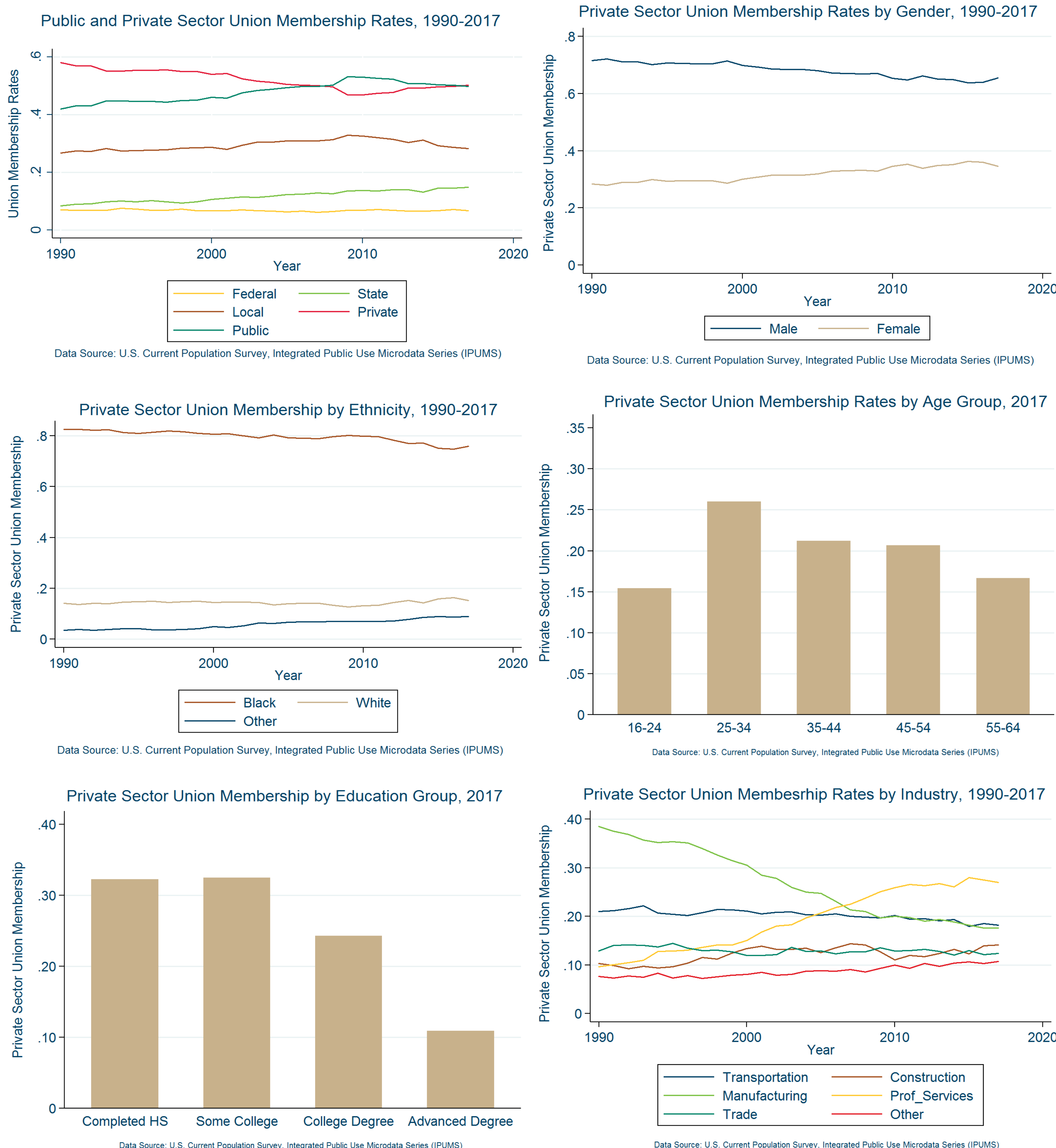


## ABSTRACT

This analysis explores the interrelation between demographic and occupational characteristics and private sector union membership, over time. Using 1990-2017 data taken from the Independent Public Use Microdata Series (IPUMS) Current Population Survey (CPS) data, this study investigates the marginal propensity to join a private sector union given personal profile characteristic groups. Time trends between demographic and occupational characteristic (*levels*) are first plotted using historical CPS data during the period 1990-2017. The historical trends reveal that private sector union membership levels are highest for black people, men, individuals ages 25-34, individuals with some college education, and those in the professional services industry. To empirically test that these trends exist at the margin, a multidimensional logistic regression is employed to underscore the odds of joining a private sector union over time. Demographic measures include **race**, **gender**, and **age** and are included first as explanatory variables, and occupational characteristics- **industry** and **schooling**- are added subsequently. The results indicate that over time black people, men, individuals ages 45-54, individuals in the transportation and utilities industry, and individuals who completed high school are more likely to unionize.

