Project Part II

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“I Brandon Faulkner did not give or receive any assistance on this project, and the report submitted is wholly my own.”

**NORMAL DISTRIBUTION**

**Goodness of Fit Test for Normal Distribution   
H0 -** The data for set 1 follows Normal Distribution **H1 –** The data for set 1 does not follow Normal Distribution

The Table below will test the hypothesis that Set 1 is sampled from a Normal distribution by using a Chi-Square Goodness-of-fit Test with a significance of 0.05.

**Expended Frequency Table:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| INTERVAL | OBSERVED  FREQUENCY | CLASS  PROBABILITY | EXPECTED  FREQUENCY | CLASS  COMPONENT |
| 150 < x ≤ 173 | 17 | 0.113408688 | 11 | (17-11)2 /11=3.27 |
| 173 < x ≤ 196 | 23 | 0.249437687 | 25 | (23-25)2 /25=0.16 |
| 196 < x ≤ 219 | 29 | 0.293160496 | 29 | (29-29)2 /29=0 |
| 219 < x ≤ 242 | 17 | 0.238217747 | 24 | (17-24)2 /24=2.04 |
| 242 < x ≤ 265 | 14 | 0.105775385 | 11 | (14-11)2 /11=0.82 |
| TOTALS | **100** | **1.0** | **100** | ***X2*=6.293** |

**Sample Mean:** 204.55

**Sample Standard Deviation:** 30.4334

**The Class Probabilities are found using the following formula in Excel:**

* **=**NORM.DIST(Second Value, mean, standard deviation, True) - NORM.DIST(First Value, mean, standard deviation, True)
* So, for the first intervals probability, you would put 173 as the “second value” and 150 as the “first value”.

**Degree of Freedom -** The degree of freedom is 99 because it is one less than the total number of observations.

**Conclusion –** We are unable to reject the hypothesis that the data for set 1, which is the weight of 100 adult males, follows a normal distribution. This does not mean that the interval follows normal distribution.