Undergraduate Economic Review

Volume 13 | Issue 1

Article 11

2017

# The Payoff of a Healthy Lifestyle while in College

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# The Payoff of a Healthy Lifestyle while in College

**Abstract**
*This study analyzes the effect that an individual's body mass index (BMI) has on their hourly compensation in their next job directly following attainment of their bachelor degree. This study uses the National Longitudinal Survey of Youth that started in 1997. This study aligned all the survey participants' timeline of life events to be coordinated in such a way that bachelor degree attainment, regardless of year, is the common reference point. Sufficient observation of bachelor degree receipts was found in the year 2001 through 2007 resulting in a pooled data set across seven years. This study hypothesizes that individuals with an excessive BMI will have a negative effect on their hourly wage and an immaterial effect on those with a normal BMI. Furthermore, an individual with a low BMI could see a higher level of hourly wage. This study found that females have a negative wage implication as their BMI increases while no significant findings for men were found. This study opens up the significance that BMI and appearance have in a snapshot of human life.*

**Keywords**
BMI, Health, College, Economics, Female, Wage Rate, Graduation

## I. Introduction, Hypothesis, Motivation

Mainstream media commonly runs stories about how attractive people make more money and how college students put on weight with the iconic freshman 15. The main motive of completing a bachelor degree program is to find a job with a higher paying wage rate in a skilled labor market. It is possible that a person's appearance affects their wage rate? Should students put just as much effort into healthy lifestyle choices as they do learning in the classroom? What effect does an individual's body mass index (BMI) have on their hourly wage in their next job following their bachelor degree attainment? These are the questions that are answered in this study. The motivation for this paper is trying to figure out how a low BMI from healthy lifestyle practices plays a role in someone's professional career. The following conflict provides additional motivation: college students (1) complete their bachelors to earn a higher wage, and (2) gain weight leading potentially to a lower wage. This counterproductive effect of increasing BMI while gaining education for individuals, highlights the desire to empirically measure BMI's impact on future wage directly following college. Having an empirical value on the importance that BMI levels have on someone's wage rate is not only intriguing but can allow us to arrive at a momentary value for a person's BMI.

BMI is calculated by taking a person's weight in pounds divided by the square of height in inches. BMI does not measure body fat directly, but Garrow (1985) has shown that BMI is moderately correlated with more direct measures of body fat obtained from skinfold thickness measurements, bioelectrical impedance, densitometry (underwater weighing), dual energy x-ray absorptiometry (DXA) and other methods. Furthermore, Lawlor (2010) shows that BMI appears to be a key indicator for various metabolic and disease outcomes as are these more direct measures of body fatness. Because of these factors and how it is a measurable indicator of appearance, it is the independent variable in this study.

Based from the already identified relationship between BMI with college students and future wages, this paper hopes to answer the question of, "Impact BMI plays in wage rate directly following bachelor degree attainment." With the prior statement being the statement of purpose the hypothesis being testing in this paper is, "The higher an individual's BMI the lower hourly wage rate in their job directly following bachelor degree attainment."

Coming out of college, students entering the workforce depend on their college experience, social skills, and their appearance to land them their first job. Taylor (1994) shows that an individual's income can be affected by race, gender, sexual orientation, and even body type or physical characteristics. Oreffice and Quintana (2016) found that an individual's BMI levels strongly contributed to male and female attractiveness. With an individual's, BMI being related to a person's physical appearance it is important to understand the effect that BMI can play in an individual's income. With college students only having a certain amount of time for leisure, understanding the effect an individual's BMI has on their future wages will impact their time decisions and lifestyle choices.

This paper will test the hypothesis through a fixed-effects regression model based off of a variation of the Becker-mincer log wage formulation (Borjas, 2013). Additionally, BMI will be measured at the time of graduation and will be grouped together in weight categories as defined by the US Center for Disease and Control (CDC, 2016). This paper will go through a review of already existing literature, theoretical model specifications, as well as reporting, interpreting, and drawing conclusions from the findings of the study.

