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Regional Effects on Female Employment

Mohammad Ashraf, Ph.D.
Assistant Professor of Economics
School of Business
The University of North Carolina at Pembroke
Phone: (910) 521-6464
Fax: (910) 521-6750
Email: mohammad.ashraf@uncp.edu
Web: www.uncp.edu/home/ashraf

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Abstract

Studies show that male-dominated occupations typically pay higher salaries than female-dominated occupations. The study of factors affecting female presence in male-dominated occupations should, at least partly, explain lower financial status of women. This study investigates the effects of age, marital status, number of children, and education on the probability of female presence in a traditionally male-dominated occupation. We also investigate if these factors are region-sensitive. Using 1% Public Use Micro Data Samples 1990 and 1% Public Use Micro Data Samples 2000 data, the results of this study indicate that being married with husband present decreases the probability of female presence in traditionally male-dominated occupations, whereas college education has changed from being a positive effect in the 1990 data to a negative effect in the 2000 data. Furthermore, there are significant regional variations with regard to the effects of these factors.

JEL: J71; J31

1. Introduction and Overview

One of the most prominent features of the labor market is its discrimination against minorities and women. In the U.S., numerous efforts have been made to eliminate labor market discrimination. In this regard the first step towards reforms was the formation of the Presidential Commission on the Status of Women in 1961. Shortly thereafter the Equal Pay Act of 1963 was passed. It was followed by Title VII of the Civil Rights Act of 1964, and the Executive Order 11375 in 1967, which prohibited discrimination in employment. In the field of education Title IX of the Education Amendments of 1972, which barred sex discrimination in federally assisted educational programs, had far reaching effects. Other significant legislative acts that followed include formation of the Equal Employment Opportunity Commission and amendments to the act in 1972 and 1978 (Randor, Strasburg & Lipman-Blumen, 1982; Ethington, 1988; Ferber and Lowery, 1976).

The evaluation of the impact of these legislative acts has been the topic of many studies. Relying on time series analysis approach and using data for the years between 1948 and 1970, Richard Freeman found that government legislation has been an important cause of the African-American economic progress in the labor market (Freeman, 1973). Testing the effectiveness of the affirmative action programs, Jonathan Leonard found that these programs affected the employment of African-American males, African-American females and white females positively (Leonard, 1984). A number of studies have examined the impact of these laws on the earnings of women. The results indicate a positive effect. However the degree of impact differs across ethnic groups

(Leonard, 1989; Blau & Kahn, 2000). Recent literature on labor market discrimination also looks at the effects of sexual orientation (Weichselbaumer, 2003).

All these results did not go without criticism. Numerous studies suggested that these gains in employment and earnings were due to factors other than the impact of these legislative acts (Heckman, 1978). Some studies suggested that affirmative action programs might lead to inefficient resource allocation (Griffin, 1992). Using a theoretical approach towards labor market discrimination, Adamson and Fausti (2004) show that asymmetry of information about worker characteristics may result in reduced marginal as well as average worker productivity. This in turn may lead to wage and employment disparity. In other words, Adamson and Fausti argue that wage and employment disparities are generated through market outcomes rather than discrimination.

Even after all these legislative acts, labor market discrimination is still present along race as well as gender lines (Darity and Mason, 1998). Almost all areas of the labor market appear to be segregated. Dickens and Lang (1985) found that females and minorities were primarily hired in secondary labor markets. Mainly relying on National Center for Education Statistics and the American Council on Education data, Randor, Strasburg and Lipman-Blumen (1982) found that women were still earning degrees in female intensive and lower status fields. The study also found an inverse relationship between the level of degree and the percentage of women earning degrees in that respective field. Another finding of the study was the enrollment of women on a part-time basis, which in turn delayed their labor market entrance.

Although the overall labor force participation rate of females has increased from 20.6 percent in 1900 to 57.9 percent in 1992 (Economic Report of the President, 1993),

this increased share has been accompanied by a relatively modest increase in their relative economic standing compared with their male counterparts. Studies show that although the male-female wage gap has been declining over the years, females still earn only about 77 percent of their male counterparts (Blau & Kahn, 2000).

