

## The Roots of Today's "Women's Jobs" and "Men's Jobs": Using the Index of Dissimilarity to Measure Occupational Segregation by Gender\*

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Looked at broadly, occupational distributions by sex in the United States have changed remarkably little since 1900; accordingly, researchers have found a slow rate of decline in the index of dissimilarity (a measure of occupational segregation by gender), estimates of which have so far been confined to the 20th century. This paper analyzes trends in the index over the latter part of the 19th century. The results indicate that during this period, industrialization and the associated changes in the nature of the business enterprise resulted in a rapid decline in occupational segregation by gender, as measured by the index. This decline occurs earliest in cities experiencing early industrialization. Index estimates are presented for the United States and for selected midwestern cities, and changes in the index are decomposed into occupational mix effects and sex composition effects. Occupation-specific index changes are used to identify which occupations influenced changes in the overall index. The results indicate that the dynamic occupational shifts of the 19th century set the stage for the "men's jobs" and "women's jobs" that have been so persistently stable in the 20th century. © 1991 Academic Press, Inc.

### INTRODUCTION

The allocation of work responsibilities on the basis of gender has been generally cited as society's earliest division of labor and has remained a persistent feature of modern-day labor markets. Since "women's work" generally pays less than "men's work," such divisions have significant implications for economic well-being. Researchers have suggested that some 10 to 40% of the continuing gap between male and female earnings is traceable to the different occupational profiles of women and men (Sorensen, 1990; U.S. Bureau of the Census, 1987; Treiman and Hartmann, 1981). Since occupation partially defines social status, continuing differences in these profiles contribute to social as well as economic aspects of gender inequality. Understanding the historical roots of these profiles

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is therefore important, in light of current efforts to address the inequality of males and females in our society.

The fundamental occupational patterns of men and women have been remarkably stable during the 20th century, to the frustration of many. One of the conundrums that scholars of women's history have repeatedly confronted is how this gender-based division of labor could in fact be so "sticky" in the face of two waves of feminism, two world wars, and dramatic increases in women's rates of labor force participation. Explanations have been offered on the supply and demand sides of the market, ranging from gender differences in human capital investment and socialization patterns to discrimination by employers, male-dominated unions, or the patriarchy in general (Goldin, 1980; Kessler-Harris, 1982; Milkman, 1987; Greenwald, 1980; Blaxall and Reagan, 1976; Matthaei, 1982; Hartmann, 1976). Existing estimates of the index of dissimilarity, which can be used to measure the degree of occupational segregation by gender, are confined to the 20th century (Jacobs, 1989a, 1989b; Blau, 1989; Beller, 1984, 1985; Blau and Hendricks, 1979; Gross, 1968; Williams, 1976, 1979). Scholars have generally been struck by the relative lack of change in the index over the course of the present century. Recent evidence suggests that the index has fallen somewhat in recent decades, largely due to women's entry into professional and managerial occupations in the 1970s, but this decline has slowed in the 1980s (Beller, 1985; Blau, 1989; Jacobs, 1989a).<sup>1</sup>

The dynamics of occupational segregation by gender in the 19th century have been extensively debated but without benefit of much quantification. Marx pointed to the use of women workers in factories as evidence of the decline of the gender-based division of labor under capitalism. In 1919, Alice Clark argued that the family workshops of the preindustrial era had in fact offered women a wider variety of work than the rigid labor markets of industrial capitalism. Modern scholars have continued the debate (Kessler-Harris, 1982; Matthaei, 1982). Recent research by economic historians emphasizes the new opportunities that emerged for women workers in traditionally male jobs such as clerical and factory work, as well as the increased presence of men in areas where women had been predominant such as textile and clothing production (Rotella, 1981; Goldin, 1984; Goldin and Sokoloff, 1982; Saxonhouse and Wright, 1984). Both of these trends would be expected to contribute to a decline in occupational segregation by gender.

<sup>1</sup> The empirical estimates discussed in this paper are for *occupational* segregation and are based on census data. When measurements of *job* segregation are possible, the degree of segregation is typically greater, as women and men are often concentrated in different jobs within the same occupational category (Bielby and Baron, 1986).

This paper focuses on the empirical measurement of the changing occupational profiles of men and women in the 19th-century labor force.<sup>2</sup> The general thesis is that in the late 19th century, industrialization and the associated changes in the nature of the business enterprise resulted in substantial occupational shifts for men and women, and a rapid decline in occupational segregation by gender.<sup>3</sup> This decline is reflected in a dramatically falling index of dissimilarity that stands in marked contrast to the slow declines that characterized the 20th century until the 1970s. Furthermore, the declining index of the 19th century occurred earliest in cities that experienced early industrialization, which suggests that the structural economic changes accompanying industrialization played a key role in the changing pattern of occupational segregation by gender. Finally, the basic occupational profile of today's women workers was already in evidence by 1900; then as now, working women were likely to be employed in the areas of clothing production, personal service, clerical and sales, teaching, nursing, or certain types of factory work. These results indicate that the dynamic occupational shifts of the 19th century set the stage for the "men's jobs" and "women's jobs" that have been so persistently stable throughout most of the 20th century.

Specifically, this paper uses the index of dissimilarity to estimate the degree of occupational segregation by gender over the period 1870 to 1900.<sup>4</sup> The index was calculated by several methods for the United States as a whole, and for midwestern cities that experienced major growth during this period (Cincinnati, Chicago, Milwaukee and Cleveland), using published decennial census data. In order to analyze trends, changes in the index from decade to decade were decomposed into occupational mix effects and sex composition effects, following the method of Blau and Hendricks (1979). Occupation-specific index changes were also computed to identify which occupations influenced changes in the overall index (Bertaux 1987).

<sup>2</sup> Although the term "labor force" is used throughout this paper, readers are reminded that the modern concept of labor force is based on whether individuals worked for pay in a given week. Before 1940, the labor force was measured using a "gainful worker" concept, which was based on whether individuals identified themselves as having had a gainful occupation during the prior year. The data used in this paper are consistent in that they are all based on the gainful worker concept.

<sup>3</sup> The historical connection between industrialization and increases in the overall labor force participation rates of women has already been well established (Goldin and Sokoloff, 1982).

<sup>4</sup> The segregation issue addressed in this paper is one of occupational segregation, or the different occupational profiles of men and women. The physical proximity form of segregation, or the issue of whether men and women work together at one location, is not the focus here.

