



# WAGE EFFECT OF ADVERSE HEALTH INDICATORS

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## Abstract

In the employment market many factors can contribute to and detract from not only an individual's success in finding and maintaining employment but also advancement and wage. The purpose of this research is to assess the effects of the negative health indicators of smoking and unhealthy weight on wages and economic status. Results unsurprisingly show a negative effect on wages for both indicators but suggest unexpected and complex causal explanations.

## Introduction

### Background:

It is hard to deny the health and quality of life costs associated with smoking and tobacco use, or maintaining a body weight and composition well outside of the medically recommended range. These points have been covered in numerous other projects as well as disseminated for public consumption through media ad campaigns and education efforts in attempts to encourage healthier lifestyles. Less commonly discussed however are the secondary and social effects of highly visible health choices that carry a stigma regardless of the actual severity of physical effects. Social attitudes toward smoking and obesity may indirectly shape the lives of many individuals in entirely unforeseen ways as well as unintentionally signaling stereotypical prejudices.

### Purpose:

The purpose of this research is to explore and interpret the extent to which wage discrimination affects the economic status of workers who either smoke tobacco products regularly or maintain an unhealthy weight in the obese category or above defined as having a Body Mass Index (BMI) of greater than 30, or underweight with a BMI of less than 20. Conclusions and analysis are based on comparison of numerous scholarly articles, papers, and databases in the fields of economics, business, and health. Beyond merely gathering data to show that negative consequences in terms of real wages exist in both cases this project is intended to discuss the mechanisms and sources of economic disparities between primarily healthy non-smokers in healthy weight ranges and those individuals who are either smokers or outside of a healthy weight range, but otherwise have no significant health issues that prevent them from working efficiently in a wide range of occupations.

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## Smoking

The act of smoking carries with it a number of effects beyond physical ailments and a potentially shortened life. On the average smokers make significantly less money than their non-smoking peers. This gap appears for a number of reasons many of which are quite surprising:

**Demographics:** Estimations of the actual wage differences among smokers vary wildly with some studies suggesting wage gaps as small as 2-4% and others suggesting that mid-career smokers make 29% less than non-smokers<sup>2,4</sup>. Several theories exist for why smokers face a lower wage and why estimates of that wage gap vary so wildly. One hypothesis is that smoking has a reverse-causal effect to lower wages rather than a causal relationship<sup>4</sup>. That is to say that rather than smoking being the cause of lower wages, lower wages lead to smoking, and indeed when controlling for demographic, family, and personal variables the smoking wage gap falls from 11-14% to 4.2-6.9%<sup>2</sup>. This explains part of the gap but also provides strong evidence that other factors are at play.

**Discount rate:** A second hypothesis is that an unobservable factor called the discount rate is higher in smokers. In economics an individual discount rate measures the value a person places on the present over the future. A person with a high discount rate would have to be offered a large incentive in the future to forgo an opportunity today of lesser value. If true then smokers will invest less in human capital, a measure of job ability that comes from education and training. Trends suggest that this is likely true in that smokers are half as likely to earn a college degree, average less than 12 years of education, and knowingly affect their future health by smoking today<sup>2,4</sup>. A second and more intensive test of this hypothesis comes from a longitudinal sample of the same respondents over time to determine if persistent smokers have a different earnings potential than those who quit at some point or smoke sporadically implying a range of discount rates. Results show an increase in the wage gap for those responding as smokers over time from 17% in 1986 to 29% in 2001<sup>2</sup>. While consistent with a slower earnings growth from lower human capital investment there is more at play. When creating multiple comparison categories for smokers, never-smokers, smokers who eventually quit, and sometimes smokers there is no statistical difference in the wages or education of never-smokers and quitters while sometimes-smokers fall between persistent smokers and never-smokers. This shows the wage gap is a result of smokers' personal preferences because coworkers and supervisors cannot distinguish between persistent smokers and future quitters. The massive growth in the wage difference over time is explained by future quitters leaving the smokers variable.

**Job risk:** Smokers may also face a flatter wage to risk curve meaning that smokers are paid less to take on additional risk in their jobs than non-smokers. Comparisons show that smokers receive only an extra \$1,089 per expected day of injury compared to \$2,109 for non-smokers<sup>5</sup>. That smokers might place less value on good health or under-perceive health risks would explain why smokers would choose riskier jobs and a 7% higher likelihood of job injury but not why they would be paid less for that risk<sup>5</sup>. Personal preference then does not explain why smokers make less for a given amount of extra risk in their jobs but an unexplained higher incidence of injury at home might, implying that smokers are simply less safe and less efficient than non-smokers at producing workplace safety.

## Conclusion

On the surface smoking and obesity are in many ways similar indicators. Both are harmful to health, result in lower wages, carry some level of discrimination, and neither account directly for the economic penalties associated with them. They are also both partially endogenous which is to say that individuals make some choice to belong to either group though this choice can be complicated by genetics, addiction, and physical ailments. Yet the economic results and penalties associated with these groups are fundamentally different in that smokers face a largely endogenous penalty through personal preferences while obese women and underweight men face largely exogenous or external penalties. Noting that BMI is a measure for determining optimal health and not necessarily in line with societal norms further research might attempt to determine optimal economic body composition or if efforts to adjust the personal discount rate of children have any effect on the decision to begin smoking.

## Obesity

According to the journal of Occupational Health Management the annual cost of obesity related absenteeism in the United States is \$4.3b per year and 9% of total absenteeism costs. Of that amount it is impossible to know how much is absorbed by companies and how much is borne by workers in the form of lower wages, but absenteeism losses are only the beginning of the story when it comes to economic penalties from unhealthy body composition.<sup>3</sup>

It is fairly clear that the health effects alone of obesity do not fully account for all the associated wage, employment, and economic status penalties. Exploring the issue leads to some striking conclusions. First is the immense difference in basic obesity effects between men and women:<sup>1,3</sup>

- Women who were obese at 16 suffered a 7% hourly wage penalty at 23 even if they were no longer obese.
- Women who become obese later in life face only a slightly smaller wage than non-obese women.
- Obese women are more likely to report gender based discrimination.
- Men face little or no wage penalty for obesity regardless of age.

Second is the scope of penalties considered when you look at economic compositions for the households of obese people:<sup>1</sup>

- Men are somewhat less likely to be married at ages 21-31 if they were obese at ages 16-24
- Obese women are much less likely to be married, only 37.4% compared to 51.7% of women overall. Obese women are also more likely to be divorced or separated.
- Obese women who are married show significantly lower spousal earnings by about 30%.

Clearly this disadvantage in the marriage market for women is much more significant to overall economic status than differences in wages and accounts for the majority of the economic effect of obesity. Men however face a different problem. While they do not appear to have significant penalties associated with mild and medium obesity they do face large penalties for being underweight with a BMI of less than 20:<sup>1</sup>

- Underweight men have a 12% lower wage.
- They are only 38.6% likely to be married versus an average 44.2%.
- Spousal earnings are about 9% lower.

