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## *Spatial Variation in U.S. Labor Markets and Workplace Gender Segregation: 1980–2005\**

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Many studies of workplace inequality have examined why workplace gender segregation still exists and how gender segregation affects workplaces (Cohen, Huffman, and Knauer 2009 *Work and Occupations* 36(4):318; Huffman, Cohen, and Pearlman 2010 *Administrative Science Quarterly* 55(2):255). Yet, fewer studies have examined how space might affect gender segregation. In this paper, we investigate two types of space, normative space and industrial space, and their influence on gender workplace segregation within geographic space. We use data from the U.S. Equal Employment Opportunity Commission (EEOC) and mixed models to examine how normative and industrial spaces affect workplaces within geographic space. We find that both measures of normative and industrial space predict differing levels of gender segregation within geographic spaces (measured via commuting zones). In addition, the effects normative space (women's share of the labor force) has on gender segregation are mediated by industrial restructuring.

Massey (1994) defines space as social relations constructed and shaped within geographies. Spaces are composed of human-made and natural resources that interact with or constrain social relationships to create unique social spaces. These socio-spatial relationships encompass and inform systems of inequality (Bourdieu 2000; Manderscheid 2009). In addition, socio-spatial relationships change over time, as do the boundaries and character of spaces. Social relationships are likely to interact differently within different places, creating spatial variability, including variability in spatial inequality (Huggins and Thompson 2015; Lobao 2004; Peck 1996). One important form of spatial inequality is gender segregation in workplaces.

Previous studies demonstrate that there has been little change in gender integration of workplaces. In fact, there was very little change of women's

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segregation in workplaces between 1960 and 1970, a decline between 1970 and 1980, and little change since (Albeda 1986; Baunach 2002; Beller 1985; Bianchi and Rytina 1986; Blau, Brummund, and Liu 2013; Carlson 1992; Cotter et al. 2004; Jacobs 1989; Jacobsen 1994; Wells 1999). Similarly, Stainback and Tomaskovic-Devey (2012) demonstrate that not only has integration slowed since the 1980s, but also that high-wage occupations show signs of re-segregation. In general, workplace integration has stalled; however, levels of segregation and integration vary spatially.

Most research examining gender segregation employs national labor market area (LMA) occupation-level-based estimates (e.g., see Cohen, Huffman, and Knauer 2009 and Huffman, Cohen, and Pearlman 2010). While these studies have greatly improved our understanding, little research has focused on how changes in space affect the gender integration or segregation of *workplaces* in commuting zones. For most workers, labor markets are local and determined partially by historical patterns and the social relationships embedded within various types of space (Lobao 1993; Peck 1996; Perales and Vidal 2015). Space represents an important conceptual tool for exploring inequality (Manderscheid 2009; Tickamyer 2000). Some academic disciplines, such as critical geography and anthropology, have produced insightful explorations of space.

This paper contributes to both the literature on workplace inequality and the growing literature on space by exploring how two forms of space (normative and industrial space) affect women's integration in workplaces. One possible spatial factor influencing workplace segregation is normative change; that is, that more liberal gender ideas lead to women comprising a larger share of the labor force, including in previously segregated workplaces. Alternatively, women's greater entrance into the labor force could lead to having "strength in numbers" and creating normative change in workplaces that would lead to greater integration (Kanter 1977). Another explanation for the spatial variation in gender segregation may be de-industrialization and the rise of the service economy (Cohen and Huffman 2003; Cotter et al. 1995; Reskin1993). In what follows, we highlight the theoretical importance of space for workplace gender segregation. Findings from our analysis indicate that changes in women's share of the labor force (our indicator of normative space) affect gender segregation, but the effects are largely mediated by industrial restructuring. In sum, geographic spatial variation in workplace gender segregation is largely due to women entering industries that are already integrated.

### **Space and Local Labor Markets**

Labor markets, like the workplaces composing a labor market, are a particular category of space defined by social relations of labor supply and demand

(Lobao 1993). A local labor market is a place where workers and capital meet at moments in time (Peck 1996: 16). Commuting zones are geographic spaces intended to measure local labor markets. In contrast to county lines or other arbitrary political markers such as zip codes, commuting zones are calculated based on decennial census surveys documenting the distance individuals commute to work from where they live (Tolbert and Sizer 1996). Workers are tied to local labor markets based on realistic commuting restraints, and conversely, labor markets are constrained by the supply of workers (Fernandez and Celina 2004). Thus, contrary to neoclassical definitions, these relations of supply and demand unfold at a local level (Peck 1996). In the following subsections, we draw on the spatial inequality and workplace segregation literature to examine how two types of space—normative and industrial space—affect gender segregation within workplaces.

### *Normative Space*

Normative space is composed of sets of norms held by organizations and individuals. For example, hiring managers may hold norms regarding employees' demographics and available jobs. Women, in the eyes of managers, may seem unfit to accomplish a job regularly given to men (Kanter 1977). Business schools and professional associations often transmit common norms to managers and other professionals (DiMaggio and Powell 1983). Managers may adopt these norms because they seem just, as well as rational, and/or legitimizing (Dobbin et al. 1993). These common norms can affect the structure and hiring practices of workplaces and industries (Stainback and Tomaskovic-Devey 2012; Teodoro 2014).