## EXPLANATION OF THE INDEX OF DISSIMILARITY

Various scholars have used the index of dissimilarity as a way of quantifying the extent to which women and men are employed in different occupations. When used in this manner, economists often refer to the index as the "sex segregation index" or the "index of sex segregation." The index of dissimilarity was developed by Duncan and Duncan (1955) and among sociologists is generally known as "Duncan's *D*." Whatever the label attached, the index ranges from 0 (complete integration or similarity) to 100% (complete segregation or dissimilarity) and is defined as

$$S_t = 1/2 [\sum |m_{it} - f_{it}|] \times 100, \quad (1)$$

where

$S_t$  = the index of dissimilarity in year  $t$

$m_{it}$  = the proportion of the male labor force in  
occupation  $i$  in year  $t$

$f_{it}$  = the proportion of the female labor force in  
occupation  $i$  in year  $t$

The index can be interpreted as the proportion of all men or women who would have to change occupations for the sexes to have the same occupational distributions. An index of 0 indicates that men and women are present in each occupation in the same proportion they are present in the overall labor force—e.g., if women represent 40% of the labor force, they would also represent 40% of each and every occupation. An index of 100% indicates that all occupations are either entirely male or entirely female.

When computing this index over time with the goal of discerning trends, one must decide whether the set of occupations used from one year to the next will be allowed to vary—and if not, what method will be used to ensure that they do not. England (1981) has summarized the three methods used by various scholars: first, the "all current occupations" method, which merely uses all occupational categories provided by the census in each year (Gross, 1968). Since the occupational classifications used by the census change in each census year, this method effectively allows the relevant set of occupations to vary. The second method is the "constant subset of occupations" method (Blau and Hendricks, 1979). This method leaves the census classifications exactly as they are, but eliminates all noncomparable classifications, thereby applying the index analysis to a sample of comparable occupations. The third method, the "back-aggregation" method, modifies certain occupational classifications for comparability—specifically, by collapsing occupational categories that have

branched out over time into the broader category—and eliminates those that cannot be made comparable. (Williams, 1979).

Each method involves the potential introduction of bias. The current occupations method understates declines in segregation if “detail has been added to census occupational categories faster than genuine job differentiation has proceeded” (England, 1981, p. 278). The constant subset method may be biased in either direction, if the occupations eliminated from the calculation show segregation trends different from those included. The back-aggregation method overstates declines in the index if the increasingly detailed census classification reflects a changing division of labor in the economy. England concludes that since the constant subset method is not practical for analysis over several decades (too many occupations would have to be excluded), the “true” index may lie somewhere between the current occupations and back-aggregation method.

Recently, Jacobs (1989a) has employed a double-coding method in calculating the index for the period 1900–1970, using the Public Use Sample. His database enabled him to recode 1900 occupations in accordance with 1950 classifications, and vice versa. His index estimates did not change substantially when classification year changed. He also found only modest differences between his estimates and those obtained with Gross’ current occupations method. These results indicate that occupational classification changes should not rule out the use of the index of dissimilarity in analyzing trends in occupational segregation by gender.

The approach taken for this paper was to use both the current occupations and the back-aggregation methods to calculate alternative estimates.<sup>5</sup> Further, the back-aggregation indices were calculated in two ways: on a decade-to-decade comparability basis, and by comparability across the entire period. Using decade-to-decade comparability minimizes the elimination of categories. The estimates presented in the next section show that in this instance, the different methods produced very similar estimates. The 19th-century categories showed a great deal of continuity and little back-aggregating was required. The changes in the data were mainly elimination of categories that could not be made comparable through the back-aggregating technique.<sup>6</sup> After all eliminations, a high

<sup>5</sup> The figures reported here under the current occupations method are based on calculations that include all occupations listed in census summaries except a handful of broad residual categories such as “other manufacturing workers” that cannot properly be considered as distinct occupations. Alternative index estimates were also calculated using all occupational categories, including these residual categories, but only small changes in the overall indices resulted. In addition, the U.S. data for 1900 gave a second level of detail for certain occupations, beyond that given in the city data for the same year; to ensure basic comparability of data, these more detailed categories were not used.

<sup>6</sup> For example, in the U.S. data, “officers of U.S. army and navy” appeared as a category in 1870–1890 but not in 1900, while “housekeepers and stewards” was a category in 1900

proportion of the labor force was always retained in the comparable groupings.<sup>7</sup>

Trends in gender segregation can result from two different types of changes. For example, a decline in the index could be due to disproportionate growth of relatively integrated occupations, or to occupations becoming more integrated. One approach to dealing with this is to calculate the "size-standardized" index, which indicates what the extent of segregation would be if all occupations were the same size. Alternatively, economists Blau and Hendricks (1979) have developed a method for decomposing changes in the index in order to distinguish shifts in the sex composition within an occupation from occupational mix effects—i.e., effects due to shifts in various occupations' importance in the general economy. The residual between the change in the index and the combined mix and sex composition effects reflects the interaction between the two effects. The Blau and Hendricks approach yields more information and is therefore the approach taken in this paper.<sup>8</sup>

The formulas for the mix and sex composition effects are easily derived. We can restate (1), the definition of the index of dissimilarity, as

$$S_t = 1/2 \left[ \sum \left| \frac{q_{it}T_{it}}{\sum q_{it}T_{it}} - \frac{p_{it}T_{it}}{\sum p_{it}T_{it}} \right| \right] \times 100, \quad (2)$$

where

$p_{it}$  =  $F_{it}/T_{it}$  or the proportion of occupation  $i$   
that is female at time  $t$

$q_{it}$  =  $1 - p_{it}$  or the proportion of occupation  $i$   
that is male at time  $t$

$M_{it}$  = the number of males in occupation  $i$  in year  $t$

$F_{it}$  = the number of females in occupation  $i$  in year  $t$

$T_{it} = M_{it} + F_{it}$

To isolate the mix effect, Year 1 is chosen as the base year. Employment figures in Year 2 are allowed to change, in total and by industry, but the proportion of the female (or male) labor force in the various occupations

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but not in 1870–1890. Complete listings of occupational categories used in the various calculations are available upon request from the author.

<sup>7</sup> Tables 2 and 6 show the numbers of occupational categories that remained after the elimination and back-aggregation. The proportions of the total labor force included in the various index calculations, by sex, ranged from 94 to 100% for the U.S. index calculations, and from 73 to 100% for the city index calculations. By comparison, Blau and Hendricks (1979) ended up with 66–70% of the labor force in the constant subset of occupations used to estimate gender segregation in the 20th century.

