A Statistical Investigation of Student Responses in a Longwood University Survey

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Data Collection

In this study, we are focusing on the BMI of Longwood University students. The populations considered in this study were all male and female students from Math 171 and Math 301 classes. The overall variables in most of the projects are quantitative, which means that most of the following variables are either discrete or continuous. Although, some of the variables were considered categorical which means that it may derive from observations made of qualitative data that are summarized as counts or cross-tabulations.

The following identifies whether the variables collected are considered quantitative (discrete or continuous) or categorical. The student identification number of each subject is quantitative and discrete because the data is numerical and can take on infinite values. For the gender (sex), the variable is categorical because in the survey students either identify as male or female. Only two gender categories were identified in this project to keep the gentrification short and specific for this project. Also, the identification of whether an individual was a freshman, sophomore, junior, or senior was categorial. The next variable was whether students approved of the job Donald Trump has been doing as President of the United States of America. This variable was also considered categorial because each student was able to choose whether they approve, disapprove, or were unsure.

The way that the simple random sample from the population was collected was by randomly picking numbers, with each number corresponding to an ID number of an individual. The subjects were split into two groups based on gender so that there would

be an equal number of male and female subjects chosen for the sample. Numbers were chosen using a random number generator on a TI-84 plus calculator. The option “MATH” was chosen, next “PROB”, then “randIntNoRep”. The following values where inserted: Lower:1, Upper:219, n:40, and finally “paste” was selected to randomly generate 40 student ID numbers. These steps were repeated to collect random samples for both female and male populations.

It is reasonable to use simple random samples to approximate the population of all males and females in Math 171 and Math 301 because by analyzing the sample, it is then used to make inferences about the whole population. The overall goal of a random sample data is to collect the average means of the entire population, which in this case is Math 171 and Math 301.

Data Description

Figures 1 and 2 demonstrated that both females and males have an average of the student who ranges in the BMI between 27.2-19.7 kg/m^2. The differences between both figures 1 and 2 are that the males have a longer average range of BMI compared to the females, which means that the mean will be slightly different compared to the females.

Figure 3 demonstrates a whisker box graph of both females and males. The graph shows that males have a smaller BMI compared to females. Although both males and females seem to have a close of range mean. This can indicate that both females and males have a slight similarity in means.

Based on figures 4 and 5 it demonstrates that both females and male have different viewpoints in whether they proved of the job Donald Trump has been doing as President of the United States of America. In the graph presented above, it exemplifies that there is a higher approval rate for the female then there is for the male. As well as there is a low unsurely for the males, while there is a high uncertainty rate for the females. Although, both genders have a high certainty of disapproval of the job Donald Trump has been doing as President of the USA.

Data Analysis

The samples must be reasonably random. Usually, the samples size must be large enough so that all expected count is at least 1. Also, hypothesis testing is most time an essential procedure to evaluate two mutually exclusive statements about a population to determine which statement is being supported by the same data. The purpose of this experiment was to determine whether all females of all males have a difference in the BMI mean. The hypothesis if that Ho: $\mu_1 - \mu_2 = 0$ and Ha: $\mu_1 - \mu_2 \neq 0$, which means that there are no differences between the means as well as there is a difference between the 2 mean.

The test statistical was calculated to be -1.39. For the P-value was determined to be 0.1686 and for the degrees of freedom is was calculated to be 70.595. The P-values> significate, which fails to reject null hypothesis. The conditions of this data were random, independent, as well n> 30. The confidence for the difference in the two population was (-3.395, 0.60507). There is evidence to concluded that the null hypotheses are correct because zero within our interval.

The data collected above was able to be gathered through the collection of both mean and stander deviation of all males and females. The mean of the females was 23.6488 and stander deviation was 5.1612. For the male is was determined to be 25.0439 and for the stander deviation is was calculated to be 3.6884.

