

# Regional Analysis of Female Age Earnings and the Gender Pay Gap in Scalable and Non-Scalable Professions



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## Abstract

The focus of this project is to analyze the gender pay gap in scalable and non-scalable professions in the Mid-West and the nation. Assumptions of the Becker Model of Discrimination and Nassim Nicholas Taleb's ideas of scalability and its affect on wage rates are the primary methods of analysis.

Using the Oxaca Decomposition to control for educational attainment and selecting specific occupations to control for occupational segregation, I will look at regional wage trends in the Mid-West compared to the national average in three separate occupations. The occupations include both scalable and non-scalable wage rates, and range from female to male dominated occupations.

The PUMS data set for 2002 will be the primary source with which I will do my analysis. The primary questions I will look to answer are: How does the Mid-West relate to the nation in each of the occupations? How does scalability affect the gender wage gap? How does the gender distribution affect the wage gap?

## Theory

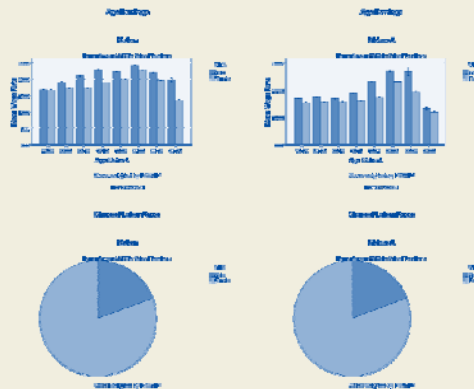
According to the Becker Model of Discrimination, if two groups of workers are equally productive and the wage rate for one is less than the wage rate for the other there will be occupational segregation as unbiased firms will always choose the lowest cost option. Using this as a framework, it would be reasonable to assume that female dominated occupations will have a lower base wage rate than other professions and the gender pay gap would be smaller due to reduced pure discrimination. Conversely, male dominated professions will have a larger gender pay gap than those that are female dominated or those that are close to gender parity.

Nassim Nicholas Taleb, in "The Black Swan," discusses the difference between scalable and non-scalable professions, which he calls "Extremistan" and "Mediocristan." The assumption he makes is that a large amount of variability in scalable professions creates "giants" and "dwarfs," a large concentration of the income in a very small percentage of the population. In non-scalable professions, however, there is a very small amount of variability in income distribution.

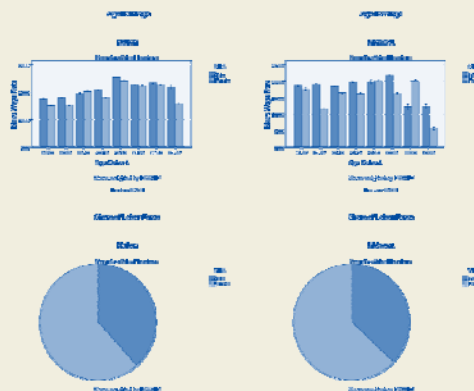
The Oxaca Decomposition factors out differences in human capital, that is educational attainment and occupational segregation, in order to focus on pure discrimination. The model used in this project assumes an educational attainment level of a Bachelor's Degree and reduces occupational segregation discrimination by focusing on three specific professions: Elementary and Middle School Teacher, Secondary School Teacher and Securities and Commodities Trader. The first two are non-scalable and range from strong female domination to weak male domination; the third is a male dominated scalable profession.

The project also looks at the Mid-West (Michigan, Indiana, Illinois, Wisconsin, Iowa and Minnesota) compared to the entire United States in order to determine the relationship of regional preference to gender discrimination. The assumption is that both the male and female wage rate will be lower in each occupation and there will be a larger gender wage gap throughout.

## Elementary and Middle School Teacher



## Secondary School Teacher



## Analysis and Conclusion

As expected from the Becker Model of Discrimination, the wage rate for elementary and middle school teachers was lower for both men and women, especially in the Mid-West, than that of secondary school teachers and commodities and securities traders.

When looking at scalability, there is a higher degree of variability in the wage rate both regionally and nationally with a fluctuating but generally large gender wage gap in securities and commodities sales compared to primary and secondary school teachers.

The Age Earnings Profiles for men and women do show a lower wage rate and higher gender wage gap in the Mid-West compared to the nation.

While causality cannot be determined from the methods used, the data appears to mirror the theoretical models.

- The data supports Gary Becker's assumption that firms who have a high proportion of female workers will have a lower wage rate and gender pay gap than that of firms with gender neutrality or a low proportion of female workers.
- Taleb's assumption that scalable income occupations yield a large number of low incomes with a small number of very high incomes appears to be supported by the wage distribution of securities and commodities sales.
- Also, controlling for human capital differences and occupational segregation a gender wage gap does exist throughout but increases as an occupation becomes more dominated by males.

## Securities / Commodities Sales