## II. Literature Review

Extensive research has been done in regards to an individual's income and their BMI over the years. Lee (1982) evaluated health as a capital stock and the higher the level of health the more productive a worker is thus increasing his wage. He found wage and health capital to be strongly jointly dependent. Wages have strong positive effect on the demand for good health and good health raises marketing productivity and hence wages. An important point found from this study is that schooling has less effect on the production and demand for health capital than wage. Lee's paper brings up a great point about the two-way relationship that both an individual's health and their wage can influence each other. Additionally, it excludes the impact of non-wage income that would come from medical coverage, pensions, and other fringe benefits. Individuals with a higher BMI might find a lower wage as employers expects to have to pay more medical expenses for the individual as they are likely to have medical issues in future periods.

Daniels (2006) finds BMI impacting wages differently based on gender. The study grouped age cohorts to find that both male and females had an increased average BMI as age increased. This would intuitively make sense because as age goes up for an individual, their metabolic rate goes down as well as their level of activity. Additionally, Daniels found that higher BMI had more of a negative impact on female income and wage than male income. Perks (2015) noted differences between actual and reported height and weight to arrive at an accurate BMI value. This discovery showed that females reported body size at a level lower than BMI actual and men reported sizes that overestimated their BMI. The difference between reported and actual can skew the results of the relationship between someone's body and income to be over or under related to what they are. Perks is the first in this topic area to specifically measures the impact of self-reported health measures verses actual. This analysis does a good job of measuring BMI's impact on wage over different age groups. However, it doesn't capture the impact BMI has on wage at a time in an individual's lifecycle.

Jolliffe (2011) looked at the relationship between income and the BMI. Using an unconditional quantile regression, the study found that the biggest relationship along the distribution was in the tails. This means that those with excessive BMI levels saw a decrease in their income while those that have a very low BMI, less than 15%, saw an income increase. The findings would relate to intuitive thinking as those below a 15% BMI may be considered "attractive" and those with an excessive BMI would have poor body image and hence be considered unattractive, as in Oreffice and Quintana (2011). Jolliffe's findings highlight how the extreme BMI values within the respondents would have the greatest effect in the wage. Those individuals that would be malnourished and or excessively obese would most likely have additional health problems lowering productivity and thus their wage which coincides with the findings of Lee (1982).

Hammermesh and Biddle (1993) published a study entitled “Beauty and the Labor Market” which concluded those individuals that are considered good-looking make more than those that are average-looking, and those individuals make more than those that are plain looking. This study went on to find the wage gap between the three categories greater for women than men. Another interesting point is that they found better looking people entered occupations where their looks added to their productivity thus increasing their wage. They conclude that discrimination is why individuals have a higher wage rate. They make an interesting point that excessive BMI might not only lower someone’s wage rate but, a very low BMI, which is indicative of a good-looking appearance, would have positive wage benefits. The idea that low BMI will have a positive wage effect departs from what Jolliffe (2011) found that the tails of their BMI distribution both have a negative wage affect. The relationship Jolliffe BMI has to all around attractiveness can impact the wage in addition to just their body composition. An important concept to note is a possibility that BMI could also carry some of the effects for the individuals all around attractiveness because they are near complements but not the same.

Kline and Tobias (2008) looked at the relationship between wages and BMI using a Bayesian Analysis and found nonlinearities in the relationships between BMI and wages different for both males and females. Kline and Tobias highlights the limitations and benefits of using a different strategy to analyze the relationship between wages and BMI. While it is useful to finding results the paper cited serious limitations in refining the sample used for observation thus limiting results.

Trombley (n.d) investigated wages and BMI by using additional control variables to explain previously theorized factors such as myopia, discrimination, and job characteristics. He reached similar results as others in that females have a negatively associated relationship with BMI more so than males. Trombley identified two key findings within his analysis. Firstly, he found that BMI levels can have long term effects on wage rate not just an individual’s initial hiring rate. Secondly, it found that under excessive controlling of factors similar findings were reached using a more robust model.

In summary, the literature shows BMI will influence wage when BMI is higher than “normal.” Additionally, it can have both a positive and or negative effect when BMI is below “normal.” This dual effect can be addressed depending on the market segment of employment and if attractiveness is an attribute for enhanced productivity. BMI also can have some relationship in judging an individual’s all-around attractiveness. BMI can hold more significance than just their body composition. Furthermore, a limitation in the available data having reported versus actual height and weight could cause for falsely reported BMI measures. However, it’s important to note that Perks found no significant difference between self-reported versus actual. Finally, there will be an effect based off an individuals' gender and ethnic background that can have a significant impact on someone's given wage rate.