We conceive of space as normative as professional associations, informal professional networks, and advocacy groups exist at the local and regional levels. When a large and vocal group within an area attempts to adopt new norms, they can effectively pressure organizations to change their practices (Collins 1997; Edelman 1990). These are just a few examples that suggest that normative space for organizations should vary across local labor markets. Additionally, normative space can be particularly important for women's representation within local labor markets since research suggests that women are more likely than men to consider how moving for better work opportunities will affect their family, and thus, women are less likely to relocate for better opportunities (Abrahamson and Sigelman 1987; Branden 2014; Lorence 1992; Ulrich, Pluut, and Buttgen 2015). Scholars commonly note how women's labor force participation can negatively affect gender inequality. The proportion of women in a local labor market or workplace can create normative change (Kanter 1977; Stainback, Ratliff, and Roscigno 2011; Taylor 2010; Taylor et al. 2019). Therefore, social inequality is spatial, varying widely across localities and regions (Lobao 2004).

One line of research suggests simply that the more women in a labor market, the less segregation (Abrahamson and Sigelman 1987; Jones and Rosenfeld 1989; Lorence 1992). This research often cites population growth and a subsequently more normatively progressive labor market as the main causes for decreases in segregation. In other words, the proportion of women in a local labor market may change normative beliefs about women in workplaces, leading to changes in normative space (Kanter 1977; Stainback, Ratliff, and Roscigno 2011). Scholars' finding that more women and/or more educated women in a labor market will lead to greater integration is consistent with Kanter's (1977) "strength in numbers hypothesis," which suggests that composition of a workplace is important. As more women participate in the labor force and the proportion of women within any given workplace increases, their influence and strength will grow. Kanter argues that men will be less likely to stereotype or job type women, but instead due to increased interactions and contact with women workers, men will start to accept women as competent coworkers (see also Abrahamson and Sigelman 1987; Jacobsen 1994; Stainback and Tomaskovic-Devey 2012). In sum, women's representation within the labor force will change normative space—the beliefs held by workers—within workplaces.

Cotter et al. (1995) argue that normative change has a large effect on decreases in levels of segregation. They find three-quarters of integration is due to women's entry into existing jobs, meaning jobs that are not created through industrial restructuring. They also argue that by the 1980s gender stereotyping of jobs had begun to fade and gender desegregation slowed. They find that most of the decline in segregation in the 1980s was due to a 40 percent increase in gender-integrated occupations (they measure "integrated" as occupations in which 20 percent to 80 percent of workers are women). Additionally, they find women entering men-dominated workplaces was the primary cause of this wave of desegregation. Although they observe occupations, Cotter et al. (1995) argument for normative change suggests that the demand for women workers increased in workplaces. Qualitative evidence supports the idea that gender-integrating environments lead to normative change among men (Anderson 2008).

H<sub>1</sub>: In a commuting zone, the percentage of women workers is negatively associated with workplace gender segregation.

On the other hand, another set of research finds that the increase of women in the labor force leads to women being steered into certain industries and occupations with higher demand and less authority (Semyonov and Scott 1983; Stainback and Tomaskovic-Devey 2012). This line of argument is consistent with a competition/threat approach (Blalock 1956, Blalock 1967). While Blalockian threat has mostly focused in racial inequality, it has been applied to studies of gender inequality (Budig 2002; Huffman and Cohen 2004). This

theory suggests that as women begin to make up a larger proportion of workers in an establishment that men will feel threatened. In response to this threat, men will differentiate themselves by constructing “natural” differences between them and women; they will devalue women and enact other exclusionary processes to prevent women from “taking over” (Reskin 1988).

These changes are more localized changes in the labor force and do suggest a need to examine them more locally—in the workplace and in local labor markets—rather than at the national level.

H<sub>2</sub>: In a commuting zone, the percentage of women workers in a commuting zone is positively associated with workplace gender segregation.

A queuing model suggests that labor markets are comprised of job queues, where employers rank prospective employees for potential jobs within labor markets and potential employees rank potential jobs (Reskin and Roos 1990). From this perspective, employers sort women into queues for less desirable jobs within devalued industries. In addition to gender, race may also affect the order that employers rank potential employees within the queue. McTague, Stainback, and Tomaskovic-Devey (2009) find that both increases in the percentage of women and blacks in labor markets predict decreases in gender segregations within workplaces (but not black/white segregation), which they attribute to queuing. Other research suggests that black men tend to be located across occupations, while black and white women are segregated from one another and from men (Kalev 2009; Maume 1999). However, McGuire and Reskin (1993) found that the differences between black women, white women, and black men, while real, were substantially smaller than the advantage of white men who were placed highest in the queues for jobs with the greatest earnings and authority. Thus, how the racial makeup of labor markets affects gender segregation warrants additional research.