Research literature considers occupational segregation as one of the major factors creating this male-female earnings differential (Darity and Mason, 1998; Heckman, 1978; Ferber & Speath, 1984; Sanborn, 1964). Some studies provide evidence that this division of occupations is due to self-selection (Desai & Waite, 1991; Fleisher and Rhodes, 1979). According to these studies women go for occupations where there are fewer penalties for leaving the labor force due to child bearing and rearing, and provide relative flexibility of schedules. Other studies have rejected these hypotheses. Ferber and Kordick (1978) conducted a study about sex differentials in the earnings of Ph.D.s. Their results led them to reject the proposition that lower earnings of female Ph.D.s were caused by their own voluntary decisions.

While conducting occupational segregation analysis most of the studies are focused on the labor market discrimination aspect of it. A few studies paid attention to educational and training structure and how different kinds of academic training might lead females into different labor market fields (Duncan and Hoffman, 1979; Ethington, 1988; Randor, Strasburg, Lipman-Blumen, 1982).

Whether the wage and employment level differentials are the manifestations of market outcomes or discrimination, the fact remains that females and minorities earn lower wages than their white male counterparts, and that the labor market is segregated. Because of the resulting production inefficiencies, wage and employment disparities, and

segregated labor markets have major consequences for an economy as a whole, and certain groups in particular. These concerns prompt further investigation of the issue.

Since male-dominated occupations typically pay higher salaries than female-dominated occupations (Darity and Mason, 1998; Blau & Kahn, 2000), the study of structural and institutional factors that affect female presence in male-dominated occupations should, at least partly, explain lower female financial status and employment disparities. However, to our knowledge, few studies address the role of factors like age, marital status, number of children, education, etc. in determining the probability of female presence in a traditionally male-dominated occupation. We define an occupation to be traditionally male-dominated where at least 75 percent of the total workforce is male. These occupations include, but not limited to, doctors, lawyers, scientists, college and university professors, construction workers, etc.

To be more specific, in this study we focus on the employment disparities faced by women and investigate the role of age, number of children, education and marital status on the probability of female presence in male-dominated occupations. We also investigate if the effects of these factors on female presence in male-dominated occupations are region sensitive. We use 1990 and 2000 Census data to figure out the impact of these factors on the female presence in male-dominated occupations. We also compare the results of these two datasets to see the changing roles of these variables over time. This may help add to our understanding of the labor market disparities faced by females.

In order to check regional sensitivity we divide our dataset into four regions: Midwest; Northeast; South; and West. In order to divide the dataset into four regions, we

follow the Bureau of Labor Statistics. The states included in each region are provided in Table 1.

Table 1: States Included in Each Region

Midwest	Northeast	South	West
Illinois	Connecticut	Alabama	Alaska
Indiana	Maine	Arkansas	Arizona
Iowa	Massachusetts	Delaware	California
Kansas	New Hampshire	Florida	Colorado
Michigan	New York	Georgia	Hawaii
Minnesota	New Jersey	Kentucky	Idaho
Missouri	Pennsylvania	Louisiana	Montana
Nebraska	Rohde Island	Maryland	Nevada
North Dakota	Vermont	Mississippi	New Mexico
Ohio		North Carolina	Oregon
South Dakota		Oklahoma	Utah
Wisconsin		South Carolina	Washington
		Tennessee	Wyoming
		Texas	
		Virginia	
		Washington, DC	
		West Virginia	

The rest of the paper is organized as follows: section 2 presents the model used in this paper; section 3 explains the data; section 4 presents and discusses the results and section 5 concludes the paper.

2. Model

In this study we use a logit model. The dependent variable is the odds of a female's presence in male-dominated occupations. The complete model tested takes the following form:

$$\ln \Phi = \beta_0 + \sum_{i=1}^{n} \beta_i X_i$$

Where Φ represents the odds of a female's presence in a traditionally male dominated occupation, βs are the coefficients to be estimated, and Xs are the independent variables. A list of the independent variables included in the model is presented in Table 2. The definitions of the variables are according to the Census documentation.