The research done in this paper is contributing to the area of BMI and wages by looking at a specific snapshot in an individual's lifecycle, bachelor degree attainment, and seeing in that moment what is BMI's impact in their next job wage. No study has been conducted in the health economics area with the wage rate and BMI being measured at a specific point in an individual's lifespan. This study will try to bring empirical results to the impact that healthy lifecycles during a college education can play in individual's future wage rate.

## III. Theoretical Overview & Methodology

The purpose of this research study is to analyze the relationship that an individual's Body Mass Index (BMI) has on their wage rate in their next job directly following bachelor degree attainment. To successfully measure the isolated effect BMI has on an individual's wage rate at a specific time in their professional career many factors need to be controlled. To look at the relationship that BMI has with wage, we will use the Becker-Mincer Model of Human Capital developed in Becker (1983) and OLS regression with fixed effects to gain insight and results.

The Becker- Mincer model will set wage in the natural log equal to level of education, experience, on-the-job training and ability. The model expands to add other explanatory variables to help explain additional changes in wage such as marriage status, gender, minority, and location. It is important to note that the model in this paper has omitted education seeing that every observation is at the same educational attainment level at time of analysis. This model will help us to test the hypothesis that states, "The higher an individual's BMI, the lower hourly wage rate in their job directly following bachelor degree attainment."

The data for the study comes from the National Longitudinal Survey of Youth 1997 (NLSY97). This survey contains human capital, earnings, occupational and other demographic information for 9,784 male and female adolescents age 12 to 18 in 1997 and re-interviewed until 2013. The NLSY97 is a longitudinal data set converted into a pooled data set focusing upon Bachelor Degree Attainment Date. From different lifetime progressions, the data had to be rearranged to capture everyone's experience directly following their bachelor degree attainment. The date that the wage rate was measured was in the next job entered after the bachelor degree attainment date[1]. The next job after BA attainment date was used to identify appropriate wage amount.

While individuals are seeking their bachelor degree it is common for them to be part of the work force, in some capacity. Some students work all through college in the same job, others

[1] Data was reorganized so variables were selected if date of Bachelor Degree attainment fell between August of the prior year and August of the current year. For example, if Data BA fell between August 2000 and August 2001 2001 variables were selected.

work in the same job after graduation, and some quit before, during, or directly after graduation in search of a better wage rate job in their field. With the different timings scenarios between graduation and employment this study measures an individual's initial wage at the next new job they enter directly following bachelor degree attainment. Through theoretical review most individuals would enter a new job classification upon graduation even though they might already be employed at the same company in a different capacity. As a result, measuring the next new job is the reasonable way to control for different respondents' timeframe for entering their post-baccalaureate job.

Since no one's wage rate is strictly based on their BMI, other dependent variables must be put into place to help explain an individual's wage rate. The theoretical model used in this equation is as follows:

*Ln(Hourly Wage | Bachelor Degree) = f(Body Image, Ability, Ethnicity, Experience, Area of Residence, Household Decision Making).*

The dependent variable for this model is that of the actual log of average hourly earnings. Having this variable as the dependent variable, we will be able to measure the specific impact all other factors will have on its outcome.

The Body Image will be the most significant parameter estimate in providing empirical support for the hypothesis. The BMI is taken from the calculation of an individual's height and weight self-reported for the year in which the respondent graduated with their bachelor degree. For the hypothesis being tested to be true, then this variable will have a positive effect on the wage rate when lower while with a higher BMI an individual will experience a lower wage rate. It is important to note that the height and weight for each year is self-reported and not an actual measurement. If an individual enters a new job after the ninth month of the year, the BMI measure will be that of the next year. This was conducted to account for a higher likelihood of body measurement changes over the summer months.

Respondent's ability is being measured with The Armed Forces Qualifying Test (AFQT). This test is the combination of four ASVAB subtests—Word Knowledge (WK), Arithmetic Reasoning (AR), Paragraph Comprehension (PC) and Mathematics Knowledge (MK). An individual's AFQT score is expected to be positively related to the wage rate. The measure for AFQT was identified through correspondence with NLSY97 staff to confirm its actuality and authenticity. For more information see ASVAB Military (n.d.).

Ethnicity measures if the respondent is a minority or not and is expected to show a negative effect of being a minority on wage rate. Two dummy variables are used to measure minority, black and Hispanic. This can come from workplace discrimination as well as their level of productivity because of their ethnic background.