While the normative space of labor markets may affect women’s representation within workplaces, women may be pushed into certain fields or jobs within a labor market. Thus, women’s access to jobs may be contingent on the types of workplaces within their labor market. Following a competition approach, we review how access and growth of certain industries (particularly, the service sector) affect gender segregation within workplaces. Just as women have less access to occupations offering the greatest rewards, we argue that women’s access to industries with higher pay and greater opportunities for advancement, is contingent on the types of industries in a labor market, which we term industrial space. In short, the payoff or success of women’s labor force share might be largely determined by the industrial makeup of the local labor market in which they are embedded.

### *Industrial Space*

We think of industrial space as having two components. First, we conceptualize industrial space as industrial composition or modes of production mapped across geographic space. Time, again, is an important element of this component. Industrial composition has changed a great deal over the last several decades, with a decline in manufacturing and agriculture and growth in service industries (albeit somewhat interrupted by the Great Recession) (Singelmann and Browning 1980; Lorence 1992; Almon and Tang 2011). Second, we can think of industrial space, particularly within local labor markets, as corresponding to organizational fields (DiMaggio and Powell 1983). Organizational fields encompass key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products that interact with one another. Organizations within a field may transmit practices and structures to one another through coercion, norms, or imitation (DiMaggio and Powell 1983). Though organizational fields may often span labor markets, or even nations, we can also conceive of organizational fields that exist within local labor market areas.

Singelmann and Browning (1980) discuss industrial changes in the 1960s and 1970s that had implications for occupational shifts, as well as women's progress. They show that most of integration (two-thirds) was due to economic restructuring from manufacturing to service, while the supply or composition of the labor force leads to the remaining changes. The greatest effects of these changes, they argue, are increases in professional and managerial jobs. Clearly, this shift should lead to a greater demand for workers in these occupations. Lorence (1992) also notes that the growth in the service sector was associated with declines in occupational gender segregation across 130 MSA's in 1980. He also found that variation in gender segregation across cities was strongly tied to variation in the industrial structure. While the service sector growth continued in the 1990s, in the 2000s, growth was more varied within the service sector. The US Bureau of Labor Statistics (Goodman 2001; Ilg 2006) shows employment loss in some service sector industries and gains in other service sector industries, especially around the time of the 2001 economic recession. Together, these findings suggest that some part of the observed desegregation will reflect change in industrial structure.

H<sub>3</sub>: In a commuting zone, the proportion of total employment found in service industries in a commuting zone is negatively associated with workplace gender segregation.

To summarize, we examine how gender segregation within workplaces is affected by normative and industrial space. Women's participation in local labor forces may impact normative space in two contradictory ways. Women's

increased participation in a local labor force may have a progressive effect on normative space (measured as decreased gender segregation within workplaces) or may have no effect (measured as no change to gender segregation within workplaces). Yet, changes to industrial space, the types of workplaces in a local labor market may also affect women's segregation within workplaces. Prior literature is inconsistent as to whether normative change or industrial restructuring has a greater effect on segregation. Based on prior research (Reskin1993; Cotter et al. 1995; Cohen and Huffman 2003; Taylor 2010; Taylor et al. 2019), we expect these effects to be related and happening concurrently rather than competing. In short, normative spatial changes are dependent on industrial spatial change. Thus, our fourth and final hypothesis is as follows:

H4: The effect of normative change is weaker when industrial change is included in the model.

In the next section of this paper, we will discuss the methods we utilize to test the theories and hypotheses in prior sections. A detailed discussion of the data, measures, and modeling strategy in our analysis follows.

## **Methods**

### *Data*

We use data collected by the U.S. Equal Employment Opportunity Commission [EEOC] from 1980 through 2005. The data contain workplace employment counts of gender by five race/ethnic (white, black, Hispanic, Asian/Pacific Islander, and American Indian/Alaskan Native) groups distributed across nine occupational categories—officials and managers, professionals, technicians, sales workers, office and clerical workers, craft workers, operatives, laborers, and service workers. EEO-1 reports also include information on the workplace's parent company, industry, and geographic location. Finally, each record states whether or not the firm is a federal contractor. Federal contractors must maintain affirmative action plans and progress for the Federal Office of Contract Compliance Programs (OFCCP).

The data (EEO-1 reports) are unique since they document workplace-level gender segregation in the private sector since 1966 (for a more detailed discussion of the data, see Robinson et al. 2005). There were over 4.5 million accumulated workplace observations by the year 2005. We focus on this time-period for methodological and substantive reasons. First, we end our analysis with 2005 since afterward the EEOC transitioned from Standard Industrial Codes (SIC) to the North American Industry Classification System (NAICS). This was a substantial change in industry codes. Secondly, we wanted to avoid the potential unique changes in workplaces due to the 2008 Great Recession, a topic worthy of an

analysis all its own. Finally, the period between 1980 and 2005 is a period in which women's share of the labor force stabilizes. By 1980, women had become 42.5% of the labor force, increasing to 44.2% in 1985 on to 46.4% in 2005 (Department of Labor n.d.).