<sup>8</sup> See England (1981, pp. 280–281) for a discussion of the desirability of using the Blau and Hendricks decomposition approach versus the size-standardized index approach.

is held constant at Year 1 values. The mix effect is therefore defined as follows, where the first term is a modified  $S_2$  and the second term is  $S_1$ :

$$\text{MIX} = 1/2 \left[ \sum \left| \frac{q_{i1}T_{i2}}{\sum q_{i1}T_{i2}} - \frac{p_{i1}T_{i2}}{\sum p_{i1}T_{i2}} \right| - \sum \left| \frac{q_{i1}T_{i1}}{\sum q_{i1}T_{i1}} - \frac{p_{i1}T_{i1}}{\sum p_{i1}T_{i1}} \right| \right] \times 100. \quad (3)$$

To arrive at the sex composition effect, a similar procedure is used: the proportions of the female and male labor force in the various occupations in Year 2 are allowed to change, but the employment figures in total and by industry are held constant at Year 1 values. The sex composition effect is

$$\text{COMP} = 1/2 \left[ \sum \left| \frac{q_{i2}T_{i1}}{\sum q_{i2}T_{i1}} - \frac{p_{i2}T_{i1}}{\sum p_{i2}T_{i1}} \right| - \sum \left| \frac{q_{i1}T_{i1}}{\sum q_{i1}T_{i1}} - \frac{p_{i1}T_{i1}}{\sum p_{i1}T_{i1}} \right| \right] \times 100. \quad (4)$$

The interaction effect is the residual:

$$\text{INTER} = (S_2 - S_1) - (\text{Mix} + \text{Comp}). \quad (5)$$

To isolate the contribution of an individual occupational category to changes in the overall index, Bertaux (1987) has defined the mix, sex composition, and interaction effects of any occupation  $i$  as

$$\text{MIX}_i = 1/2 \left[ \left| \frac{q_{i1}T_{i2}}{\sum q_{i1}T_{i2}} - \frac{p_{i1}T_{i2}}{\sum p_{i1}T_{i2}} \right| - \left| \frac{q_{i1}T_{i1}}{\sum q_{i1}T_{i1}} - \frac{p_{i1}T_{i1}}{\sum p_{i1}T_{i1}} \right| \right] \times 100 \quad (6)$$

$$\text{COMP}_i = 1/2 \left[ \left| \frac{q_{i2}T_{i1}}{\sum q_{i2}T_{i1}} - \frac{p_{i2}T_{i1}}{\sum p_{i2}T_{i1}} \right| - \left| \frac{q_{i1}T_{i1}}{\sum q_{i1}T_{i1}} - \frac{p_{i1}T_{i1}}{\sum p_{i1}T_{i1}} \right| \right] \times 100 \quad (7)$$

$$\text{INTER}_i = (S_{i2} - S_{i1}) - (\text{Mix}_i + \text{Comp}_i), \quad (8)$$

where

$$S_{it} = 1/2 |m_{it} - f_{it}| \times 100$$

$m_{it}$  = the proportion of the male labor force in occupation  $i$  in year  $t$

$f_{it}$  = the proportion of the female labor force in occupation  $i$  in year  $t$

In the following section of this paper, empirical estimates of the index of dissimilarity and appropriate mix and sex composition effects are presented.

TABLE 1  
Estimates of the Index of Dissimilarity for the United States, 1870-1900

	(n)	1870	1880	1890	1900
All occupations					
(1) Current occupations method		70.62	66.66	66.98	63.95
(n)		(166)	(169)	(176)	(177)
(2) Back-aggregation method					
(a) 1870-1880 comparable	(163)	70.62	66.64		
(b) 1880-1890 comparable	(169)		66.66	66.90	
(c) 1890-1900 comparable	(165)			66.85	62.89
(d) 1870-1880-1890-1900 comparable	(153)	70.58	66.38	66.78	62.75
Nonagricultural occupations					
(1) Current occupations method		86.71	81.28	77.98	74.10
(n)		(155)	(158)	(165)	(165)
(2) Back-aggregation method					
(a) 1870-1880 comparable	(152)	86.72	81.27		
(b) 1880-1890 comparable	(158)		81.28	77.79	
(c) 1890-1900 comparable	(154)			77.67	73.37
(d) 1870-1880-1890-1900 comparable	(142)	86.59	81.09	77.55	73.21

Note. n = number of occupational categories.

## INDEX ESTIMATES FOR THE 19TH CENTURY

The decennial population census data that were used in the calculation of the index of dissimilarity were limited in two ways.<sup>9</sup> First, census data were not collected on women's occupations until 1860. In 1860, this information was collected but was not summarized and published. Beginning in 1870, information on women's occupations was published for the nation, the states, and the major cities. Second, city indices cannot be computed for 1890 because the census summaries for that year gave separate occupations tables for men and women. These tables only listed the most important occupations for each sex, and since there was very little overlap between the top occupations for men and women, there are only a handful of occupations with observations for both men and women. It is therefore impossible to calculate reliable estimates of indices from these summaries. Fortunately, the national summaries were not presented in separate tables, so the 1890 index can be calculated for the United States as a whole. The available data, then, allowed calculation of segregation indices beginning in 1870, with the exception of city indices in 1890.

Table 1 presents the estimates of the index of dissimilarity for the total

<sup>9</sup> The quality of occupation data from the early population censuses has been questioned by various scholars, with much of the discussion centering on the possible undercounting of women who worked on family farms. Goldin (1990) concludes that women who worked as boardinghouse keepers were also substantially undercounted.



U.S. labor force. There was a sizable decline in the index in the late 1800s; all the estimates yielded similar results, so that the 1870 estimates are in the 70–71% range and the 1900 estimates are in the 63–64% range.<sup>10</sup> Using our earlier interpretation of the index, in the last three decades of the century, about 7% of the men and women in the total U.S. labor force changed jobs in the direction of equal occupational distributions for the two sexes. It is interesting to note that recent estimates of the national index of dissimilarity for the 1980s are in the 56–60% range (Blau 1989; Beller 1984, 1985). The 7-point drop in the last 30 years of the 19th century can be sharply contrasted with the 3- to 8-point drop in over 80 years of the 20th century, showing that the rate of change in U.S. occupational gender segregation was much faster in the late 19th century than the 20th century as a whole. Looked at in another way, there was an average annual drop in the index of 0.23 over the 1870 to 1900 period, while the rate of change in the index was virtually zero for the period from 1900 to 1950 (Jacobs, 1989a). Since 1970, however, the index has dropped at a faster annual rate, probably due to the combined effects of structural economic shifts (especially the shift from manufacturing to service employment), antidiscrimination laws, and affirmative action initiatives. Beller (1985) gives rates of decline ranging from 0.58 to 0.75 for various subperiods of the 1970s, while Blau (1989) calculates annual declines of 0.84 and 0.59 for the 1970s and 1983–1987, respectively.

