The Hours We Work: Are They Occupationally Determined?

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For more information on the American Community Survey (ACS), see the following website: www.census.gov/acs.

The Importance of Work Hours

Why study work hours?

The hours we work impact:

- Career options, promotions, and earnings (Rosenfeld and Kalleberg 1990; Maume 1999).
- Health, well-being, and employer provided benefits (OECD 2002).
- Family responsibilities and work-family balance (Casper and Bianchi 2002; Brines 1993; Gornick and Heron 2006; Jacobs and Gerson 2004).
- Business productivity and costs (Berg et al. 2004).

Predictors of Work Hours

A variety of factors influence an individual's work hours, including work hour regulations, the occupation a person is in, and the individual's characteristics.

Work Hour Regulations
Workers in the United States operate in a context of few regulations on working hours. The Fair Labor Standards Act of 1938 (FLSA) provides limited guidelines that apply to most, but not all, of the workforce. The FLSA requires overtime pay for non-exempt workers after 40 hours of work in a given week but does not establish a limit on the number of hours individuals age 16 and over can work in a week (U.S. Department of Labor 2009). Exceptions are regulations on members of certain occupations, such as Resident Physicians (state law) and Pilots, due to public safety concerns (American Medical Student Association 2009; Federal Aviation Administration 2009).

Occupational Culture
Popular media and academia describe occupations as having a distinct "subculture" (Kwantes and Boglarsky 2004; Thornton 2009). This subculture refers to supposedly unique occupational work environments, expectations, and sense of community among its members. Individuals may self-select into occupations, based on preferences or available options, further increasing occupational homogeneity (Kwantes and Boglarsky 2004; Weeden and Grusky 2005). One plausible result of this occupational standardization is work hour standardization within occupations.

Individual Characteristics
Researchers show that work hours vary by individual characteristics, such as: educational attainment (Baxter and Kane 1995), the presence of children in the household (Jacobs and Gerson 2001), sex (Bianchi and Mattingly 2004), marital status (Bureau of Labor Statistics 2008), and earnings (Niemesh 2006). What is not shown in these studies is whether individual characteristics maintain a strong correlation with work hours even after controlling for a person's detailed occupation.

Research Questions

Prior research has examined work hour variation by occupation and by individual characteristics. However, these factors are usually examined in isolation, even though they interact with one another in complex ways. Work hour variance may be a result of occupational requirements or because similar individuals work in the same occupations. I examined these questions in this study:

1. Are work hours more similar among members of the same occupation or among individuals with similar characteristics?

2. Are there interaction effects between occupation and the characteristics of the individuals in the occupation?

Data

Data Source
First 3-year Public Use Microdata Sample (PUMS) file of the American Community Survey (ACS). The ACS 3-year PUMS file provides detailed demographic, social, economic, and housing data obtained from approximately 5.8 million households over a three year period (2005-2007).

The ACS 3-year PUMS file is ideal for the study of occupation because it provides a large enough sample to analyze 92 detailed occupations* with statistical precision. As shown in studies of the wage gap (Treiman and Hartmann 1981), group differences are most evident and more fully explained at the most detailed levels of occupation.

Population Size and Universe
Approximately 132.7 million weighted individuals in the employed civilian labor force who are between the ages of 18 and 64 and report at least one hour of work in a "usual" week. This age range was selected to cover what are typically post-high school and pre-retirement ages.

* The occupational groupings used in these analyses correspond to the groupings in ACS table B24010 "Sex by Occupation for the Civilian Employed Population 16 Years and Over" and are available at http://factfinder.census.gov.

Variables

Dependent Variable:
- Number of hours worked in a "usual" week, top coded to 79 hours per week (1 to 79 hours).

Independent Variables:
- Age
- Sex
- Presence and age of children in the household
- Marital status
- Race
- Ethnicity
- Educational attainment
- School enrollment
- Class of worker
- Earnings
- Industry
- Occupation

I divided variables into "demographic characteristics" and "job characteristics" for analytical purposes. Demographic characteristics refer to characteristics that describe the individual or his or her household, such as age, sex, presence of children, marital status, race, ethnicity, educational attainment, and school enrollment. Job characteristics refer to characteristics that describe the individual's job, such as class of worker, earnings, industry, and occupation.

