Sexual Behavior and Body Weight

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I. Introduction

Body weight is an increasingly important issue in contemporary society. On the one hand, the media shapes our perceptions of body image and attractiveness: being skinny is presented as being one of the main criteria of sexual attractiveness. Simultaneously, the rate of obesity is rapidly increasing worldwide. In order to understand some possible consequences of these trends, we analyzed the relationship between weight and sexual behavior. One of our goals was to test the hypothesis that there is an inverse relationship between weight and amount of sex for single heterosexuals. In addition, we were interested in how the effect of weight compares to that of other variables, as well as how its effect varies across different demographic groups.

Our analysis evaluated sexual outcomes using two different criteria; whether a person had any sex in the previous year, and number of partners in the previous year. Logistic and linear regression models were used to analyze each of these variables, respectively. Both variables were of interest; looking at them alongside one another had the additional advantage of allowing us to see if the independent variables selected had the same relationship with each of the dependent variables.

Both the linear and the logistic regression analyses looked at weight in terms of Body Mass Index (BMI), however BMI was used differently in each case. For the linear regression analysis, in which number of partners in the past year was the dependent variable, BMI itself was used. For the logistic regression analysis, which looked at whether people had had any sex in the past year, a dichotomous variable was needed. For this purpose a new variable was created which indicated if a person is in the top BMI

quintile for their gender (>26.93 for women, >27.1 for men). The latter was chosen as a definition of 'overweight' that would be most relevant to the survey's respondents.

II. Literature on Weight and Obesity

According to traditional definitions, an adult who has a BMI between 25 and 29.9 is considered overweight; an adult with a BMI of 30 or higher is clinically obese. While our analysis did not use these categories, they are often used in the available studies of weight, many of which look specifically at the category of obesity. Several of these studies that are informative to our analysis are summarized below.

Health complications such as diabetes, hypertension, high cholesterol, stroke, and coronary heart disease are strongly associated with being overweight and obese. Due to the vast health implications in connection with the growing prevalence of overweight and obese people around the world, many studies have been conducted. From 1960 to 2002, the prevalence of overweight persons increased from 44.8 to 65.2 percent in U.S. adults age 20 to 74. More strikingly, the prevalence of obesity during this time period more than doubled among adults age 20 to 74, from 13.3 to 30.5 percent (National Center for Health Statistics). According to the behavioral Risk Factor Surveillance System conducted by the Centers for Disease Control, obesity rates in US have skyrocketed from 1991 to 2005. In 2005, a new category was developed to identify states in which 30 percent or more of the population was obese. See figures 1 and 2 below.

