

An Econometric Analysis of the Socioeconomic and Demographic Factors Affecting Obesity among Americans

Nicolás Endre

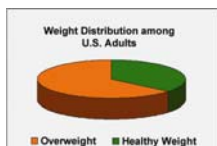
Abstract

Obesity in the United States has increased significantly during the past two decades. According to recent estimates of the National Center for Health Statistics, 30 percent of American adults 20 years of age and older are obese and more than 9 million children and teenagers 6 to 19 years of age are considered overweight. In this study, we used *ordered probit regression analysis* to examine the socioeconomic and demographic factors affecting obesity. The empirical results show that some health risk factors and certain demographic and socioeconomic factors increase the probability of being obese and overweight. The results of this study could be used to determine effective policies to prevent the expansion of these diseases among Americans.

Objective

The purpose of this study is to analyze the role of health risk factors, schooling and other socioeconomic factors as determinants of obesity and weight-related diseases.

Introduction



Source: Center for Disease Control and Prevention (CDC), 2000

Sixty-four percent (64%) of American adults are considered overweight. This figure includes obese adults, who make up thirty percent (30%) of the U.S. population. Also, sixteen percent (16%) of young people are considered overweight.

Methods

I. Empirical Framework

The empirical approach used to analyze the factors affecting overweight/obesity status was *ordered probit regression analysis*. This type of analysis is used to analyze the relationship between a dependent ordinal variable and a group of independent variables.

II. Data Set

The latest survey of the Behavioral Risk Factor Surveillance System (BRFSS) conducted in 2003 provides the basis for this research. The BRFSS is an on-going data collection program administered and supported by the Division of Adult and Community Health, National Center for Chronic Disease Prevention and Health Promotion (CDC). The BRFSS collects uniform, state-specific data on preventive health practices and risk behaviors that are linked to chronic diseases, injuries and preventable infectious diseases in the adult population. The final sample used in this study included 60,489 households.

III. Variables

Definitions of the dependent and independent variables included in the analysis follow.

Dependent Variable	
Obesity ¹	0 if individual is neither overweight nor obese 1 if individual is overweight ² 2 if individual is obese
Independent Variables	
Continuous variables	
age	individual's age
numadult	Number of adults in household
children	Number of children (less than 18 years of age) in household
monthshlth	Number of days in the past month in which individual's mental health was not good
servings	Number of fruit and vegetable servings per day
Discrete Variables	
West ³	1 if residence is in the west; 0 otherwise
midwest	1 if residence is in the mid-west; 0 otherwise
northeast	1 if residence is in the northeast; 0 otherwise
midhigh	1 if individual has some sort of health care coverage; 0 otherwise
modest	1 if individual could not see a doctor in the past year when he/she needed because of the cost; 0 otherwise
black ⁴	1 if individual is black; 0 otherwise
hispanic	1 if individual is hispanic; 0 otherwise
othernon	1 if individual is of other race; 0 otherwise
married	1 if individual is married; 0 otherwise
employed	1 if individual is employed; 0 otherwise
income	1 if income level is more than \$50,000; 0 otherwise
Discrete Variables (continued)	
checked	1 if individual has checked that he/she has high cholesterol; 0 otherwise
male	1 if individual is male; 0 otherwise
school ⁵	1 if individual has high school education; 0 otherwise
college	1 if individual has college education; 0 otherwise
limited	1 if individual is limited in any way in any activity because of physical, mental or emotional problems; 0 otherwise
Risk Factors	
diabetes	1 if individual has been told by a doctor that he/she has diabetes; 0 otherwise
hypertension	1 if individual is at risk (individual has been told his/her blood pressure is high by a health professional); 0 otherwise
obesity	1 if individual is at risk (individual reported doing no moderate or vigorous physical activity or exercise); 0 otherwise
asthma	1 if individual is at risk (individual has been told he/she has asthma by a health professional); 0 otherwise
arthritis	1 if individual has been told by a health professional that he/she has some form of arthritis, gout, bursitis, rheumatoid arthritis or fibromyalgia; 0 otherwise