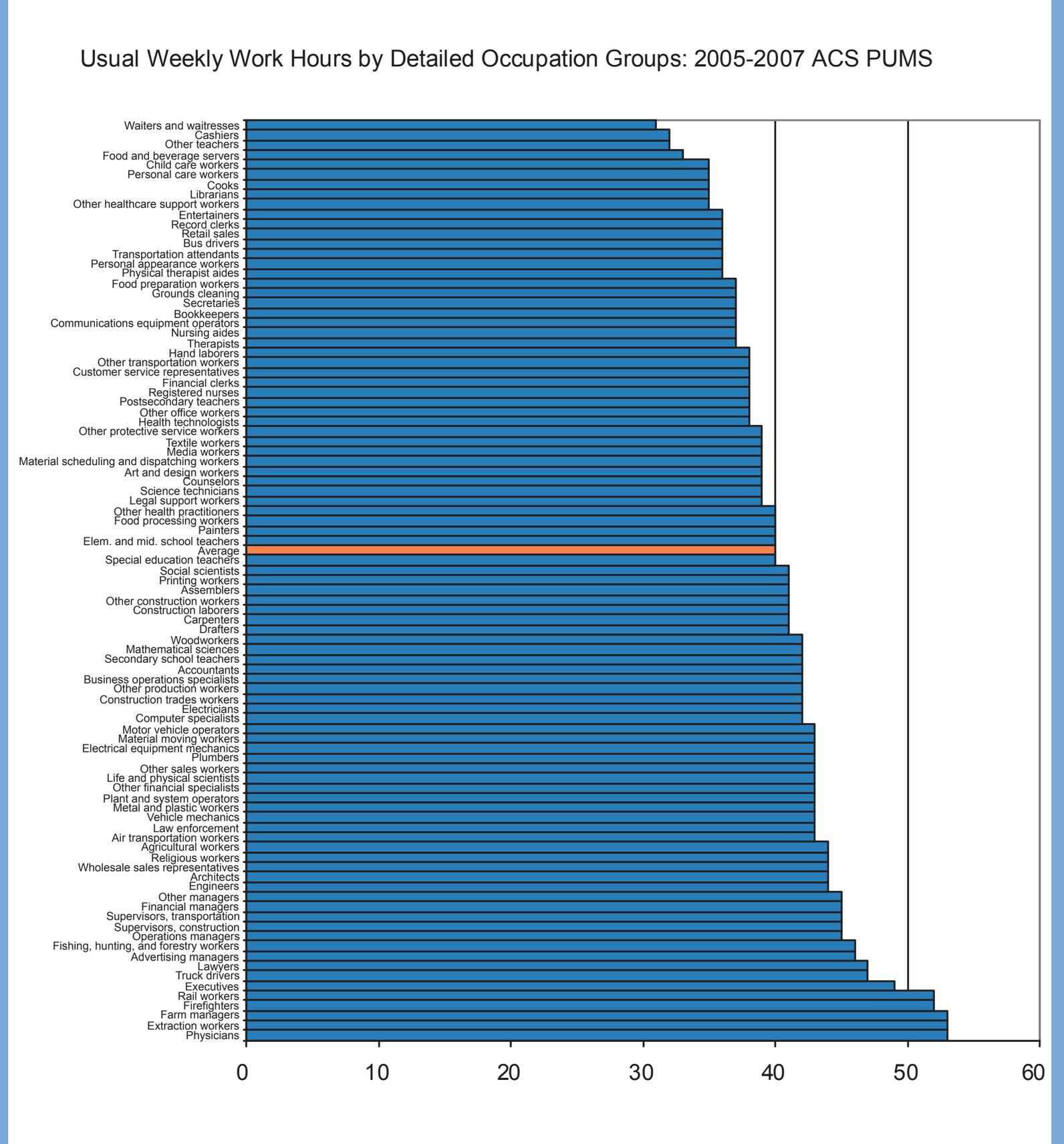
All variables in these analyses are considered individual characteristics with the exception of the variable "percent female." Percent female is the sex distribution of an occupation.

