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STAT440 0101

**Report 1. Data Description**

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**Name of project:** Temperatures in Mount Ginini, Australia

**Description**: The population of N=748 contains measurements of the minimum and maximum temperature during the summer months in Mount Ginini, Australia over the years 2008-2017. The mean of the maximum temperature is 19.11 degrees Celsius and the mean of the minimum temperature is 8.70 degrees Celsius. The correlation between minimum and maximum temperatures in 0.71, meaning 71% of the variation in the maximum temperature can be attributed to the variation in minimum temperature, and vice versa.

**Research question:** What is the average maximum temperature during the summer? What is the average minimum temperature? Are the maximum and minimum temperatures correlated?

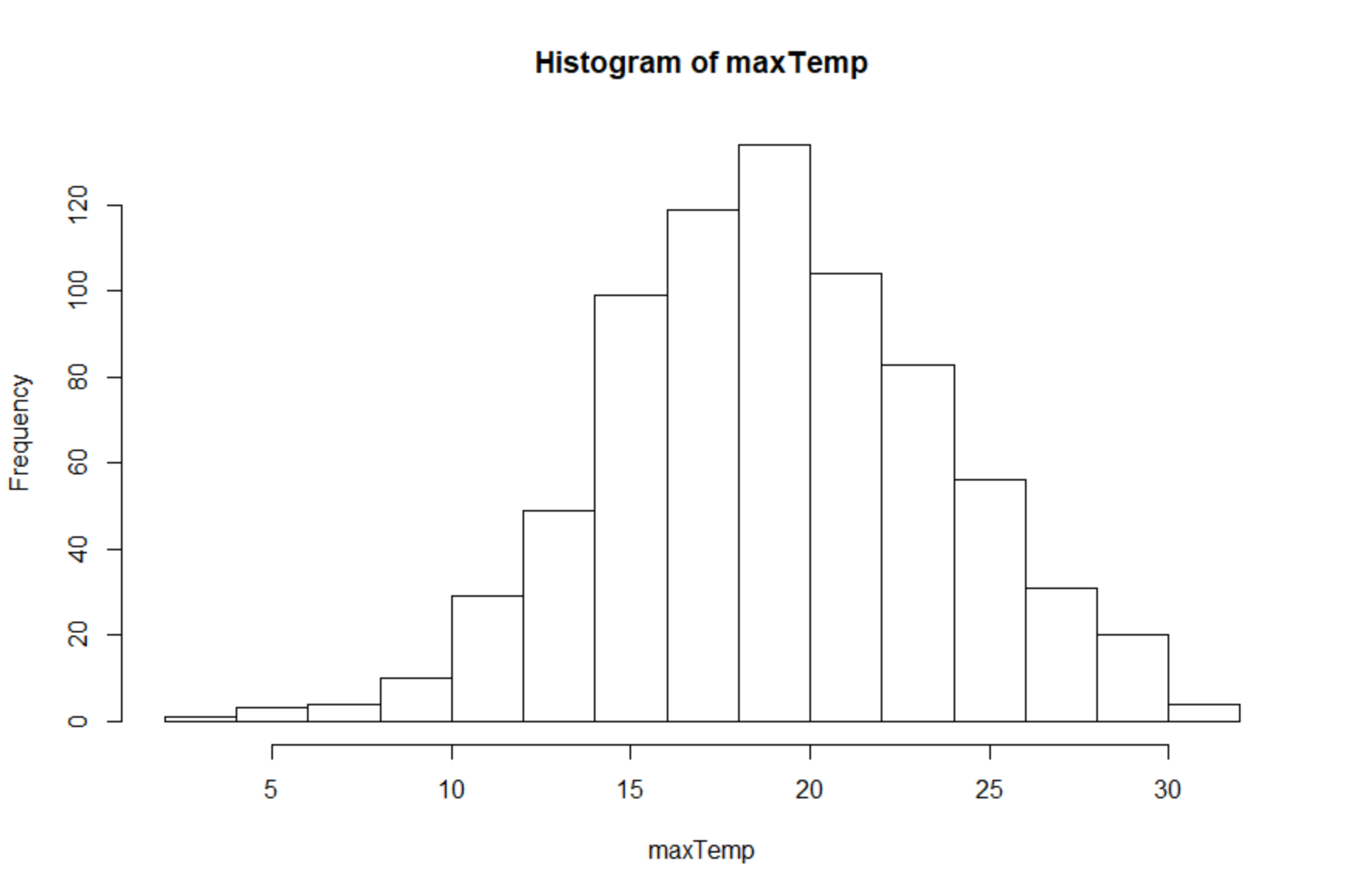
**Variable of interest:** Maximum and minimum temperature