Experience estimator is the effect of the prior work experience a respondent has incurred. The variable is a summarization of total weeks worked by respondents in all jobs prior to his job after bachelor degree attainment and is converted to weeks worked. This variable should have a positive effect on an individual's wage as the more experience they have, the higher the pay level. As in the Mincerian model a quadratic term will be tried but is expected to be insignificant due to the common age of the respondents. Mincer (1974) used potential experience and not actual experience as available in the NLSY97. For comparison, potential experience, X = Age – Schooling – 5, will be examined. Since schooling equals 16 for every respondent then age will be added to the model to pick up the effect of potential experience as an alternative to actual weeks worked.

Three different variables were used to measure area of residence including metropolitan statistical area (MSA), if they live in an urban environment, and region of residence. It is expected that those living within an MSA or in an urban area would see a positive effect on their wage as there are more available white collar and specialized jobs at higher wage rates within an urban central business district. Thusly, if the individual lives in a rural environment or outside of an MSA they would expect it to have a negative effect on wages. This can come from cost of living adjustments for living in urban areas with more costs and thus a higher wage. Geographic region was also used to see the regional effects of living in the northeast, versus the central, south, and west. Intuitive thinking that those living within the coastline would see a higher wage with a historically high level of populated areas from ease of transportation and trade.

Marriage is used as a variable to measure the impact of household decision making. The expected parameter estimate could be different along gender roles as women being married would opt to stay at home with children while the male would be at a higher wage rate because he has more expenses to cover.

## IV. Model Specification and Results

Transition from theoretical to empirical model resulted in many modifications being made to arrive at final reported results. The models were run separately for both male and female to gain better results within each gender grouping. Furthermore, both body mass index and grouped categories of underweight, normal, overweight, and obese were used. Additionally, the experience measure was ran with the amount of work experience the respondents had and their age. The final results include eight total models sorting population samples by gender, using different experience measures, and using BMI and BMI categories.

To bring all variables into the right time period SAS array processing was used to select the appropriate variables. The focus of this was to align the measurement to be at the point every respondent had bachelor attainment (BA) giving rise to a six year pooling of the data. The processing was used to align the entire data set to a single snapshot of the entire samples life event that happens in a different time for every single sample. This was done by defining the year and month all respondents obtained their bachelor's degree and then selecting their next job after that date and identifying what wage they achieved. Other variables were calculated using the date of BA to select appropriate BMI measure, calculate amount of prior experience, identify current marital status, and select their current residence situation.

Additional variables were tested within the model but were omitted for having no significant effect on the wage rate or relation with any other variables in the model. Those variables include BMI squared, ability squared, residency in relation to MSA, and region within the United States. In an action to increase the sample size of ability and work experience, a missing value imputation was completed setting missing values to the mean of the sample.

Further restrictions of the model were completed to refine the results and throw outliers out of the sample. BMI was restricted to the 99% of the sample eliminating extreme values that can be attributed to input errors. Furthermore, the sample years of observations were restricted to 2002, when the first large grouping of bachelor degree attainment to 2007, where they no longer captured yearly experience measures. The lack of a yearly experience measure after 2007 was from the redefinition of the variable done by NLSY97 staff into a continuous variable. Years 2000 and 2001 had single digit bachelor degree attainment resulting from 2002 to be selected for the first year of analysis. The sample was restricted to only capture those wages greater than zero that was reported in the pooled sample. To better understand the model and the variables used, Table One identifies each variable, its description, and the years of observation used in the model.

## V. Interpretation of Results

Having the regressions sorted by gender allowed for robust findings to be found. Female models were found to have an F-Statistic greater than two for all models at the .01 significance level, while male models were insignificant and below two. Females have a significantly negative BMI impact on hourly wage which aligns with findings of many other papers in this area. The models for men showed no significant results. Using such a large micro-dataset for analysis speaks to the low levels reported for adjusted R-squared.

The experience variable, weeks worked, under multiple testings and computations, could not gain significance in the model and age was substituted as a measure of potential experience. Through running regressions 1 & 2 with 3 & 4 only changing wage and experience variables, little fluctuation occurred with the control variables, apart from fixed effects.

The most predictive model run can be found in Table Two Model Two Female, saying that body mass index has a .9% influence on the percent change of wages at the .01 level. The significant findings from this paper are through multiple model testings of female log wage, BMI measures stayed highly robust.