Figure 1: Growing rates of obesity in United States

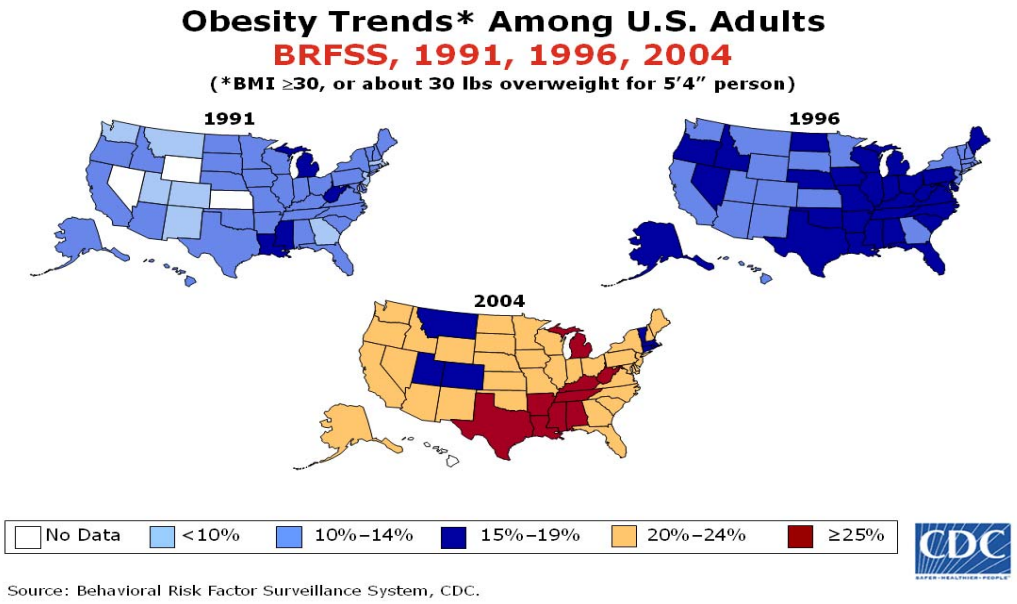
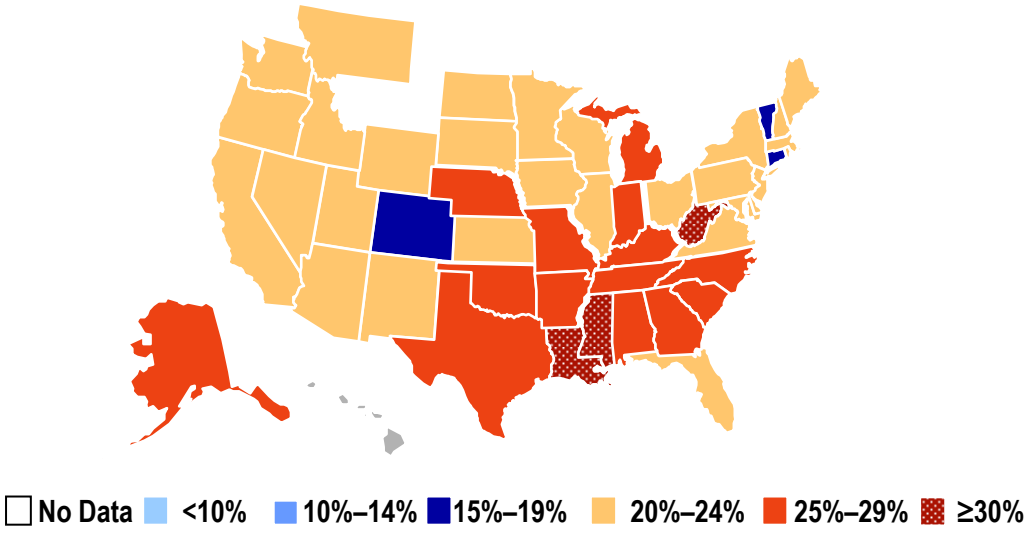


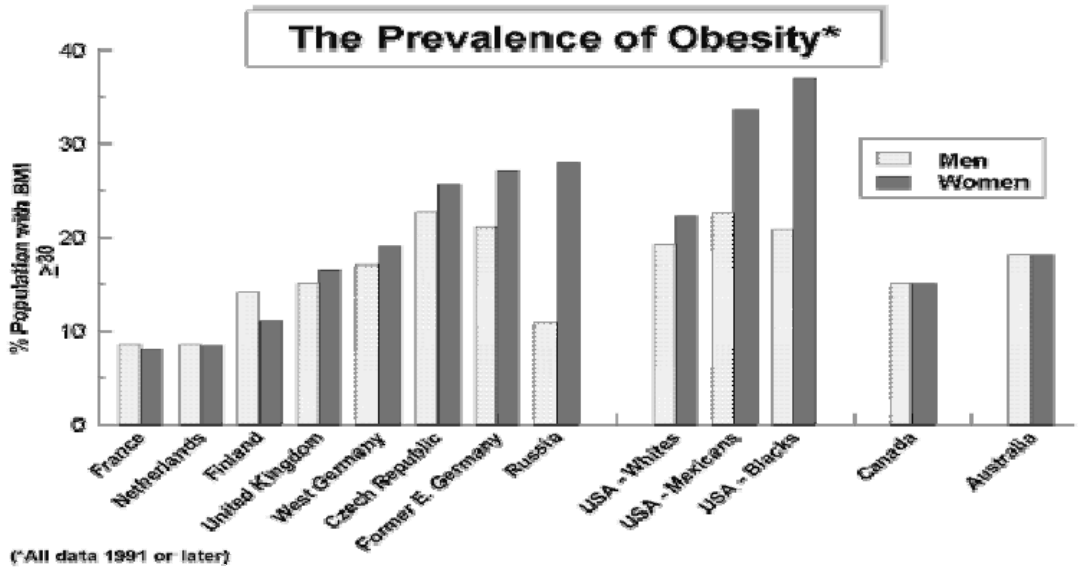
Figure 2: 2005 Obesity Trends Among U.S. Adults (courtesy of BRFSS, CDC)



The growing prevalence of obesity is also seen worldwide (see figure 3 below). In the United Kingdom, where the survey used in our analysis was conducted, more than half of

all people are currently overweight and 1 in 5 are obese. (Medical Research Council's centre for nutrition 2005).