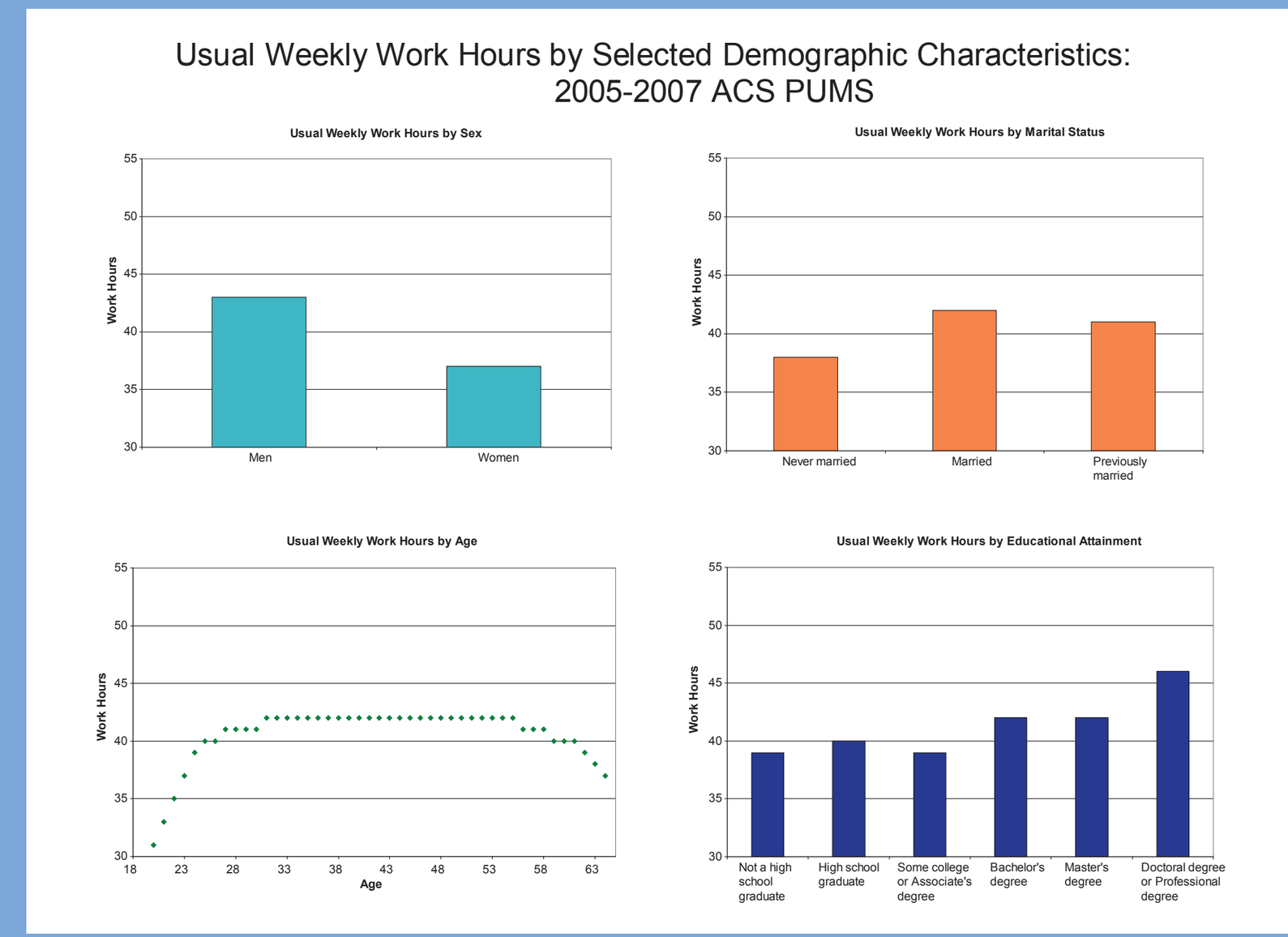
Methods

Ordinary least squares (OLS) regression and hierarchical linear models (HLM) to assess how individual characteristics are associated with work hours within and across occupations.

All independent variables, with the exception of sex, were grand mean centered to facilitate interpretation. Resulting coefficients can be interpreted as the effect for an average male or for an average female. Because sex is a significant predictor of work hours, I present additional investigations of sex-specific interactions*.

* These interactions were chosen based on separate model runs for men and women. Variables which behaved differently for men and women were added to the final models as interactions.





