as a "stalling," however, is contested (Reskin and Maroto 2011).

With regard to slowing in occupational gender integration, early observations to this effect come from Wells (1999), and Jacobs (2001; 2003) who used CPS data to extend segregation series into the late 1990s. Since then others have noted slowing of integration using Census PUMS, CPS and EEO-1 data (Cotter, Hermsen and Vanneman 2004, Hegewisch, Liepmann, Hayes, Hartmann 2010; Stainback and Tomaskovic-Devey, *et al.*; Weeden, 2004) -- though the timing and degree of the slowing differs.

### *The Significance of Segregation*

Occupational gender segregation can be conceived of as one dimension of gender inequality, or as a causal component in several aspects of gender inequality (Bridges, 2003; England, 2005). Differences in men's and women's occupations are strongly linked to differences in pay (Cotter, *et al.*, 1997; Levanon, England and Allison 2009; Petersen and Morgan 1995), access to authority (Huffman and Cohen, 2004) and opportunities for advancement (Maume, 1999). In short, whether occupational segregation forms the "backbone" of gender inequality in modern societies (Chang, 2000), or part of a broader structural and ideological system (Pettit and Hook, 2009), trends and patterns of occupational segregation are of importance for understanding gender inequality.

### *Segregation Scenarios*

Whether or not gender inequality exists as a single "system" or consists of multiple dimensions, social scientific approaches to change in gender inequality can be broadly classified into those which focus on the persistence of inequality, and those which emphasize the gradual demise of inequality, and those which focus on the unevenness of change (Charles, 2011). Weeden (2004) suggests three possible trajectories for gender segregation: reproductive, evolutionary and punctuated equilibrium. The reproductive trajectory would suggest a steady state in which levels of segregation remain relatively constant over time with little change in one direction or another. Alternatively the evolutionary perspectives posit a pattern of steady erosion of segregation. These perspectives are most consistent with functionalist theories in sociology and neoclassical economics suggest declines in segregation either due to increasing economic costs to indulging discriminatory tastes, increasing similarity in men's and women's human capital profiles, or that discrimination becomes normatively inconsistent with modern political and organizational forms (c.f. Blau, Brinton and Grusky, 2006). The punctuated equilibrium

model, however, is more attuned to idiosyncratic events which affect patterns of sex segregation – including major social and economic upheavals.

## **Methods**

### *Data*

Analysis of occupational segregation across detailed occupational categories requires large sample sizes. Therefore, most survey-based examinations utilize census data which can provide sufficiently large sample sizes to allow relatively detailed occupational categories. The data used in this paper combine United States Census Public Use Microdata Samples from 1950 through 2000 and American Community Surveys from 2001-2010 made available, and harmonized, by iPUMS (Ruggles, *et al.* 2010). The 2000 Census marked the end of the “long form” questionnaire which asked a sample of respondents questions, including occupation, beyond age, race and natality included on the “short form.” The long-form Census was replaced in 2001 with the American Community Survey which replicates much of the content of the “long form” questionnaire to a sample of the U.S. population each year. The ACS is designed to allow national-level representation on an annual basis, three and five year aggregations for geographies smaller than the state level. While the ACS is substantively similar to the Census PUMS, there are differences in definition of the population and residency, that may affect comparability of estimates for some areas of interest. Notable for this paper are that while the Census data collection takes place from March to August, ACS data collection proceeds throughout the year (U.S. Census Bureau, 2008). Most of the analyses presented here utilize the civilian labor force aged 25-64, though some broaden the sample to include all individuals aged 16 and over. In our

comparisons to Census estimates we aggregate three years of ACS data, combining 2001-3, 2004-6 and 2008-10. Sample sizes for these data can be found in Appendix Table 1.

### *Occupational Coding Schemes*

Estimates of levels of segregation are affected by the detail of occupational categories – more categories reveal higher, and probably more accurate, estimates of segregation. Comparisons across time, or other units, require consistent categories. The Census Bureau, however, changed the occupational classification scheme used in each decennial census, with the most substantial of these changes taking place from 1970 to 1980 and from 1990 to 2000. Reconciling these changes in coding requires developing consistent sets of codes which bridge these modifications. However, because observed changes in patterns or trends in segregation might merely be artifacts of modifications in occupational classification schemes, we utilize three different coding schemes covering different periods. In addition, longer time series which bridge multiple coding scheme revisions result in the greatest level of aggregation of occupations.

In each case we begin with iPUMS' harmonization of the occupational categories (Ruggles, *et al.*, 2011), and then are forced to collapse some occupational groupings together in order to ensure that there are no empty cells in our occupation by year by sex matrix. The first coding scheme results in a set of 179 occupations covering the years 1950-2010, based on iPUMS' harmonization of codes to the 1950 census categories (OCC1950) (Ruggles, *et al.* 2010, Chapter 4). This longest time span has the least detail in occupational categories, the consequence of which is to bias segregation estimates downward. Similarly, we develop a modified set of 320 codes covering the years 1980 to 2010 based on iPUMS' use of BLS technical papers to translate

occupations into 1990 categories (OCC1990)<sup>1</sup>. Finally, we examine a set of 496 occupations from 2000-2010 giving us the greatest level of occupational detail but covering the shortest time span. The longer time span made possible in the 1950 codes makes this operationalization of occupation our preferred data series, however as we show below substantively similar results are generated from each measure.