Table 2: List of Variables

Variable Name	Definition
AGE	Age of the individual. Range: 1 to 89 years.
AGE^2	Age squared.
CHILD_6	With own children under 6 years only.
CHILD_17	With own children ages 6 to 17 only.
SCHOOL_H	High school graduate.
SCHOOL_4C	Bachelor's degree.
SCHOOL_GS	Master's degree, professional degree or doctorate degree.
MAR_A	Married, spouse absent.
MAR_W	Widowed.
MAR_D	Divorced.
MAR_S	Separated.
MAR_N	Never married.
C17_AGE	CHILD_17 × AGE
S4C_AGE	SCHOOL_4C × AGE
SGS_AGE	SCHOOL_GS × AGE

3. Data

In this study first we used the Census 1990 1% Public Use Micro Data Samples (PUMS 1990) and the Census 2000 1% Public Use Micro Data Samples (PUMS 2000) for the US. That is, forty-eight contiguous states along with District of Columbia, Alaska, Hawaii and Puerto Rico. Then we dichotomized the dataset into four regions: Midwest; Northeast; South; and West. The states included in each region are presented in Table 1. We used data for females of all races working at least forty hours per week. The data source is the US Census Bureau. The URL is: www.census.gov.

4. Results and Discussion

In this section we present and discuss the results of the study. Subsection 4.1 presents and discusses the results using PUMS 1990 and PUMS 2000 data for the US, and subsection 4.2 presents and discusses the results using PUMS 1990 and PUMS 2000 data for the four regions.

We estimated various specifications of the model. The variables included in this study are presented in Table 2. This specification of the model was selected using Akaiki's Information Criteria (AIC) and Schwartz's Bayesian Information Criteria (SIC). Coefficient estimates using PUMS 1990 and PUMS 2000 for the US are presented in Table 3 and coefficient estimates using PUMS 1990 and PUMS 2000 for the four regions are presented in Tables 4 through 7.

In Tables 3 through 7, column [1] lists the names of the variables used in the model, column [2] presents the β estimates using PUMS 1990, column [3] provides the standardized β estimate using PUMS 1990, column [4] presents the odds ratio estimates using PUMS 1990, column [5] presents the β estimates using PUMS 2000, column [6] provides the standardized β estimates using PUMS 2000, and column [7] presents the odds ratio estimates using PUMS 2000.

The control group for CHILD_6 (females with own children under six-years old) and CHILD_17 (females with own children from six- to seventeen-years old) are the females with no children. The control group for SCHOOL_H (females who are high school graduates), SCHOOL_4C (females who are four-year college graduates), and SCHOOL_GS (females who have a masters or higher or professional degrees) are the females who have less than high school education. The control group for MAR_A

(females who are married but spouse is absent), MAR_W (females who are widowed), MAR_D (females who are divorced), MAR_S (females who are separated), and MAR_N (females who were never married) are the females who are married and their spouses are present.

We also included three interaction terms: C17_AGE (females with own children from six- to seventeen-years old and age of the female); S4C_AGE (females who are four-year college graduates and age of the female); and SGS_AGE (females who have a masters or higher or professional degrees and age of the female).

Along with the "regular" regression β estimates and the odds ratios, Tables 3 through 7 also present the standardized β estimates. Standardized β estimates help determine the relative importance of a variable in a multiple regression model.

4.1 Results Using PUMS 1990 and PUMS 2000 Data for the US

In this subsection we present and discuss the results using PUMS 1990 and PUMS 2000 datasets for the US. The coefficient estimates are presented in Table 3.

The results present a very interesting picture. The results indicate that age has a positive impact on the probability of female presence in traditionally male-dominated occupations, but at a decreasing rate. If we use age as a proxy for experience, the implication is that experience increases the probability, but at a decreasing rate.

Results using PUMS 1990 data point out that having children under six-year old does not have a negative impact on the probability of female presence in a male-dominated occupation. The coefficient, although negative, is statistically insignificant. However, we find a change taking place during the 1990s; using PUMS 2000 data the

results indicate that having children under six-year old has a statistically significant negative impact and the odds of female presence decrease significantly.[1]

The results of both datasets indicate that the odds of female presence in a male-dominated occupation increase significantly if a female has children from six- to seventeen-year old. This may indicate the return of females to the labor market after the children have reached the school age. This may also indicate the higher financial burden that a family faces once children reach a certain age, forcing females to go for relatively high-paying occupations.