OLS Regression Results

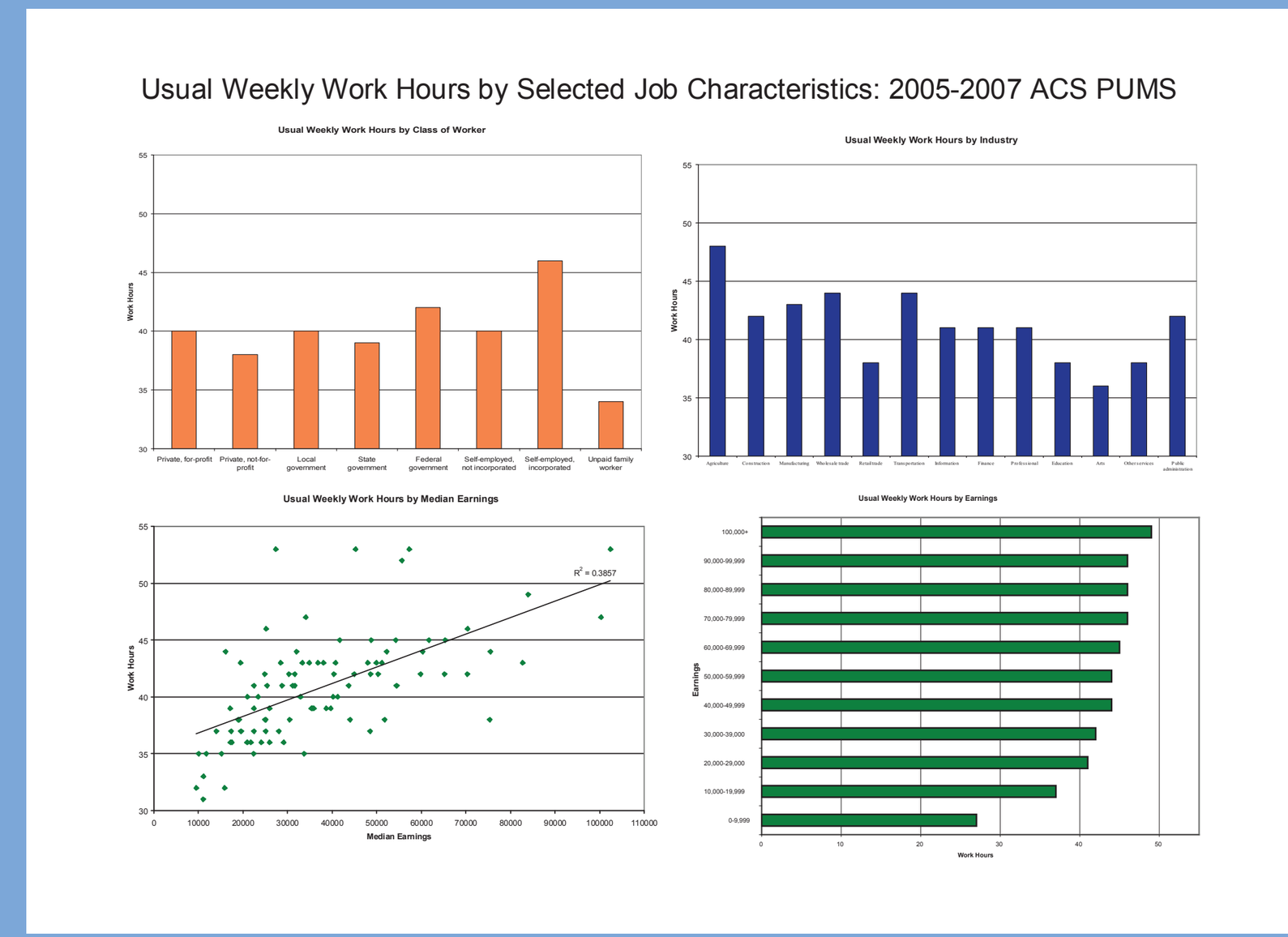
Research Question 1:
Are work hours more similar among members of the same occupation or among individuals with similar characteristics?

Occupation and individual characteristics are approximately equal predictors of work hours.

- Although work hours are significantly different across occupations, occupation only explains about 13% of the variance in work hours. Given these results, it is unlikely that work hours are determined solely by occupational norms, regulations, or time requirements.
- Demographic characteristics explain about 14% of the variance, indicating that work hours vary among similar individuals.
- The combination of all individual characteristics, including occupation, explains about 23% of the variance in work hours.

Table 1: Individual Predictors of Work Hours: Ordinary Least Squares Regression Results

	Model 1	Model 2	Model 3	Model 4
Intercept	40.48*** (0.01)	43.01*** (0.01)	40.49*** (0.01)	41.94*** (0.01)
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



HLM Results

HLM fixed effects provide similar conclusions to the OLS models. In addition to fixed effects, HLM allow us to evaluate whether individual characteristics have a different correlation with work hours within each occupation.

Research Question 2:
Are there interaction effects between occupation and the characteristics of the individuals in the occupation?

- These models indicate that there are interaction effects between individual characteristics and occupation as all slopes are statistically significant.
- Of the variance that can be explained by the model, about 72% of the variance in work hours is accounted for by fixed effects. An additional 6% can be accounted for by individual characteristics and their occupation-specific interactions, for a total of 78%.