In this paper, we use commuting zones as our unit of analysis to capture the importance of geographic space. This allows us to take account of geographic shifts in employment over the period under study, and therefore, commuting zones are a proxy for local labor markets (Tolbert and Sizer 1996). Commuting zones are calculated based upon decennial census surveys documenting the distance individuals commute to work from where they live. Since these boundaries can change every ten years, for consistency, we impose 1990 commuting zones on all years of data in these analyses. There are 741 total commuting zones in the United States (see Figure 1). We omitted commuting zones with less than ten workplaces reporting to the Equal Employment Opportunity Commission since these commuting zones are simply too small to try to assess normative change or industrial restructuring. The omission results in 535 commuting zones for our analysis. These commuting zones are in each year of data used (6 years), resulting in a final sample of 3210 commuting zones.

Prior research has been limited by the availability of workplace data, which is why most researchers have relied on census and other occupational-level data, often doing labor market area analyses. A major strength of the EEOC data is they allow us to examine a very large number of workplaces. We believe that aggregating from workplace-level data is more appropriate for assessing women's occupational attainment than aggregating from individuals void of spatial and social context. The data we use in this paper allow us to estimate levels of segregation in a geographic area and within workplaces in geographic areas (commuting zones). This is important substantively since our estimates of women's progress must consider how women are distributed among workplaces. If women are crowded in certain industries or workplaces, this tells us something important about women's overall level of progress. Further, an examination of commuting zone composition provides insights into how the supply of workers competing for jobs in geographic spaces affects gender segregation.

There are some limitations to these data, the greatest being the use of nine occupation categories to describe within workplace employment. Ideally, we would have job-level data so that we could show differences within occupation categories. Prior research has shown increases in the level of detail in the data show dramatic increases in gender segregation (Bielby and Baron 1986; Robinson et al. 2005) relative to occupation-based estimates. Research has also shown that job title proliferation is widespread and that women may mostly have access to occupations with lower status, responsibility, and opportunity for mobility than men in these same occupations (Strang and Baron 1990). In

**Labor market areas for the United States, 1990**

**Figure 1** Map of the 741 Commuting Zones in the United States, 1990.  
 Map Source: United States Department of Agriculture Economic Research Service  
 Web site. <http://www.ers.usda.gov/briefing/rurality/lmacz/czones.htm>.

short, while our estimates of gender segregation are taken from actual workplaces, we may still be overestimating progress. Additionally, the data do not allow us to examine more complex organizational dynamics or processes that may affect segregation. Finally, workplaces in the data tend to be larger workplaces. We know larger workplaces are more likely to have formalized personnel systems, which tend to reduce segregation (Carrington and Troske 1998; Reskin 1988; Reskin and McBrier 2000; Tomaskovic-Devey and Skaggs 1999). Therefore, here again, we might be overestimating integration. Overall, however, the ability to examine gender segregation in such a very large number of workplaces far outweighs the limitations of the data.

### *Measures and Analysis*

We use mixed (also called multilevel) models to analyze between and within unit change over time. Utilizing these statistical procedures (with

SAS PROC MIXED) gives us considerable flexibility in modeling covariance. Essentially, this technique allows us to specify fixed and random effects in the same models (for a detailed discussion of this, see Singer 1998 or Karney and Bradbury 1995). We regress segregation on time, women's labor force share, racial minority share, and industry. We begin with our intercept-only model and then model time and average workplace size. In the next model, we add women's labor force share. Next, we combine women's labor force share with racial minority share of labor force. Our full main model includes average workplace size, women's labor force share, racial minority labor market share, and industry. Finally, we add two interaction effects, between (1) time and women's labor force share and (2) time and industry. Detailed discussion of variable measurement and their treatment as random and/or fixed variables follows. Descriptive statistics for all the variables are presented in Table 1.

### *Dependent Variable*

We measure segregation using the index of dissimilarity ( $D$ ). This index measures the evenness of the distribution of workers in a bounded area. In our analysis, our measure is for occupations in a workplace aggregated to the

**Table 1**  
Descriptive Statistics 1980–2005

Variable	$N$	Mean	$SD$	Minimum	Maximum
Total # Est.	3,210	321.783	784.210	11	11,384.00
Total # Empl.	3,210	69,846.38	175,854.93	1,126.03	2,153,185.49
Avg. Est. Size	3,210	206.167	50.283	65.877	562.771
CZ % Women	3,210	45.620	7.380	16.019	72.696
CZ % White	3,210	81.940	16.714	6.397	99.857
CZ % Black	3,210	10.950	13.797	.001	72.960
CZ % Hispanic	3,210	5.834	11.054	0	91.4667
CZ % Manuf.	3,200	44.620	20.178	.598	97.921
CZ % Service	3,210	41.240	16.867	1.0509	95.643
$D$ Across Est.	3,210	43.743	7.887	23.049	76.200