Appendix

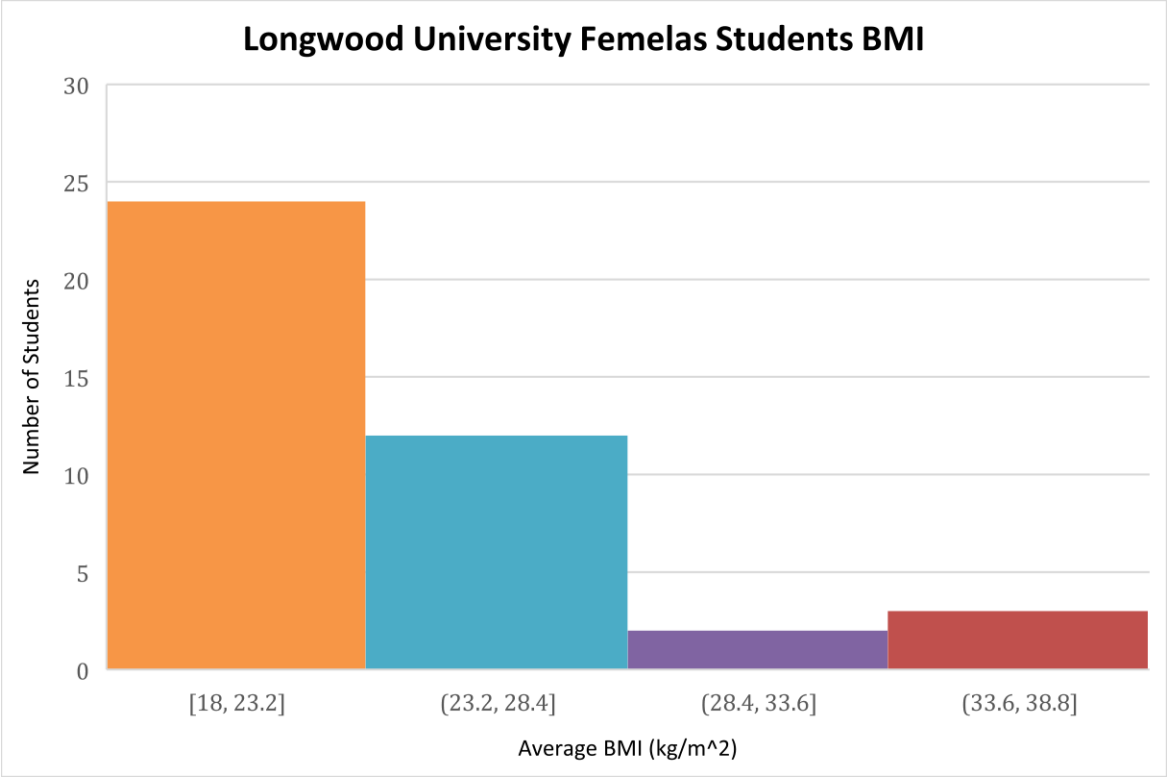

Figure 1.

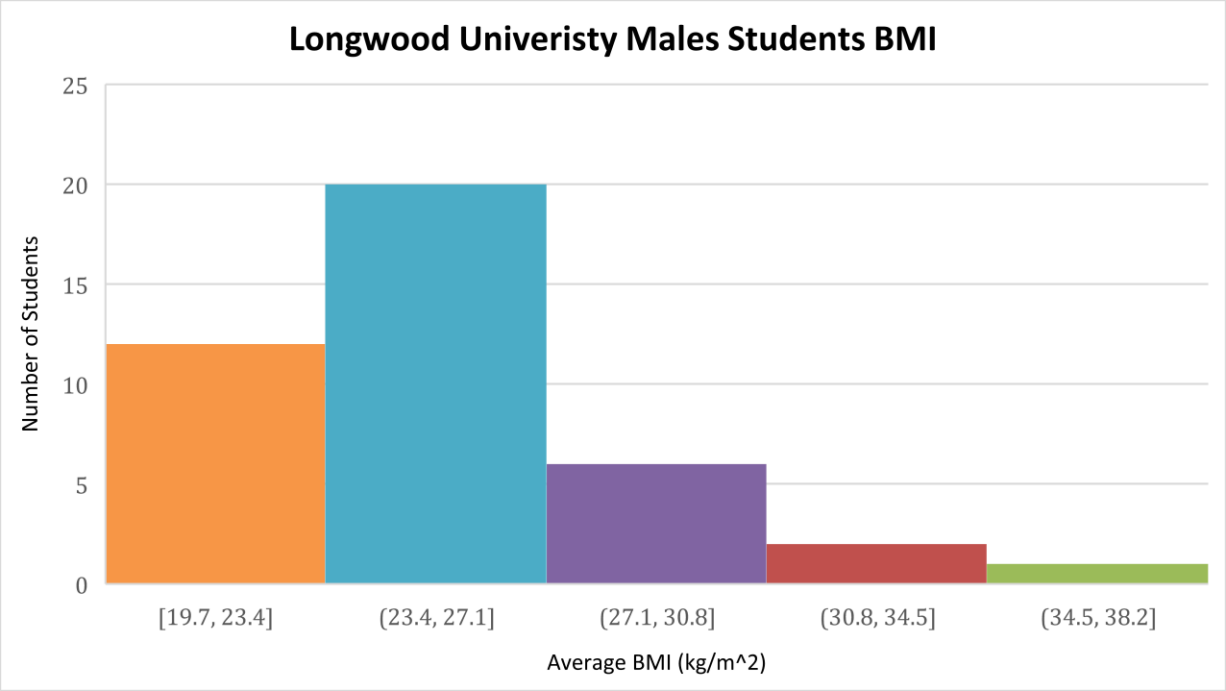

Figure 2.