Table 3: Coefficient Estimates Using 1% PUMS 1990 and 1% PUMS 2000 Data
Region: USA

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Variable Name	β Est_90	STB_90	[p/1-p]_90	β Est_00	STB_00	[p/1-p]_00
Intercept	-2.71[a]	-	-	-3.74[a]	-	-
AGE	0.041[a]	0.098[a]	1.01	0.059[a]	0.393[a]	1.06
AGE^2	-0.0002[a]	-0.116[a]	1.0	-0.001[a]	-0.411[a]	0.99
CHILD_6	-0.027	-0.004	0.97	-0.138[a]	-0.021[a]	0.87
CHILD_17	0.488[a]	0.111[a]	1.63	0.23[a]	0.054[a]	1.26
SCHOOL_H	0.087[a]	0.022[a]	1.09	0.164[a]	0.04[a]	1.78
SCHOOL_4C	0.622[a]	0.113[a]	1.86	-0.233[a]	-0.049[a]	0.79
SCHOOL_GS	2.379[a]	0.339[a]	10.8	-0.078	-0.013	0.93
MAR_A	0.238[a]	0.017[a]	1.27	0.321[a]	0.025[a]	1.38
MAR_W	0.089[b]	0.01[b]	1.09	0.149[a]	0.014[a]	1.16
MAR_D	0.083[a]	0.016[a]	1.09	0.2[a]	0.04[a]	1.2
MAR_S	0.038	0.004	1.04	0.17[a]	0.016[a]	1.19
MAR_N	0.122[a]	0.028[a]	1.13	0.205[a]	0.047[a]	1.23
C17_AGE	-0.014[a]	-0.129[a]	0.99	-0.008[a]	-0.073[a]	0.99
S4C_AGE	0.026[a]	-0.197[a]	0.97	-0.002	-0.018	0.99
SGS_AGE	-0.051[a]	-0.312[a]	0.95	-0.008[a]	-0.057[a]	0.99

Significance Level: [a] = 1%, [b] = 5%, [c] = 10%

Using PUMS 1990 we find that education affects the probability of female presence in male-dominated occupations positively. Notice the size of the odds ratio estimate of having a masters or higher or professional degrees in column [4]: it implies

[1] An odds ratio of 1 implies a 50-50 chance of either outcome.

that a female having a masters or higher or professional degrees has about 11-times higher odds of being in a male-dominated occupation compared with the control group—females without a high school diploma. A female with a masters or higher or professional degrees has about ten-times higher odds of being present in a male-dominated occupation compared with a female who has just a four-year college degree.

This does not seem to be the case when we use PUMS 2000 data. Having a four-year college degree actually has a negative impact on the probability of female presence in male-dominated occupations, and having a master's or professional or higher degree does not affect the probability significantly.

This result is rather surprising. One would expect higher level of education to pay off in gaining access to a male-dominated occupation. However, this does not seem to be the case and the results contradict with the PUMS 1990 data results where having a four-year college or higher level degrees have rather large premiums in terms of the odds of being in a male-dominated occupation. One explanation may be that the majority of females in this sample are in those male-dominated occupations that do not value higher level of education.

However, one gets a deeper understanding of the phenomenon by looking at the descriptive statistics. Comparing the descriptive statistics of PUMS 1990 with PUMS 2000, we find that in the 1990 data females who were in male-dominated occupation, about 10 percent of them had masters or higher or professional degrees. This percentage dropped to only 6 percent in the 2000 data. The decline in the percentage of females carrying a high school diploma or a bachelor's degree is not that significant. In the 1990 data about 34 percent of females who were in male-dominated occupations were high

school graduates and about 11 percent had a bachelor's degree as compared with about 33 percent and 12 percent, respectively, in the 2000 data. This means that in the 1990 dataset, more females had the "required" human capital for the available jobs as compared with the 2000 dataset. All else equal, the more women there are with the required characteristics, the higher the odds of women being hired for the job, and this is exactly what we find in the regression results.

Descriptive statistics also show that in the 1990 data, about 8.8 percent of the females who were working full-time were working in male-dominated occupations. However in the 2000 dataset, only 7.4 percent of the females who were working full-time, were working in male-dominated occupations.

Why did the percentage of women, who were working full-time, dropped from 8.8 percent in the 1990 dataset to 7.4 percent in the 2000 dataset? The answer to this question may be the changes in female preferences towards labor market due to the unprecedented prosperity of the mid to late 1990s. Because of the increased household wealth women opted for female-dominated occupations, which tend to have relatively "flexible" schedules, as suggested by some studies (Desai & Waite, 1991, for instance). These relatively higher levels of household wealth during the 1990s may also have led women not to seek masters or higher or professional degrees.