*Notes:* Data are collected from the U.S. Equal Employment Opportunity Commission using the years 1980, 1985, 1990, 1995, 2000, and 2005 from 535 commuting zones.

commuting zone level. The index of dissimilarity measures the difference between the ratio of women in occupations compared to their representation in workplaces and the ratio of men in occupations compared to their representation in workplaces. The equation is computed as follows, where “wo” represents women in occupations, “Ww” represents women in workplaces, “mo” represents men in occupations, and “Mw” represents men in workplaces.

$$D = \frac{1}{2} \sum \left| \left( \frac{wo}{Ww} - \frac{mo}{Mw} \right) \right|$$

The index of dissimilarity ranges from 0 to 100, from total integration to total segregation. The value of  $D$  represents the percentage of women or men who would have to change jobs in order to have equal gender representation in a workplace. For instance, a value of  $D = 52$  would mean that 52 percent of men or women in that occupation would have to change occupations for the workplace to be completely integrated.

### *Independent Variables*

**Time.** We include data in five-year increments from 1980 until 2005. Therefore, time is coded as 1980 = 0, 1985 = 1, 1990 = 2, 1995 = 3, 2000 = 4, and 2005 = 5. Time is modeled as both fixed and random in the analyses.

**Normative Change.** Following Kanter (1977) and others, we use women’s labor force share as a fixed measure of normative change. We compute this variable by the proportion of total employees that are women in all EEO-1 reporting workplaces in the commuting zone. We realize this measure has limitations in time order. Do increases in labor force share create normative change or does normative change create increases in labor force share? Regardless, women’s labor force share and normative change are clearly related and while the measure is limited, it should give some indication of changes occurring net of industrial change.

**Racial Minority Labor Force Share.** We measure the percentage of African Americans and Hispanics in all EEO-1 reporting workplaces in the commuting zone. Of course, these measures have limitations since we are measuring the supply of women and racial minorities who are actually employed in these workplaces and do not include the unemployed. Both variables are skewed, so we transform them by taking the natural log for our analyses. We model these variables as fixed variables.

**Industrial Restructuring.** The data include Standard Industrial Classifications (SIC) for each workplace. These classifications are grouped into twelve broad industrial sectors with total employment in each industrial sector. We use a proportional measure that we calculate as the proportion of total

employment that is in service sector workplaces in each commuting zone. We model this as a fixed variable.

### ***Control Variables***

***Total Employment, Total Workplaces, and Average Workplace Size.*** Prior research suggests we should control for total employment and the total number of workplaces in the commuting zone as measures of population growth or decline (Abrahamson and Sigelman 1987; Lorence 1992). Similarly, workplace size has been shown to be related to women's occupational progress since larger workplaces are more likely to have centralized personnel systems and policies that lessen discrimination (Carrington and Troske 1998; Reskin 1988; Reskin and McBrier 2000; Tomaskovic-Devey and Skaggs 1999). These variables are all related substantively and in computation (average workplace size is the product of dividing total employment by the number of workplaces). Therefore, we only include a control for the average workplace size in commuting zones. Given the skewed distribution of this variable, we transform it using the natural log for our analyses. We model this as a fixed variable.

### **Results**

In our multivariate analysis, we regress gender segregation on time, average establishment size, women's labor force share, racial minority share, and industry with a series of nested multilevel models. Results for the analysis are presented in Table 2. We begin with our intercept-only model. In model 2, we include time and the control for average workplace size. In model 3, we add women's labor force share. Model 4 includes racial minority labor force share with women's labor force share. In model 5, we add our industry measure—the percent employment in service sections. Finally, in model 6, we add two interaction effects, between time and women's labor force share and time and industry. With the exception of model 6, each additional model is a significantly better fit to the data than the comparison nested model, such that model 2 is a better fit to the data than model 1, model 3 better than model 2, etc. The intercept-only model indicates that there are significant differences in gender segregation within commuting zones and significant differences in gender segregation in commuting zones across time. Thus, using mixed models is an appropriate modeling strategy.

The second model with fixed effects for time and average workplace size and random effects for time and the intercept has a residual of 7.906. All variables are significant in the model, and each is negatively associated with segregation. The model predicts that increases in the average workplace size and increases in time are associated with less gender segregation. The covariance estimates between the slope and intercept show that a one-unit increase in time is predicted to decrease the intercept for segregation 4.18 units. In sum, all