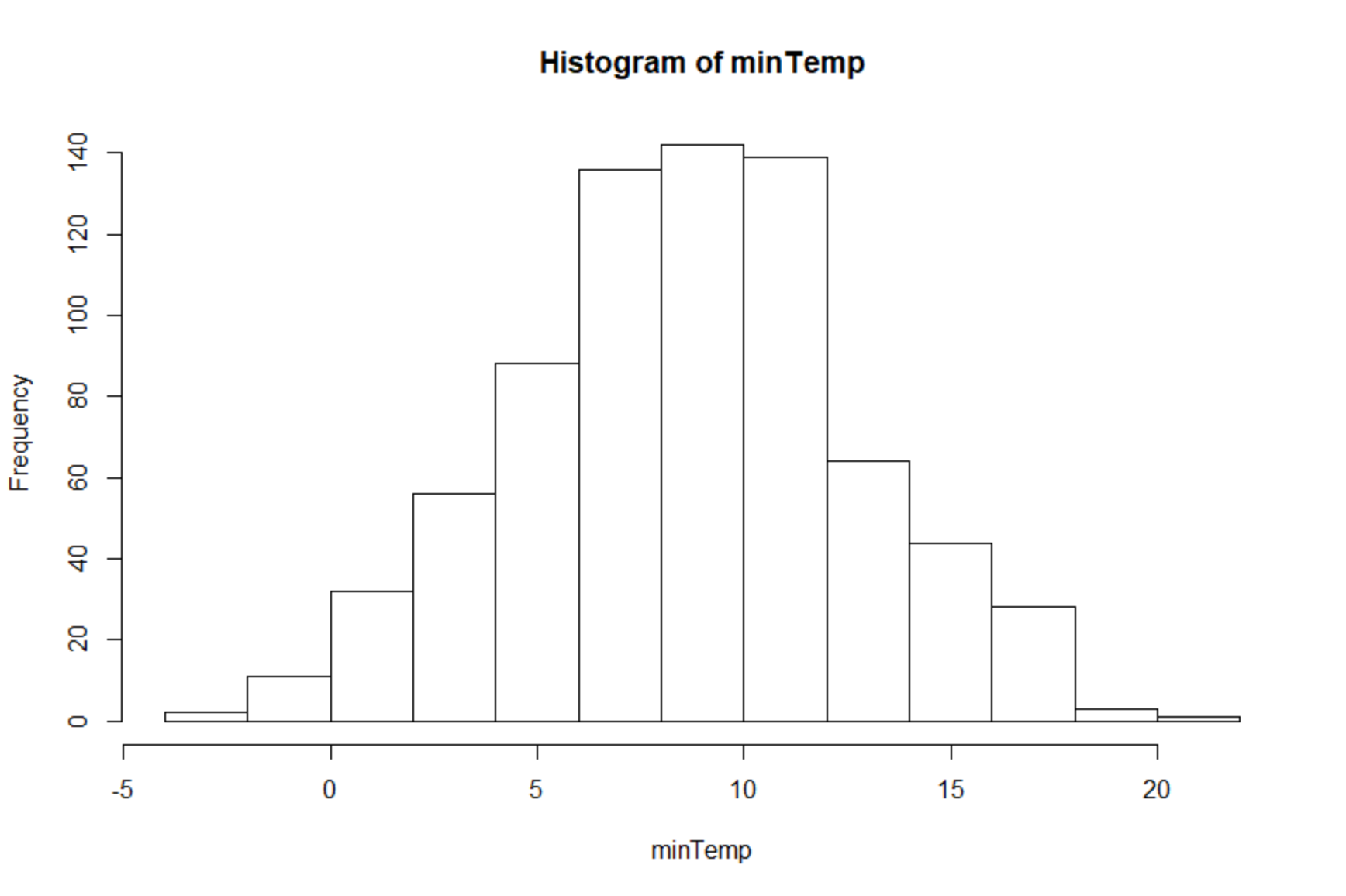
**Need to be estimated:** Maximum and minimum temperatures of samples