To summarize, the total U.S. index calculations show that the pace of change in gender-based occupational segregation was much faster from 1870 to 1900 than in the 1900 to 1970 period, but was not as rapid as in the 1970s and 1980s.

The analysis was repeated using nonagricultural occupations only, in order to allow for meaningful comparisons between U.S. and city indices.<sup>11</sup> The bottom half of Table 1 shows that when the analysis was restricted to nonagricultural occupations, the index decline was a more dramatic 14%, from nearly 87% in 1870 to the 73–74% range in 1900.<sup>12</sup> This indicates the importance of the nonagricultural sector in the occupational desegregation process. It also reflects the relatively broad census classifications used for the agricultural labor force; while much farm labor did follow a gender-based division of labor, categories like “agricultural laborers” and “farmers and planters” failed to make these distinctions. This 14-point decline in the index translates into an average annual drop of

<sup>10</sup> It should be noted here that the results for 1900 are quite close to Jacobs' (1989a) estimates for 1900, which were in the 65% range for the total labor force.

<sup>11</sup> Jacobs (1989a) discusses several other reasons for using the nonagricultural labor force when analyzing trends in occupational segregation by gender, including greater measurement error in the agricultural sector and lack of occupational distinctions.

<sup>12</sup> Once again, the results for 1900 are quite close to Jacobs' (1989a) estimates for 1900, which were in the 75% range for the nonagricultural labor force.

TABLE 2  
U.S. Occupational Mix and Sex Composition Effects,<sup>a</sup> 1870–1900

	(n)	MIX	COMP	INTER	Δ S
All occupations					
1870 to 1880					
(a) 1870–1880 comparable	(163)	1.48	–6.33	0.86	–3.99
(b) 1870–1880–1890–1900 comparable	(153)	1.48	–6.58	0.90	–4.20
1880 to 1890					
(a) 1880–1890 comparable	(169)	5.16	–4.61	–0.30	0.25
(b) 1870–1880–1890–1900 comparable	(154)	5.16	–4.45	–0.31	0.40
1890 to 1900					
(a) 1890–1900 comparable	(165)	–2.49	–1.99	0.52	–3.96
(b) 1870–1880–1890–1900 comparable	(154)	–2.50	–2.03	0.50	–4.03
Nonagricultural occupations					
1870 to 1880					
(a) 1870–1880 comparable	(152)	–0.72	–4.22	–0.51	–5.45
(b) 1870–1880–1890–1900 comparable	(142)	–0.73	–4.28	–0.49	–5.50
1880 to 1890					
(a) 1880–1890 comparable	(158)	0.57	–3.26	–0.79	–3.48
(b) 1870–1880–1890–1900 comparable	(143)	0.53	–3.26	–0.82	–3.55
1890 to 1900					
(a) 1890–1900 comparable	(154)	–1.01	–3.28	–0.01	–4.30
(b) 1870–1880–1890–1900 comparable	(143)	–1.01	–3.31	–0.02	–4.34

Note. n = number of occupational categories.

<sup>a</sup> Based on indices calculated by the back-aggregation method.

0.43. In contrast, Jacobs' (1989a) index figures for the nonagricultural labor force over the 1900–1950 period show an average annual decline of 0.17, once again showing the dynamism of the late 19th century.<sup>13</sup>

Table 2 presents the results of calculating mix and sex composition effects for the United States in the 1870 to 1900 period. For the total labor force, the 1870s and 1880s show mix effects that were large and positive and sex composition effects that were large and negative. In the 1870s, the net effect was a decline in the index, but in the 1880s the effects essentially canceled each other out. By the 1890s, the mix and sex composition effects were both consistently negative. The nonagricultural

<sup>13</sup> Index estimates for the nonagricultural labor force are not available for the period after 1950, but they would presumably get closer to the total labor indices as the importance of the agricultural labor force grew progressively smaller.

labor force had much smaller mix effects, and the more dramatic decline in the index was clearly attributable to the large, negative sex composition effects. Thus, in the nonagricultural sector, the dramatic declines in the index in the latter half of the 19th century were almost wholly due to changes in the sex composition of individual occupations.

### OCCUPATION-SPECIFIC INDEX CHANGES

Tables 3, 4, and 5 show estimates of occupation-specific index changes for the United States for each decade. Positive values indicate that the contribution of this occupation is in the direction of increased segregation; negative values mean the direction is toward greater integration. These tables help clarify why the mix effect did not make more of a contribution to reducing gender segregation in the 19th century. The largest single effect in each of the tables is in fact the negative (segregation-reducing) effect due to the declining importance of domestic servants, a traditional, highly female occupation, in the overall labor force. Available evidence suggests that this was a development welcomed by women workers.<sup>14</sup> However, this large effect was offset by the increasing economic importance of other segregated occupations, as evident in the positive (segregation-increasing) mix effects attributable to occupations such as laundresses, clothing workers, and teachers. While washing and sewing had long been traditional "women's jobs," teaching had been more recently feminized when public school systems were established in the early to mid 19th century (Carter, 1986; Kaestle, 1983; Bertaux, 1987). In any event, many of the women who left (or did not enter) domestic service in this period ended up in occupations that were also gender-segregated.

In contrast to the mix effects, the sex composition effects of individual occupations were more consistently negative. We can therefore say that gender-segregated occupations generally became more integrated in the late 19th century. In each decade, the occupation that contributed most to the negative sex composition effect was the category that included domestic servants. Servants, an overwhelmingly female occupation, became somewhat less female-dominated over the last three decades of the 19th century. Examination of occupational distributions by race and sex indicates that post-Civil War substitution of blacks (male as well as female) for white, female servants was a factor in this trend. All the other occupations that made significant contributions to the negative sex composition effect were male occupations that became somewhat less male. In the agricultural labor force, this was the case with agricultural laborers

<sup>14</sup> Katzman (1978, p. 268) reports that "domestic service was clearly considered undesirable by most working women. The extremely low status, the personalized mistress/servant relationship, the atomization of work, the designation 'servant,' and the servility and deference required led nearly all who could to avoid it."