The hypothesis, “The higher an individual’s BMI the lower hourly wage rate in their job directly following bachelor degree attainment,” has validity. Specifically, there are findings to show that women see a negative effect as their BMI increases. Male model parameter estimates have signs that agree with theoretical thinking, however, their statistical significance is at a level where accurate conclusions cannot be drawn. Female models on the other hand for all modes has significant levels and parameters with logical signs for how they impact the log of wages.

Graph 1 shows visually the change in wages based on BMI categories for females. This shows one of the significant findings from this paper. The amounts presented have been adjusted as observed by Halvorsen and Palmquist (1980) to adjust for interpreting dummy variables within a semi logarithmic equation. Graph 1 looks at both female regressions using weeks worked and age as a measure of experience. The graph shows that overweight and obese category females having a 5% and a 12/13% decrease in wage rate respectively at a statistically significant level . Additionally, it is suggested that underweight females see a positive increase on their wage however it isn't found at a statistically significant level.

## VI. Limitations and Conclusions

Limitations can be found both in the model and in the data available for analysis. The total experience variable used was not collected beyond 2007 which limited the sample of college degree graduates. Had the measure existed to 2011 the total sample size would rise from 1352 to 2236. Nevertheless, the sample is sufficient enough for the study conducted.

There was also a limitation in the available data. Being able to analyze the area of study for bachelor degree attainment could have allowed for industry similarity of next job after BA attainment to be analyzed. This would be able to control for a wage increase for being skilled labor in a field or if a respondent found work outside of his area of expertise.

A final limitation that was identified in the literature review was the bias in using self-reported height and weight measures. The data only had self-reported measurements to go into the BMI calculation which opens risk for factitious data being used. The Canadian study that made this finding said that the difference in analysis was immaterial and didn't materially adjust the findings.

In conclusion findings for male are inconclusive as the regression failed to show significance but there are significant findings for female. The results show for females entering work following the receipt of their bachelor's degree suffer a 9 to 10 wage penalty for every ten additional points on the BMI scale.

When examined by traditional BMI categories, female in the obese category with a BMI greater than 29.9 suffer a 12 to 13 percent wage penalty. The data also suggests a 7 to 9 percent premium for females being underweight and although the finding is not significantly different from zero the BMI level in the categorical regression match in qualitative correlation with the results of the continuous regression model.

## VII. Appendix

**Table 1: Table Defining Variables Used in Regression Analysis**

| **Scope of Data:** | The data are for the years 2002 to 2007 in addition demographic variables captured in 1997, the first survey year. All data is taken from NLSY97 which is a representative sample of youth within the United States. | |
|---|---|---|
| **Variable** | **Definition (Mean & Standard Deviation)** | **Year** |
| LN(Wage) | The natural log of the average hourly earnings for their job directly following Bachelor Degree attainment | 2002-2007 |
| Gender | The state of being male or female. | 1997 |
| Body Mass Index | A measure of fat based on height and weight that applies to men and women. | 2002-2007 |
| Underweight | A grouping of the sample that has a reported BMI below 18.5. | 2002-2007 |
| Overweight | A grouping of the sample that has a reported BMI between 25 and 30. | 2002-2007 |
| Obese | A grouping of the sample that has a reported BMI greater than 30. | 2002-2007 |
| Urban | Residence in an urban or a rural area | 2002-2007 |
| Married | The respondent reported as married at the month of bachelor degree attainment. | 1997 |
| Black | The respondent reported having origins in any of the black racial groups. | 1997 |
| Hispanic | The respondent reported having origins in any of the Hispanic racial groups. | 1997 |
| Ability | A percentile score of respondent's performance on four exams that compute the AFQT Score. AFQT scores are computed by the Bureau of Labor Statistics using the Standard Scores from four ASVAB subtests: Arithmetic Reasoning (AR), Mathematics Knowledge (MK), Paragraph Comprehension (PC), and Word Knowledge (WK) | 2002-2007 |
| Abilitym | Ability plus a mean value of ability creating imputation for missing values. | 2002-2007 |
| MissAbility | A binary variable equal to one for all missing value imputation to ability. | 2002-2007 |
| WW_Everm | Weeks worked plus a zero value of weeks worked to create an imputation for missing values for variable named WW_ever. | |
| WW_Ever | Number of weeks of total work at an employee-type job in all jobs prior to entering the next job after bachelor degree attainment. | 2002-2007 |
| Missww_ever | A binary variable equal to one for all missing value imputation to WW_Ever. | 2002-2007 |
| Age | Respondents current age. | 2002-2007 |
| Year 2002 - 2007 | A fixed effects measure for every year of observation. | 2002-2007 |
| *Source:* | *National Longitudinal Survey of Youth 1997 sample, accessed at Https://www.bls.gov/nls/nlsy97.htm* | |

