**Kingdom of Saudi Arabia**

**King Abdulaziz University**

**Faculty of Economics & Administration**

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**Project STAT – 271**

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**Course Coordinator: Dr. Saeed ALghamdi**

**Introduction:**

**This is a project in the statistic 271 King Abdulaziz University; we have some data to derive some information from them.**

**The data will be in the reference.**

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**The questions:**

**#1/ Find Mean, Median, Mode, Variance, SD, Q1, Q3, Coefficient of skewness For Price and size.**

**#2/ Draw the stem and leaf and the Boxplot for Price and Size.**

**#3/ Constaract a 95% confidence interval for the mean of price and the mean of size.**

**#4/ Constaract a 99% confidence interval for the proportion of Pool [Category 1] and for Town [Level 2].**

**#5/ at 1% Significance Level Test That Mean Price is less than 200.**

**#6/ At 5% Level of Significance Test that the Mean Price at Town [Level 1] Equals the Mean Price at Town [Level 2].**

**#7/ at 5% Level of Significance Test that the Mean Price at All Town Levels are Equal.**

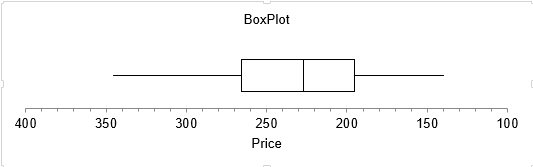
**#8/ Find The Correlation Coefficient between the Price and Size.**

**#9/ Find the Regression Equation of the Price on Size? Test the Significance of the regression equation at 5% significance Level**

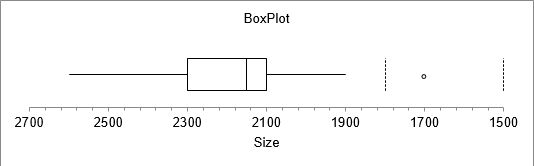
**Questions #1: Find Mean, Median, Mode, Variance, SD, Q1, Q3, Coefficient of skewness For Price and size.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Price** | | **Size** | |
| **count** | **30** | **count** | **30** |
| **mean** | **233.747** | **mean** | **2,183.33** |
| **sample variance** | **2,511.487** | **sample variance** | **42,816.09** |
| **sample standard deviation** | **50.115** | **sample standard deviation** | **206.92** |
|  |  |  |  |
| **population variance** | **2,427.770** | **population variance** | **41,388.89** |
| **population standard deviation** | **49.272** | **population standard deviation** | **203.44** |
|  |  |  |  |
| **skewness** | **0.466** | **skewness** | **0.14** |
|  |  |  |  |
| **1st quartile** | **195.525** | **1st quartile** | **2,100.00** |
| **median** | **227.050** | **median** | **2,150.00** |
| **3rd quartile** | **265.725** | **3rd quartile** | **2,300.00** |
| **mode** | **209.300** | **mode** | **2,100.00** |

**Questions #2: Draw the stem and leaf and the Boxplot for Price and Size.**



|  |  |
| --- | --- |
| Price | |
| Leaf | Stem |
| 3 7 7 8 8 8 9 9 9 | 1 |
| 0 0 0 0 1 2 3 4 4 4 5 5 6 6 7 7 8 9 | 2 |
| 2 2 4 | 3 |

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|  |  |
| --- | --- |
| Size | |
| Leaf | Stem |
| 0 | 17 |
|  | 18 |
| 0 0 0 | 19 |
| 0 | 20 |
| 0 0 0 0 0 0 0 0 0 0 | 21 |
| 0 0 0 0 0 | 22 |
| 0 0 0 0 0 | 23 |
| 0 | 24 |
| 0 0 | 25 |
| 0 0 | 26 |

**Questions #3: Constaract a 95% confidence interval for the mean of price and the mean of size.**

|  |  |
| --- | --- |
| **for price** | |
| **95%** | **confidence level** |
| **233.7466667** | **mean** |
| **49.27241103** | **std. dev.** |
| **30** | **n** |
| **1.960** | **z** |
| **251.3782** | **upper confidence limit** |
| **216.1151** | **lower confidence limit** |
|  |  |
| **for size** | |
| **95%** | **confidence level** |
| **2183.333333** | **mean** |
| **203.4425936** | **std. dev.** |
| **30** | **n** |
| **1.960** | **z** |
| **2,256.1330** | **upper confidence limit** |
| **2,110.5337** | **lower confidence limit** |

**Questions #4: Constaract a 99% confidence interval for the proportion of Pool [Category 1] and for Town [Level 2].**

|  |  |  |
| --- | --- | --- |
| Town | pool | Confidence interval - proportion |
| **-0.304** | **-0.093** | **lower confidence limit** |
| **0.571** | **0.693** | **upper confidence limit** |

**Questions #5: At 1%, Significance Level Test That Mean Price is less than 200**

|  |  |
| --- | --- |
| Hypothesis Test: Mean vs. Hypothesized Value | |
| Ho: µp ≥ 200  Ha: µp <200 | |
| 200.0000 | hypothesized value |
| 233.7467 | mean Price |
| 50.1147 | std. dev. |
| 9.1497 | std. error |
| 30 | n |
| 3.69 | z |
| **.9999** | **p-value (one-tailed, lower)** |

Since the P-Value is 0.9999 is greater than 0.01, Ho is not reject. We conclude that there is enough evidence to support the claim that.