TABLE 3  
Contribution of Occupations to U.S. Index Changes,<sup>a</sup> 1870-1880

	% Female 1870	% Female 1880	COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>	$\Delta S_i$
All occupations						
Servants	87.3	84.0	-2.90	-2.93	0.27	-5.56
Agricultural laborers	12.9	16.1	-1.42	-0.77	1.23	-0.96
Professors, teachers	66.3	67.8	-0.13	0.77	-0.06	0.58
Launders, laundresses	91.3	88.7	-0.17	0.78	-0.10	0.51
Laborers	2.1	3.4	-0.29	1.12	-0.09	0.74
Tailors, dressmakers, milliners, seamstresses	73.7	79.5	0.04	1.22	-0.03	1.23
Total	14.7	15.2	-6.33	1.48	0.86	-3.99
Nonagricultural occupations						
Servants	87.3	84.0	-2.45	-4.42	0.09	-6.78
Carpenters, joiners	0.0	0.0	0.03	-0.99	0.01	-0.95
Professors, teachers	66.3	67.8	-0.01	0.85	-0.06	0.78
Launders, laundresses	91.3	88.7	-0.13	0.90	-0.10	0.67
Boot and shoemakers	0.4	10.8	-0.74	-0.33	0.11	-0.96
Laborers	2.1	3.4	-0.48	1.75	-0.08	1.19
Tailors, dressmakers, milliners, seamstresses	73.7	79.5	0.46	1.31	-0.04	1.73
Total	22.7	22.0	-4.22	-0.72	-0.51	-5.45

<sup>a</sup> Occupations included in the table are those contributing  $\pm 0.50$  to the mix or sex composition effects, based on the back-aggregation method using 1870-1880 comparable occupations.

TABLE 4  
Contribution of Occupations to U.S. Index Changes,<sup>a</sup> 1880-1890

	% Female 1880	% Female 1890	COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>	$\Delta S_i$
All occupations						
Laborers	3.4	2.9	0.37	-0.99	-0.06	-0.68
Launderers, laundresses	88.7	87.2	-0.19	1.01	-0.13	0.69
Dressmakers, milliners, seamstresses	98.5	99.0	-0.35	1.53	-0.20	0.98
Farmers, planters	1.4	4.3	-2.35	-0.43	0.27	-2.51
Servants	84.0	84.2	-1.26	-0.23	-0.25	-1.74
Bookkeepers, clerks, sales	7.1	16.9	-0.92	0.50	-0.50	-0.92
Total	15.2	17.3	-4.61	5.16	-0.30	0.25
Nonagricultural occupations						
Laborers	3.4	2.9	0.57	-3.22	-0.12	-2.77
Servants	84.0	84.2	-1.22	-2.10	-0.15	-3.47
Bookkeepers, clerks, sales	7.1	16.9	-1.49	0.77	-0.38	-1.10
Launderers, laundresses	88.7	87.2	-0.20	0.98	-0.13	0.65
Dressmakers, milliners, seamstresses	98.5	99.0	-0.33	1.25	-0.16	0.76
Total	22.0	23.8	-3.26	0.57	-0.79	-3.48

<sup>a</sup> Occupations included in the table are those contributing  $\pm 0.50$  to the mix or sex composition effects, based on the back-aggregation method using 1880-1890 comparable occupations.

TABLE 5  
Contribution of Occupations to U.S. Index Changes,<sup>a</sup> 1890-1900

	% Female 1890	% Female 1900	COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>	ΔS <sub>i</sub>
All occupations						
Servants	84.2	82.1	-1.20	-2.85	0.20	-3.85
Farmers, planters	4.3	5.4	-0.65	-1.69	0.09	-2.25
Nurses, midwives	87.0	89.9	0.00	0.55	0.00	0.55
Laundrerers, laundresses	87.2	86.7	-0.13	0.72	-0.05	0.54
Bookkeepers, clerks, sales	16.9	22.1	0.53	-0.06	0.19	0.66
Total	17.4	17.7	-1.99	-2.49	0.52	-3.96
Nonagricultural occupations						
Servants	84.2	82.1	-1.31	-3.01	0.14	-4.18
Carpenters, joiners	0.0	0.1	0.02	-0.79	0.00	-0.77
Nurses, midwives	87.0	86.7	0.01	0.69	-0.01	0.69
Laundrerers, laundresses	87.2	86.7	-0.13	0.95	-0.06	0.76
Bookkeepers, clerks, sales	16.9	22.1	-0.92	-0.15	-0.08	-1.15
Laborers	2.9	4.7	-0.58	0.40	-0.06	-0.24
Total	24.0	23.4	-3.28	-1.01	-0.01	-4.30

<sup>a</sup> Occupations included in the table are those contributing  $\pm 0.50$  to the mix or sex composition effects, based on the back-aggregation method using 1890-1900 comparable occupations.

in the 1870s and farmers in the 1880s and 1890s. Looking at the non-agricultural labor force, this was the case with boot and shoe workers in the 1870s, and clerical and sales workers in the 1880s and 1890s. Thus, the movement toward gender integration in occupations during the period 1870 to 1900 was attributable both to women entering "male" occupations and to men entering "female" occupations (and both made roughly equal contributions to the negative sex composition effects of the era).

In the boot and shoemaking industry, the locus of production shifted from small, craft shops to factories, and the proportion of women increased as tasks were increasingly specialized and machinery was introduced in tasks such as leather-rolling (Kessler-Harris, 1982, p. 144; Abbott, 1918, pp. 148-185; Warner and Low, 1947, pp. 91-92).<sup>15</sup> Studies of the feminization of clerical work have emphasized the routinization and mechanization of office procedures, as well as the large increases in demand for clerical labor, that resulted from the larger, more bureaucratic firms of the industrial era (Rotella, 1981; Davies, 1982; Cohn, 1985). The increased employment of female sales workers was related to the growth of large department stores. On the labor supply side, clerical and sales work required literate employees, and Davies (1982) has pointed out that by 1890, the national population of high school graduates was more than half female. Of course, clerical work is an example of a predominantly male occupation that eventually (in the 20th century) became a predominantly female occupation. What began as integration became a switching of gender labels, or resegregation. Teachers had followed a similar pattern in the early to mid 19th century. Such resegregation has slowed the overall pace of occupational desegregation, but it has not stopped or reversed it.<sup>16</sup>

It is interesting to reflect on the fact that the biggest impact of industrialization on occupational desegregation in the United States occurred outside the manufacturing sector.<sup>17</sup> The decline in the importance of do-

<sup>15</sup> Abbott (1918) argued that the introduction of the sewing machine (the McKay stitcher) to boot and shoemaking did bring women into the factories, but it actually decreased the proportion of women in the industry, as it dramatically increased labor productivity in stitching and binding, an aspect of the trade previously performed by hand by women outworkers.