## Table 2: Body Mass Index impact on Natural Log of Wage with Fixed-Effects

| | Model #1 Male | Model #1 Female | Model #2 Male | Model #2 Female |
|---|---|---|---|---|
| **Constant** | 2.258 *** | 2.848 *** | 1.975 *** | 2.580 *** |
| | (9.35) | (16.93) | (5.25) | (8.83) |
| **Body Mass Index** | 0.006 | -0.010 *** | 0.006 | -0.009 *** |
| | (1.13) | (-2.83) | (1.07) | (-2.72) |
| **Urban** | 0.068 | 0.093 ** | 0.063 | 0.089 ** |
| | (0.9) | (1.71) | (0.82) | (1.64) |
| **Married** | -0.042 | 0.153 ** | -0.047 | 0.154 ** |
| | (-0.46) | (2.43) | (-0.51) | (2.45) |
| **Black** | -0.069 | -0.242 *** | -0.051 | -0.222 ** |
| | (-0.55) | (-2.19) | (-0.41) | (-2.02) |
| **Hispanic** | -0.117 | -0.288 *** | -0.113 | -0.276 *** |
| | (-0.83) | (-2.43) | (-0.8) | (-2.33) |
| **Abilitym** | 0.002 * | 0.0003 | 0.002 | 0.0003 |
| | (1.44) | (0.34) | (1.17) | (0.34) |
| **MissAbility** | -0.114 | -0.069 | -0.137 * | -0.082 |
| | (-1.36) | (-1.19) | (-1.61) | (-1.43) |
| **WW_Everm** | 0.009 | 0.0003 * | | |
| | (0.61) | (1.55) | | |
| **Missww_ever** | 0.14 | 0.145 ** | | |
| | (1.43) | (1.81) | | |
| **Age** | | | 0.029 | 0.026 * |
| | | | (1.26) | (1.42) |
| **Year 2002** | -0.218 | -0.188 * | -0.343 * | -0.295 *** |
| | (-1.14) | (-1.84) | (-1.71) | (-2.58) |
| **Year 2003** | -0.099 | -0.157 ** | -0.207 * | -0.241 *** |
| | (-0.87) | (-2.13) | (-1.71) | (-2.92) |
| **Year 2004** | 0.063 | 0.013 | -0.153 | -0.054 |
| | (-0.7) | (0.2) | (-1.58) | (-0.81) |
| **Year 2005** | -0.084 | -0.032 | -0.15249 * | -0.076 |
| | (-0.93) | (-0.35) | (-1.71) | (-1.26) |
| **Year 2007** | 0.151 | 0.031 | 0.1243 * | 0.0325 |
| | (1.89) * | (0.5) | (1.65) | (0.54) |
| **N** | 551 | 801 | 551 | 801 |
| **ADJ. R Squared** | 0.035 | 0.051 | 0.033 | 0.050 |
| **F-Statistic** | 1.4 | 3.0 *** | 1.5 | 3.2 *** |
| **Root MSE** | 0.63 | 0.55 | 0.63 | 0.55 |

*Note: All regressions estimated with OLS using the SAS REG procedure. (t-statistics in parentheses)*
*Note: One-Tail test completed for those variables with expected signs.*
**** significant at the .01 level ** significant at the .05 level * significant at the .10 level*

