

Exam II – 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. This data set contains information from measurements taken during the Spring semester. A portion of that data appears in the data file **nutri3b.xls** which is available at <http://csuohio.edu/holcombj/mth147/exam2.htm> Note that some variables may not be used for this assignment, but may be used for the take-home Final Examination.

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

The main purpose of the study was to examine weight and nutrition characteristics in the college first year population. One the variables examined was the percent fat in the daily diet of the students. The variable **perfats** gives the percent fat in the Spring Semester. The variable **fat30s** indicates whether the subject had higher than 30% fat in the diet. The USDA generally recommends adults have a diet with less than 30% of the caloric intake come from fat.

Another interesting variable is sweets. This variable was used as part of the calculations of percent carbohydrate and fat. Here it is just considered by itself. The USDA does not make a specific requirement for the percent of caloric intake related to sweets. It is interesting to look at the subjects who had more than 10% of their diet consist of sweets. The variable **sweets10s** does just that.

Begin your report by providing a summary of the discrete variables (raw numbers and percents), and a table summary of the continuous variables of **perfats**, **perpros**, and **persweets** (5 number summary and histogram). Determine the shape of the histograms and comment on whether the mean or median is a better measure of center.

Create a 2x2 contingency table of **residenc** vs. **fat30s**. Let A be the event of being an on-campus resident and B be the event of having over 30% of diet come from fat. Determine the following:

1. $P(A)$
2. $P(B)$
3. $P(A \cap B)$
4. $P(A \cup B)$
5. $P(B|A)$
6. $P(B|A')$

Now we will consider being an on-campus resident (A) as a risk factor and having a diet higher than 30% fat as the disease (B). Calculate the relative risk and interpret its meaning.

Create a 2x2 contingency table of **athlete** vs. **sweets10f**. Let A be the event of being an athlete and B be the event of having more than 10% of diet come from sweets. Determine the following:

1. $P(B)$
2. $P(A \cap B)$
3. $P(A \cup B)$
4. $P(B|A)$
5. $P(B|A')$

Let the risk factor be being a non-athlete (A') and the disease be having a diet higher than 10% sweets (B). Determine the relative risk and interpret its meaning.

Write a summary paragraph of at least five sentences that reports any of the findings that you find interesting or surprising. Also propose two additional variables that could have been measured with this study and describe how the measurement would have taken place.