Table 2: Individual Characteristics Nested Within Occupation With Randomly Varying Slopes: Hierarchical Linear Models Results

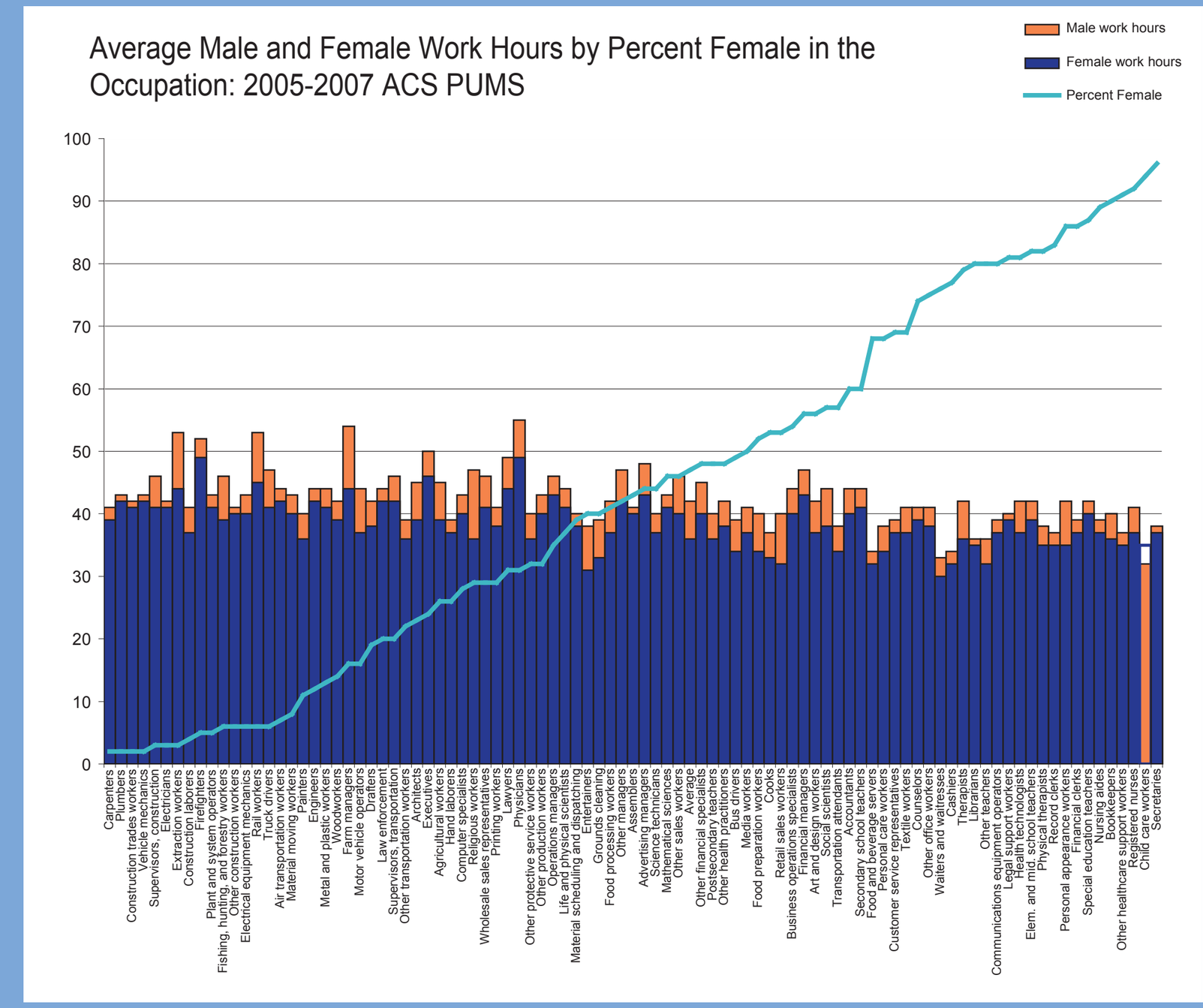
	Model 1 Random intercept	Model 2 Fixed effects	Model 3 Randomly varying slopes[1]
Intercept	40.80*** (0.47)	41.77*** (0.25)	42.55*** (0.22)
[illegible]	[illegible]	[illegible]	[illegible]

Percent Female in an Occupation

Previous studies of the gender wage gap show that wages are generally lower for men and women in occupations that have a higher percentage of female workers (Bayard et al. 2003; Boraas and Rodgers 2003; Roksa 2005).

