

A Household Production Approach to Overweight: A Model and Preliminary Estimates

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Abstract

Using a health capital model and a national sample, this study provides preliminary estimates of the impact of socio-economic, behavioral and demographic variables on the likelihood of being overweight. Findings indicate that active lifestyle, moderation of fast food intake, and eating more meals “made from scratch,” are associated with a healthy weight. Older persons, men, people with a family history of overweight and sedentary lifestyles are associated with overweight. While the results are not earth shattering, the study shows promise for an economic approach to estimating overweight and points to logical policy outcomes including the promotion enjoyable physical activity and teaching people to prepare simple meals from “scratch.” It also sheds light on the debate as to whether the obesity epidemic is caused by individual choice or industry actions. Our results point to both consumer and market forces as contributing to an overweight America.

Introduction

Over the past several decades, obesity rates have nearly doubled: 30 percent of Americans are currently obese, and 64 percent are overweight (Flegal, Carroll, Ogden, & Johnson, 2002; U.S. Food and Drug Administration, 2004; Center for Disease Control and Prevention, 2004). With as many as 400,000 Americans dying in the year 2000 due to poor diet and a lack of physical activity, obesity is on track to overtake tobacco as the greatest cause of preventable death in the country (Mokdad, Marks, Stroup, & Gerberding, 2005; Mokdad, Marks, Stroup, & Gerberding, 2004).

No one approach to the empirical study of obesity, therefore, appears to offer an accurate, full representation of all the factors that lead to increasing rates of obesity. However, an economic approach is rich enough to include individual, biological and environmental variables. While the existing literature covers a broad spectrum of topics, ranging from time use and food choice to gender and poverty, an overarching theme is that household production of meals and energy expenditure through time use and purchased input choices do impact the obesity epidemic. In turn, the obesity epidemic impacts the productivity of the nation through a decline in the stock of health capital. Clearly, overweight does not seem to be providing utility. Americans do not want to be overweight. In 2000, almost three quarters of Americans were eating fewer calories or less fat (or both) in order to lose weight or keep from gaining weight (CDC, 2006). At the same time, almost 70 percent of Americans were actively using physical activity or exercise to lose weight or keep from gaining weight (CDC, 2006). The above literature suggests that the household production model may serve as an effective framework for the examination of the building of health capital in terms of a healthy weight. Using a model based on the production of health capital, we empirically examine the contributions that food inputs and physical activity outputs have on overweight. We utilize a national household database that includes information about food inputs, exercise patterns, socio-demographic characteristics and tastes and preferences.

Method

We use Grossman’s (1972a, 1972b) model of the demand for health capital to model consumer demand for a healthy weight. Grossman (1972a, 1972b) developed his model for the demand for health capital as an extension of human capital theory developed by Shultz (1960) and Becker (1964), and of Becker’s (1965) theory on the allocation of time. Human capital theory posits that individual consumers invest in themselves through education and training in order to build up a stock of knowledge or skills. In turn, this stock of human capital will increase that individual’s productivity and help to increase their earnings. The issue of time-use is also critical, because individuals must use both time and market goods (such as education) to produce knowledge and increase their initial stock of human capital. The actual cost of these investments in human capital is a combination of the cost of the good itself (cost of the schooling) and the opportunity cost of the time, during which the individual could have been engaging in other market activities.

Estimating the model for the demand for a healthy weight involves three steps. First, we estimate reduced form equations for the share of meal type and save the estimated shares as a new variable. We then estimate the number of hours of physical activity a respondent engages in and save the estimates. Finally, we estimate whether or not a respondent is characterized as overweight. The estimates of meal share and exercise are calculated using ordinary least squares (OLS). A Logit specification is used for the estimation of overweight, given it is a limited dependent variable.

Results

Individuals who are in the lowest quartile for fast food meals are only about half as likely to be overweight compared to individuals who eat more than 5 percent of their meals as fast food. For an individual who eats 3 meals a day, this means eating one meal or less per week as fast food. Respondents in the lowest quartile of scratch meals are about one and a quarter times more likely to be overweight. For the same individual described above, this means eating fewer than two-thirds of their meals (or fewer than 14 out of 21) as meals at home, self prepared. Prepared foods and restaurant meals were insignificant, but positive.

We also know the effects of demographic and other behavioral variables on the probability of being overweight. Men are more likely to fall in the overweight category (Gender). Overweight increases at a decreasing rate as one ages (Age10 and Age10squared). Smokers are less likely to be overweight. Respondents who have a family member with a weight problem (Family weight) are more likely (3 times) to be overweight. And, individuals who watch more television (Hours tv) (proxy for sedentary leisure behavior) are 1.2 more likely to be overweight at the mean of television watching hours (2.2 hours).

Discussion

We confirm many of the current recommendations. To name a few:

1. Moderate intake of fast food.
2. Find leisure activities that you enjoy that get you moving.
3. Watch less television.

These three recommendations are based on the variables that had the largest impact on overweight in our model.

Endnotes

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