The rate of obesity in the United States reached 30% in 2002, nearly doubling in just three decades, without signs of slowing. With this epidemic there has been a direct economic impact on medical costs. In fact, obese individuals are at a much greater risk for serious health conditions including hypertension, type 2 diabetes, hypercholesterolemia, stroke, and arthritis to name a few.[1] Attaching a numerical value to these health risks, it is estimated that the average obese individual costs $732 more in healthcare expenses per year than a non-obese peer.[2] Applying this increase in medical costs to the growing rate of obese individuals in the United States, a question arises about who bears this expense?

This question ultimately challenges the distribution of costs associated with employer-sponsored health insurance, which Jay Bhattacharya and M. Kate Bundorf attempt to unravel through analysis from the National Longitudinal Survey of Youth (NLSY) and the Medical Expenditure Panel Survey. Moreover, these data point to the healthcare costs associated with obesity being passed directly to obese workers with employer-sponsored healthcare in the form of lower wages. Lower wages are especially prominent among obese females, which Bhattacharya and Bundorf associate with the higher health expenses for this cohort.

The question of who bears this cost is directed at employer-sponsored coverage because obesity is easily observable by a private insurer and therefore the individual is likely to pay a premium for greater utilization of the benefits. Moreover, employee premiums are not adjusted for observable risk characteristics, such as obesity, and therefore if the employer retains the incremental costs for obesity, it could be an added cost that depletes their bottom line.

Economics and Empirical Framework

Although the medical effects of obesity are well documented, the economic impact of obesity is less known. However, by considering traditional economic theory regarding fringe benefits, Bhattacharya and Bundorf are able to establish a framework for their study. Economic theory predicts that employees of a firm, rather than the employer, bear the costs associated with any fringe benefits offered through a wage differential that corresponds to the cost of the benefit to the employer. Since less is known about the impact of fringe benefits when it comes to the cost of health insurance, two possibilities are considered.

Individual-specific incidence theory predicts the wage differential to equal the cost of providing health insurance to that specific employee. The shortcoming with this theory is that it

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[1] Hammond & Levine, 2010, p. 286.
[2] Bhattacharya & Bundorf, 2009, p. 1.

would require each worker's premium to be risk-rated and appropriately priced. The alternative possibility is that an employer pools the expenses of all employees and then pass on the average cost of health insurance to each worker. This means that any employee's compensation is dependent on the health status of their coworkers. Each possibility is considered in the study to confront whether or not workers with higher expected medical costs pay more for their health care. By this logic, the authors hypothesize that if obese individuals pay for their increased expected medical expenditure, wage offsets should increase with BMI.

The data used for this study comes from NLSY and the Medical Expenditure Panel Survey (MEPS). The NLSY is a nationally representative sample, collected by Bureau of Labor Statistics, and this study looks at data from 1989-2002. The sample includes 31,176 people.[3] However, NLSY does not report information on medical expenditures. Therefore, by also analyzing MEPS, the authors were able to apply the financial aspect to the subjects from the NLSY and thus realize any relationship between obesity and medical expenditures.

Key Findings

The dependent variable that the authors hope to explain is the workers' hourly wage. To account for differences among subjects from the NLSY data, the authors utilize a set of control variables: survey year, gender, race, if there are children in the household, marital status, age, age squared, education level, AFTQ score, job tenure, location of residence, number of employees in work place, industry category, and occupation category. Even with the adjustments, the wage differential observed remains statistically significant.

Findings from the study indicate that companies with employer-sponsored health insurance programs pass on the cost of expected medical expenses to obese workers through lower wages. On average, obese employees earn $1.42 less per hour than their non-obese counterparts. Additionally, findings show a negative correlation between hourly wage and BMI. The wage offset for mildly obese was -$1.27 and for morbidly obese, -$2.22 per hour. Since expected medical expenses increase with BMI, the decrease in wages that correspond to an increase in BMI supports predictions. Additionally, obese females have higher expected medical costs and the study observes that the greatest wage differential is among female workers.[4]

Since findings were consistent in both small and large firms, it suggests that the costs of health insurance are closer to the individual-specific incidence theory and therefore medical costs are not pooled across all employees. The authors suggest that total compensation is equal when you consider wage and medical expense, thereby implying that individuals pay for the characteristics that make them costly to insure.