This analysis shows that the same holds true for work hours. Although sex is a significant predictor of work hours, both men and women work shorter hours in occupations with a higher percentage of female workers even after controlling for the effect of sex, showing an interaction between work hours, occupation, and percent female.

For every 10% increase in percent female, work hours decrease by about 19 minutes per week.



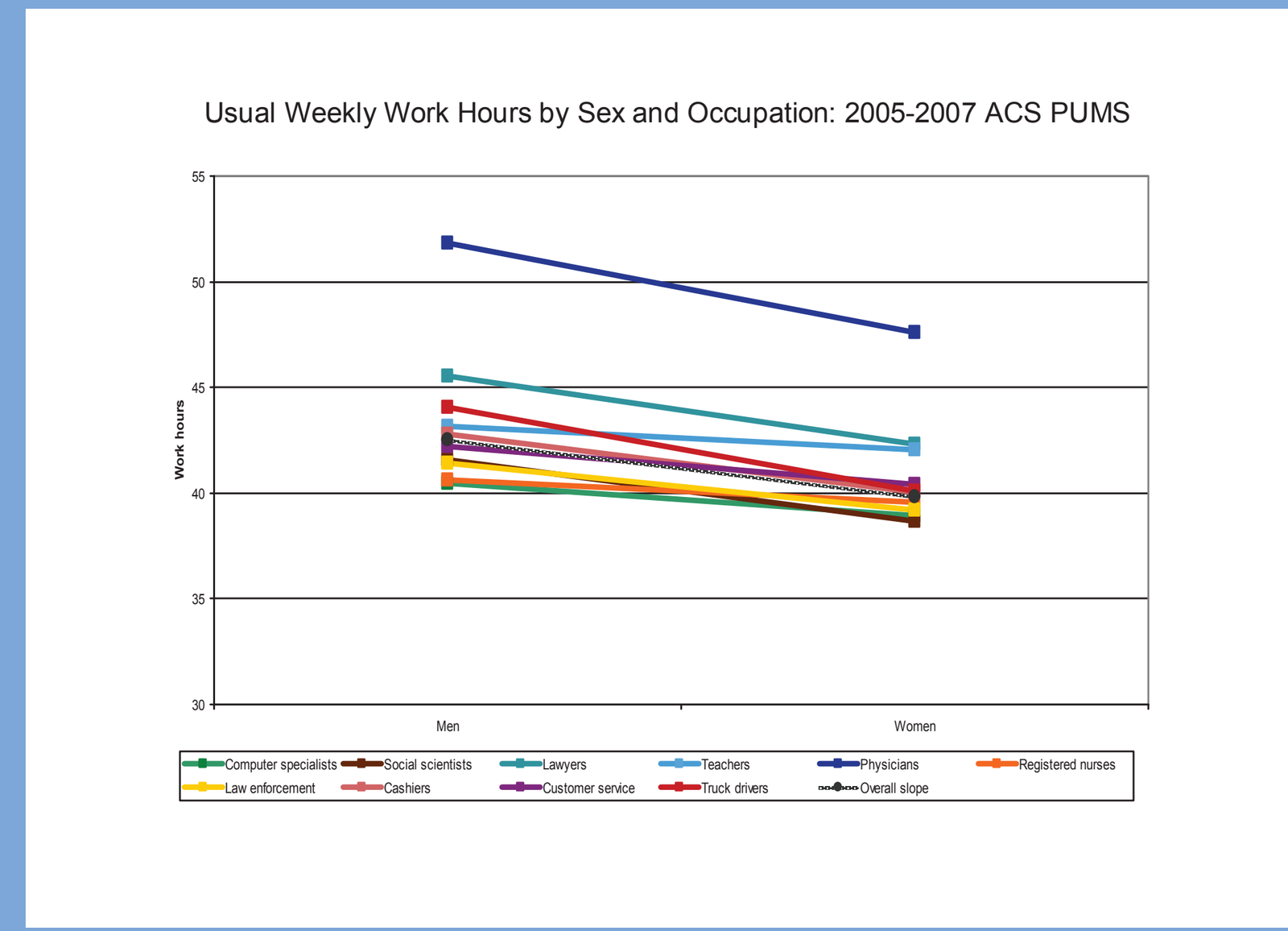
HLM Slope Effects

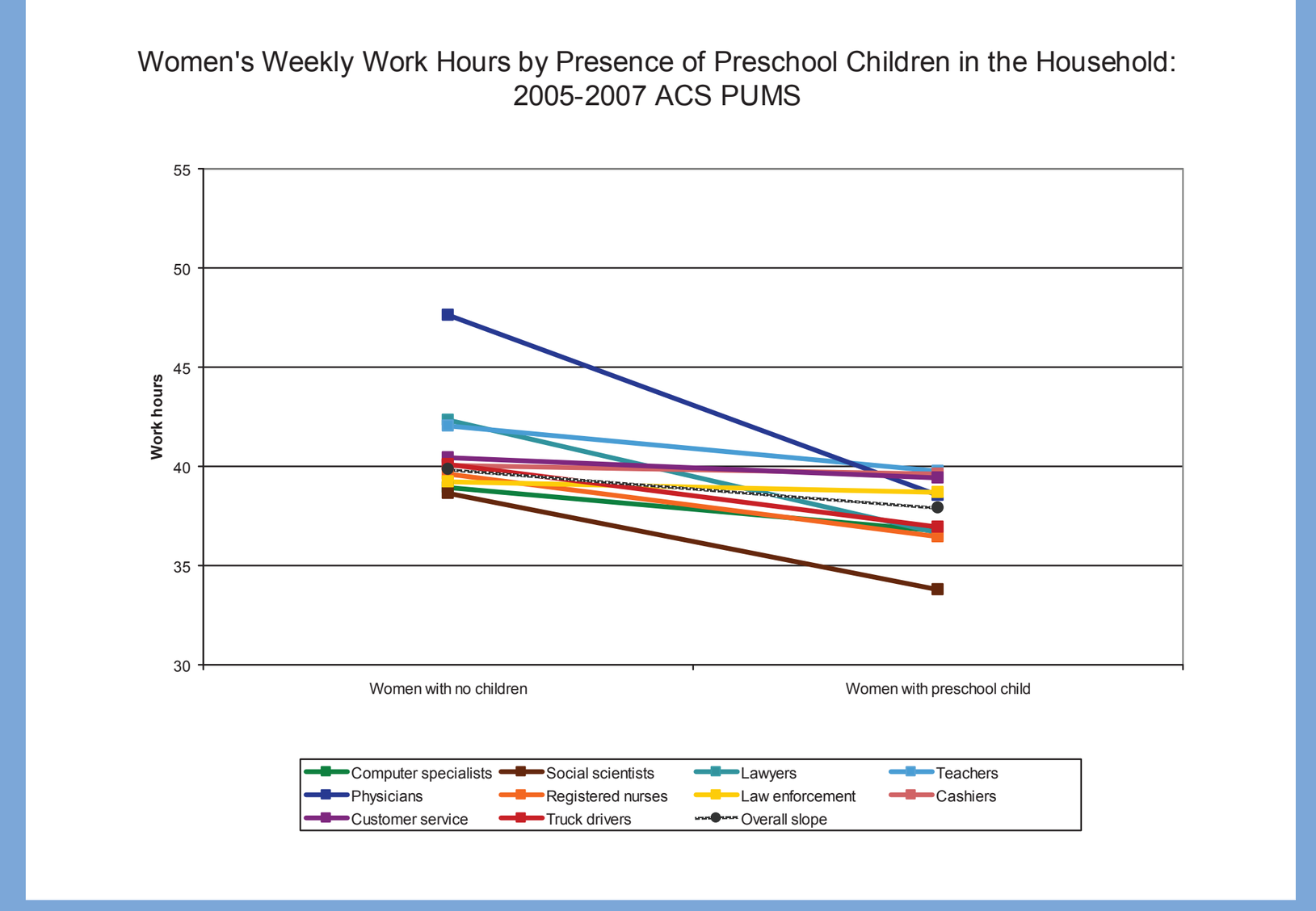
The following graphs illustrate interaction effects between sex and presence of preschool children in the household and ten occupations. These occupations were selected to cover a wide spectrum of occupations.