### *Segregation Measures*

While there has been considerable criticism in recent years of exclusive focus on segregation indices (Charles and Grusky, 2004), and debate about appropriate indices (Baunach, 2002; Bridges, 2003; Charles and Grusky, 2004; Jacobs, 2001; Jerby, Semyonov, and Lewin-Epstein 2005; Weeden, 2004), we argue that such an overall description of the *trends* and *patterns* in occupational segregation is essential for understanding the broad pattern of occupational segregation. To ensure that the changes (and stagnation) we observe are not merely due to measurement selection, we utilize three indices of segregation: the index of dissimilarity (D), a size-standardized index of dissimilarity (SSD), and the log-linear segregation index (A). The most familiar of our segregation measures, the index of dissimilarity, can be interpreted as the proportion of men or women who would have to change occupations in order for all occupations to have a female share equal to the labor force. D is calculated as:

$$D = \frac{1}{2} * \sum \left| \left( \frac{F_i}{F} \right) - \left( \frac{M_i}{M} \right) \right|,$$

where  $F$  represents all the women in the sample in a given year,  $F_i$  the number of women in occupation  $i$ ,  $M$  the total number of men in the sample, and  $M_i$  the number of men in occupation

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<sup>1</sup> Collapsing categories for consistent occupations from 1950-2010 using the 1990 codes reduces the number of occupations to 164. Because this resulted in less detail than the 1950 codes we abandoned this approach.

*i*. The D statistic has been criticized for being sensitive to the size of occupations of which it is composed, weighting larger occupations more heavily. Further, changes in D may reflect changes in the overall occupational structure rather than actual integration of occupations. The size-standardized index of dissimilarity addresses this problem by equalizing the weight given to each occupation regardless of size:

$$SSD = \frac{1}{2} * \sum \left| \left( \frac{F_i / T_i}{\sum F_i / T_i} \right) - \left( \frac{M_i / T_i}{\sum M_i / T_i} \right) \right|,$$

where all terms are as defined above and  $T_i$  represents the total number of women and men in occupation *i*. Thus, SSD can be used to show changes in segregation net of changes in the size of occupations. Finally, because D is also sensitive to the gender composition of the labor force, we calculate a margin free log linear index developed by Charles and Grusky (2004):

$$A = \left\{ \frac{1}{n} * \left[ \sum \ln \frac{F_i}{T_i} - \frac{1}{n} \sum \ln \frac{F_i}{T_i} \right]^2 \right\}^{\frac{1}{2}},$$

where  $n$  represents the number of occupations, and all other notations are as defined above. The A index depends on neither the size of occupations nor the gender composition of the labor force.<sup>2</sup> A can be interpreted as changes in segregation net of changes in either occupational size or gender composition of the labor force.

### *Decompositions*

We decompose changes in the D statistic into three components: a part that is due to changes in occupational structure (i.e. due to growth of integrated occupations, and/or the decline of

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<sup>2</sup> The log-linear index not only requires that  $T_i \neq 0$ , but also  $F_i \neq 0$ , and  $M_i \neq 0$ . To address this we used a constant (1) in place of those instances in which there were no female incumbents in an occupation. We did this for 44 out of 5760 occupation\*year\*sex cells.

segregated ones) and a part that is due to changing gender composition within occupations (i.e. the rising number of female managers) and an interaction between these two components (Blau and Hendricks, 1979; Cotter, *et al*, 1995). The occupational structure effect is defined as:

$$\frac{1}{2} * \sum \left| \left( \frac{F_{i1} * T_{i2}}{\sum F_{i1} / T_{i2}} \right) - \left( \frac{M_{i1} / T_{i2}}{\sum M_{i1} / T_{i2}} \right) \right| - \sum \left| \left( \frac{F_{i1} * T_{i1}}{\sum F_{i1} / T_{i1}} \right) - \left( \frac{M_{i1} / T_{i1}}{\sum M_{i1} / T_{i1}} \right) \right|,$$

The occupational gender composition effect can be defined as:

$$\frac{1}{2} * \sum \left| \left( \frac{F_{i2} / T_{i1}}{\sum F_{i2} / T_{i1}} \right) - \left( \frac{M_{i2} / T_{i1}}{\sum M_{i2} / T_{i1}} \right) \right| - \sum \left| \left( \frac{F_{i1} * T_{i1}}{\sum F_{i1} / T_{i1}} \right) - \left( \frac{M_{i1} / T_{i1}}{\sum M_{i1} / T_{i1}} \right) \right|,$$

### *Demographic Disaggregation*

After describing the general trends in occupational gender segregation, and decomposing the structural and compositional sources by decade, we proceed to examine whether these changes are widespread or are relatively isolated within the labor force. We disaggregate the trends by calculating segregation statistics for a series of demographic and labor force characteristics, including race/ethnicity, education, class and cohort.

## **Results**

For illustrative purposes we present the gender composition of a set of selected occupations in Table 1, grouping them into “male” (less than 30% female in 2010), “mixed” (30-70% female) and “female” (70% or more) When compared to the 1950s, all the occupations show *some* signs of integration. In some cases it is dramatic. For instance, only 8% of bakers were women in 1950 and by 2010 nearly 60% were. Similarly, bill collectors transition from a male occupation (15% female in 1950) to a “female” one by 2000 (74% female) (see Reskin and Roos, 1992 for compelling case studies of several of these occupations). But for a number of

occupations, the progress toward integration slows or stalls after 1990. A near parallel to the broader trend we observe is that, female representation among electrical engineers doubles in each decade for the 1960s, 1970s and 1980s, and then only increases by a percentage point in the 1990s and not at all in the 2000s, having apparently topped out at ten percent. Similarly, among managers, female representation increases approximately one percentage point per year in the 1970s and 1980s, but slows to just three percentage points in the 1990s and just two in the 2000s.