**Table 3: Body Mass Categories impact on Natural Log of Wage with Fixed-Effects**

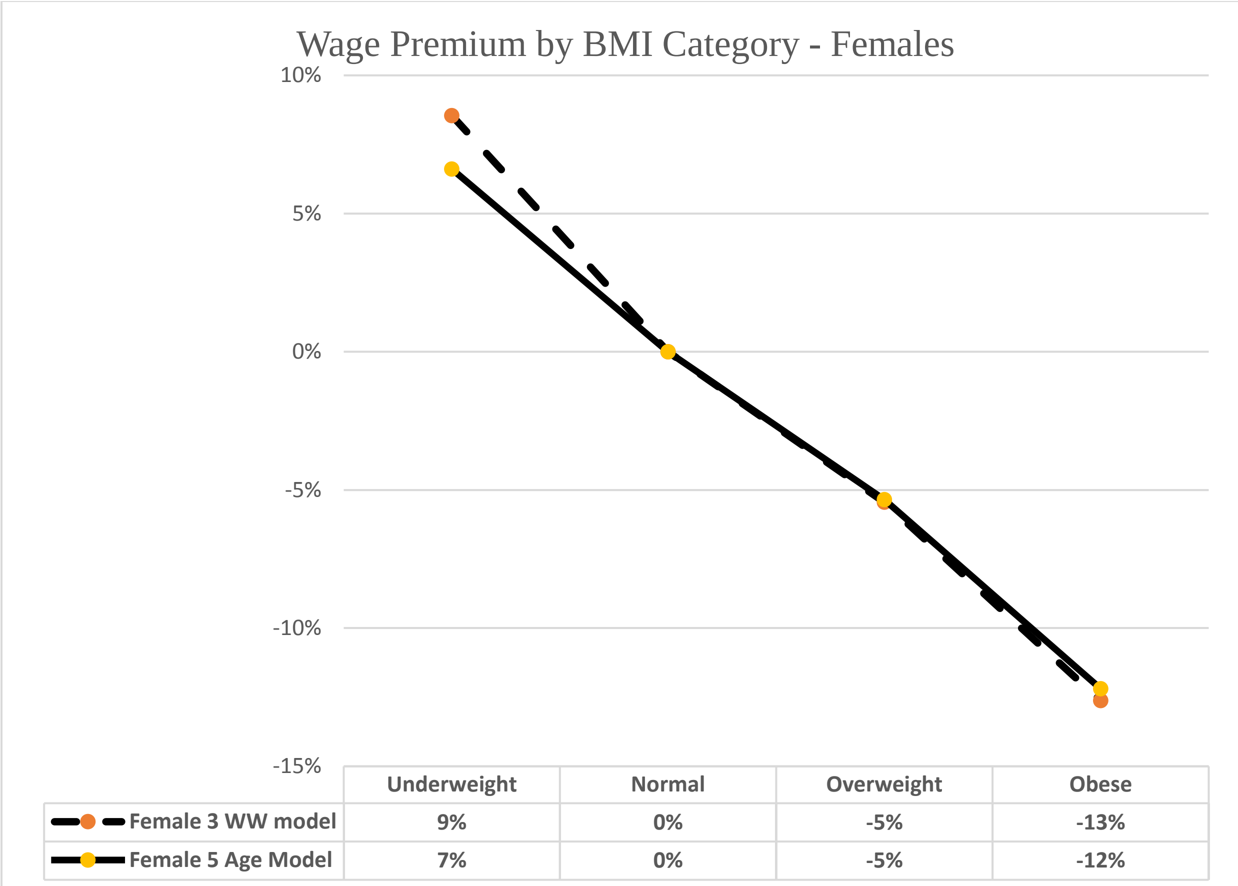
| | Model #3 Male | Model #3 Female | Model #4 Male | Model #4 Female |
|---|---|---|---|---|
| **Constant** | 2.422 *** | 2.622 *** | 2.136 *** | 2.363 *** |
| | (12.73) | (17.47) | (5.9) | (8.16) |
| **Underweight** | 0.147 | 0.082 | 0.100 | 0.064 |
| | (0.56) | (0.62) | (0.4) | (0.48) |
| **Overweight** | -0.016 | -0.056 | -0.014 | -0.055 |
| | (-0.27) | (-1.13) | (-0.23) | (-1.1) |
| **Obese** | 0.051 | -0.135 ** | 0.045 | -0.130 ** |
| | (0.69) | (-2.3) | (0.61) | (-2.21) |
| **Urban** | 0.067 | 0.091 ** | 0.061 | 0.089 |
| | (0.87) | (1.68) | (0.8) | (1.62) |
| **Married** | -0.044 | 0.159 ** | -0.047 | 0.161 ** |
| | (-0.47) | (2.52) | (-0.51) | (2.54) |
| **Black** | -0.066 | -0.243 ** | -0.046 | -0.224 ** |
| | (-0.52) | (-2.2) | (-0.37) | (-2.02) |
| **Hispanic** | -0.109 | -0.286 *** | -0.104 | -0.275 ** |
| | (-0.78) | (-2.41) | (-0.74) | (-2.31) |
| **Abilitym** | 0.002 * | 0.0004 | 0.002 | 0.0003 |
| | (1.42) | (0.39) | (1.14) | (0.39) |
| **MissAbility** | -0.114 * | -0.068 | -0.136 | -0.081 * |
| | (-1.36) | (-1.17) | (-1.6) | (-1.4) |
| **WW_Everm** | 0.00018 | 0.0003 * | | |
| | (0.65) | (1.56) | | |
| **Missww_ever** | 0.14 * | 0.147 ** | | |
| | (1.49) | (1.83) | | |
| **Age** | | | 0.03 | 0.026 * |
| | | | (1.25) | (1.43) |
| **Year 2002** | -0.213 | -0.184 ** | -0.341 ** | -0.293 ** |
| | (-1.11) | (-1.78) | (-1.69) | (-2.55) |
| **Year 2003** | -0.093 | -0.153 ** | -0.204 ** | -0.239 *** |
| | (-0.82) | (-2.06) | (-1.68) | (-2.88) |
| **Year 2004** | -0.061 | 0.015 | -0.151 | -0.054 |
| | (-0.67) | (0.25) | (-1.57) | (-0.81) |
| **Year 2005** | -0.079 | -0.035 | -0.15 ** | -0.08 |
| | (-0.88) | (-0.58) | (-1.67) | (-1.31) |
| **Year 2007** | 0.154 | 0.029 | 0.126 ** | 0.023 |
| | (1.93) * | (0.46) | (1.66) | (0.5) |
| **N** | 551 | 801 | 551 | 801 |
| **R Squared** | 0.035 | 0.049 | 0.033 | 0.047 |
| **F-Statistic** | 1.2 | 2.5 *** | 1.2 | 2.6 *** |
| **Root MSE** | 0.64 | 0.55 | 0.64 | 0.56 |