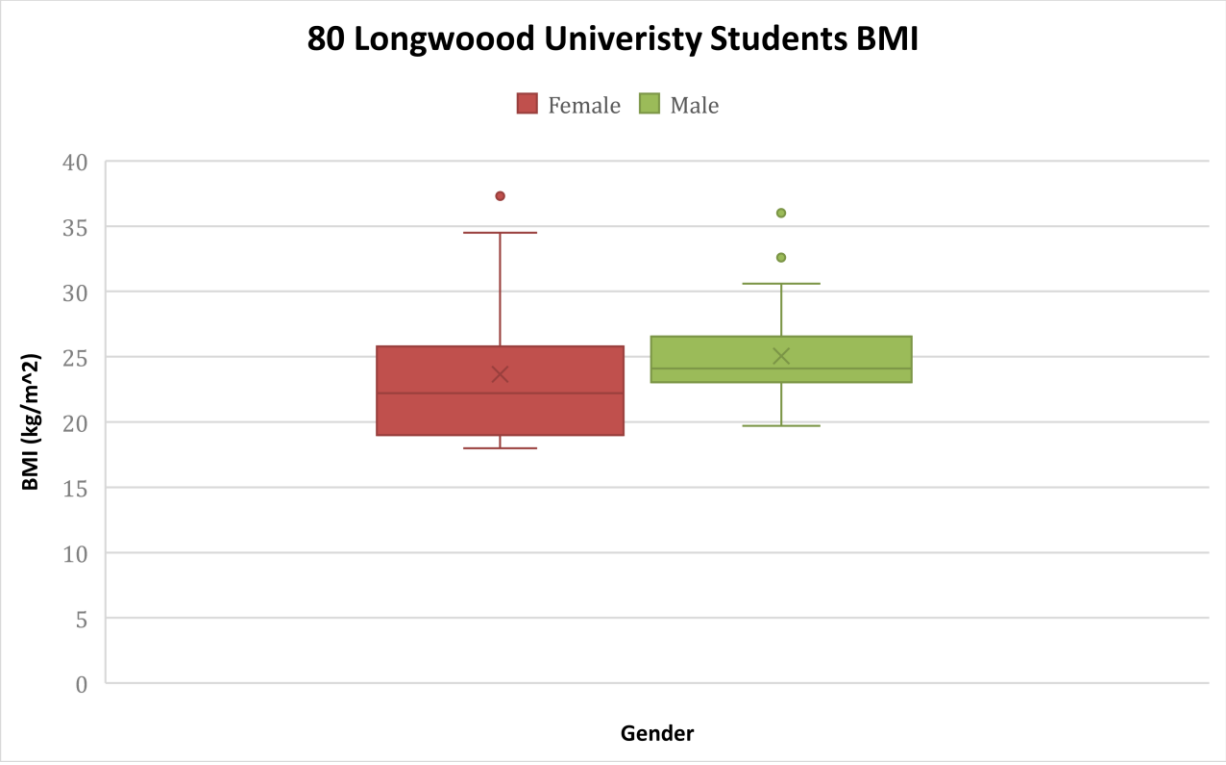

Figure 3.