Figure 1, and the first three rows of Table 2 , present three segregation statistics for the 179 occupations based on the 1950 codes. Across all three measures, a relatively consistent pattern emerges: a slight resegregation in the 1950s, followed by a steady decline from 1960-1990, slowing in the 1990s, and stalling in the 2000s. The D-statistic declines between four to five points in each decade from 1960 to 1990, dropping by a total of 14 points. From 1990 to 2000 it drops just two points, and in the 2000s only 1/3 of a point. In fact the amount of change in the 1980s is nearly twice as much as the change observed in the 1990s and 2000s combined.

The size standardized index (SSD) shows a similar pattern, though the overall estimate of segregation is higher. The log-linear index (A) also exhibits the pattern of resegregation in the 1950s, desegregation from 1960-1990 and a slowing the 1990s followed by stagnation or even resegregation in the 2000s.

As the remaining lines in Table 2 illustrate, sample restrictions and occupational coding schemes do not appear to account for the slowing of integration. Sample selection does not much affect our substantive conclusions about the general trend: whether we restrict the analysis to “prime aged” or 16+, the labor force desegregated rapidly between 1960 and 1990 and has changed little since then. More detailed occupational schemes show higher overall levels of

segregation, but again similar patterns. The 1990 occupational coding scheme using 320 occupations show more than four times as much desegregation in the 1980s as either the 1990s or 2000s. The most detailed coding scheme using 460 categories from the 2000 Census and 2001-2010 ACS shows a slight decline (1.4 points) in the overall levels of segregation in the last decade. Occupational gender integration appears to have slowed in the 1990s and stalled in the 2000s.

### *Sources of Desegregation*

Our next analysis (Table 3) disaggregates changes in segregation into its two main sources. The most obvious of these is the integration of previously segregated occupations – women becoming doctors and (far less often) men becoming nurses. The second component comes from the shift in the occupational structure – the growth of already integrated occupations such as cooks and the shrinking of segregated ones (miners since the 1950s, secretaries since the 1970s). A third portion of total segregation comes from an interaction between the two sources: often the fastest growing occupations are those which are integrating most (Cotter, 1995).

In the 1950s the small decline in segregation (-0.44) is due mostly to that interaction, with the structural and compositional effects operating in nearly equivalent and opposite directions: the compositional effect leading to segregation, the slightly larger structural effect to desegregation. In the 1960s, 1970s and 1980s the bulk of the desegregation came from the integration of segregated occupations. By the 1990s this effect is substantially reduced. By the 2000s it appears that, had it not been for the integrative effects of structural changes, there may be some resegregation of those integrated occupations. In most decades, except the 1970s, the structural effects contribute to desegregation. In the 1990s it was the prime source of

desegregation, accounting for nearly three quarters of the nearly two point decline. However, in the 2000s, structural change accounts for very little of the decline in segregation; most desegregation in the 2000s was due to changes in the gender composition of occupations.

A second way of decomposing desegregation looks at whether changes in segregation are due more to women shifting into formerly male occupations or men moving into formerly female occupations. To assess this we examine the extent of between gender segregation across census years (or ACS years), comparing, for instance, women in 2010 to men in 2000 and men in 2010 to women in 2000. These results, shown in Table 3a show that the period 1970-1990 saw the largest declines in sex segregation (change in  $D = -5.6$  and  $-4.4$ ). During that period, women's occupations shifted each decade to look more like where men's occupations had been ( $-6.4$  and  $-3.6$ ) – that is, women were entering previously male occupations. But men did not enter previously female occupations; in fact, each of those two decades their occupational distributions shifted slightly *away* from where women's had been ( $+2.9$  and  $+0.9$ ).

In the slower or non-existent changes since 1990, ( $-1.9$  and  $-0.8$ ) the pattern is quite different. From 1990-2000, women's occupations shifted only modestly to look like 1990 men's occupations ( $-2.0$ ); and from 2000-2009, they shifted back away from where men were in 2000 ( $+2.1$ ). Men's occupations, however, did shift slightly each decade towards a more female-like distribution ( $-2.1$  and  $-1.9$ ). Men's occupations in 2000 looked more like women's 1990 occupations than they had ten years earlier. This continued in the first decade of the next century.

### *Demographic Disaggregation*

We utilize demographic disaggregations to assess the degree to which desegregation – and its stalling – occurred evenly across demographic subgroups. Table 4 shows these trends by race/ethnicity, specifically women’s segregation from men of the same race/ethnicity. In general, there were rapid changes for all groups from 1960 to 1990, these slowed for all but Asians in the 1990s. In the 2000s, integration stalled for whites, slowed for Asians and African Americans, and increased for Hispanics and Native Americans.

Table 5 presents results from disaggregation by education and class. As shown in the top panel of Table 5, when we disaggregate by educational levels we observe the following: Levels of occupational segregation are now much lower among college graduates than other levels of education but this difference emerged *during* the gender revolution of the 1960s, 1970s and 1980s because integration proceeded much more quickly among college graduates than non-college graduates. As seen before, though, the general pattern is of greater change in the 1960s through 1980s with slowing in the 1990s and stalling in the 2000s.