<sup>16</sup> Indeed, in a recent paper, Blau (1989, p. 14) finds that in the 1980s, declines in occupational segregation by gender have slowed relative to the 1970s primarily because "the influx of women into some initially male or integrated occupations has caused them to become 'resegregated' as female occupations." Another interesting aspect of contemporary patterns of occupational segregation by gender is the high rate of attrition of women who enter male-dominated occupations. Jacobs (1989b) calls this the "revolving door" phenomenon.

<sup>17</sup> Tables 3 through 5 and 7 through 10 show occupation-specific index changes for individual occupations that contributed  $\pm 0.5$  to the mix or sex composition effect. Index changes were also calculated for the major categories of employment identified by census

mestic servitude and the decline in the degree of gender segregation in the servant and clerical worker occupations were key elements in the falling index of dissimilarity in the late 19th century. While certain types of factory work also became available to women during this period (most notably in the boot and shoemaking industry), the service sector made a larger contribution to occupational desegregation. Industrialization led to a fundamental shift from home production to market production that ultimately reduced the need for domestic servants. (Of course, many middle class families of the time perceived a shortage of domestic help, as female workers increasingly chose other jobs.) Industrialization also generated larger, more bureaucratic firms with a greater need for record-keeping and thus a greater demand for clerical workers. These effects were central to the industrialization process, not tangential to it, and they had a profound effect on women workers.

### INDEX ESTIMATES FOR MIDWESTERN CITIES

The midwestern region of the United States was undergoing particularly dramatic economic growth during the latter part of the 19th century, as the boundaries of cultivation and urbanization were extended further and further west. Analysis of this region should therefore be especially instructive in studying the changing patterns of occupational gender segregation during this period. If industrialization with its accompanying structural economic changes was the factor behind the declines in the U.S. index, then we would expect individual cities to show large index declines in the decades in which those cities experienced industrialization. We would also expect larger index declines in these fast-growing and industrializing midwestern cities than in the nonagricultural United States as a whole.

A set of index calculations was therefore made for the individual cities of Cincinnati, Chicago, Milwaukee, and Cleveland. Table 6 presents the estimates of indexes and mix and sex composition effects for these cities. In general, the declines in gender segregation for these industrializing cities were indeed larger than the declines for the nonagricultural U.S. labor force. (Note that the estimates are in the same general range as those for the nonagricultural U.S. labor force.) The results in Table 6 indicate that a falling index of dissimilarity occurred earliest in cities experiencing early industrialization. Cincinnati was the earliest western industrial center, due largely to its Ohio River location during the steamboat era, and this city had experienced much of the 19th-century decline in its index by 1880. Chicago, with its impressive railroad connections,

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officials—e.g., personal service, manufacturing, agricultural. The personal service category was found to make a much larger contribution than any of the other categories (including manufacturing) to the negative sex composition effects of the period.



TABLE 6  
Estimates of the Index of Dissimilarity for Selected Cities, 1870-1900

	(n)	1870 index	MIX	COMP	1880 index	MIX	COMP	1900 index
Cincinnati								
Current occupations method		88.44 (71)	n/a	n/a	77.68 (70)	n/a	n/a	73.01 (129)
1870-1880-1900 comparable	(48)	85.60	-0.91	-4.94	78.51	-1.43	-5.45	70.40
1870-1880 comparable	(59)	88.57	-1.39	-7.20	79.02			
1880-1900 comparable	(55)				78.16	-1.48	-4.93	70.63
Chicago								
Current occupations method		87.62 (72)	n/a	n/a	82.05 (70)	n/a	n/a	69.69 (129)
1870-1880-1900 comparable	(51)	87.25	-1.47	-3.24	83.19	-2.39	-10.91	67.33
1870-1880 comparable	(60)	87.58	-1.20	-3.80	83.59			
1880-1900 comparable	(55)				82.99	-2.56	-10.44	67.99
Cleveland								
Current occupations method		90.41 (71)	n/a	n/a	85.49 (70)	n/a	n/a	77.55 (129)
1870-1880-1900 comparable	(49)	89.68	-1.43	-1.98	86.77	-1.61	-8.68	75.15
1870-1880 comparable	(58)	90.42	-0.86	-3.53	86.63			
1880-1900 comparable	(55)				86.17	-1.67	-8.23	75.25
Milwaukee								
Current occupations method		90.37 (72)	n/a	n/a	85.42 (70)	n/a	n/a	75.66 (129)
1870-1880-1900 comparable	(50)	89.86	-0.89	-3.21	86.18	-2.32	-10.58	73.63
1870-1880 comparable	(59)	90.59	-0.73	-4.39	86.34			
1880-1900 comparable	(55)				85.80	-2.38	-10.31	73.73

Note. n = number of occupational categories.

rose to prominence later and showed more significant declines in gender segregation during the 1880s and 1890s. Industrialization transformed the Great Lakes cities of Milwaukee and Cleveland later yet, with major shifts still occurring in the early decades of the 20th century; accordingly, the indices in these cities, while showing large declines in the 1880s and 1890s, are still at relatively high levels in 1900.

Examination of the mix and sex composition effects for the cities in Table 6 shows that large, negative sex composition effects are the most important reason for the declining index of dissimilarity. This was the same basic conclusion reached from the national data. However, these rapidly industrializing cities showed larger sex composition effects than the nonagricultural U.S. labor force taken as a whole during this period. Also, unlike the United States, these midwestern cities consistently had significant, negative occupational mix effects, indicating that their economies were growing faster in integrated occupations than in segregated ones. This suggests that the presence of rapid structural economic change may be a key indicator of declines in gender segregation during this period.

Each city showed a different pattern of occupational contributions to index changes based on the specific nature of its economy. Tables 7, 8, 9, and 10 show estimates of occupation-specific index changes, as well as figures on percentage female, for Cincinnati, Chicago, Milwaukee, and Cleveland. Once again, the occupation that consistently contributed most to the negative sex composition effect was the category that included domestic servants. Most of the other occupations that made significant contributions to the negative sex composition effect were male occupations that became somewhat less male. In Cincinnati in the 1870s, the predominantly male occupations of boot and shoemakers, hotel and restaurant workers, and clerical workers all became relatively more integrated. In Chicago and Cleveland in the 1880s and 1890s, clerical workers contributed heavily to the negative sex composition effect. In Milwaukee, boot and shoemakers, cigar and tobacco workers, and clerical workers made large contributions over the period from 1870 to 1900. Most of these occupations were discussed in the analysis of negative sex composition effects in the U.S. indices. Cigar and tobacco workers, however, were not. In this industry, increased specialization of tasks and the introduction of cigar molding machines were accompanied by a higher proportion of women workers (Cooper, 1987, pp. 10–31; Abbott, 1918, pp. 186–214).