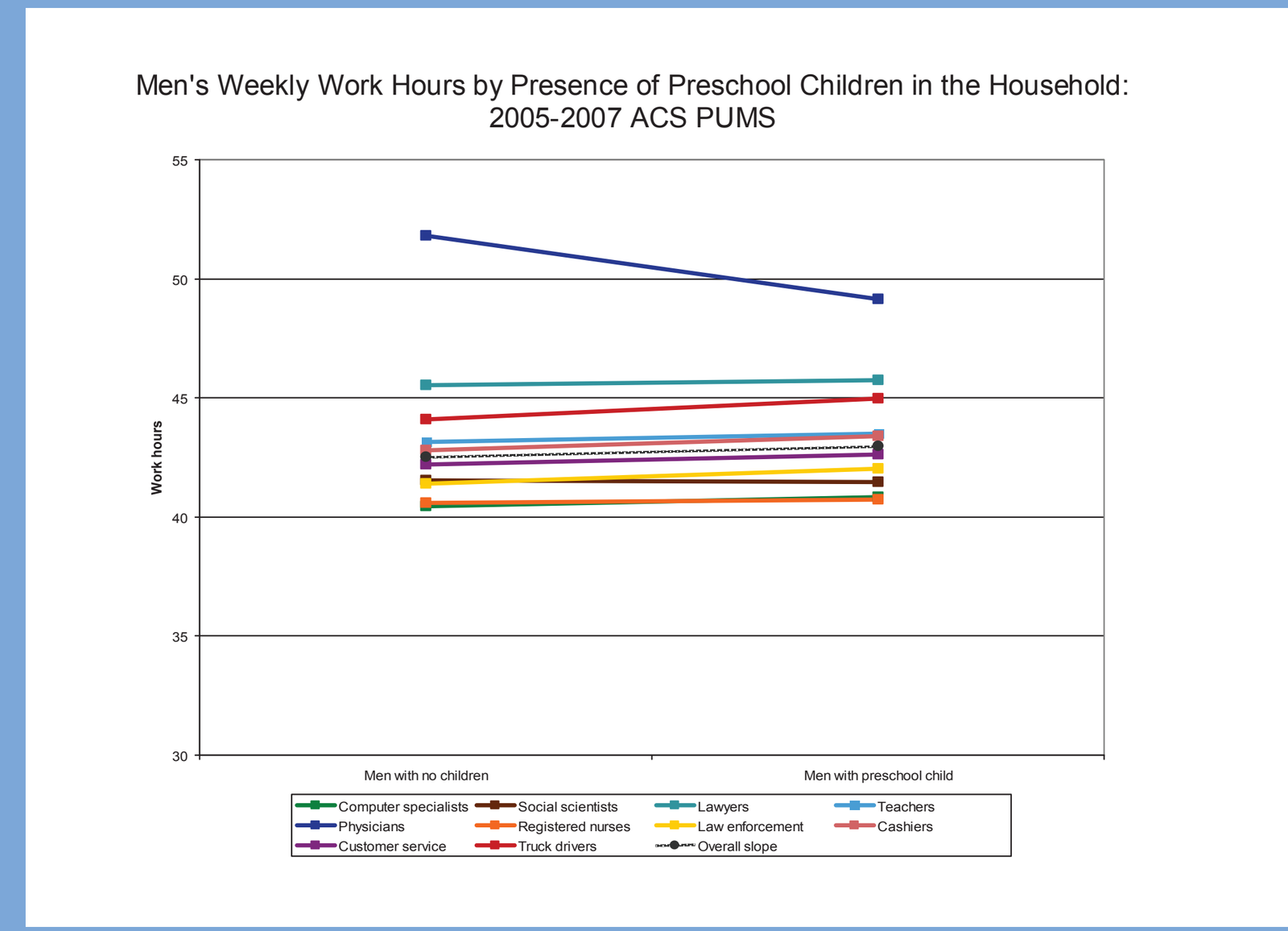
Work Hours by Sex and Occupation
Men work longer weekly hours than women, on average. However, work hour differences by sex are only statistically significant in five of the ten occupations examined: social scientists, lawyers, physicians, cashiers, and truck drivers.

Work Hours by Presence of Preschool Children and Occupation
Among men, the presence of preschool children has no effect on their work hours in these ten occupations. The only exception are physicians, where having preschool children in the household is associated with working three fewer hours per week.

Presence of children in the household is associated with a decrease in work hours among women in three of ten occupations: social scientists, physicians, and lawyers. Physicians with preschool children work about nine fewer hours than physicians without preschool children. All else being equal, female physicians with preschool children work approximately the same number of hours as female customer service representatives with preschool children.







Conclusion

- This study is among the first to show that work hours vary among similar individuals even in very detailed occupations. I also find that work hours are not necessarily standardized by occupation, as implied in popular media.
- There is a complex relationship between individual characteristics and work hours and there are strong interaction effects by occupation.
- There is not a unique or constant effect of having children. Rather, **among working women, the work hour effect of having children in the household depends on what occupation they are in**. In some occupations, work hours are reduced quite substantially. In others, there is no statistically significant effect.
- These statistical models indicate that both occupation and individual characteristics are important predictors of work hours, and that these characteristics should be evaluated within an individual's occupational context.

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