Another very interesting result is the impact of marital status. Females, who are married with spouse present, have lower likelihood of being in a male-dominated occupation than either of the other categories of marital status, except females who are separated in PUMS 1990 data. For this category the coefficient, although positive, is not significant.

To give a specific example using the PUMS 1990 data results, a forty year old female who is married with spouse present, has children from six- to seventeen-years old and is a high school graduate, has an implied probability of being present in a traditionally male-dominated occupation of about 0.2. A female with similar characteristics, except that she is divorced, has an implied probability of being present in a traditionally male-dominated occupation of about 0.22. That is, her probability increases by 10 percent.[2]

4.2 Results Using PUMS 1990 and PUMS 2000 Data at the Regional Levels

This subsection presents and discusses the regression results using PUMS 1990 and PUMS 2000 datasets at the regional level. The results are presented in Tables 4 through 7. The layout of the tables and the variables included in the model are the same as in the case of US level data.

4.2.1 Midwest

The results for the Midwest, presented in Table 4, show that age was not a statistically significant factor in affecting the probability of female presence in male-dominated occupations during the 1980s (PUMS 1990). However during the 1990s (PUMS 2000) age became a significant factor in determining the probability of female

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[2] In order to calculate the probability, please recall that $\ln \Phi = \ln\left(\frac{p}{1-p}\right)$; where p is the probability of female presence in a male-dominate occupation. Taking the exponent and plugging-in the coefficient estimates for a female with the characteristics presented in the above example with spouse present give us: $\frac{p}{1-p} = e^{-1.373}$. Solving for p we get 0.2.

presence. The results show that age has a positive impact, but at a decreasing rate. If we proxy experience by age, the implication is that experience started to matter.

Table 4: Coefficient Estimates Using 1% PUMS 1990 and 1% PUMS 2000 Data
Region: Midwest

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Variable Name	β Est_90	STB_90	[p/1-p]_90	β Est_00	STB_00	[p/1-p]_00
Intercept	-2.51[a]	-	-	-3.53[a]	-	-
AGE	0.004	0.03	1.00	0.05[a]	0.34[a]	1.05
AGE^2	-0.00	-0.03	1.00	-0.00[a]	-0.35[a]	1.0
CHILD_6	-0.07	-0.01	0.93	-0.04	-0.01	0.96
CHILD_17	0.48[a]	0.11[a]	1.61	0.28[c]	0.07[c]	1.33
SCHOOL_H	0.20[a]	0.05[a]	1.22	0.24[a]	0.06[a]	1.27
SCHOOL_4C	0.71[a]	0.14[a]	2.04	-0.33[b]	-0.07[b]	0.72
SCHOOL_GS	2.66[a]	0.36[a]	14.37	-0.29	-0.04	0.75
MAR_A	0.23[b]	0.01[b]	1.25	0.52[a]	0.03[a]	1.69
MAR_W	-0.06	-0.01	0.94	0.16[b]	0.01[b]	1.17
MAR_D	0.11[a]	0.02[a]	1.12	0.19[a]	0.04[a]	1.21
MAR_S	0.23[a]	0.02[a]	1.26	0.25[a]	0.02[a]	1.28
MAR_N	0.07[c]	0.01[c]	1.07	0.19[a]	0.04[a]	1.21
C17_AGE	-0.01[a]	-0.12[a]	0.99	-0.01[b]	-0.08[b]	0.99
S4C_AGE	-0.03[a]	-0.24[a]	0.97	-0.00	-0.02	1.0
SGS_AGE	-0.06[a]	-0.38[a]	0.94	-0.01	-0.04	0.99

Significance Level: [a] = 1%, [b] = 5%, [c] = 10%.

The impact of college or higher levels of education and marital status are similar to the US level datasets. That is, four-year college and master's or professional or higher degrees affect the probability of female presence in a male-dominated occupation positively using PUMS 1990, but the coefficients become negative using PUMS 2000 data. However being married, with spouse present, decreases the odds of female presence in male-dominated occupations.

4.2.2 Northeast

The results for the Northeast region are presented in Table 5. The coefficient estimates indicate that age affects the probability of female presence in male-dominated

occupations positively, but at a decreasing rate. Also the presence of children from six- to seventeen-year old increases the odds significantly. This is true whether we use PUMS 1990 or PUMS 2000.

