QTM302W

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**Poster project proposal**

**Introduction**

Humans spend a third of their waking time working, yet the role of our job in our lives is usually underappreciated. When it comes to work, there are many output variables that one might consider before choosing to stick to: job satisfaction, number of hours, working environment, benefits, and most importantly, pay. Since one's salary is so detrimental to his well-being, we seek to understand the factors that contribute to this number. Does one simply get paid more if he or she works harder and more efficiently? In other words, how much do skills and experiences really affect one's income? Moreover, are there other variables, especially ones that do not contribute to skills such as race and gender, that affect wage as well, and to what extent? On the basis that the workplace and recruitment process should be merit-based, we hope to find that skills and experiences would dictate salaries more than other variables. However, in the case that it is not, we will propose some solutions for future studies on the matter.

**Literary Review**

Several studies have been done on factors affecting wages.

A study at New York University (Mehta, 2012) that aims to weigh different factors on salaries found: " In a regression comparing salary and non-monetary factors, only two out of

16 dummy variables are statistically significant. Both are positive work conditions, but Benefits (Positive) decreases salary and Long Hours (Positive) increases salary." This result shows that while your identity background may not affect the amount you deserve to get paid, your skillset might not matter as much anyway.

In another study that uses machine learning models to predict college graduates starting salaries (Wang et al, 2022) researchers found "the main factors affecting the starting salary of graduates are the accumulation of human capital and social capital, but the segmentation of the labor market is also the main reason affecting the starting salary of graduates." Labor market segmentation is a variable we did not consider in our initial discussion regarding this project, but it certainly is one of the uncontrollable variables for individuals. It thus harms those who are capable of contributing meaningful work to society and deserve to get paid more.

One of the indicators of ability is the highest education received. There has been data showing that a higher education does bring higher expected income. Data from the US Social Security office demonstrated that Men with bachelor's degrees earn approximately $900,000 more in median lifetime earnings than high school graduates. Women with bachelor's degrees earn $630,000 more. Men with graduate degrees earn $1.5 million more in median lifetime earnings than high school graduates. Women with graduate degrees earn $1.1 million more. Such a difference indicates how education as a skill set indicator can affect income.

Moreover, studies have been observing the effect of recent social activities such as COVID-19 impact income. For instance, the study of Dang and Nguyen (2021) has demonstrated that women experience a larger income decrease during COVID-19 and the

recession while being compared to men. Such studies provide a more modern context of social impacts, demographics and income.

**Method**

Provided that we are focusing on the effect of variables in two categories, "skillset" and "demographics", against personal income, we would wish to categorize each variable into a binary nature of being included in a skillset or demographics. For instance, "experience in industry" and "highest education acquired" may be a representation of skillset, and "age", "gender" and "race" would be good examples of demographics.

If we wanted to evaluate which affects annual salary more, it would be plausible to measure the scale of effect first, using traditional regression methods such as OLS regression and do significance testing on the results. Other tests such as an f-test that determines whether an unrestricted model with additional variables is a better fit than a restricted model with few variables may also be helpful. In addition, we can use various visualization techniques such as q-q plots and scatter plots to determine correlations as well as distributions, which would be essential for regression analysis.

Despite these aspects, one significant process is to set up an expectation of the general public on how demographics affect salary. This can be done by posing a new survey, which allows people to respond to various questions regarding their expectation on the labor force, and by including both quantitative data like scales and qualitative data collecting opinions.

**Work Cited**

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