

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 Fall semester. A portion of that data appears in the data file nutri3a.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
perfatf	Percent Fat in Diet Fall
fat30f	0=no, 1=yes for over 30% Fat in Diet in Fall
perprof	Percent Protein in Diet for Fall
percarbof	Percent Carbohydrates in Diet for Fall
persweetf	Percent Sweets in Diet for Fall
sweets10f	0=no, 1=yes for over 10% Sweets in Diet in Fall
peralcf	Percent Alcohol in Diet in Fall

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 **perfatf** gives the percent fat in the Fall Semester. The variable **fat30f** 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 **sweets10f** 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 **perfatf**, **perprof**, and **persweetf** (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. **fat30f**. 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	14	30	44

Sum of count	Sweets10s		
	0	1	Grand Total
Total	20	24	44

perfatf

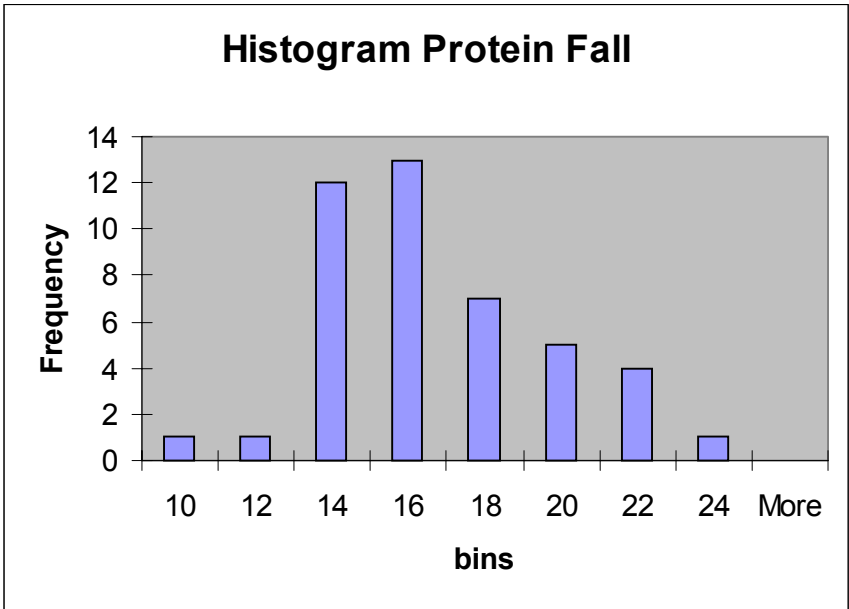
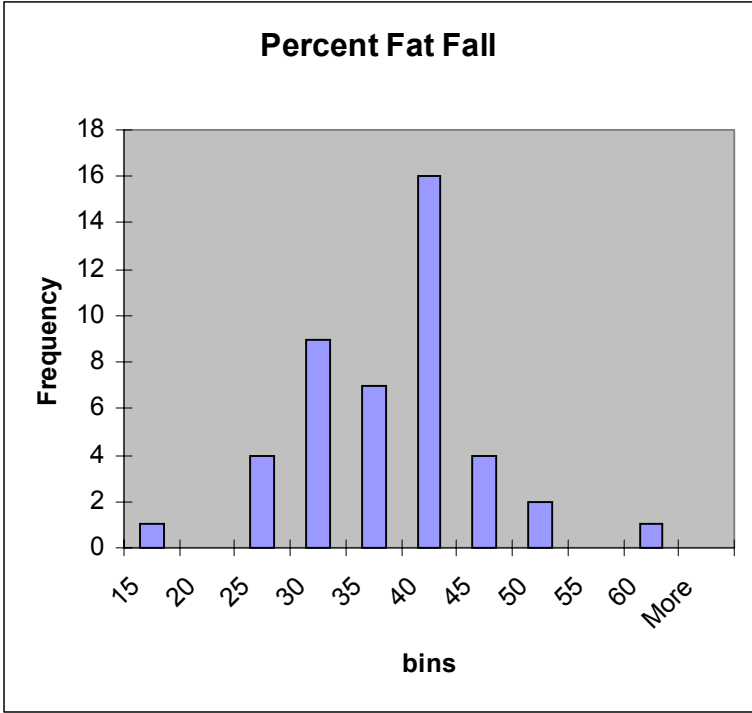
Mean	34.52045
Standard Error	1.179662
Median	35.7
Mode	38.6
Standard Deviation	7.824992
Sample Variance	61.2305
Kurtosis	0.861924
Skewness	0.101771
Range	42.8
Minimum	14.4
Maximum	57.2
Sum	1518.9
Count	44