Answers for Test

Sum of count	gender		
	0	1	Grand Total
Total	18	26	44

Sum of count	athlete		
	0	1	Grand Total
Total	31	13	44

Sum of count	residenc		
	0	1	Grand Total
Total	32	12	44

Sum of count	Fat30s		
	0	1	Grand Total
Total	7	37	44

Sum of count	Sweets10s		
	0	1	Grand Total
Total	27	17	44

perfats

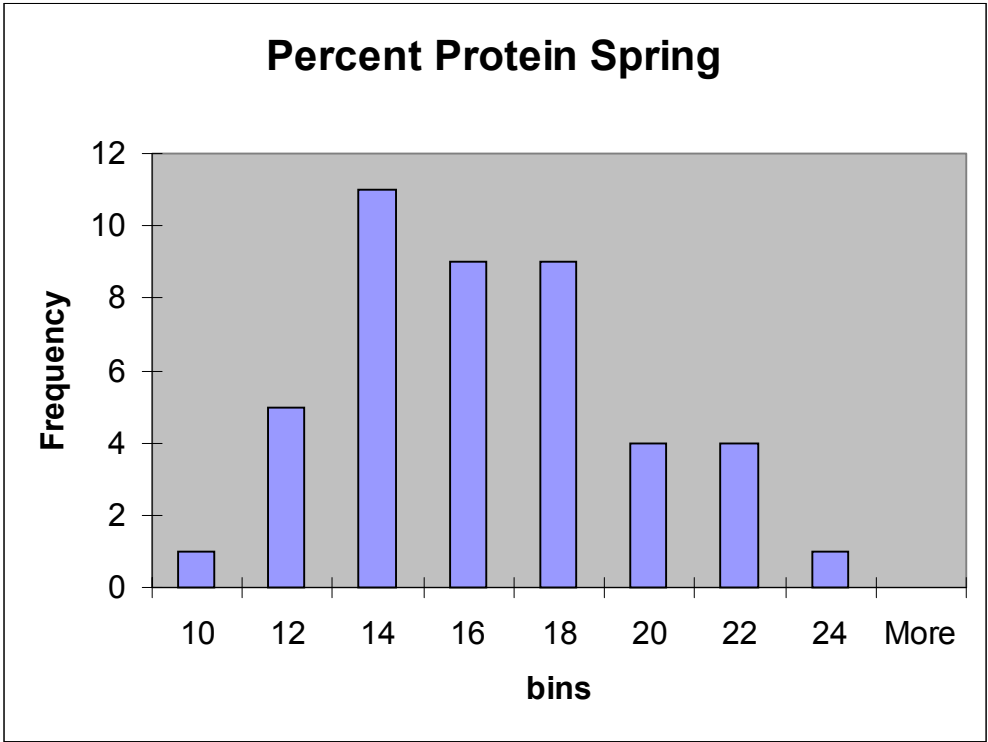
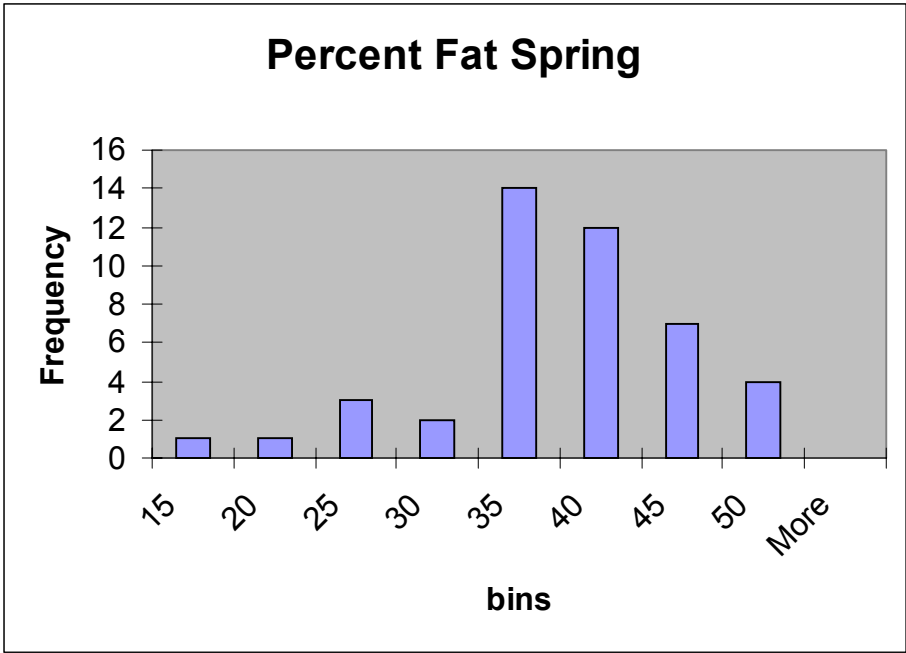
Mean	35.12273
Standard Error	1.122412
Median	35.85
Mode	41.1
Standard Deviation	7.445238
Sample Variance	55.43156
Kurtosis	1.21378
Skewness	-0.84345
Range	36.7
Minimum	12.6
Maximum	49.3
Sum	1545.4
Count	44

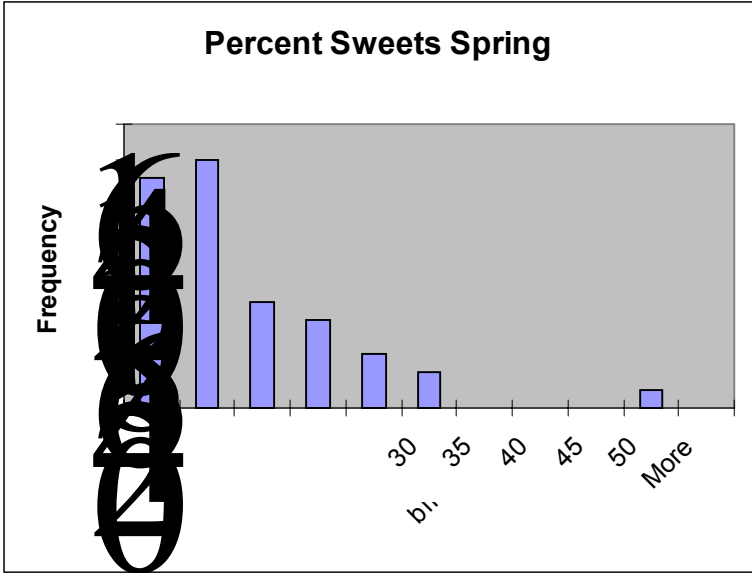
perpros

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

persweets

Mean	11.12045
Standard Error	1.33267
Median	8.6
Mode	18.6
Standard Deviation	8.839935
Sample Variance	78.14446
Kurtosis	5.81932
Skewness	2.040446
Range	45.1
Minimum	2.8
Maximum	47.9
Sum	489.3
Count	44





Sum of count		fat30s		
residenc		0	1	Grand Total
	0	5	27	32
	1	2	10	12
Grand Total		7	37	44

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