ECON 4848: Final Project

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I. DATA

Understanding why income varies across individuals is one of the central questions in labor economics, and personal characteristics such as education, age, gender, and family structure play an important role in explaining these differences. This project examines the question: How does marital status affect individual wage income? To answer this question, we use data from the 2023 American Community Survey (ACS), a large, nationally representative dataset collected annually by the U.S. Census Bureau. The sample was limited to respondents who were at least 16 years old and below 65 years old. This will allow us to focus on individuals who are of working age and earning income.

The dependent variable in our analysis is annual wage income, measured using the ACS variable *incwage*. Because wage income is highly skewed, we use the log of wage income as our dependent variable in the regression analysis, allowing us to interpret regression coefficients as percentage differences in earnings across groups. The key independent variables are the ACS marital status categories. These include individuals who are married with a spouse present, married with a spouse absent, separated, divorced, or widowed. The final category, never married, serves as the excluded reference group in the regression analysis. Each coefficient in the marital-status variables, therefore, measures the difference in log wage income relative to individuals who have never been married. In addition to marital status, we include a broad set of control variables: age, usual hours worked per week, number of children, sex, citizenship status, and education levels.

We hypothesize that married individuals will have higher wage income than unmarried individuals. Married individuals often benefit from greater household stability, shared resources, and are often married to partners with similar or higher levels of education and earning potential. Thus, we predict that marriage should be positively associated with individual earnings.

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Table 1: Descriptive Statistics from 2023 ACS

Variable	Mean	Minimum	Maximum
Income (incwage)	64,727.70	4	870,000
Age (age)	40.682	16	65
Hours Worked per Week (uhrswork)	38.363	1	98
Number of Children (nchild)	0.742	0	9
Male	0.514		
Female	0.486		
Married	0.518		
Separated	0.015		
Divorced	0.092		
Widowed	0.013		
Never Married	0.362		
Citizen	0.931		
Not Citizen	0.069		
Elementary Education	0.002		
Middle School	0.011		
Some High School	0.042		
High School Graduate	0.318		
Some College	0.223		
College Graduate	0.391		
Observations	2,216,199		

Table 1 provides the summary statistics for relevant variables in our analysis. From this table, we can see that individuals earned an average of $64,727.70 in the year 2023, with reported incomes ranging from $4 to $870,000. The average respondent in the sample is 41 years old and works about 38.4 hours per week. The sample is pretty evenly split by gender, with 51.4% identifying as male and 48.6% as female. In terms of marital status, 51.8% of individuals in our sample are married, 36.2% have never been married, and the remaining respondents fall into separated, divorced, or widowed categories. Education levels vary widely, with 31.8% of respondents holding a high school diploma, 22.3% having some college experience, and 39.1% earning a college degree.

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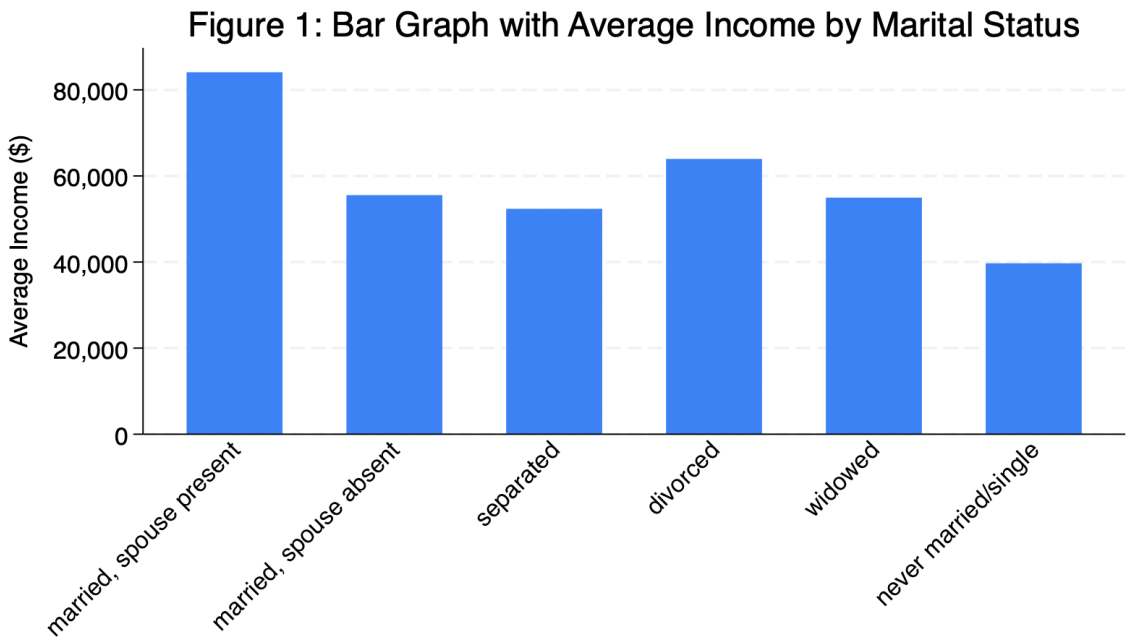

Figure 1 shows a bar graph with each bar representing a different marital status category. From this, we can see that individuals who are married with a spouse present have the highest average income, which is a little over $80,000. Individuals who have never been married have the lowest average income, which is roughly $40,000.