### CONCLUDING REMARKS

This paper found substantial declines in the index of dissimilarity, a common measure of occupational segregation by gender, from 1870 to 1900. When changes in the index were decomposed into occupational mix effects and sex composition effects, the sex composition effects were found to be more significant in accounting for the downward trend in occupa-

TABLE 7  
Contribution of Occupations to Cincinnati Index Changes<sup>a</sup>

Occupation	1870-1880		COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>	$\Delta S_i$
	% Female 1870	% Female 1880				
Servants	93.0	90.2	-2.70	-2.78	-0.18	-5.66
Boot and shoemakers	5.9	23.3	-1.16	0.46	-0.49	-1.19
Hotel/restaurant keepers, employees	4.5	22.7	-1.15	-0.28	0.18	-1.25
Clerks and salespeople	5.5	11.3	-1.03	0.35	-0.14	-0.82
Launderers, laundresses	99.3	93.9	-0.62	-0.75	0.03	-1.34
Tailors, dressmakers, milliners, seamstresses	74.7	76.9	-0.61	2.40	-0.58	1.21
Laborers	0.1	1.4	-0.22	-1.28	0.06	-1.44
Total	24.1	24.9	-7.20	-1.39	-0.96	-9.55
Occupation	1880-1900		COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>	$\Delta S_i$
	% Female 1880	% Female 1900				
Clerks and salespeople	11.3	25.2	-2.61	1.08	-0.95	-2.48
Servants, hotel/restaurant employees	78.8	79.2	-2.59	-1.77	-0.02	-4.38
Tailors, dressmakers, milliners, seamstresses	76.9	79.0	-1.80	-1.42	-0.08	-3.30
Launderers, laundresses	93.9	94.7	-0.39	2.32	-0.38	1.55
Carmen, draymen, teamsters	0.0	0.3	0.10	0.71	0.04	0.85
Laborers	1.4	1.1	0.50	-1.95	-0.11	-1.56
Cigar and tobacco workers	10.5	56.8	0.92	0.22	-0.47	0.67
Total	24.9	28.2	-4.93	-1.48	-1.12	-7.53

<sup>a</sup> Occupations included in the table are those contributing  $\pm 0.50$  to the mix or sex composition effects, based on the back-aggregation method using 1870-1880 and 1880-1900 comparable occupations.

TABLE 8  
Contribution of Occupations to Chicago Index Changes<sup>a</sup>

Occupation	1870-1880				
	% Female 1870	% Female 1880	COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>
Servants	91.9	90.6	-4.58	-7.41	0.26
Laborers	0.0	0.5	0.12	-1.61	0.06
Carpenters and joiners	0.0	0.0	0.12	-1.28	-0.02
Clerks, salespeople, and accountants	2.6	8.5	-1.23	0.71	-0.16
Laundresses and laundresses	95.6	80.8	-0.57	1.17	-0.43
Tailors and seamstresses	51.6	71.3	2.62	5.56	1.15
Total	17.5	20.1	-3.80	-1.20	1.00
					-4.00
Occupation	1880-1900				
	% Female 1880	% Female 1900	COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>
Servants, waiters	77.8	73.1	-3.27	-2.76	-0.47
Tailors and seamstresses	71.3	68.5	-2.34	-1.59	-0.62
Sailors	0.0	0.2	0.03	-1.49	-0.02
Laborers	0.5	1.9	-0.43	-0.68	-0.58
Carpenters and joiners	0.0	0.1	0.05	-0.58	-0.09
Iron and steel workers	0.0	1.3	-0.04	0.53	0.00
Draymen/teamsters	0.0	0.1	0.03	0.62	0.04
Manufacturers	1.5	1.7	0.01	0.68	0.03
Machinists	0.0	0.2	0.02	0.74	0.03
Laundresses and laundresses	80.8	76.0	-0.33	1.17	-0.36
Teachers	79.1	81.9	-0.07	1.55	-0.26
Clerks, salespeople, copyists	8.1	23.3	-3.59	1.62	-0.88
Total	20.2	21.0	-10.44	-2.56	-2.00
					-15.00

<sup>a</sup> Occupations included in the table are those contributing  $\pm 0.50$  to the mix or sex composition effects, based on the back-aggregation method using 1870-1880 and 1880-1900 comparable occupations.

tional segregation. These conclusions did not vary with the several methods of calculation that were used. The pace of change in the late 19th century was faster than in the 20th century as a whole. However, since 1970, the decline in occupational segregation has been even faster.

This paper points to the significance of industrialization in reducing the extent of occupational segregation by gender in the late 19th century. The U.S. indices showed substantial declines over the 1870 to 1900 period, the period in which we would expect to see the effects of industrialization. Also, the indices calculated for Cincinnati, Chicago, Milwaukee, and Cleveland showed larger declines than the U.S. indices, an expected result given that industrialization had its greatest impact in urban areas. Finally, the timing of the declines in the city indices was strongly tied to the timing of industrialization in each of the individual cities.

Industrialization affected the occupational profiles of men and women in several ways. Certain categories of factory work such as cigar-making and boot and shoemaking became available to women. But industrialization also led to the decline of the traditional service sector (especially evident in the declining importance of the domestic servant) and the rise of a new, business-oriented service sector staffed with clerical workers, who were increasingly likely to be women.

The impact of industrialization on the occupations of male and female workers was dynamic indeed. But did this dynamism actually benefit women workers? When we contrast the entry of women into professional and managerial occupations since 1970 with the rise of clerical and factory jobs for women in the 19th century, it would be easy to conclude that the occupational shifts of the 19th century did not give women much to cheer about. The decline of domestic servitude for women, tied as it was to the substitution of black for white servants, tells us as much about the discrimination faced by black workers as it does about the new opportunities available to white women (Bertaux 1991), and as such it is harder to applaud than, say, the opening of the legal and medical professions to women in recent years. Viewed from the perspective of women workers, both the late 19th and the late 20th centuries have been periods of widening opportunities. The 19th-century changes greatly benefited the lower and middle strata of the (white) female labor force, as it gave them options beyond the traditional servant, laundress, seamstress trio. The 20th-century changes have tended to benefit highly educated women, leaving the majority of "pink collar" workers with little to celebrate. Which set of changes one considers more "significant" probably depends on where one stands in the labor force.