Table 5: Coefficient Estimates Using 1% PUMS 1990 and 1% PUMS 2000 Data
Region: Northeast

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Variable Name	β Est_90	STB_90	[p/1-p]_90	β Est_00	STB_00	[p/1-p]_00
Intercept	-2.92[a]	-	-	-4.2[a]	-	-
AGE	0.02[b]	0.13[b]	1.02	0.07[a]	0.48[a]	1.08
AGE^2	-0.00[b]	-0.13[b]	1.0	-0.00[a]	-0.49[a]	1.0
CHILD_6	0.06	0.01	1.07	-0.01	-0.00	0.99
CHILD_17	0.83[a]	0.18[a]	2.3	0.61[a]	0.14[a]	1.84
SCHOOL_H	0.09[a]	0.03[a]	1.09	0.17[a]	0.04[a]	1.19
SCHOOL_4C	0.61[a]	0.13[a]	1.84	-0.37[b]	-0.08[b]	0.69
SCHOOL_GS	2.41[a]	0.39[a]	11.15	-0.14	-0.03	0.87
MAR_A	0.1	0.01	1.1	0.19[c]	0.02[c]	1.21
MAR_W	0.11	0.01	1.11	0.1	0.01	1.1
MAR_D	0.05	0.01	1.05	0.22[a]	0.04[b]	1.25
MAR_S	-0.07	-0.01	0.93	0.17[b]	0.02[b]	1.19
MAR_N	0.05	0.01	1.06	0.21[a]	0.05[a]	1.24
C17_AGE	-0.02[a]	-0.2[a]	0.98	-0.02[a]	-0.15[a]	0.98
S4C_AGE	-0.02[a]	-0.18[a]	0.98	0.00	0.03	1.0
SGS_AGE	-0.05[a]	-0.32[a]	0.95	-0.00	-0.03	1.0

Significance Level: [a] = 1%, [b] = 5%, [c] = 10%.

As in the case of the US and Midwest datasets, the impact of four-year college, or master's or professional or higher degrees turns negative as we switch from PUMS 1990 to PUMS 2000.

Marital status did not affect the likelihood of female presence in male-dominated occupations during the 1980s (PUMS 1990). However this trend changes as we move into the 1990s. Using PUMS 2000 we find females who are married, with spouse present, have lower likelihood of being in male-dominated occupations as compared with the rest of the marital status categories, except widow. In this category, the coefficient, although positive, is insignificant.

4.2.3 South

The results using the data for the South are presented in Table 6.

Table 6: Coefficient Estimates Using 1% PUMS 1990 and 1% PUMS 2000 Data
Region: South

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Variable Name	β Est_90	STB_90	[p/1-p]_90	β Est_00	STB_00	[p/1-p]_00
Intercept	-2.88[a]	-	-	-3.80[a]	-	-
AGE	0.02[a]	0.14[a]	1.02	0.06[a]	0.41[a]	1.06
AGE^2	-0.00[a]	-0.16[a]	1.0	-0.00[a]	-0.44[a]	1.0
CHILD_6	-0.03	-0.00	0.97	-0.24[a]	-0.04[a]	0.79
CHILD_17	0.49[a]	0.11[a]	1.63	0.18	0.04	1.19
SCHOOL_H	0.06[b]	0.02[b]	1.06	0.14[a]	0.04[a]	1.15
SCHOOL_4C	0.69[a]	0.13[a]	1.99	-0.08	-0.02	0.93
SCHOOL_GS	2.12[a]	0.29[a]	8.33	-0.09	-0.01	0.92
MAR_A	0.27[a]	0.02[a]	1.31	0.41[a]	0.03[a]	1.5
MAR_W	0.14[b]	0.02[b]	1.15	0.14[b]	0.01[b]	1.15
MAR_D	0.11[a]	0.02[a]	1.11	0.25[a]	0.05[a]	1.29
MAR_S	0.05	0.01	1.05	0.21[a]	0.02[a]	1.24
MAR_N	0.23[a]	0.05[a]	1.25	0.27[a]	0.06[a]	1.31
C17_AGE	-0.02[a]	0.14[a]	0.98	-0.01[b]	-0.06[b]	0.99
S4C_AGE	-0.03[a]	0.23[a]	0.97	-0.01[b]	-0.06[b]	0.99
SGS_AGE	-0.05[a]	-0.28[a]	0.95	-0.01[b]	-0.07[b]	0.99

Significance Level: [a] = 1%, [b] = 5%, [c] = 10%.