## BACKGROUND



## DATA

This analysis uses private sector union membership data captured through the Bureau of Labor Statistics's (BLS) Current Population Survey (CPS) and extracted from the Integrated Public Use Microdata Series (IPUMS) over the time period 1990-2017. The CPS is a monthly survey of households where surveyors interview nearly 60,000 households on the activities of everyone in the household during the prior week. The CPS is the most important source of data on the U.S. labor market. The CPS data includes information on age, race, sex, schooling, location and employment status. The section of most interest for this study are the questions that comprise the BLS's Outgoing Rotation Groups or the Earner Study. Households in the CPS are interviewed for four months, ignored for 8 months, and then interviewed for 4 more months. The earner study questions include information on labor union status.

## RESULTS

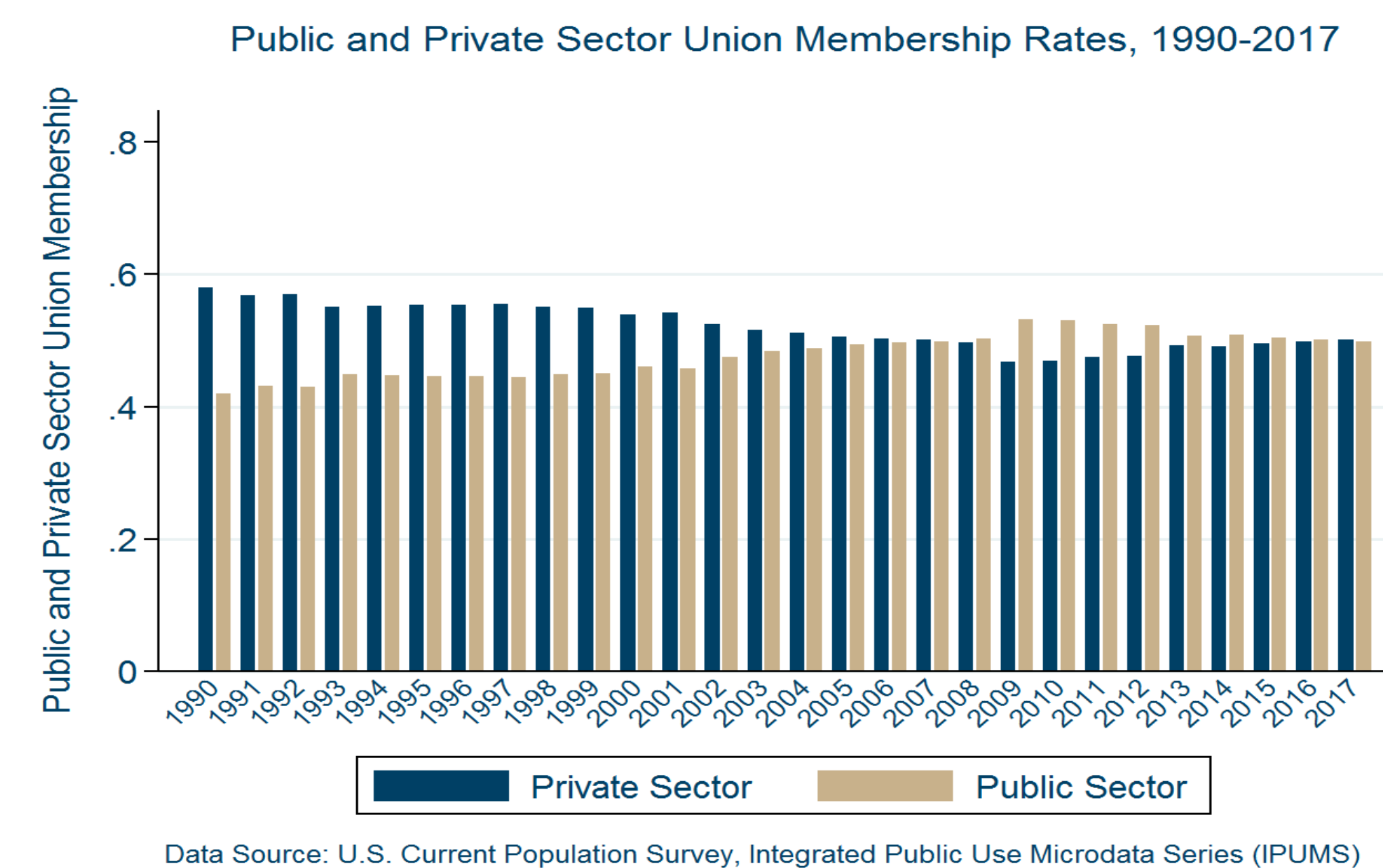


Table 1: Multivariate Logistic Regression - Odds Ratio Results

Regressor	Union <sub>1990-2000</sub>	Union <sub>2000-2010</sub>	Union <sub>2010-2017</sub>
<b>Race</b>			
Black	1.45*** (0.12)	1.32*** (0.12)	1.23*** (0.15)
Other	1.24*** (0.016)	1.29*** (0.015)	1.25*** (0.017)
<b>Sex</b>			
Female	0.56*** (0.00)	0.61*** (0.00)	0.68*** (0.00)
<b>Age</b>			
25-34	1.64*** (0.01)	1.64*** (0.02)	1.56*** (0.02)
35-44	2.17*** (0.02)	2.04*** (0.02)	1.89*** (0.03)
45-54	2.58*** (0.02)	2.43*** (0.03)	2.13*** (0.03)
55-56	2.34*** (0.03)	2.42*** (0.03)	2.22*** (0.03)
<b>Industry</b>			
Construction	0.58*** (0.00)	0.66*** (0.00)	0.73*** (0.01)
Manufacturing	0.58*** (0.00)	0.54*** (0.00)	0.51*** (0.00)
Professional Services	0.31*** (0.00)	0.40*** (0.00)	0.46*** (0.00)
Trade	0.22*** (0.00)	0.20*** (0.00)	0.21*** (0.00)
Other	0.15*** (0.00)	0.16*** (0.00)	0.18*** (0.00)
<b>Schooling</b>			
Some College	0.78*** (0.00)	0.91*** (0.00)	1.00 (0.00)
College Degree	0.42*** (0.00)	0.57*** (0.00)	0.70*** (0.00)
Advanced Degree	0.35*** (0.00)	0.48*** (0.00)	0.62*** (0.01)
cons	0.04*** (0.00)	0.03*** (0.00)	0.02*** (0.00)
<i>N</i>	5,523,190	5,841,753	4,122,453
<i>Prob &gt; Chi²</i>	0.00***	0.00***	0.00***

(Standard errors in parentheses)  
 \*\*\**p* < 0.01; \*\**p* < 0.05; \**p* < 0.1

## INFERENCE

- Ceteris Paribus:
- On average, men are nearly twice as likely to unionize than women over time
- On average, Black people are the race group more likely to unionize than White people over time
- On average, individuals ages 45-54 are the age group more likely to unionize than individuals ages 16-24, over time.
- On average, those in the transportation industry are, industry-wise, more likely to unionize