*Note: All regressions estimated with OLS using the SAS REG procedure. (t-statistics in parentheses)*
*Note: One-Tail test completed for those variables with expected signs.*
**** significant at the .01 level ** significant at the .05 level * significant at the .10 level*

**Table 4: Mean and Standard Deviation Table for Variables by Gender**

| Variables | Male | | Female | |
|---|---|---|---|---|
| | Mean | Standard Deviation | Mean | Standard Deviation |
| LN(Wage) | 2.591 | 0.504 | 2.540 | 0.446 |
| Body Mass Index | 26.569 | 4.641 | 25.283 | 5.754 |
| Underweight | 0.011 | 0.104 | 0.021 | 0.145 |
| Overweight | 0.345 | 0.476 | 0.223 | 0.416 |
| Obese | 0.453 | 0.398 | 0.454 | 0.361 |
| Urban | 0.850 | 0.357 | 0.840 | 0.367 |
| Married | 0.098 | 0.298 | 0.120 | 0.325 |
| Black | 0.789 | 0.408 | 0.771 | 0.420 |
| Hispanic | 0.157 | 0.364 | 0.194 | 0.396 |
| Abilitym | 72.165 | 21.378 | 68.443 | 21.067 |
| MissAbility | 0.120 | 0.325 | 0.135 | 0.342 |
| WW_Everm | 172.031 | 147.827 | 211.871 | 144.289 |
| Missww_ever | 0.290 | 0.454 | 0.201 | 0.401 |
| Age | 23.037 | 1.765 | 22.781 | 1.788 |
| Year 2002 | 0.022 | 0.147 | 0.042 | 0.201 |
| Year 2003 | 0.070 | 0.256 | 0.098 | 0.298 |
| Year 2004 | 0.128 | 0.334 | 0.163 | 0.370 |
| Year 2005 | 0.128 | 0.334 | 0.160 | 0.367 |
| Year 2006 | 0.181 | 0.386 | 0.153 | 0.360 |
| Year 2007 | 0.128 | 0.334 | 0.084 | 0.278 |
| Number of Observations | 551 | | 801 | |

**Graph #1: BMI Impact on Wage for Females**




Note: Calculated from intercept and binary variables on BMI categories. All underlying parameter estimates meet the hypothesized relationships, but only the normal and obese parameter estimates are statistically significant.

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