Figure 3: Obesity trends worldwide (courtesy CDC)



With the growing prevalence of overweight and obese individuals, there may also be a shift in patterns of sexual behavior. Typically, obese people are stereotyped and this may affect their likelihood of acquiring sexual partners. One common stereotype is that heavier people have fewer resources to contribute to a relationship. In the 1990 study conducted by Harris, 222 college students completed an anonymous survey to assess stereotypes of obesity and their perceptions of love. Participants were shown a photograph of a male or female who appeared fat or normal weight and responded to the questionnaire as they thought the pictured person would. Results showed that the stimuli containing the fatter persons were judged to be less attractive, having lower self-esteem,

less likely to be dating, and to deserve a fatter, less attractive love partner. These showed statistical significance, demonstrating the prevailing stereotypes with regard to obese individuals.

In examining the affect of weight it is also necessary to identify both gender and ethnic differences as in some cases, such as the study conducted by Harris, Walters, and Waschull 1991, there may be marked differences. In this study a sample of 650 college students were surveyed. Results showed specific gender and ethnic (black/white) differences in attitudes in relation to obesity. The study revealed that overweight women were more negatively viewed than overweight men, black women were more satisfied with their body size despite being heavier than whites, and black men were less likely to refuse a date due to weight and black men considered overweight to be more attractive than white counterparts.

Other studies also support the bias effect of weight in regards to gender. Women indicated greater concern with obesity than men, and overweight women were viewed more negatively than overweight men. Furthermore, women are more objectified than men. Their compatibility and attractiveness are based more on physical appearance than they are for men (Fredrickson & Robertson 1997). Unfortunately, limited research has been performed on the affect of weight on sexual satisfaction and attractiveness of typical adult women (Hurst et al 1990). Research in this area has focused on the post-operative surgery and self image.

III. Sample Selection

The sample for our analysis was selected from the National Survey of Sexual Attitudes and Lifestyles. This was a nationally representative survey of sexual behavior in Britain, conducted in 2000, from men and women ages 16-44. The design over-sampled people living in the greater London area as well as ethnic minority groups (Black Caribbean, Black African, Indian and Pakistani) The survey utilized a combination of computer assisted personal interview (CAPI), computer assisted self-interview (CASI), and pen and paper self-completion techniques.

For the purposes of our analysis, we were interested in the sexual outcomes only of people who were seeking new sexual partners. The sample used in our analysis therefore consisted of single, sexually active respondents only; all married, widowed, living with partner, and virgin respondents were dropped. Homosexual sexual behavior is known to differ greatly from that of heterosexuals, however there were too few homosexuals in the dataset to allow for an adequate sample size; therefore homosexuals were dropped, so as not to distort the results. Respondents with 40 or more sexual partners in the previous year were deemed outliers and were also dropped to ensure accuracy. The resulting sample consisted of 4,149 total respondents.

IV. Effect of Survey Design

Sample sizes for some of the subgroups we wanted to look at were too small to allow for analysis. We were interested in comparing homosexual and heterosexual outcomes, but there were too few homosexuals in the survey to provide an adequate sample size. We

were also very interested in looking at how the effect of BMI on sexual behavior varied by race, but couldn't because breaking out race groups by BMI quintile left insignificant samples. In addition, certain variables that seemed to have distinct patterns of sexual behavior in simple frequencies were insignificant after weighting (e.g. living in a household with children).

V. Variables Used

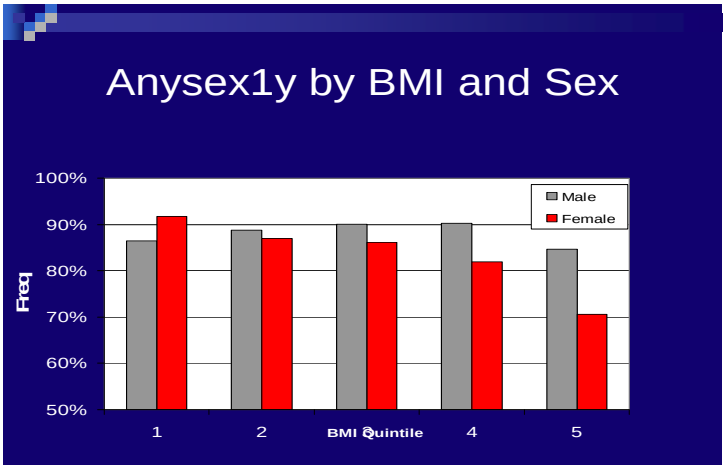
In order to analyze the relationship between sexual behavior and weight plus a number of demographic variables, new variables were constructed. They included the following dichotomous dummy variables: "anysex1y", which referred to whether the respondent had sex in the past year; "female"; "Overweight", which referred to respondents within the top BMI quintile; "Working Class", which were semi/unskilled workers; "over29", which referred to respondents over the age of 29; and "female w/degree", which were women with a qualification. Non-dichotomous variables created included "Pbmi", which was body mass recoded into quintiles by gender, and race recoded into White, Black and Asian. An additional dummy variable "nonwhite female" was created since most race subgroups had an insufficient sample size when broken down by BMI quintile, and analysis could not be performed.

