

Project Report Sample 1

Topic: Courses of Obesity

Course: STA 220 (Statistics)

Semester: Spring 2011

Name: XYZ

Introduction:

Obesity, the new pandemic sweeping developed countries has reached epic proportions with more than 58 million obese individuals in the US today. The World Health Organization has predicted that, by 2020, two-thirds of the global disease burden will be attributable to chronic diseases associated with obesity. It is a complex disease and current research suggests that several factors may be involved in some way in causing the disease. Obesity is a multi-factorial disease, frequently associated with related and serious disorders like diabetes, cardiovascular disorders, inflammatory problems like osteoarthritis, ageing, and certain cancers.

Although large amounts of research money have been spent on studying this disease, there is yet no clear understanding of cause. It is apparent, however, that multiple factors are involved. It is for this reason that I designed a study to investigate the everyday life practices of individuals from Hazard community & Technical College (HCTC) that could promote obesity. I specifically investigated the long held belief that eating from fast food restaurant and lack of exercise (Sitting inactive for longer hours during the day) contributes to obese conditions.

Methodology:

Data was collected through a survey in which individuals were asked to state how many times they ate at a fast-food restaurant each week and how many hours they spent inactively sitting during each day. They were also asked to state their Age, weight, gender and annual income.

The survey was given to the entire Hazard community & Technical College (HCTC) between October-December 2010 via e-mails and 75 participants (Employees and Students) voluntarily responded to the

questions posed. The data obtained was analyzed using Statcrunch data analysis package available at www.statcrunch.com

Survey

<p>1. What is your sex? Male Female</p> <p>3. What is your weight (In pounds)?</p> <p><i>Enter a numeric response between 50 and 1000 inclusive.</i></p> <p>6. How many hours daily, do you spend sitting during the day (include driving & napping hours)?</p> <p>Choose one ▼</p>	<p>2. How old are you?</p> <p><i>(Enter a numeric response between 15 and 80 inclusive)</i></p> <p>4. What is your annual income?</p> <p>Choose one ▼</p> <p>5. How many times per week do you eat at a fast food Restaurant?</p> <p>Choose one ▼</p> <p>You must do the simple addition/subtraction math before submitting the survey to confirm that you're not a robot.</p>
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See the data obtained from the survey on Appendix I

Analysis and Results:

Both descriptive and inferential data analyzing were done using statcrunch.

- a. **Descriptive Data Analysis:** A pie-chart was used to describe the sample data since there were only two categories of individuals (Males and Females).The pie-chart clearly revealed that the majority of the respondents were Females (78%) compared to Males (22%). A scatter plot was also used to provide a pictorial relationship between weight , and the other two variables (numbers of times an individuals ate at a fast-food restaurant and the numbers of hours an individual spend sitting down inactively without getting involved in a calorie burning activity. See appendix II (Graphs)

The individuals surveyed had a mean weight of 183 lb with a standard deviation of 51, and the females and males average weights were 176 lb and 209 lb respectively. Further analysis revealed that both females and males spent the same average amount of hours sitting down inactively during each day (about 2 hours). The average number of times they both ate at a fast-food restaurant each week was also the same (about 6 times). More about the summary statistics is available on appendix III.

- b. **Test Analysis (Inferential Statistics):** Regression analysis was done using statcrunch to identify the existence of a correlation between the participants' weight and how frequent they ate at a fast-

food restaurant. A similar analysis was

also done for a possible correlation between the weight and number of hours spent sitting down inactively each day.

The results (see appendix III) indicates almost zero (0) correlations between individuals weight and how often one ate at a fast-food restaurant as well as how long one spent sitting inactively during the day. The coefficient of relation (r) were found to be -0.039 and 0.017 respectively with R^2 being 0.0015 and 0.00027. Such weak correlations surprised me because of the expectation that eating frequently at a fast-food restaurant and lack of exercise would be some of the factors which contributes to obese condition.

In both cases p-values (0.7418 and 0.8877) obtained are greater than 0.0001, a reason good enough to support the rejection of the null hypothesis (there is a linear correlation between the variables).