Looked at broadly, the distribution of occupations available to women in 1900 is remarkably similar to that of women today. The same cannot be said for the occupational distribution of 1870. Thus, the roots of today's

TABLE 9  
Contribution of Occupations to Cleveland Index Changes<sup>a</sup>

Occupation	% Female 1870	1870-1880 % Female 1880	COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>	$\Delta S_i$
Servants	91.2	87.9	-5.53	-6.55	0.78	-11.30
Employees of railroad companies	0.3	0.3	0.00	-1.67	0.06	-1.61
Coopers	0.0	0.0	-0.06	-1.49	-0.03	-1.46
Sailors	0.0	0.0	0.05	-1.32	-0.03	-1.30
Carpenters and joiners	0.0	0.0	0.08	-0.85	0.00	-0.77
Brick and stone masons	0.0	0.0	0.05	-0.70	-0.01	-0.66
Boot and shoemakers	0.2	4.9	-0.38	-0.56	0.19	-0.75
Clerks and salespeople	3.4	8.5	-0.87	0.95	-0.06	0.02
Teachers	67.4	83.0	0.19	0.81	0.06	1.06
Iron and steel workers	0.0	0.0	0.06	1.11	0.06	1.23
Machinists	0.0	0.0	0.02	1.17	0.04	1.23
Laundries and laundresses	98.8	91.5	-0.22	1.90	-0.43	1.25
Laborers	0.0	0.8	-0.05	2.33	0.10	2.38
Tailors, seamstresses	59.2	76.9	1.71	3.80	0.76	6.27
Traders and dealers	0.0	0.0	-0.58	-0.03	0.12	-0.49
Hotel and restaurant keepers/employees	11.0	46.0	2.13	-0.09	-1.35	0.69
Total	14.9	20.0	-3.53	-0.86	0.60	-3.79

Occupation	% Female 1880	1880-1900 % Female 1900	COMP,	MIX,	INTER,	$\Delta S_i$
Servants, waiters	83.1	81.6	-2.20	-4.54	-0.14	-6.88
Tailors and seamstresses	76.9	72.2	-2.28	-1.26	1.83	-1.71
Employees of railroad companies	0.3	0.2	0.00	-0.92	0.05	-0.87
Coopers	0.0	0.2	0.01	-0.81	-0.01	-0.81
Carpenters and joiners	0.0	0.1	0.05	-0.58	0.00	-0.53
Carmen, draymen, teamsters	0.0	0.2	0.02	0.56	0.02	0.60
Iron and steel workers	0.0	1.1	-0.13	0.59	0.00	0.46
Manufacturers	0.8	1.2	0.00	0.72	0.02	0.74
Clerks, salespeople	7.9	23.5	-2.88	1.05	-0.29	-2.12
Machinists	0.0	0.2	0.02	1.02	0.03	1.07
Teachers	83.0	84.1	-0.14	0.89	-0.18	0.57
Laundresses and laundresses	91.5	84.2	-0.39	1.27	-0.32	0.56
Total	20.1	18.3	-8.23	-1.67	-1.02	-10.92

<sup>a</sup> Occupations included in the table are those contributing  $\pm 0.50$  to the mix or sex composition effects, based on the back-aggregation method using 1870-1880 and 1880-1900 comparable occupations.

TABLE 10  
Contribution of Occupations to Milwaukee Index Changes<sup>a</sup>

Occupation	% Female 1870	1870-1880 % Female 1880	COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>	$\Delta S_i$
Servants	94.6	93.2	-3.91	-5.59	0.71	-8.79
Traders and dealers	1.9	4.2	-0.34	-0.89	0.08	-1.15
Laborers	0.2	0.5	0.13	-0.75	-0.01	-0.63
Cigar and tobacco workers	0.2	1.2	-0.02	0.67	-0.01	0.64
Tailors and seamstresses	65.3	74.4	0.50	5.82	0.29	6.61
Boot and shoemakers	0.0	7.8	-0.64	-0.47	0.17	-0.94
Clerks and salespeople	4.4	10.7	-1.16	-0.16	0.06	-1.26
Hotel and restaurant keepers/employees	12.7	43.8	1.14	-0.17	-0.45	0.52
Total	18.5	20.7	-4.39	-0.73	0.87	-4.25



Occupation	% Female 1880	1880-1900 % Female 1900	COMP <sub>i</sub>	MIX <sub>i</sub>	INTER <sub>i</sub>	$\Delta S_i$
Servants, waiters	87.4	86.8	-4.29	-4.20	0.42	-8.07
Laborers	0.5	1.6	0.16	-2.99	-0.08	-2.91
Cigar and tobacco workers	1.2	27.4	-1.64	-1.29	1.22	-1.71
Carpenters and joiners	0.0	0.0	0.19	-1.09	-0.06	-0.96
Tailors and seamstresses	74.4	80.8	-1.39	-1.08	-0.27	-2.74
Sailors	0.3	0.0	0.07	-0.64	-0.04	-0.61
Coopers	0.0	0.2	0.05	-0.61	-0.03	-0.59
Leather curriers, dressers	1.8	7.2	-0.16	0.52	-0.12	0.24
Clerks and salespeople	9.3	26.5	-2.56	0.67	0.26	-1.63
Carmen, draymen, teamsters	.0	0.1	0.08	0.80	0.04	0.92
Manufacturers	0.5	1.0	0.01	0.84	0.03	0.88
Teachers	71.9	78.7	-0.18	0.88	-0.15	0.55
Machinists	0.0	0.1	0.05	0.98	0.05	1.08
Iron and steel workers	0.0	0.9	0.02	1.88	0.02	1.92
Launderers and laundresses	94.9	89.9	-0.29	2.45	-0.63	1.53
Boot and shoemakers	7.8	22.9	-0.71	-0.23	0.12	-0.82
Total	20.7	22.7	-10.31	-2.38	0.62	-12.07

<sup>a</sup> Occupations included in the table are those contributing  $\pm 0.50$  to the mix or sex composition effects, based on the back-aggregation method using 1870-1880 and 1880-1900 comparable occupations.

"women's jobs" can be clearly seen in the occupational shifts experienced in the late 19th century.

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