

Final Exam – Take Home

First Year College Student Nutrition Study

The data for your project comes from a nutritional study conducted at Youngstown State University during 1997-1998. Forty four subjects completed the study in which body measurements and nutrition data was collected at the beginning of the Fall semester and then again in the Spring semester. A portion of that data appears in the data file **nutri6a.xls** which is available at <http://csuohio.edu/holcombj/mth147/finalexam.htm>

Variable guide:

studynum	An identifying number to keep track of subjects
gender	0=male, 1=female
residenc	0=on-campus, 1=off-campus
athlete	0=non-athlete, 1=athlete
perfats	Percent Fat in Diet Spring
fat30s	0=no, 1=yes for over 30% Fat in Diet in Spring
perpros	Percent Protein in Diet for Spring
percarbos	Percent Carbohydrates in Diet for Spring
persweets	Percent Sweets in Diet for Spring
sweets10s	0=no, 1=yes for over 10% Sweets in Diet in Spring
peralcs	Percent Alcohol in Diet in Spring
weights	Weight in kg in Spring

The main purpose of the study was to examine weight and nutrition characteristics in the college first year population. The study examined the percents of calories made up of fat, protein and carbohydrates. Then they broke the carbohydrate group down further into the percent of total calories from sweets and alcohol.

For the following tests of Hypothesis, be sure to state the hypotheses, the test statistic, the P-value or the P-value estimate, and your conclusion. Assume that the subjects are a random sample of first year students.

1. Is there sufficient evidence to conclude that the mean percent of protein is greater than 10% (**perpros**) is greater than 10%? (Perform a test of means)
2. Is there sufficient evidence to conclude that under 50% of first year students have sweet percents over 10%? (Use a test of proportions on **sweets10s**)?
3. Determine if **athlete** and **sweets10s** (having over 10% of calories come from sweets) are independent.

4. Create a scatterplot of **perfats** predicting **weights**. Do you think **perfats** is useful in predicting **weights**? Perform a formal test of hypotheses. What is your conclusion?
5. Create a scatterplot of **persweets** predicting **weights**. Do you think **persweets** is useful in predicting **weights**? Perform a formal test of hypotheses. What is your conclusion?

Write a paragraph that describes your conclusions. Also, perform some kind of a test of hypothesis that I have not proposed. This could be a test involving a mean, a proportion, or it could involve a regression analysis. Clearly state your null, alternative, test statistic, P-value, and conclusion.

perpros

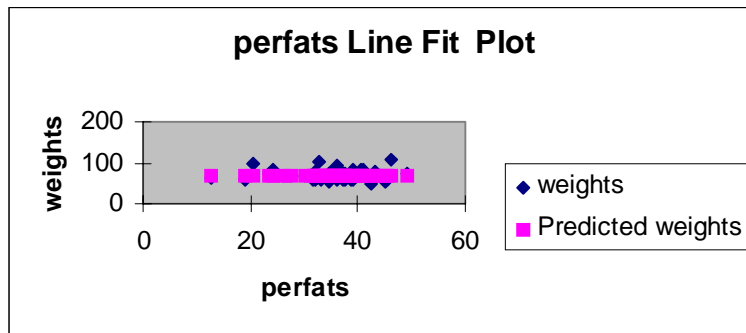
Mean	15.65455
Standard Error	0.485601
Median	15.3
Mode	12.5
Standard Deviation	3.221112
Sample Variance	10.37556
Kurtosis	-0.34806
Skewness	0.347253
Range	13.4
Minimum	9.8
Maximum	23.2
Sum	688.8
Count	44

z 11.64443

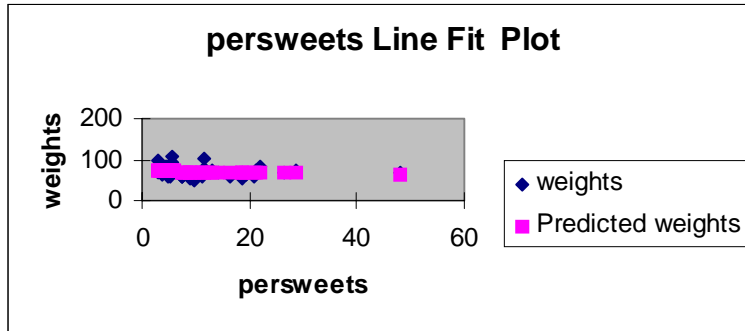
Sum of count	sweets10s		
athlete	0	1	Grand Total
0	18	13	31
1	9	4	13
Grand Total	27	17	44

phat 0.386363636
z -1.50755672
pvalue 0.065834033

Chi-Square 0.482
df 1
p-value 0.488



	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	70.52022	9.366904	7.528658	2.57E-09
perfats	-0.01915	0.261021	-0.07335	0.941873



	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	72.10872	3.077629	23.42996	9.74E-26
persweets	-0.20332	0.217603	-0.93435	0.355463