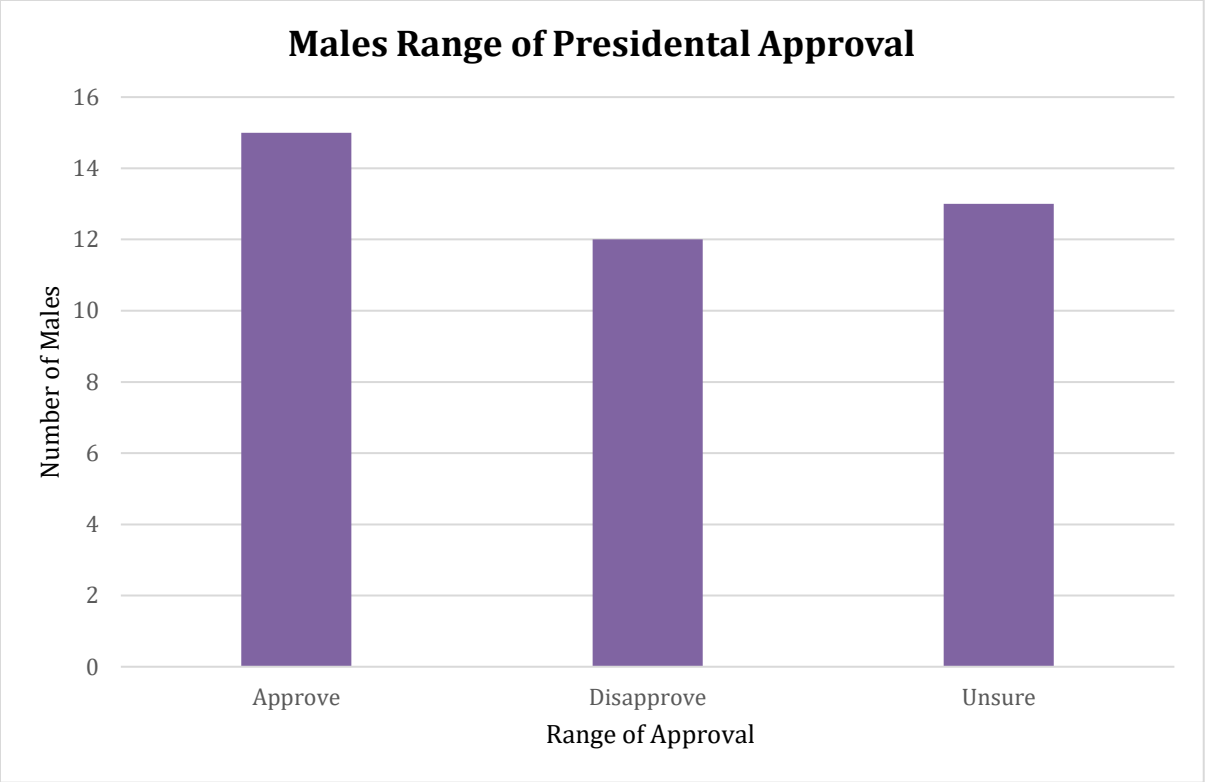

Figure 4.

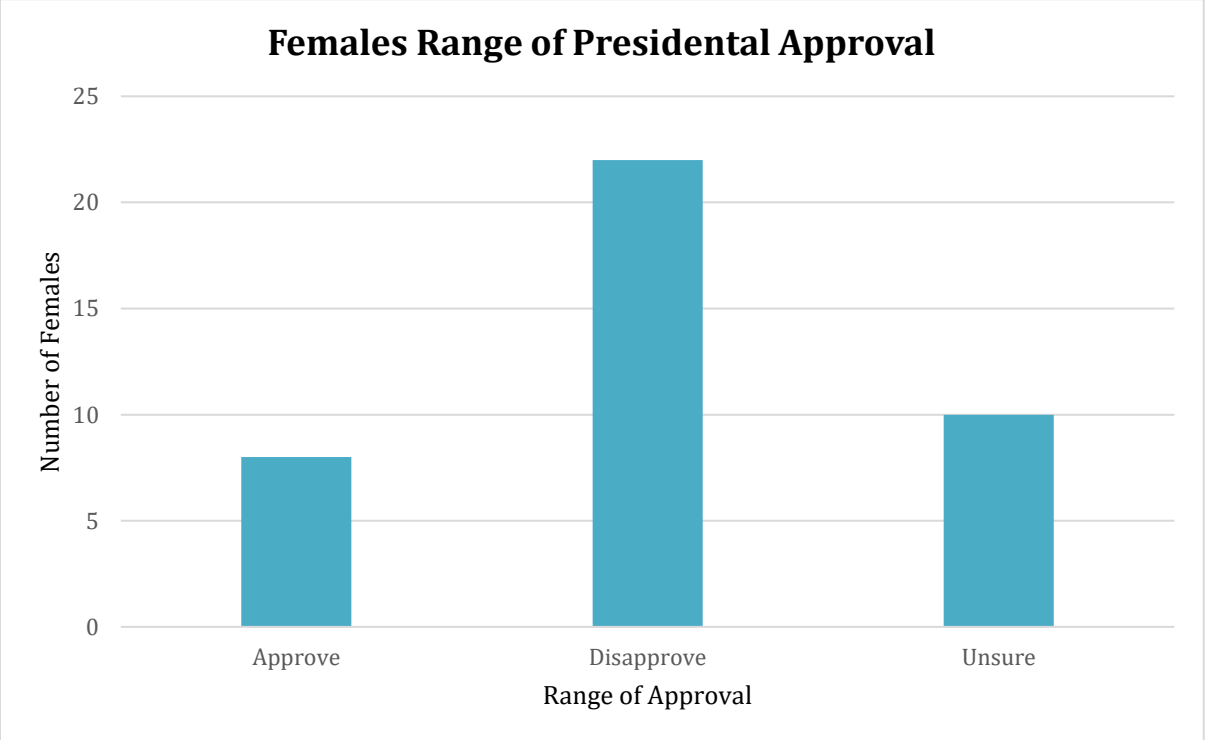

Figure 5.

Introduction

This project calculated the different variables which were BMI and whether Longwood students in Math 171 and Math 301 approves, disapproves, or are not sure of how well Donald Trump is doing as president. For this project, the hypothesis was supported there was no difference between both means and there was a difference between the 2 mean. The hypothesis was support by the figures and data provided above. Overall, based on the data provided we were able to determine an average overall result of both females and male president approval and BMI.