**Table 2**  
 Multilevel Regression Coefficients for Workplace Gender Segregation 1980–2005\*

	Intercept model	Control model	Women's labor force model	Full labor force model	Labor force and industrial restructuring	Full interaction model
<b>Fixed effects</b>						
Intercept	43.743*** (.1721)	71.586*** (2.462)	83.134*** (2.755)	84.658*** (2.778)	87.622*** (2.707)	86.527*** (2.672)
Time	-	-3.566*** (.043)	-3.333*** (.050)	-3.135*** (.062)	-2.943*** (.066)	-2.767*** (.306)
Avg. Size(ln)	-	-3.572*** (.463)	-4.197*** (.461)	-4.310*** (.461)	-4.939*** (.448)	-4.772*** (.456)
CZ % Women	-	-	-.193*** (.018)	-.217*** (.019)	-.156*** (.020)	-.134*** (.023)
CZ % Black (ln)	-	-	-	-.111 (.083)	-.140 <sup>†</sup> (.081)	-.149 <sup>†</sup> (.082)
CZ % Hispanic(ln)	-	-	-	-.437*** (.086)	-.313*** (.097)	-.281** (.088)
CZ % Service	-	-	-	-	-.070*** (.010)	-.091*** (.013)
Time*	-	-	-	-	-	-.012 (.008)
CZ Women	-	-	-	-	-	.009*** (.003)
Time*	-	-	-	-	-	-
CZ Service	-	-	-	-	-	-
<b>Random effects<sup>1</sup></b>						
Intercept	6.602*** (1.004)	18.106*** (1.370)	15.151*** (1.180)	14.030*** (1.115)	13.664*** (1.092)	13.791*** (1.104)
Slope/Intercept	-	-1.413*** (.232)	-1.171*** (.205)	-1.201*** (.203)	-1.308*** (.204)	-1.326*** (.208)

**Table 2**  
(continued)

	Intercept model	Control model	Women's labor force model	Full labor force model	Labor force and industrial restructuring	Full interaction model
Slope	–	.500*** (.061)	.430*** (.055)	.444*** (.056)	.442*** (.056)	.458*** (.057)
Residual	55.618*** (1.521)	7.906*** (.243)	7.646*** (.234)	7.659*** (.235)	7.556*** (.232)	7.481*** (.230)
Chi-square	72.24	1,781.130	159.700	1,414.220	133.760	134.160
–2 Log Likelihood	22,297.4	17,465.900	17,268.300	17,235.700	17,164.800	17,172.800
df	2140	1604	1603	1601	1600	1598

Notes: Data are collected from the U.S. Equal Employment Opportunity Commission using the years 1980, 1985, 1990, 1995, 2000, and 2005 from 535 commuting zones. Standard errors are given in parentheses. \*\*\* $\leq .001$ , \*\* $\leq .01$ , \* $p \leq .05$ , †  $\leq .1$ .

† Coefficients under heading random effects are covariance and variance estimates.

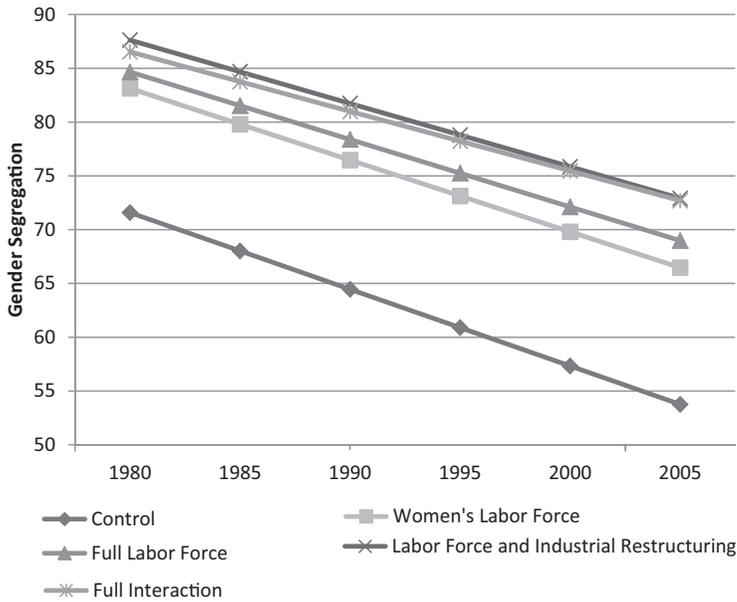
things being equal, as time progresses workplaces become less segregated. The third model is a significantly better fit to the data while only adding women's labor force share. This addition results in a minor decrease in the residual. The effects of time and average workplace size change little from model one to model two. Women's labor force share negatively affects workplace gender segregation. In fact, a one-unit increase in the proportion of total employment that is women is predicted to decrease the intercept for segregation by .193 units. The addition of women's labor force share as a fixed effect does reduce the covariance between the slope and the intercept.

In model 4, we added the proportion of total employment that is black and the proportion that is Hispanic. The addition of these variables results in a slightly stronger effect for women's labor force share and a slightly higher covariance estimate between the slope and intercept. An increase in the proportion of black employees is not significantly associated with gender segregation, while the proportion of Hispanic employees predicts a decrease in gender segregation.

In the full main effects model, model 5, we add the measure for industrial restructuring which is the proportion of employment in service industries for the commuting zone. An increase in the percentage of employment in service industries is predicted to decrease the intercept in gender segregation by .05 units for each one-unit increase in service employment. In other words, as the percentage of service industry jobs in a commuting zone increases, workplace gender segregation decreases. The addition of this variable weakens the effect of women's labor force share.