The bottom panel of Table 5 shows what happens when we split the occupational spectrum by class – essentially 112 working class and 67 professional/managerial class occupations. These are constructed following Poulantzas (1974) Eherenreich & Eherenreich, (1979), and Vanneman and Cannon (1987)<sup>3</sup>. Most notable here is that nearly all the desegregation that has taken place in the last sixty years took place in those middle class occupations. In fact, the working class occupations are nearly as segregated today as they were in 1950 and have become more segregated since 1990. However, the stronger integration of middle-class occupations even continued in the 1990s. But even that stopped – and perhaps

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<sup>3</sup> The list of occupations by class can be found in Appendix Table B.

rolled backwards – in the 2000s! Only the continuing shift from (segregated) working class to (more integrated) middle class occupations kept the 2000s from being a period of resegregation.

Our final disaggregation involves an age-period-cohort analysis of patterns in occupational gender segregation. As is typical with an age-period-cohort analysis there is clearly some of each at play in Table 6. In terms of the period effects, the changes operate broadly across cohorts – all those in the labor force see declines in the 1960-1980s. Those cohorts who bridge the 1980s through 1990s show less integration in the 1990s than 1980s. Only the most recent cohort shows a pattern favoring integration in the 2000s – but it should be noted that these respondents are in their teens when they enter the series and early 20s by the end.

The cohort effect story here is relatively clear too – mostly small differences between cohorts which follow the pattern of each successive cohort entering the labor force more integrated than the one before it and stay about that distance from the cohort before them.<sup>4</sup> An entering cohort is generally 4-5 points more integrated than the cohort forty years prior so cohort replacement accounts for a part of the occupational integration over time. There is little evidence that this cohort replacement effect is weakening so it cannot explain the post 1990s stall in occupational integration. In fact, since the cohort replacement effect is maintained into the present, the actual period effects within cohorts after 1990 must be towards re-segregation.

Nevertheless, most of the integration from the 1960s through the 1980s appears to be a *period* effect. Women and men in almost all cohorts (and thus almost all ages) experienced more occupational integration during this period. The national change was accelerated somewhat by

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<sup>4</sup> The only exceptions to this are the 1975-1984 group who enter equal to the prior cohort and become **more** segregated, and the 1915-1924 cohort who, in late life continue to exhibit integration through the 1990s.

cohort replacement effects. However, almost all cohorts (and ages) experienced a stall or even slight re-segregation after 1990 which balanced the small increased integration due to cohort replacement.

## **Discussion and Conclusion**

The results presented above show that occupations desegregated substantially from the 1960s through the 1980s, this desegregation slowed in the 1990s and stalled in the 2000s. These findings are robust to measure of segregation, sample selection, and occupational classification scheme. Broadly, the same pattern holds across racial/ethnic and educational groups. In terms of class we have shown that nearly all of the desegregation has taken place in “middle class” occupations, but that even this has slowed in the recent period. Finally, we show that much of the desegregation in the early period was due to integration of segregated occupations; the only source in more recent times has been from shifts in the composition of occupations with more integrated fields growing while segregated ones shrink. Our age-period-cohort analysis confirms that much of the change over the gender revolution was a period effect experienced broadly across cohorts, while any recent integration is attributable to cohort replacements of more recent, more integrated cohorts replacing earlier, more segregated cohorts.

Just as the integration of occupations in the 1960s-1980s proves a challenge for reproductive accounts of segregation regimes, so the stalling of the 1990s and 2000s presents a challenge to the evolutionary accounts. Neither of these can be used to explain both the fact of substantial change in one period and its absence in another. Our findings therefore, most support a “punctuated equilibrium” model which posits that exogenous forces intervene in social systems. The puzzle for future research will be to identify potential mechanisms for that punctuation.

One candidate would be the decline in public feminist protest which most accounts date from the 1980s (Costain 1992; Minkoff 1997; Barakso and Shaffner 2006), what Ferree and Hess call a period of “defensive consolidation” after the defeat of the ERA in 1984. By the late 1980s the political and media backlash against feminist change had been thoroughly mobilized (Faludi 1991). Together with an increased emphasis on intensive motherhood (Hays 1996), a climate arose that legitimated resistance to further gender equality. This resistance could easily have prompted the stall in occupational gender segregation.

A second candidate might simply be the near-exhaustion of the limited process of occupational integration that had been observed in the previous decades. By 1990 most of the remaining large segregated occupations were either working-class (e.g., mechanics and construction workers) or predominantly female (e.g., nurses and teachers) neither of which had witnessed much occupational integration even during the heyday of the 1970s and 1980s. Continued occupational integration may depend on more men entering middle-class “women’s work” or more women entering working-class “men’s work”. Either of those changes would be quite different from the occupational integration from the 1960s through the 1980s.

While most explanations of occupational gender segregation focus on either supply side (characteristics and preferences of women and men as workers) or demand side (aspects of occupations, organizations, labor markets, or time periods which make them more or less open to integration), both the decline of feminist protest and the exhaustion of middle-class integration of male occupations could incorporate either demand-side or supply-side factors. The challenge is to develop models which can incorporate both *and* account for change (and its absence) over time (England 2011).