¹Overweight and obesity ranges were determined by using weight and height to calculate a number called the Body Mass Index (BMI).
²Individuals for whom the BMI is such that 25.00 < BMI < 30.00
³Individuals for whom the BMI is such that 30.00 < BMI < 35.00
⁴Unlimited category: residence in the west
⁵Unlimited category: individual is white
⁶Unlimited category: individual has elementary education

Results

Ordered Probit Model Results
 Maximum Likelihood Estimates
 Log-Likelihood..... -61826.91
 Restricted (Slopes=0) Log-L. -65624.96
 Chi-Squared (25)..... 7596.102
 Significance Level..... 0.0000000

Variable	Coefficient	Std. Error	t-ratio	ProbitLox	Mean of X	Std.Dev.of X
Constant	-0.21967	0.4069E-01	-5.399	0.00000		
WEST	0.11547E-01	0.2221E-01	0.521	0.60238	0.50720E-01	0.21943
MIDWEST	0.10110	0.1122E-01	9.012	0.00000	0.25674	0.43684
NORTHEAST	-0.29249E-01	0.1682E-01	-1.740	0.08188	0.89256E-01	0.28512
NUMADULT	-0.48568E-02	0.7248E-02	-0.670	0.50278	1.8243	0.72368
CHILDREN	0.36790E-01	0.4748E-02	7.749	0.00000	0.71337	1.0938
MONTHLTH	0.13888E-02	0.6324E-03	2.196	0.02810	3.2392	7.4716
MEDCOST	0.10149	0.1408E-01	7.221	0.00000	0.12987	0.33617
DIABETES	0.55787	0.1771E-01	31.493	0.00000	0.82395E-01	0.27497
HYPERTEN	0.49583	0.1154E-01	42.970	0.00000	0.29600	0.45650
SERVINGS	-0.22307E-01	0.2287E-02	-9.755	0.00000	3.7342	2.0953
CHECKED	0.34511E-01	0.3259E-02	10.588	0.00000	2.8960	1.5630
AGE	-0.41370E-02	0.4038E-03	-10.244	0.00000	48.572	16.285
BLACK	0.35373	0.1449E-01	24.410	0.00000	0.12663	0.33257
HISPANIC	0.11235	0.2843E-01	3.952	0.00008	0.28137E-01	0.16537
OTHERRAC	0.44674E-01	0.2129E-01	2.099	0.03585	0.49164E-01	0.21622
MARRIED	0.11482	0.1137E-01	10.101	0.00000	0.57096	0.48494
SECOND	0.11644	0.2784E-01	4.189	0.00003	0.38513	0.48663
COLLEGE	0.43292E-01	0.2818E-01	1.536	0.12446	0.58673	0.49242
EMPLOYED	0.17497	0.1115E-01	15.667	0.00000	0.63193	0.48228
MALE	0.24002	0.9900E-02	24.244	0.00000	0.40860	0.49158
INCOME	-0.76619E-01	0.1160E-01	-6.605	0.00000	0.34291	0.47468
ASTHMA	0.20364	0.1759E-01	11.579	0.00000	0.71484E-01	0.25763
ARTHRIT	0.22603	0.1133E-01	19.949	0.00000	0.31364	0.46398
LIMITED	0.15539	0.1272E-01	12.215	0.00000	0.19814	0.39860
NOHYACT	0.90254E-01	0.1592E-01	5.669	0.00000	0.96076E-01	0.29469
MD [1]	1.0421	0.6028E-02	172.866	0.00000		

Results of the Ordered Probit Regression Analysis.
 The results were obtained using LIMDEP.

Conclusions

Non-white individuals, men, employed persons, and those who are married are all more likely to be overweight or obese. Certain health risk factors such as bad mental health, diabetes, high cholesterol levels, and arthritis also increase this probability. Surprisingly, individuals who have high-school education as opposed to those who only have elementary education are also more likely to be overweight or obese.

On the contrary, those individuals who consume fruits and vegetables on a daily basis, as well as those who are older or enjoy a higher income are less likely to be obese or overweight.

Acknowledgements

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