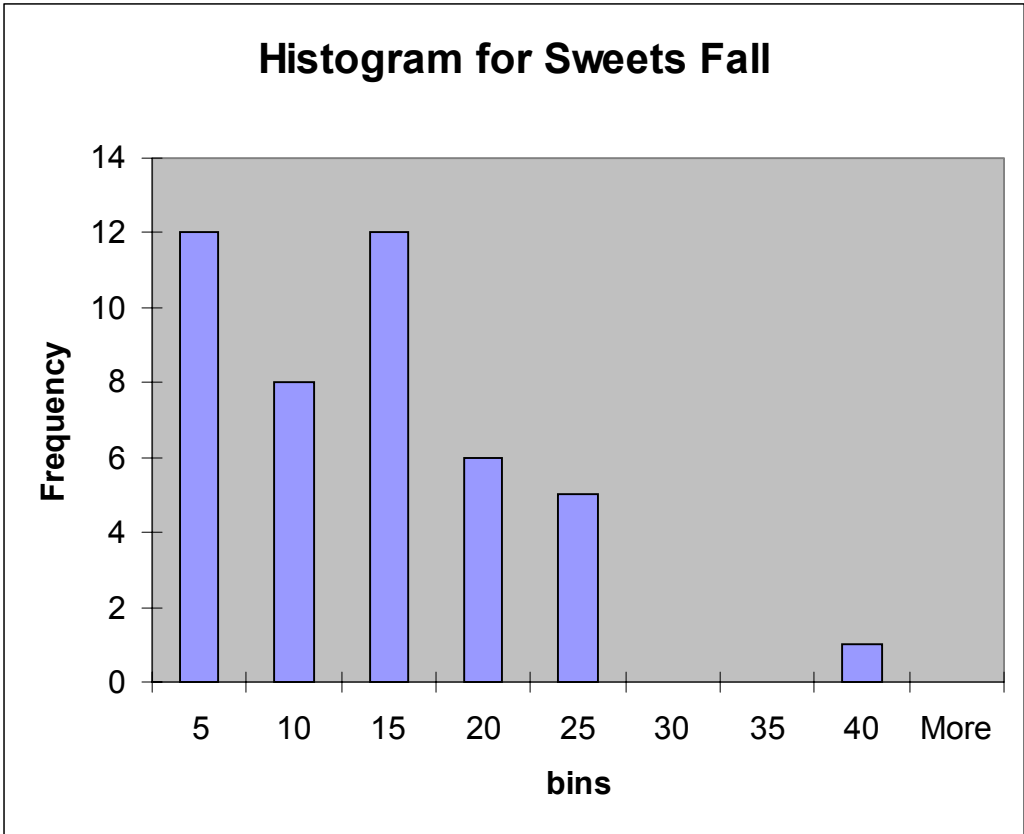
perprof

Mean	15.71591
Standard Error	0.441108
Median	15.35
Mode	16.2
Standard Deviation	2.925982
Sample Variance	8.561369
Kurtosis	-0.19398
Skewness	0.419273
Range	13.1
Minimum	9.1
Maximum	22.2
Sum	691.5
Count	44

persweetf

Mean	11.66136
Standard Error	1.159587
Median	11.65
Mode	3.5
Standard Deviation	7.691832
Sample Variance	59.16429
Kurtosis	2.121981
Skewness	1.110278
Range	37.7
Minimum	1.2
Maximum	38.9
Sum	513.1
Count	44





Sum of count	fat30f		
residenc	0	1	Grand Total
0	10	22	32
1	4	8	12
Grand Total	14	30	44

Sum of count	sweets10f		
athlete	0	1	Grand Total
0	11	20	31
1	9	4	13
Grand Total	20	24	44