- On average, individuals that have only completed high school are, schooling-wise, more likely to unionize

## METHODOLOGY

The characteristic groups used to run the logistic regressions are constructed by categorically grouping each explanatory variable over time. The five explanatory variables used are race, sex, age, schooling, and industry. Consider the multivariate, q-order logistic specification below to capture the marginal propensity to unionize for each explanatory variable. I estimate three multivariate logistic regression of the form

$$\text{Logit}[\pi(X_t)] = \beta_0 + \beta_{1i} \cdot \text{Race}_t + \beta_{2i} \cdot \text{Sex}_t + \beta_{3i} \cdot \text{Age}_t + \beta_{4i} \cdot \text{Schooling}_t + \beta_{5i} \cdot \text{Industry}_t + \epsilon$$

where age, gender, race, schooling, and industry are categorical variables in the time period  $t=1, \dots, 3$ , respectively. The first time period is 1990-2000, the second 2000-2010 and the third 2010-2017.  $\epsilon$  is assumed to be an uncorrelated white-noise disturbance. This regression allows us to interpret the regression coefficients in terms of probabilities respective to each independent variable. Prior to estimating the full multivariate logistic regression model above, the regression is separately tested for significance using just the characteristics variables (age, race and gender) and subsequently the occupational variables (industry and schooling). Each explanatory variable in each time period is statistically significant at the 95% level  $\Pr(< |t|)$  less than 0.05.

## CONCLUSION

A continual challenge of unions is finding ways to advance the well being of marginalized communities given limited power. Unions advocate for fair employee pay standards and workplace protection: unions can be regarded as a symptom of disequilibrium between the wages workers seek and the wage offered by an employer. Unions serve as powerful institutions for the alleviation of discriminatory workplace practices through the creation of a collective voice for disenfranchised communities. Results indicate that there exists a greater marginal propensity to unionize for black people, men, individuals ages 45-54, individuals in the transportation and utilities industry, and individuals who have only completed high school.

## REFERENCES

Kenneth McLaughlin, Labor Economics: Principles In Practice, Oxford University Press, 2016.  
 Sarah Flood, Miriam King, Steven Ruggles, and J. Robert Warren. Integrated Public Use Microdata Series, Current Population Survey: Version 5.0. [dataset]. Minneapolis: University of Minnesota, 2017.