**Final Project Instruction (First Name S-Z)**

*Due:* *May 1, 11:59 pm*

4. Fill the table.

|  |  |  |  |
| --- | --- | --- | --- |
| Count | | Male = 1 | Female=2 |
| Age | <6 | 0 | 0 |
| 6-12 | 15 | 15 |
| 13-19 | 200 | 173 |
| Ethnicity | Non-Hispanic White | 60 | 62 |
| Non-Hispanic Black | 52 | 43 |
| Mexican American | 47 | 37 |
| Other | 56 | 62 |
| Poverty | PIR <1.3 | 92 | 81 |
| 1.3-3.5 | 80 | 83 |
| >3.5 | 43 | 40 |
| Cotinine | >10 ng/ml | 21 | 8 |
| =<10 | 194 | 196 |
| BMI | Underweight/Normal | 147 | 115 |
| Overweight | 27 | 58 |
| Obese | 41 | 31 |
| Descriptive Statistics | | Male | Female |
| Triglyceride  mg/dl | Mean | 70.9069767 | 67.0098039 |
| Standard Deviation | 52.5354415 | 35.7538093 |
| Range | 373.00000 | 239.00000 |
| Median | 58.00000 | 58.50000 |
| 95th Percentile | 177 | 136.0 |
| LDL/HDL Ratio | Mean | 1.79613953 | 1.66093137 |
| Standard Deviation | 0.82707936 | 0.65917071 |
| Range | 4.78000 | 4.09000 |
| Median | 1.580000 | 1.530000 |
| 95th Percentile | 3.53 | 2.81 |

5. The reference levels for serum triglyceride and LDL/HDL ratio are 150 mg/dl and 5.

1) Test whether the average triglyceride is statistically different from this recommended level. Include the relevant table from SAS output and interpret the results. You need to do it separately by gender.

Male:

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The pvalue is <.0001 which is less than our alpha level of 0.05. Therefore, we reject the null hypothesis that the average triglyceride is statistically different from this recommended level (150 mg/dl) in males.

Female:

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The pvalue is <.0001 which is less than our alpha level of 0.05. Therefore, we reject the null hypothesis that the average triglyceride is statistically different from this recommended level (150 mg/dl) in females.

2) In the same way, test whether the average LDL/HDL ratio is statistically different from this recommended level. Include the relevant table from SAS output and interpret the results. You need to do it separately by gender.

**Male:**

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The pvalue is <.0001 which is less than our alpha level of 0.05. Therefore, we reject the null hypothesis that the average LDL/HDL ratio is statistically different from this recommended level (5) in males.

**Female**:

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The pvalue is <.0001 which is less than our alpha level of 0.05. Therefore, we reject the null hypothesis that the average LDL/HDL ratio is statistically different from this recommended level (5) in females.

3) Compare the average triglyceride between males and females (significant level=0.05). Include the relevant table from SAS output and interpret the results.

Satterwaite

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In the equality of variances output we get a p value <.0001. Therefore, variances are not equal, and we need to look at the Satterthwaite Method to analyze significance

Based on the Satterthwaite Method, our p value is 0.3731 which Is less than our alpha level of 0.05. Therefore we reject the null hypothesis that the average triglyceride between males and females are all the same. (not the same)

4) Compare the average LDL/HDL ratio between males and females (significant level=0.05). Include the relevant table from SAS output and interpret the results.

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In the equality of variances output we get a p value 0.0012. Therefore, variances are not equal, and we need to look at the Satterthwaite Method to analyze significance

Based on the Satterthwaite Method, our p value is 0.0643 which Is greater than our alpha level of 0.05. Therefore we fail to reject the null hypothesis that the average LDL/HDL between males and females are all the same. (there is no difference/ they are same or similar)

5) Draw boxplots for triglyceride and LDL/HDL ratio by gender.

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6. We tried to answer the research question that people with cotinine (continuous variable) have higher blood lipids, based on our data. Statistical significance can be declared if the p-value is less than 0.05.

1) Evaluate the correlation between cotinine and triglyceride. Include the relevant table and scatter plot from SAS output and interpret the results. In the interpretation, you should include the **strength** and **direction** of the association.

R is -0.04872 and p values is greater then 0.05. therefore, the correlation between cotinine and triglyceride is weak and negative, and this is not statistically significant.

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2) Evaluate the correlation between cotinine and LDL/HDL ratio. Include the relevant table and scatter plot from SAS output and interpret the results. In the interpretation, you should include the **strength** and **direction** of the association.

R is 0.01687 and p values is greater then 0.05. Therefore, the correlation between cotinine and LDL/HDL is very weak yet positive, and this is not statistically significant.

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3) Test the association between **cotinine and triglyceride** using a linear regression model. Include the relevant table from SAS output and interpret the results. You also need to include the **regression equation if there is a significant association.**

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The p values is greater than .05

The association between **cotinine and triglyceride** is not significant

4) Test the association between **cotinine and LDL/HDL** ratio using a linear regression model. Include the relevant table from SAS output and interpret the results. You also need to include the **regression equation if there is a significant association.**

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The p values is greater than .05

The association between **cotinine and LDL/HDL** is not significant

Note: Compress the SAS code you write, datasets, and a completed Word file in one zip file (final\_lastname.zip) and submit it on eCampus.