In model 6, we add interaction effects between time and women's labor force share and time and the proportion of employment in service sectors. This allows women's labor supply and industry to interact with time, or the slope in predicting segregation over time. However, the inclusion of these variables does little to improve the overall fit of the model. The interaction effect between women's labor supply and time fails to reach statistical significance. The interaction effect between the percentage of service sector establishments and time is positive and statistically significant, but the coefficient is small (.009).

Figure 2 illustrates the basic trend lines in the predicted levels of segregation based on our models. First, we see that there are still high levels of gender segregation despite decades of EEOC enforcement (which began with the passing of the Civil Rights Act of 1964), which prohibits discrimination in employment based on race and gender. Further, change has indeed been gradual, meaning women's gains have been slow. As we increased the number of variables to understand more variance within the data, we found that the trend lines become even more flat. Also, note that levels of segregation are much higher



**Figure 2** Predicted Trends in Gender Segregation, 1980–2005.

Data are EEO-1 Reports Collected from the U.S Equal Employment Opportunity Commission using the years 1980, 1985, 1990, 1995, 2000, and 2005 from 535 Commuting Zones.

than in the first model, which only controlled for time and average workplace size. In the next section, we will discuss these results substantively and determine how our hypotheses compare to the data.

### Discussion

Two explanations for women’s integration in workforces are changes in normative attitudes and industrial restructuring. Scholars argue that normative changes in attitude—whether spatially distributed or geographically invariant—create more opportunities for women (Blau and Ferber 1992; Kanter 1977; Stainback, Kleiner, and Skaggs 2016). Other scholars find that industrial restructuring, specifically growth in the service sector, creates more workplace opportunities for women (Alonso-Villar and del Río 2016; Cohen, Huffman, and Knauer 2009). This article finds mixed support for both normative and industrial restructuring explanations of gender segregation. We find a gradual

yet slow change in gender segregation, which is similar to previous work examining gender segregation in workplaces (Albeda 1986; Stainback and Tomaskovic-Devey 2012).

The first hypothesis, following Kanter's (1977) strength in numbers argument, suggests that increased percentages of women will lead to greater occupational access for women. There is support for this hypothesis in our data. In fact, women's share of the labor force, which we measure as the percentage of total employment that are women in the commuting zone, is indeed significant in all models. This suggests that as women increase as a proportion of the labor supply, greater integration within workplaces will occur. We realize our data limitation and that percentage of women in a commuting zone is an imperfect measure of changing attitudes about women's place in society. However, researchers have found that women's representation in the labor force and/or workplaces is related to normative change (Cotter et al. 1995). Some research has also begun to examine the effects of normative space, measured by state-level policies, albeit on women's access to management, suggesting an important avenue for future research (Kmec and Skaggs 2014). For instance, Kmec and Skaggs (2014) find that states with equal pay laws and states that ratified the Equal Rights Amendment have higher rates of women in lower management. However, state-level policies seem to have a lesser effect on higher level management positions, suggesting that normative change may have a quicker effect on women's access into the larger pool of lower management, but slower to weaken the glass ceiling (Kmec and Skaggs 2014).

In contrast, Blalock's competition approach (1967) suggests that women's increases in the labor force lead men to enact exclusionary tactics which decrease women's access to workplaces. From this approach, our second hypothesis predicted that the percentage of women in a labor market would be positively associated with segregation. We do not find support for this hypothesis; however, we note that the strength of the women's labor supply effect is slightly stronger when we account for racial variation within this supply and for racial minority men by adding the racial minority share of labor. This suggests there might be a level of competition between white women and racialized minority men. White women likely fare better in this competition. Gains in managerial representation through the EEOC, for instance, have disproportionately benefitted white women, as compared racialized minority men and women (Stainback and Tomaskovic-Devey 2012; Taylor 2010). Additionally, compared to white women in 2016 and 2017, black and Hispanic women still earned only 82% and 75% as much, respectively (Hegewisch and Williams-Baron 2017). In addition, black men and women are segregated in lower status jobs when compared to white women, and especially when compared to white men (Mintz and Krymkowski 2010). Further, black men and women are

segregated through different mechanisms of gendered racism (Essed 1991; Wingfield Harvey 2007). Future research should further examine potential competition between white women and different racialized minorities as it affects workplace segregation in labor markets.

Next, we turn to our third hypothesis concerning industrial restructuring. Many researchers have commented on the impact of service industry growth for women's occupational attainment (Abrahamson and Sigelman 1987; Singelmann and Browning 1980; Lorence 1992; Charles and Grusky 2006). This hypothesis predicts that the proportion of total employment found in service industries is negatively associated with segregation. We find support for this hypothesis in our data. Yet, given our results, we have reason to agree with Cotter et al. (1995) assertion that normative attitudes account for a large proportion of women's greater integration in workplaces. While both the percentage of workplaces in the service industry and the percentage of women in a labor market reduce the index of dissimilarity, the percentage of women in a labor market predicts a larger negative change than the percentage of workplaces in the service sector.