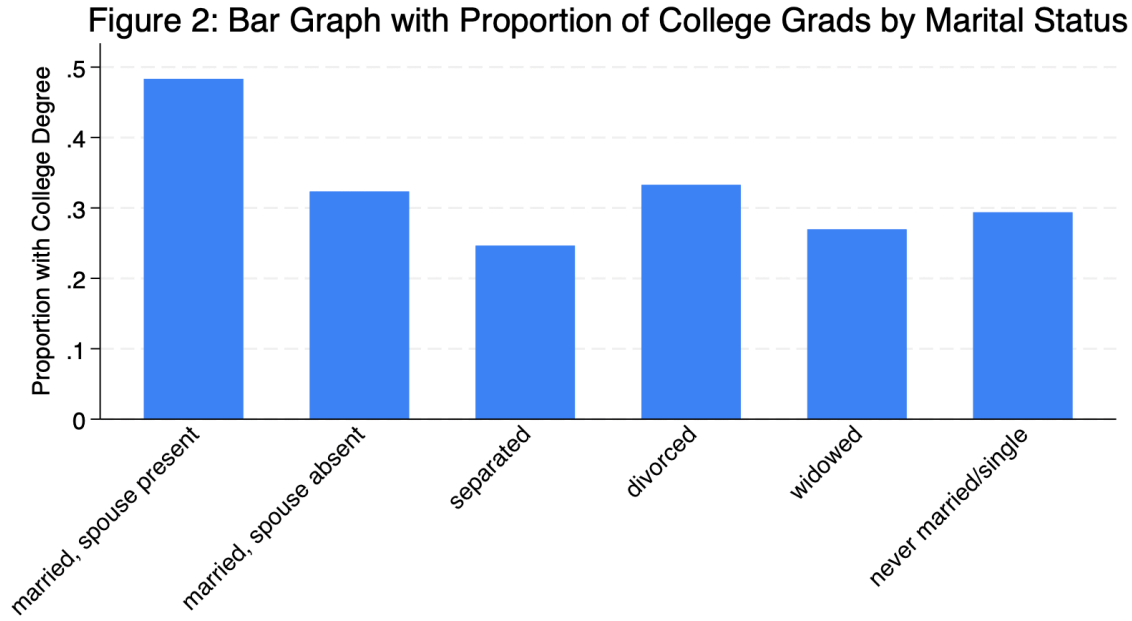

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Figure 2 shows a bar graph with each bar representing a different marital status category. From this, we can see that the marital status category with the highest proportion of college graduates is individuals who are married with a spouse present, where roughly 48% of the individuals graduated from college. This time, individuals who are separated have the lowest proportion of college graduates, with roughly 24% having graduated from college. About 30% of individuals who have never been married have college degrees.

II. RESULTS

To determine the effect of marital status on annual wage income, we will use the Ordinary Least Squares (OLS) Regression Model. The dependent variable is the log of wage income, and the independent variable is marital status. The first regression table, Table 2, shows the results of a regression with only the variables of interest. This is considered the baseline regression results; however, the true relationship is likely different because of omitted variable bias. In each regression table below, * indicates the variable is significant at the 10% level, ** at the 5% level, and *** at the 1% level. In Table 2, *never married* is excluded to avoid perfect multicollinearity.

Table 2: OLS Regression for Log Wage Income - No Controls

Variable	**Coefficient**	**P-Value**
Married	0.976***	0.000
Separated	0.474***	0.000
Divorced	0.741***	0.000
Widowed	0.529***	0.000
Number of Observations		1,532,043
R^2		0.1257
Adjusted R^2		0.1257
Excluded Category = Never Married/Single		

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Without additional control variables, a married individual is expected to earn 97.6% more in income compared to those never married. With the addition of control variables, we expect this coefficient to decrease considerably.

Table 3: OLS Regression for Log Wage Income - With Control Variables

Variable	Coefficient	P-Value
Married	0.263***	0.000
Separated	0.063***	0.000
Divorced	0.134***	0.000
Widowed	0.038***	0.000
Age	0.015***	0.000
Hours Worked per Week	0.049***	0.000
Number of Children	0.056***	0.000
Male	0.193***	0.000
Citizen	0.054***	0.000
Elementary Education	-0.03*	0.075
Middle School	-0.049***	0.000
Some High School	-0.363***	0.000
High School Graduate	0.165***	0.000
Some College	0.33***	0.000
College Graduate	0.869***	0.000
Number of Observations = 1,529,831		
$R^2 = 0.496$		
Adjusted $R^2 = 0.496$		

Excluded Categories: Never Married/Single, Female, Non-Citizen, No Schooling

The regressions in Table 2 and Table 3 show the effect of marital status on log of wage income with and without controls added. The addition of control variables increased the adjusted R^2 value by a considerable amount. However, the coefficients of interest decrease by a lot with the added controls. Overall, the effect of being married on income is positive as hypothesized,

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suggesting that individuals who are married earn more income than those who are not. With p-values of 0.000 in both regression models, the variables of interest have strong statistical significance. The magnitude of the effect is fairly large; the regression in Table 3 suggests that individuals who are married earn 26.3% more income compared to those who have never been married, holding all other variables constant. The R^2 value suggests that the model with all of the control variables explains about 50% of the variation in the log of wage income.