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Table 1. Gender Composition of Selected Occupations, 1950-2010

<b>% Female</b>	<b>1950</b>	<b>1960</b>	<b>1970</b>	<b>1980</b>	<b>1990</b>	<b>2000</b>	<b>2010</b>
<b><u>Male Occupations</u></b>							
Electricians	1%	1%	2%	2%	2%	3%	2%
Firemen, fire protection	0%	0%	0%	1%	2%	3%	4%
Truck and tractor drivers	0%	0%	1%	2%	5%	6%	5%
Airplane pilots and navigators	0%	1%	1%	1%	3%	4%	5%
Electrical-Engineers	0%	1%	2%	4%	9%	10%	10%
Policemen and detectives	2%	3%	4%	5%	12%	14%	16%
Clergymen	4%	2%	2%	5%	10%	15%	17%
Architects	2%	3%	3%	8%	15%	21%	27%
<b><u>Mixed Occupations</u></b>							
Lawyers and judges	3%	4%	5%	14%	24%	30%	36%
Physicians and surgeons	4%	6%	9%	14%	21%	27%	36%
Mail carriers	2%	2%	8%	12%	27%	35%	39%
Managers, officials, and proprietors	11%	14%	15%	25%	34%	37%	39%
Bus drivers	3%	10%	30%	48%	53%	55%	51%
Real estate agents and brokers	13%	26%	33%	47%	52%	53%	53%
Officials & administratators (Pub Admin)	19%	24%	21%	34%	57%	57%	57%
Bartenders	7%	12%	22%	44%	55%	58%	58%
Bakers	8%	16%	31%	39%	47%	55%	59%
Accountants and auditors	11%	16%	25%	36%	53%	59%	62%
<b><u>Female Occupations</u></b>							
Collectors, bill and account	15%	17%	37%	61%	69%	74%	70%
Medical and dental-technicians	45%	58%	58%	69%	74%	70%	71%
Waiters and waitresses	82%	89%	92%	88%	85%	79%	74%
Teachers	70%	70%	66%	67%	73%	75%	76%
Librarians	88%	89%	85%	85%	86%	85%	85%
Nurses, professional	97%	98%	92%	91%	91%	89%	87%
Bank tellers	39%	72%	88%	94%	94%	95%	87%
Stenographers, typists, and secretaries	92%	96%	96%	98%	98%	97%	96%

**Figure 1. Trends in Occupational Gender Segregation, 1950-2010**

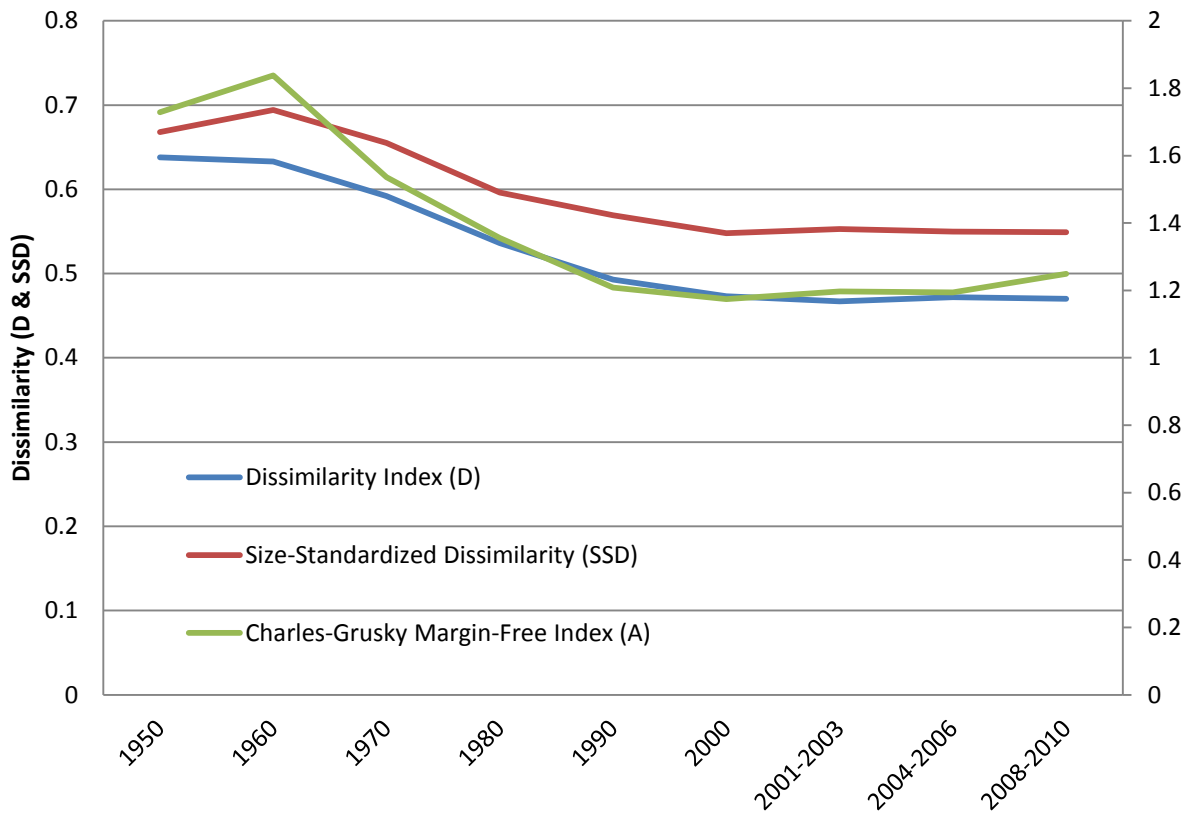


Table 2. Alternative Measures of Segregation, Samples and Occupational Classification Schemes

Year	1950	1960	1970	1980	1990	2000	2001-2003	2004-2006	2008-2010		
<u>Employed Civilian Labor Force 25-64</u>											
Dissimilarity Index (D)	0.638	0.633	0.592	0.536	0.493	0.473	0.467	0.472	0.470		
Size-Standardized Dissimilarity (SSD)	0.668	0.694	0.655	0.596	0.569	0.548	0.553	0.550	0.549		
Charles-Grusky Margin-Free Index (A)	1.729	1.838	1.536	1.356	1.208	1.174	1.197	1.194	1.249		
<u>Alternate Sample Restrictions (D)</u>											
ECLF 16+	0.640	0.635	0.588	0.532	0.482	0.458	0.450	0.456	0.453		
CLF 25-64	0.638	0.641	0.599	0.542	0.491	0.471	0.464	0.469	0.468		
<u>Alternate Occupational Classifications (D, ECLF 25-64)</u>											
1950 Codes (179)	0.638	0.633	0.592	0.536	0.493	0.473	0.467	0.472	0.470		
1990 Codes (320)					0.575	0.529	0.521	0.514	0.513		
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
2000 Codes (460)	0.533	0.525	0.529	0.529	0.527	0.527	0.527	0.525	0.525	0.523	0.519