**Population parameters** (all measurements in degrees Celsius):

|  |  |  |
| --- | --- | --- |
|  | Maximum Temperature | Minimum Temperature |
| µ | 19.108 | 8.698 |
| σ2 | 21.775 | 16.664 |
| τ | 14254.7 | 6488.9 |

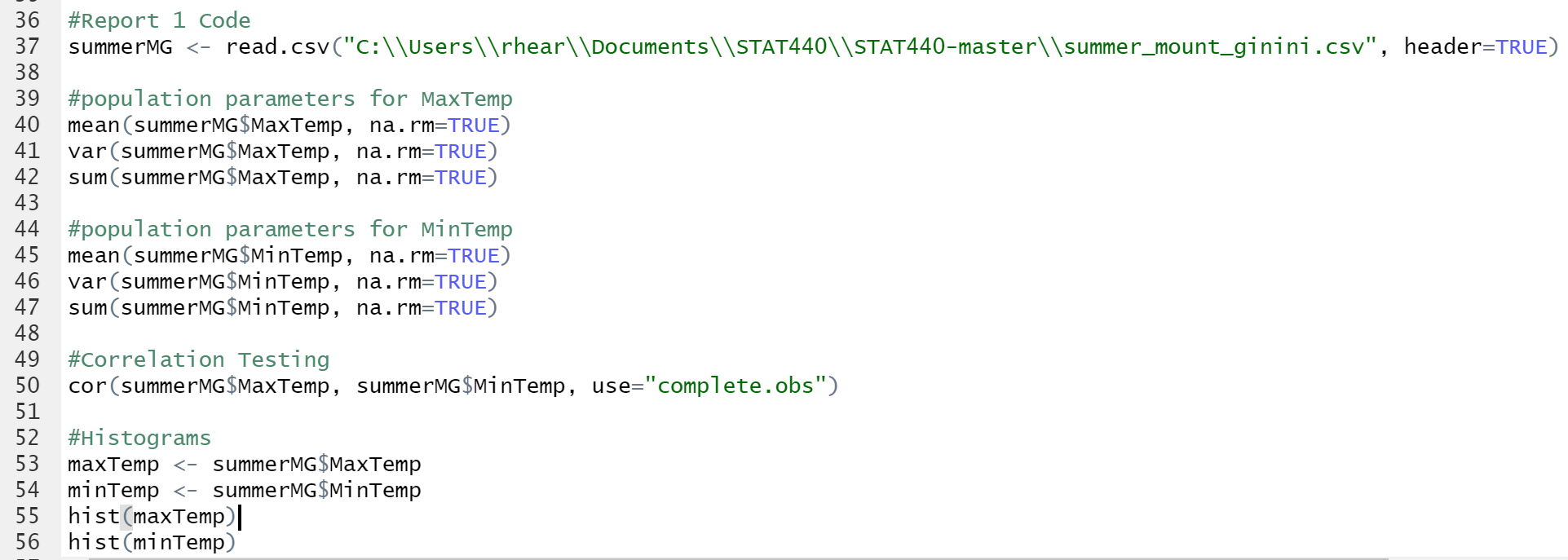
**Histograms**:





The distribution of the maximum temperatures looks fairly normally distribute, but it does have a slight left skew caused by some smaller outliers. The mean is centered around 19.11 degrees Celsius and the standard deviation is 4.66. The distribution of the minimum temperatures also look normally distributed with a mean of 8.70 and a standard deviation of 4.08. Both populations lack extreme outliers.

Code and output:



#Report 1 Code

> summerMG <- read.csv("C:\\Users\\rhear\\Documents\\STAT440\\STAT440-master\\summer\_mount\_ginini.csv", header=TRUE)

>

> #population parameters for MaxTemp

> mean(summerMG$MaxTemp, na.rm=TRUE)

[1] 19.10818

> var(summerMG$MaxTemp, na.rm=TRUE)

[1] 21.77468

> sum(summerMG$MaxTemp, na.rm=TRUE)

[1] 14254.7

>

> #population parameters for MinTemp

> mean(summerMG$MinTemp, na.rm=TRUE)

[1] 8.698257

> var(summerMG$MinTemp, na.rm=TRUE)

[1] 16.66358

> sum(summerMG$MinTemp, na.rm=TRUE)

[1] 6488.9

>

> #Correlation Testing

> cor(summerMG$MaxTemp, summerMG$MinTemp, use="complete.obs")

[1] 0.7094098