Table 4: OLS Regression for Log Wage Income - Gender Categories

Variable	**Men**		**Women**	
	Coefficient	P-Value	Coefficient	P-Value
Married	0.355***	0.000	0.179***	0.000
Separated	0.124***	0.000	0.016***	0.052
Divorced	0.154***	0.000	0.108***	0.000
Widowed	0.061***	0.000	0.006***	0.433
Age	0.015***	0.000	0.014***	0.000
Hours Worked per Week	0.043***	0.000	0.054***	0.000
Number of Children	0.075***	0.000	0.035***	0.000
Citizen	0.024***	0.000	0.098***	0.000
Elementary Education	-0.086***	0.000	0.05*	0.060
Middle School	-0.035***	0.005	-0.066***	0.000
Some High School	-0.375***	0.000	-0.35***	0.000
High School Graduate	0.193***	0.000	0.143***	0.000
Some College	0.344***	0.000	0.315***	0.000
College Graduate	0.906***	0.000	0.822***	0.000
Number of Observations	785,948		743,883	
	R^2	0.4789	R^2	0.5035
	Adjusted R^2	0.4789	Adjusted R^2	0.5035

Excluded Categories: Never Married/Single, Non-Citizen, No Schooling

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Table 4 shows the results going deeper into the analysis by breaking down the regressions into two separate ones for male and female. The results from these regressions reveal important gender differences in the association between marital status and income that are not shown in Table 3. In particular, the return to being married is substantially larger for men than for women. Married men earn about 35.5% more than men who have never been married, while married women earn only about 17.9% more than women who have never been married. While this still supports our hypothesis that overall being married increases your income, it does reveal that the magnitude of this increase is less for women. The models explain 47.89% and 50.35% of the variation in the log of income for men and women respectively.

III. DISCUSSION

This project explores the relationship between marital status and its effects on income. Using data from the 2023 American Community Survey (ACS), the analysis uses control variables for number of children, usual hours worked per week, age, educational attainment, and citizenship status. The sample is limited to individuals aged between 16 and 65.

The main regression model in Table 3 shows that the effects are fairly strong and in the expected direction. Married individuals earned about 26.3% more income than those who have never been married, holding all other independent variables constant. Table 4 then expands upon this analysis, by splitting it into two regressions between men and women. The results in Table 4 reveal key information, we find that men benefit much more from marriage than women. A married man is expected to earn 35.5% more than men who have never been married, while a married woman is expected to earn only 17.9% more than women who have never been married. Figure 1 shows that married individuals with a spouse present have the highest income, while individuals who have never been married have the lowest. This relation makes sense according to our analysis as married couples have the highest proportion of individuals with the highest educational attainment (college degree).

Besides our variables of interest, the control variables that have the largest impact on the dependent variable in Table 3 are the educational attainment values. As educational attainment increases, income appears to increase. Table 3 suggests that individuals with a college degree earn 86.9% more compared to those who reported no schooling. In addition to educational

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attainment, the male variable also has a large impact on income, as it is associated with a 19.3% higher income compared to individuals who don't fall under the male category.

A surprising result from our regression analysis was that individuals with some high school education are expected to earn 36.3% less than those who reported no schooling. One might expect that someone with at least some schooling would earn more than an individual with no schooling, however this does not seem to be the case. Additionally, this regression coefficient is significant at the 5% level, suggesting the lower earnings of individuals with some high school education, relative to those with no schooling, represents a statistically meaningful pattern rather than random variation.

Another interesting finding for us was about the number of children and its relation for men and women and how that impacted their income. Holding other independent variables constant, the regression table shows that males with an additional child have a 7.5% higher income whereas for females it's about a 3.5% higher income. The attainment of a college degree by both males and females play an important role with a 90.6% and 82.2% increase in income respectively.

The analysis could probably still be improved with additional control variables. For example, the respondents geographic region could have an impact on income as well and further increase the fit of the model while reducing omitted variable bias. Another limitation of our model is that it uses cross sectional data, which means that all observations are recorded at one point in time, rather than following the same individuals over multiple years. Using panel data instead would allow us to observe for example how someone's income changes when they transition from single to married, giving us a stronger causal interpretation. Addressing these limitations would improve the fit of the model and create a stronger case for a causal relationship between marital status and income.

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