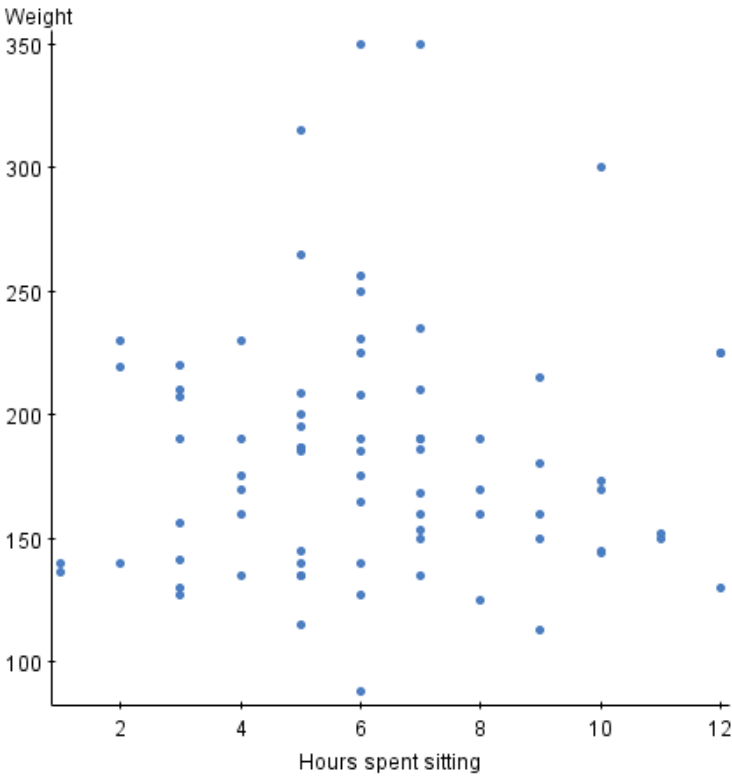
Conclusion:

The linear regression results obtained contradicted my initial belief that an individual's weight will increase significantly if one sits a lot without getting involved in any calories burning activity during the day. Also baffling was the result indicating that eating frequently from a fast-food restaurant has no significant effect on an individual's weight. Even though the results are contrary to the long held perception that lack of exercise and eating from a fast-food restaurant leads to weight gain, there are various loopholes which could have lead to these unexpected results.

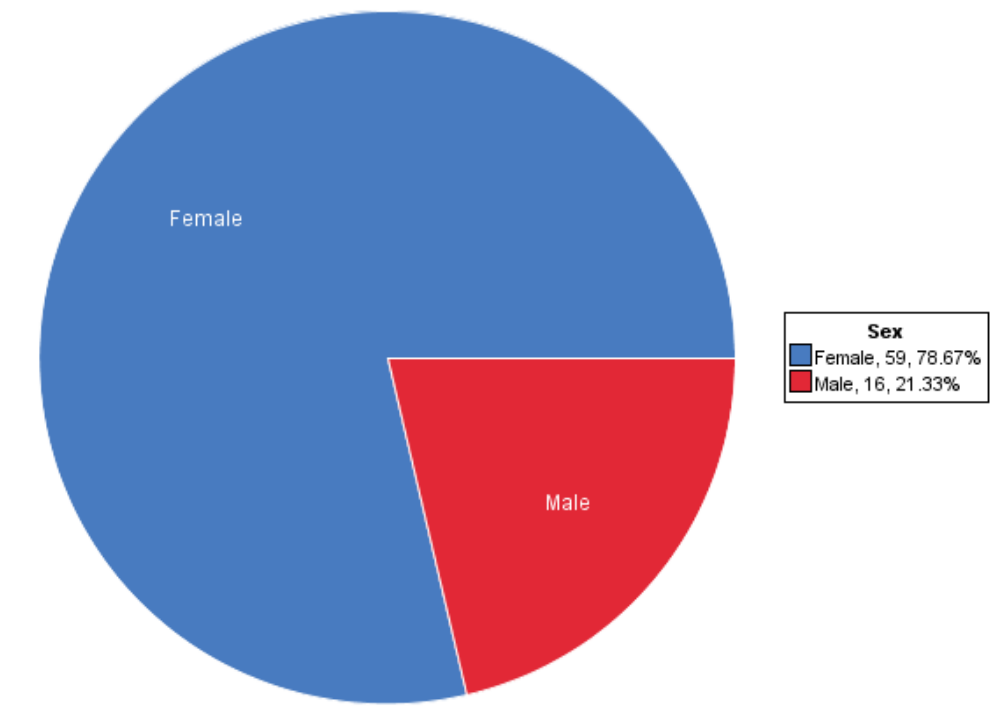
The respondents may have provided inaccurate data since there was no way to verify the information obtained from the survey. Also, the 75 individuals from HCTC who were surveyed may have been dominantly weight observers who exercise at night and also carefully choose what they eat during visits to a fast-food restaurant. Given the above loopholes, it would not be accurate to conclude that there is no correlation between body weights and how frequent individuals eat at a fast-food restaurant or how long an individual sits without getting involved in a calories burning