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[3] Data are eliminated from 1991 due to lack of health insurance information from that year. Additionally, the sample is restricted to individuals who are full-time employed and either had employer-sponsored health care or were uninsured.

[4] Bhattacharya & Bundorf, 2009, p. 22.

Discussion

The research by Bhattachaarya and Bundorf presents a theory on how increased healthcare costs due to obesity are managed in an employer-sponsored health care program. Although their findings appear conclusive, there are several factors that should be considered as potential alternative explanations for the wage differentials. To attribute the wage differentials between obese workers and their non-obese counterparts exclusively to increased expected healthcare costs, it must be true that all uncontrolled aspects of the different worker groups are identical, including worker productivity.[5] In fact, a 2010 study by Ross Hammond and Ruth Levine of the Economic Studies Program, Brookings Institution in Washington DC, reports total productivity costs linked with obesity could be as high as $66 billion annually.[6]

The legality of passing along healthcare costs to obese employees seems contradictory to the Health Insurance Portability and Accountability Act (HIPAA). This act prevents employers from directly assessing healthcare premiums to employees based on health factors including obesity.[7] Though Bhattachaarya and Bundorf do not imply a HIPAA violation, any wage discrimination based on health factors would seem counterintuitive to the HIPAA guidelines.

Perhaps another area to further investigate would be occupational characteristics. Bhattachaarya and Bundorf do model their data by controlling the "industry category" and "occupation category," however specific characteristics, including interpersonal skills, are neglected.[8] This is an important consideration that is not taken into account in Bhattachaarya and Bundorf's study and could limit their finding supporting wage discrimination as a result of increased expected health care costs. The importance of interpersonal skills is investigated in research conducted by Euna Han, Edward C. Norton and Sally C. Stearns. In their study, the authors measure the relationship between BMI and hourly wages differentials by interpersonal skills required. To classify the interpersonal skills required for each occupation, the authors utilized the classifications from the DOT.[9] According to the DOT, an attorney or a doctor is classified as requiring mentoring, whereas a hair stylist or waiter requires serving. Results from this study support Bhattachaarya and Bundorf's findings that for women, obesity decreases hourly earnings; however, they also find that for occupations requiring interpersonal skills, the wage penalty is greater. For instance, one of the most significant observations was the wage differential for white and black women in occupations requiring "speak-signal" and "serve," with an hourly wage differential of up to 11.9%.[10]

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[5] The study controls for the following variables: survey year, gender, race, whether there are children in the household, marital status, age, age squared, education level, AFQT score, job tenure, location of residence, number of employees at workplace, industry category, and occupation category (Bhattacharya & Bundorf, 2009, p. 6-7).

[6] Hammond and Levine, 2010, p. 294.

[7] Society for Human Resource Management, 2015, http://www.shrm.org/templatestools/hrqa/pages/offeringdifferentbenefitsfordifferentemployees.aspx

[8] Bhattacharya & Bundorf, 2009, p. 7.

[9] The DOT is published by the US Department of Labor to standardize characteristics of different occupations. The fifth digit of the DOT is used to characterize the occupation's relationship to people. The classification options include: "(1) take instructions; (2) mentor, negotiate, instruct; (3) supervise; (4) persuade; (5) speak-signal; and (6) serve." (Han, Norton, Sterns, 2008, p. 541).

[10] Han, Norton, Sterns, 2008, p. 537.

Additionally, Bhattachaarya and Bundorf created their own hierarchy to classify insurance coverage type, which they point out could have influenced their findings.[11] Finally, it is unknown whether the uninsured employees used as a comparison group, opted out of an offered employer plan, which could point to additional third-party variables affecting the findings.

Ultimately, since there are only a few studies available on the economic effects of obesity, it is difficult to draw finite conclusions. Incorporating highly sensitive, and protected data such as health care costs further complicates this ability. Bhattachaarya and Bundorf attempt to systematically answer the question of who is paying for the additional health care costs of obese workers, however, are confined to the constraints put upon their work.

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[11] Since survey respondents were able to indicate more than one source of insurance coverage, the authors created a hierarchy to classify participants' as follows: "employer-sponsored coverage in own name, other source of employer-sponsored coverage, individual coverage, public coverage, and other coverage" (Bhattacharya & Bundorf, 2009, p. 7).

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