Table 3. Decomposition of Changes in Occupational Segregation

Year	1950	1960	1970	1980	1990	2000	2008-10
<b>Actual D</b>	0.638	0.633	0.592	0.536	0.493	0.473	0.470
<b>Structural</b>		0.616	0.619	0.597	0.529	0.477	0.473
<b>Composition</b>		0.657	0.612	0.537	0.500	0.485	0.469
		<b>1950-1960</b>	<b>1960-1970</b>	<b>1970-1980</b>	<b>1980-1990</b>	<b>1990-2000</b>	<b>2000-2010</b>
<b>Actual Change</b>		-0.44	-4.17	-5.57	-4.35	-1.91	-0.34
<b>Change from shifts in occupational structure</b>		-2.23	-1.45	0.56	-0.72	-1.51	-0.09
<b>Change from integration of occupations</b>		1.92	-2.17	-5.48	-3.64	-0.78	-0.49

Note: Sample includes employed civilian labor force, 25-64 years old.

Table 3a. Male-Female Shift Share Analysis

	1950-60	1960-70	1970-80	1980-90	1990-2000	2000-2010	2000-2008-10
<b>start D</b>	0.6378	0.6334	0.5917	0.5360	0.4925	0.4734	0.4734
<b>end D</b>	0.6334	0.5917	0.5360	0.4925	0.4734	0.4656	0.4701
<b>Change</b>	-0.0044	-0.0417	-0.0557	-0.0435	-0.0191	-0.0078	-0.0034
<b>F shift</b>	0.0157 -355%	-0.0148 36%	-0.0638 115%	-0.0360 83%	-0.0198 104%	0.0213 -274%	0.0190 -564%
<b>M shift</b>	-0.0163 368%	-0.0113 27%	0.0292 -52%	0.0087 -20%	-0.0205 107%	-0.0187 240%	-0.0172 511%

Note: Sample includes employed civilian labor force, 25-64 years old.

Table 4. Occupational Gender Segregation by Race/Ethnicity

	1950	1960	1970	1980	1990	2000	2008-10
<b>White</b>	0.635	0.632	0.595	0.543	0.505	0.487	0.480
<b>African American</b>	0.683	0.689	0.596	0.521	0.474	0.450	0.429
<b>Hispanic</b>	0.653	0.601	0.552	0.499	0.472	0.461	0.474
<b>Asian American</b>	0.524	0.599	0.573	0.498	0.418	0.381	0.367
<b>Native American</b>	0.740	0.721	0.640	0.566	0.522	0.500	0.519

Note: Sample includes employed civilian labor force, 25-64 years old.

Table 5. Occupational Gender Segregation by Education and Class

	1950	1960	1970	1980	1990	2000	2008-10
<b><u>Education</u></b>							
<b>Less Than High School</b>	0.643	0.652	0.610	0.566	0.531	0.520	0.532
<b>High School Graduates</b>	0.598	0.628	0.606	0.581	0.553	0.539	0.546
<b>Some College</b>	0.640	0.651	0.616	0.573	0.538	0.511	0.518
<b>College Graduates</b>	0.652	0.652	0.589	0.496	0.422	0.390	0.378
<b><u>Class</u></b>							
<b>Middle Class Occupations</b>	0.548	0.553	0.517	0.404	0.350	0.312	0.319
<b>Working Class Occupations</b>	0.586	0.612	0.570	0.582	0.568	0.576	0.592

Note: Sample includes employed civilian labor force, 25-64 years old.

Table 6. Occupational Gender Segregation by Cohort

	1950	1960	1970	1980	1990	2000	2008-10
<b>1885-1894</b>	0.630	0.618	0.527				
<b>1895-1904</b>	0.639	0.619	0.566	0.546			
<b>1905-1914</b>	0.640	0.631	0.592	0.559	0.531		
<b>1915-1924</b>	0.638	0.644	0.598	0.560	0.537	0.521	
<b>1925-1934</b>	0.611	0.638	0.603	0.557	0.526	0.516	0.520
<b>1935-1944</b>		0.633	0.591	0.552	0.511	0.501	0.507
<b>1945-1954</b>			0.589	0.520	0.495	0.486	0.493
<b>1955-1964</b>				0.549	0.492	0.483	0.486
<b>1965-1974</b>					0.506	0.465	0.469
<b>1975-1984</b>						0.449	0.461
<b>1985-1994</b>							0.404

Note: Sample includes employed civilian labor force, 16-84 years old.