Prior literature disagrees on whether normative change or industrial restructuring has had a greater effect on segregation. Based on prior research (Cohen and Huffman 2003; Cotter et al. 1995; Reskin1993), we expected these effects to be interrelated and happening concurrently. We expected that there was a relationship between increased industrial restructuring and increased demand for women's labor. Consistent with our fourth hypothesis, the effect of women's labor force share weakens when we add the proportion of employment in the service industry, suggesting a relationship between women's entrance into the labor force and growth in the service sector.

Growth in the service sector provides jobs for women in an industry that is much more integrated than non-service industries even shortly after the passage of the Civil Rights Act. In other words, the normative climate of the service industry was already one that was accepting of women. However, the interaction effect between service sector and time suggests that the impact on segregation may be weakening across time. More recent research supports this finding as both Goodman (2001) and Ilg (2006) find uneven growth within the service sector, with some industries gaining employment and others losing employment between 2000 and 2005. Additionally, Ilg (2006) describes massive downsizing in manufacturing for men and women, but especially for men. This downsizing could, in effect, result in greater integration in manufacturing.

Women fared better in terms of service sector employment growth, which likely results in some service industries becoming more dominated by women, and thus, more segregated. Our findings for EEO-1 reporting workplaces illustrate the consequences of these trends for segregation. In short, these substantial

changes in the industrial makeup in the United States greatly reduced the overall effect of industry on gender segregation. Further, in terms of women's overall progress in the workforce, the service industry is, generally, associated with low-wage, low-status work which has few or limited benefits or opportunities for advancement (Harlan and White Berheide 1994; Jacobs and Padavic 2015; Lorence 1992).

### Conclusion

How do we, as a society, define progress? Is it women's greater labor force share? Is it decreasing levels of segregation in some industries or greater integration in *all* industries? In this paper, we assess workplace segregation through/in relation to women's progress. Prior research has offered several explanations for women's progress and decreases in segregation. This past research has often relied on occupation-level data collected from individuals that is void of social contexts. Explanations of this gradual decline in segregation include normative change explanations and industrial restructuring. A starting point in assessing these explanations could include looking at national trends while controlling for labor market, but this is only a beginning. Normative change and industrial restructuring occur in local labor markets, but they also occur because workplaces respond to an industrial or normative climate that is progressive or perhaps less progressive. Our data allow us to examine these explanations at the local labor market level, within commuting zones, but also basing this examination on workplace-level data.

In this paper, we have examined these explanations using workplaces across time, geographic space, and industry. Proponents of the normative change explanation argue that women's greater entrance into the labor force and therefore becoming a larger proportion of the labor force would create greater access to all occupations. Whether it is through normative change caused by women "proving" themselves or sheer strength in numbers, this would lead to progress. We do find support for this argument. Our findings also support the industrial restructuring explanation that the substantial growth that has occurred in the service sector has created incredible opportunities for women. In fact, this increased demand in service industries no doubt absorbed the dramatic increases of women entering the labor force as our findings show considerable overlap when we combine both measurements for both explanations in our models.

This paper contributes to the literature on workplace inequality and growing literature on space through increasing our understanding of how normative and industrial space influence segregation. However, this is an area of inquiry that future research should explore further. In this paper, we have only looked at one outcome, gender segregation. This is only one measure of workplace

inequality and as such, is an incomplete picture of progress. The residential segregation literature, which is far more advanced in theorizing space, often uses measures for segregation and isolation. While the two are certainly related to one another, isolation is often seen as the result of purposeful action of people in power to maintain a boundary between them and less powerful others (Acker 2006; Baunach 2002; Massey and Denton 1988). Isolation is clearly a process of exclusion meant to protect privilege. Women's concentration in certain industries certainly suggests this is another avenue for future research. Further, our current focus on gender has lacked an intersectional analysis, but our future work will center on intersectional workplace inequality.

Often researchers note the importance of space and even spatial variability. Different types of space, as we have shown here, affect workplace inequality. Women's increases in employment and the growth of the service sector reflect the overlapping effects of normative and industrial spaces. In fact, these changes were dependent upon one another. However, temporal space is also important, as we find the strength of these effects decreases over time. While we have examined normative and industrial spaces, our analysis also builds on prior literature on spatial inequality by adding workplaces to our conceptualization of space and to predict yet another spatial phenomenon: segregation. Space does matter, and researchers would do well to further specify and conceptualize spatial relations and how different types of spatial relations condition and produce workplace inequalities.

#### ENDNOTES

\*Please direct correspondence to Tiffany Taylor, Department of Sociology at Kent State University, P.O. Box 5190, Kent, OH 44242-0001, USA; phone: 330-672-9474; e-mail: ttaylor36@kent.edu [Corrections added on May 7, 2019, after first online publication: University location for Tiffany Taylor was changed from "Stark" to "Kent"; university location for Katrina Bloch was changed from "Kent" to "Stark."]

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