For the purpose of isolating the effect of variables by gender in the regression analyses, several variables were repeated for females only. Thus "Female Bodymass", "Female Overweight", and "Female age" were created by multiplying the each variable by "female".

VI. Frequencies

Before constructing the regression models, crosstabs were run using ‘anysex1y’ and ‘tot1yr’, by BMI quintiles and a number of demographic variables, broken by gender. This allowed us to identify apparent patterns in these variables’ relationships to ‘anysex1y’ and/or ‘tot1yr’. New variables were then constructed for use in the regression models, as described above.

The first and most essential table produced is of ‘anysex1y’ by BMI quintile by sex.



It is apparent that the fifth quintile has a dramatically lower frequency of ‘anysex1y’ for both males and females. Another noticeable pattern is that there is a consistently negative correlation for women, whereas for men it is positive for all but the fifth quintile.

Other subgroups whose frequencies were of interest included older females, females with degrees, non-white females, respondents identified as working class. See Appendix for all frequency tables.

VII. Regression Analysis

To further investigate the correlation seen in the crosstab above, between ‘anysex1y’ and BMI quintile, logistic regression analysis was performed. The dependent variable was ‘anysex1y’; the independent variables were the quintiles converted into dummy variables.

Survey logistic regression

pweight: total_wt
Strata: totalstr
PSU: totalpsu

Number of obs = 4149
Number of strata = 5
Number of PSUs = 1016
Population size = 3456.2718
F(4, 1008) = 12.03
Prob > F = 0.0000

anysex1y	Odds Ratio	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pbmi2	.9937858	.1897808	-0.03	0.974	.6831973	1.445571
pbmi3	.9908406	.1888725	-0.05	0.962	.6816393	1.4403
pbmi4	.7176212	.1301763	-1.83	0.068	.5026925	1.024444
pbmi5	.4101992	.0696217	-5.25	0.000	.2940018	.5723207

Quintiles one through four do not display a statistically significant correlation. Quintile five, however, displays a strongly negative correlation that is very significant. Based on this observation, for the purpose of further analysis the fifth quintile was used to create the dummy variables ‘overweight’ and ‘female overweight’.

The final logistic regression analysis incorporated ‘overweight’ and ‘female overweight’, as well as three demographic variables that displayed significance. The latter included ‘female w/degree’, ‘asian’, and ‘over29’.

Survey logistic regression

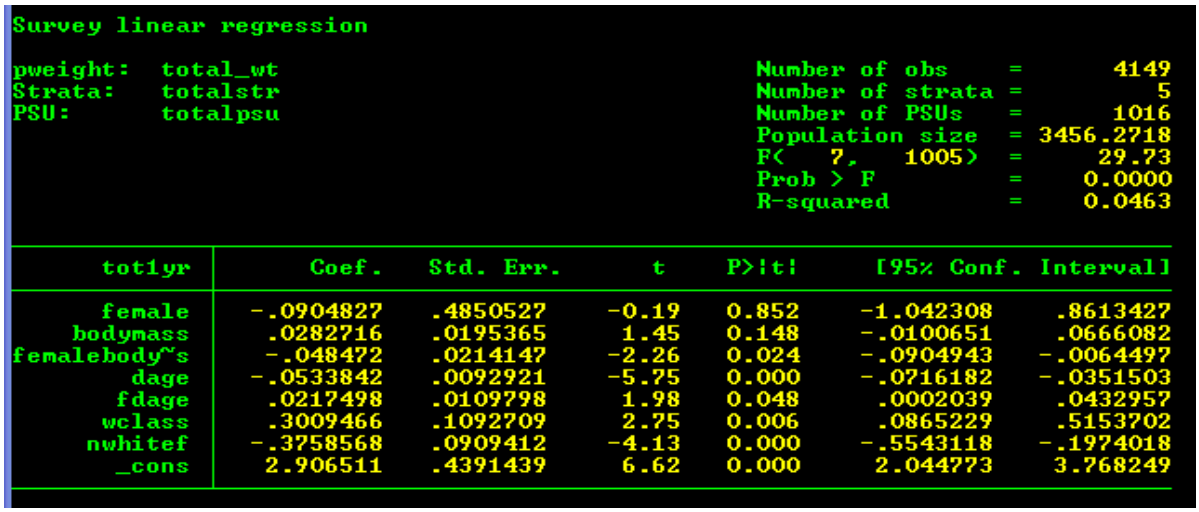
pweight: total_wt
Strata: totalstr
PSU: totalpsu