Appendix Table A. PUMS and ACS Sample Sizes

<b>Year</b>	<b>Cases</b>
<b>1950</b>	495,196
<b>1960</b>	499,627
<b>1970</b>	591,063
<b>1980</b>	3,722,177
<b>1990</b>	4,703,821
<b>2000</b>	5,288,439
<b>2001</b>	471,028
<b>2002</b>	420,441
<b>2003</b>	464,928
<b>2004</b>	464,201
<b>2005</b>	1,115,903
<b>2006</b>	1,153,539
<b>2007</b>	1,159,433
<b>2008</b>	1,189,265
<b>2009</b>	1,153,074
<b>2010</b>	1,146,197

Note: Sample Size for ECLF 25-64

Appendix Table B. Percent Female in Occupations by Class, 2010

<b>Middle Class Occupations</b>	<b>% Female 2010</b>
.00 Accountants and auditors	62%
2.00 Airplane pilots and navigators	4%
3.00 Architects	28%
4.00 Artists and art teachers	43%
6.00 Authors	60%
7.00 Chemists	37%
8.00 Chiropractors	40%
9.00 Clergymen	18%
29.00 Subject not specified-Professors and instructors	51%
31.00 Dancers and dancing teachers	74%
32.00 Dentists	25%
33.00 Designers	54%
34.00 Dietitians and nutritionists	93%
35.00 Draftsmen	20%
36.00 Editors and reporters	56%
41.00 Aeronautical-Engineers	12%
42.00 Chemical-Engineers	13%
43.00 Civil-Engineers	13%
44.00 Electrical-Engineers	10%
45.00 Industrial-Engineers	38%
46.00 Mechanical-Engineers	7%
47.00 Metallurgical, metallurgists-Engineers	10%
48.00 Mining-Engineers	12%
49.00 Engineers (nec)	13%
51.00 Entertainers (nec)	59%
53.00 Foresters and conservationists	13%
54.00 Funeral directors and embalmers	24%
55.00 Lawyers and judges	35%
56.00 Librarians	86%
57.00 Musicians and music teachers	66%
58.00 Nurses, professional	87%
61.00 Agricultural scientists	29%
62.00 Biological scientists	50%
63.00 Geologists and geophysicists	33%
68.00 Physicists	18%
69.00 Misc. natural scientists	38%
70.00 Optometrists	37%
72.00 Personnel and labor relations workers	68%
73.00 Pharmacists	56%
74.00 Photographers	37%
75.00 Physicians and surgeons	35%
76.00 Radio operators	14%
77.00 Recreation and group workers	72%
78.00 Religious workers	64%

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<b>79.00 Social and welfare workers, except group</b>	<b>77%</b>
<b>81.00 Economists</b>	<b>51%</b>
<b>82.00 Psychologists</b>	<b>71%</b>
<b>83.00 Statisticians and actuaries</b>	<b>42%</b>
<b>84.00 Misc social scientists</b>	<b>55%</b>
<b>91.00 Sports instructors and officials</b>	<b>34%</b>
<b>92.00 Surveyors</b>	<b>14%</b>
<b>93.00 Teachers (n.e.c.)</b>	<b>76%</b>
<b>98.00 Veterinarians</b>	<b>49%</b>
<b>99.00 Professional, technical and kindred workers (nec)</b>	<b>46%</b>
<b>100.00 Farmers (owners and tenants)</b>	<b>14%</b>
<b>123.00 Farm managers</b>	<b>16%</b>
<b>200.00 Buyers and dept heads, store</b>	<b>47%</b>
<b>201.00 Buyers and shippers, farm products</b>	<b>23%</b>
<b>210.00 Inspectors, public administration</b>	<b>47%</b>
<b>230.00 Managers and superintendants, building</b>	<b>53%</b>
<b>240.00 Officers, pilots, pursers and engineers, ship</b>	<b>3%</b>
<b>250.00 Officials and administratators (nec), public administration</b>	<b>62%</b>
<b>280.00 Purchasing agents and buyers (nec)</b>	<b>57%</b>
<b>290.00 Managers, officials, and proprietors (nec)</b>	<b>38%</b>
<b>400.00 Advertising agents and salesmen</b>	<b>51%</b>
<b>450.00 Insurance agents and brokers</b>	<b>61%</b>
<b>470.00 Real estate agents and brokers</b>	<b>54%</b>
<b>480.00 Stock and bond salesmen</b>	<b>31%</b>

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#### **Working Class Occupations**

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<b>94.00 Medical and dental-technicians</b>	<b>72%</b>
<b>95.00 Testing-technicians</b>	<b>34%</b>
<b>96.00 Technicians (nec)</b>	<b>20%</b>
<b>97.00 Therapists and healers (nec)</b>	<b>78%</b>
<b>203.00 Conductors, railroad</b>	<b>7%</b>
<b>301.00 Attendants and assistants, library</b>	<b>88%</b>
<b>302.00 Attendants, physicians and dentists office</b>	<b>92%</b>
<b>305.00 Bank tellers</b>	<b>92%</b>
<b>310.00 Bookkeepers</b>	<b>91%</b>
<b>320.00 Cashiers</b>	<b>79%</b>
<b>321.00 Collectors, bill and account</b>	<b>73%</b>
<b>322.00 Dispatchers and starters, vehicle</b>	<b>55%</b>
<b>335.00 Mail carriers</b>	<b>39%</b>
<b>340.00 Messengers and office boys</b>	<b>19%</b>
<b>341.00 Office machine operators</b>	<b>74%</b>
<b>342.00 Shipping and receiving clerks</b>	<b>34%</b>
<b>350.00 Stenographers, typists, and secretaries</b>	<b>96%</b>
<b>370.00 Telephone &amp; Telegraph operators</b>	<b>81%</b>
<b>380.00 Ticket, station, and express agents</b>	<b>72%</b>
<b>390.00 Clerical and kindred workers (n.e.c.)</b>	<b>74%</b>
<b>420.00 Demonstrators</b>	<b>79%</b>
<b>490.00 Salesmen and sales clerks (nec)</b>	<b>41%</b>