As in the other results, age has a positive impact on the likelihood of female presence in male-dominated occupations, but at a decreasing rate. Children, ages six- to seventeen-year old carried a positive significant coefficient using the PUMS 1990 data. However, using the PUMS 2000 data the coefficient estimates are not significant.

Four-year college degrees and master's or professional or higher degrees had a significant positive impact using PUMS 1990, but not using PUMS 2000. In the case of PUMS 2000, the coefficient estimates are insignificant.

As in the case of the other data results presented so far, being married, with spouse present, does not bode well for women in terms of the likelihood of being present in male-dominated occupations. This is true for both datasets.

4.2.4 West

The results using the data for the West are presented in Table 7.

Table 7: Coefficient Estimates Using 1% PUMS 1990 and 1% PUMS 2000 Data
Region: West

[1]	[2]	[3]	[4]	[5]	[6]	[7]
Variable Name	β Est_90	STB_90	[p/1-p]_90	β Est_00	STB_00	[p/1-p]_00
Intercept	-2.46[a]	-	-	-3.59[a]	-	-
AGE	0.01	0.07	1.01	0.06[a]	0.37[a]	1.06
AGE^2	-0.00[a]	-0.12[a]	1.00	-0.00[a]	-0.4[a]	1.0
CHILD_6	-0.06	-0.01	0.95	-0.18[a]	-0.03[a]	0.84
CHILD_17	0.26	0.06	1.30	-0.05	-0.01	0.96
SCHOOL_H	-0.03	-0.01	0.97	0.08[b]	0.02[b]	1.08
SCHOOL_4C	0.63[a]	0.13[a]	1.87	-0.18	-0.04	0.84
SCHOOL_GS	2.52[a]	0.36[a]	12.49	0.2	0.03	1.22
MAR_A	0.30[a]	0.02[a]	1.36	0.13	0.01	1.14
MAR_W	0.15[c]	0.02[c]	1.17	0.2[b]	0.02[b]	1.22
MAR_D	0.05	0.01	1.05	0.12[a]	0.02[a]	1.12
MAR_S	0.02	0.00	1.03	0.09	0.01	1.1
MAR_N	0.1[b]	0.02[b]	1.10	0.15[a]	0.03[a]	1.16
C17_AGE	-0.01[c]	-0.09[c]	0.99	-0.00	-0.01	1.0
S4C_AGE	-0.02[a]	-0.18[a]	0.98	0.00	0.01	1.0
SGS_AGE	-0.05[a]	-0.31[a]	0.95	-0.01[b]	-0.07[b]	0.99

Significance Level: [a] = 1%, [b] = 5%, [c] = 10%.

The coefficient estimates indicate that age has a positive impact on the probability of female presence in male-dominated occupations, but at a decreasing rate using PUMS 2000. Using PUMS 1990, the coefficient of AGE, although positive, is insignificant. The presence of any age children does not seem to matter using PUMS 1990, but using PUMS 2000, the presence of children under six-year old does have a negative impact.

Four-year college and higher level education carried positive significant coefficients using PUMS 1990, but insignificant coefficients using PUMS 2000 with varying signs. Another coefficient value that is different in the case of the West is the coefficient signs and significance levels for the high school diploma. It had negative insignificant coefficients using PUMS 1990, but positive significant coefficients using

PUMS 2000. This change may reflect the changing job market conditions and requirements from the 1980s to the 1990s.

5. Conclusion

In this study we investigate if age, education level, number of children and marital status affect the probability of female presence in male-dominate occupations. We used 1% PUMS 1990 and 1% PUMS 2000 datasets for the US, as well as, for four census regions: Midwest; Northeast; South; and West. The results are rather interesting. There are significant differences among regions, as measured by the coefficient estimates, which probably reflect institutional and structural variations. However, on the overall, age affects this probability positively, but at a decreasing rate, and the presence of spouse lowers the probability of female presence in a male-dominated occupation. This is true for both data samples. However, college level education positively affected this probability in the 1990 dataset, but in the 2000 dataset college level education has a negative impact.

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