Number of obs = 4149
Number of strata = 5
Number of PSUs = 1016
Population size = 3456.2718
F(6, 1006) = 32.88
Prob > F = 0.0000

anysex1y	Odds Ratio	Std. Err.	t	P>|t|	[95% Conf.	Interval]
female	.9586133	.1257137	-0.32	0.747	.741109	1.239952
overweight	.8216446	.15865	-1.02	0.309	.5625095	1.200157
femoverwght	.5044827	.1258515	-2.74	0.006	.3092042	.8230895
asian	.4854128	.1292309	-2.71	0.007	.287889	.8184598
fwdegree	.6256243	.1113152	-2.64	0.009	.4412459	.8870469
over29	.259102	.0301983	-11.59	0.000	.2061316	.3256845

The logistic regression output shows that the relationship between likelihood of sex and being overweight is different for each gender. Overweight men have an odds ratio that is less than 1, which however is not significant. For overweight women, however, the odds ration is highly significant and a very low 0.5. Of the other independent variables used, age is most significant, followed by being Asian and being a woman with a degree.

Linear Regression was performed using the dependent variable ‘tot1yr’, combined with the independent variables BMI (named ‘bodymass’), female BMI, and a number of demographic variables that displayed interesting patterns when crosstabbed with ‘tot1yr’ and were significant in the model. These included ‘non-white female’, age, female age, and ‘working class’. Since it is possible to use continuous or metric variables in linear regression, bodymass and age were not recoded as before.



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Survey linear regression

pweight:  total_wt                                Number of obs    =      4149
Strata:   totalstr                                Number of strata =         5
PSU:      totalpsu                                Number of PSUs   =      1016
                                                  Population size  = 3456.2718
                                                  F(   7,   1005)  =     29.73
                                                  Prob > F         =    0.0000
                                                  R-squared        =    0.0463

------------------------------------------------------------------------------
      tot1yr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      female |  -.0904827   .4850527    -0.19   0.852    -1.042308    .8613427
    bodymass |   .0282716   .0195365     1.45   0.148    -.0100651    .0666082
femalebody~s |   -.048472   .0214147    -2.26   0.024    -.0904943   -.0064497
        dage |  -.0533842   .0092921    -5.75   0.000    -.0716182   -.0351503
       fdage |   .0217498   .0109798     1.98   0.048     .0002039    .0432957
      wclass |   .3009466   .1092709     2.75   0.006     .0865229    .5153702
     nwhitef |  -.3758568   .0909412    -4.13   0.000    -.5543118   -.1974018
       _cons |   2.906511   .4391439     6.62   0.000     2.044773    3.768249
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The linear regression output shows that for men, BMI appears to have a slightly positive effect on number of partners, which however is insignificant. For women, on the other hand, the effect of BMI is negative and significant. Other notable results include the fact that age is negative and highly significant for men but positive though barely significant for women; non-white female was highly significant and negative; ‘working class’ was also positive. The R-square for the model was 0.0463.

The construction of two regression models that used different dependent variables with some of the same independent demographic variables allows for some interesting comparisons. Some of the demographic variables have a significant effect on one dependent variable but not the other; for instance ‘working class’ has a significant effect on ‘tot1yr’, but not on ‘anysex1y’; conversely, ‘female w/degree’ and asian had a significant effect on ‘anysex1y’, but not on ‘tot1yr’.

VIII. Conclusion

The logisitc regression analysis performed demonstrates that for the dataset used, there is a significant, negative correlation between being overweight and one's likelihood of having sex, for women only. Similarly, linear regression analysis demonstrated that there is a significant, negative correlation between BMI and number of partners, for women only. This partially confirms our principal hypothesis, that there is an inverse relationship between weight and amount of sex for single heterosexuals, while adding the important caveat that it is true for women only. Unfortunately, insufficient samples prevented us from measuring and comparing the effect of weight on sexual behavior for homosexuals, as well as for race subgroups. Based on our findings, however, we can conclude that as the proportion of the population that is overweight and obese continues to increase, the affected populations' sexual behavior will change accordingly.