activity during the day. Proper methods of data collection such as observation may be appropriate for this type of study.

Result 1: Scatter Plot (Weight vs Hours Spent Sitting)



Result 2: Pie Chart



Result 3: Summary Statistics

Summary statistics for Weight:

Group by: Sex

Sex	n	Mean	Variance	Std. Dev.	Std. Err.	Median	Range	Min	Max	Q1	Q3
Female	59	175.64407	2312.3022	48.086403	6.2603164	170	262	88	350	140	200
Male	16	209.375	3038.5166	55.12274	13.780685	202	210	140	350	170.5	225

Summary statistics for Number of Visits to a Fast Food Restaurant:

Group by: Sex

Sex	n	Mean	Variance	Std. Dev.	Std. Err.	Median	Range	Min	Max	Q1	Q3
Female	58	2.137931	3.2788868	1.8107697	0.23776571	2	8	0	8	0	4
Male	16	2.3125	5.429167	2.3300571	0.5825143	2	8	0	8	0.5	3

Summary statistics for Hours Spent Sitting:

Group by: Sex

Sex	n	Mean	Variance	Std. Dev.	Std. Err.	Median	Range	Min	Max	Q1	Q3
Female	58	2.137931	3.2788868	1.8107697	0.23776571	2	8	0	8	0	4
Male	16	2.3125	5.429167	2.3300571	0.5825143	2	8	0	8	0.5	3

Female	59	6.118644	7.175336	2.6786819	0.34873468	6	11	1	12	4	8
Male	16	6.25	6.6	2.5690465	0.6422616	6	9	3	12	4.5	8

Result 4: Simple Linear Regression (Weight vs # Hours spent sitting)

Simple linear regression results:

Dependent Variable: Weight

Independent Variable: Hours Spent Sitting

Weight = 180.8631 + 0.3216226 Hours Spent Sitting

Sample size: 75

R (correlation coefficient) = 0.0166

R-sq = 2.7478786E-4

Estimate of error standard deviation: 51.5458

Parameter estimates:

Parameter	Estimate	Std. Err.	Alternative	DF	T-Stat	P-Value
Intercept	180.8631	15.172378	≠ 0	73	11.92055	<0.0001
Slope	0.3216226	2.2705271	≠ 0	73	0.14165108	0.8877

Analysis of variance table for regression model:

Source	DF	SS	MS	F-stat	P-value
Model	1	53.31216	53.31216	0.020065026	0.8877
Error	73	193958.77	2656.9695		
Total	74	194012.08			

Result 5: Simple Linear Regression (Weight vs # of visits to a fast-food Restaurant)

Simple linear regression results:

Dependent Variable: Weight

Independent Variable: Number of Visits to a Fast Food Restaurant

Weight = 186.34479 - 1.0218256 Number of Visits to a Fast Food Restaurant

Sample size: 74

R (correlation coefficient) = -0.039

R-sq = 0.0015174698

Estimate of error standard deviation: 50.636963

Parameter estimates:

Parameter	Estimate	Std. Err.	Alternative	DF	T-Stat	P-Value
Intercept	186.34479	8.934087	$\neq 0$	72	20.85773	<0.0001
Slope	-1.0218256	3.0890198	$\neq 0$	72	-0.33079278	0.7418

Analysis of variance table for regression model:

Source	DF	SS	MS	F-stat	P-value
Model	1	280.57394	280.57394	0.10942387	0.7418
Error	72	184615.33	2564.1018		
Total	73	184895.9			

Data set 1: Responses to STA 220_Project Data_Survey