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500.00 Bakers	59%
502.00 Bookbinders	46%
503.00 Boilermakers	2%
504.00 Brickmasons,stonemasons, and tile setters	1%
505.00 Cabinetmakers	7%
510.00 Carpenters	2%
511.00 Cement and concrete finishers	2%
512.00 Compositors and typesetters	51%
513.00 Cranemen,derrickmen, and hoistmen	4%
515.00 Electricians	2%
521.00 Engravers	39%
522.00 Excavating, grading, and road machinery operators	2%
523.00 Foremen (nec)	16%
524.00 Forgemen and hammermen	1%
530.00 Glaziers	4%
531.00 Heat treaters, annealers, temperers	4%
533.00 Inspectors (nec)	11%
534.00 Jewelers, watchmakers, goldsmiths, and silversmiths	20%
540.00 Linemen and servicemen, telegraph, telephone, and power	7%
541.00 Locomotive engineers	4%
544.00 Machinists	5%
545.00 Airplane-mechanics and repairmen	5%
550.00 Automobile-mechanics and repairmen	1%
551.00 Office machine-mechanics and repairmen	12%
552.00 Radio and television-mechanics and repairmen	5%
554.00 Mechanics and repairmen (nec)	3%
560.00 Millwrights	3%
563.00 Opticians and lens grinders and polishers	69%
564.00 Painters, construction and maintenance	7%
570.00 Pattern and model makers, except paper	18%
573.00 Plasterers	1%
574.00 Plumbers and pipe fitters	1%
575.00 Pressmen and plate printers, printing	20%
580.00 Rollers and roll hands, metal	18%
581.00 Roofers and slaters	1%
582.00 Shoemakers and repairers, except factory	4%
583.00 Stationary engineers	3%
585.00 Structural metal workers	2%
591.00 Tin, copper, blacksmiths, sheet and other metal workers	4%
592.00 Tool makers, and die makers and setters	2%
593.00 Upholsterers	23%
595.00 Members of the armed services	15%
620.00 Asbestos and insulation workers	12%
621.00 Attendants, auto service and parking	17%
622.00 Blasters and powdermen	6%
624.00 Brakemen, railroad	0%
625.00 Bus drivers	54%
632.00 Deliverymen and routemen	20%
633.00 Dressmakers and seamstresses, tailors & milnersexcept factory	78%

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<b>635.00 Filers, grinders, and polishers, metal</b>	<b>12%</b>
<b>640.00 Fruit, nut, and vegetable graders, and packers, except facto</b>	<b>36%</b>
<b>643.00 Laundry and dry cleaning Operatives</b>	<b>66%</b>
<b>644.00 Meat cutters, except slaughter and packing house</b>	<b>26%</b>
<b>650.00 Mine operatives and laborers</b>	<b>3%</b>
<b>662.00 Oilers and greaser, except auto</b>	<b>3%</b>
<b>670.00 Painters, except construction or maintenance</b>	<b>15%</b>
<b>671.00 Photographic process workers</b>	<b>64%</b>
<b>672.00 Power station operators</b>	<b>8%</b>
<b>673.00 Sailors and deck hands</b>	<b>5%</b>
<b>674.00 Sawyers</b>	<b>10%</b>
<b>680.00 Stationary firemen</b>	<b>12%</b>
<b>682.00 Taxicab drivers and chauffeurs</b>	<b>17%</b>
<b>683.00 Truck and tractor drivers</b>	<b>5%</b>
<b>684.00 Weavers, textile</b>	<b>65%</b>
<b>685.00 Welders and flame cutters</b>	<b>5%</b>
<b>730.00 Attendants, hospital and other institution</b>	<b>88%</b>
<b>731.00 Attendants, professional and personal service (nec)</b>	<b>90%</b>
<b>732.00 Attendants, recreation and amusement</b>	<b>54%</b>
<b>740.00 Barbers, beauticians, and manicurists</b>	<b>87%</b>
<b>750.00 Bartenders</b>	<b>60%</b>
<b>753.00 Cleaners &amp; housekeepers incuding private hhld</b>	<b>90%</b>
<b>754.00 Cooks, except private household</b>	<b>56%</b>
<b>760.00 Counter and fountain workers</b>	<b>78%</b>
<b>762.00 Firemen, fire protection</b>	<b>4%</b>
<b>763.00 Guards, watchmen, and doorkeepers</b>	<b>27%</b>
<b>764.00 Housekeepers and stewards, except private household</b>	<b>79%</b>
<b>770.00 Janitors and sextons</b>	<b>34%</b>
<b>773.00 Policemen and detectives</b>	<b>16%</b>
<b>780.00 Porters</b>	<b>18%</b>
<b>781.00 Practical nurses</b>	<b>93%</b>
<b>782.00 Sheriffs, marshals, constables and bailiffs</b>	<b>33%</b>
<b>783.00 Ushers, recreation and amusement</b>	<b>58%</b>
<b>784.00 Waiters and waitresses</b>	<b>74%</b>
<b>790.00 Service workers, except private household (nec)</b>	<b>54%</b>
<b>810.00 Farm foremen</b>	<b>16%</b>
<b>820.00 Farm laborers, wage workers</b>	<b>28%</b>
<b>910.00 Fishermen and oystermen</b>	<b>7%</b>
<b>930.00 Gardeners, except farm, and groundskeepers</b>	<b>8%</b>
<b>950.00 Lumbermen, raftsmen, and woodchoppers</b>	<b>2%</b>
<b>970.00 Laborers (nec)</b>	<b>14%</b>

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