**Questions #6: At 5% Level of Significance Test that the Mean Price at Town [Level 1] Equals the Mean Price at Town [Level 2]**

|  |  |  |
| --- | --- | --- |
| Hypothesis Test: Independent Groups (t-test, pooled variance) | | |
| **Ho: µPrice at town 1 = µPrice at town 2**  **Ha: µPrice at town 1 ≠ µPrice at town 2** | | |
| price at town (2) | price at Town (1) |  |
| 239.900 | 202.133 | mean |
| 43.329 | 55.248 | std. dev. |
| 4 | 3 | n |
| 5 | | df |
| 37.7667 | | difference (price - price) |
| 2,347.3973 | | pooled variance |
| 48.4499 | | pooled std. dev. |
| 37.0043 | | standard error of difference |
| 0 | | hypothesized difference |
| 1.021 | | t |
| **.3543** | | **p-value (two-tailed)** |
| F-test for equality of variance | | |
| 3,052.363 | | variance: price |
| 1,877.420 | | variance: price |
| 1.63 | | F |
| .6648 | | p-value |

Since the P-Value is 0.3543 is greater than 0.05, the decision is not reject Ho. Thus, there is not enough evidence to support the claim that there is different in the mean price to town.

**Questions #7: At 5% Level of Significance Test that the Mean Price at All Town Levels are Equal**

|  |  |
| --- | --- |
| Hypothesis Test: Mean vs. Hypothesized Value | |
| 0.0000 | hypothesized value |
| 233.7467 | mean Price |
| 50.1147 | std. dev. |
| 9.1497 | std. error |
| 30 | N |
| 25.55 | Z |
| **0.00E+00** | **p-value (two-tailed)** |

Since the P-Value 0 is less than 0.05, Ho is rejected, we conclude that there is enough evidence to reject the claim that.

**Questions #8: Find The Correlation Coefficient between the Price and Size.**

|  |  |  |  |
| --- | --- | --- | --- |
| Correlation Matrix | | | |
|  | *Price* | | *Size* |
| *Price* | 1.000 | |  |
| *Size* | .462 | | 1.000 |
| 30 | | sample size | |
| ± .361 | | critical value of r .05 (two-tail) | |
| ± .463 | | critical value of r .01 (two-tail) | |

First, it is positive, so we see there is a direct relationship between price and size. The value of 0.462 is moderate because it is not close zero or one it is close to 0.5.

**Questions #9: Find the Regression Equation of the Price on Size, Test the Significance of the regression equation at 5% significance Level.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Regression Analysis | | | | | | |
|  |  | 0.213 | r² | 30 | n |  |
|  |  | 0.462 | r | 1 | k |  |
|  |  | 45.235 | Std. Error | **Price** | Dep. Var. |  |
| ANOVA table | | | | | | |
| *Source* | *SS* | *df* | *MS* | *F* | *p-value* |  |
| Regression | 15,538.9015 | 1 | 15,538.9015 | 7.59 | **.0102** |  |
| Residual | 57,294.2132 | 28 | 2,046.2219 |  |  |  |
| Total | 72,833.1147 | 29 |  |  |  |  |
| Regression output | | | | | | |
|  |  |  |  |  | *confidence interval* | |
| *variables* | *coefficients* | *std. error* | *t (df=28)* | *p-value* | *95% lower* | *95% upper* |
| Intercept | -10.4995 |  |  |  |  |  |
| Size | 0.1119 | 0.0406 | 2.756 | .0102 | 0.0287 | 0.1950 |

Regression equation is **y' = -10.4995 + 0.1119X.**

The P-value is 0.0102, which is less than .05 indicating the rejecting of Ho. This means that the correlation in the population is not zero.

**REFRENCE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Price** | **Size** | **Pool** | **Town** | |
| **139.9** | **2100** | **0** | **1** | |
| **172.7** | **2200** | **1** | **3** | |
| **173.1** | **2200** | **1** | **5** | |
| **180.4** | **2000** | **0** | **5** | |
| **182.4** | **2100** | **0** | **4** | |
| **187** | **1900** | **0** | **4** | |
| **192.9** | **1900** | **1** | **2** | |
| **194.4** | **2300** | **0** | **3** | |
| **198.9** | **2200** | **1** | **4** | |
| **207.5** | **2300** | **1** | **4** | |
| **209** | **1700** | **0** | **4** | |
| **209.3** | **2100** | **0** | **5** | |
| **209.3** | **1900** | **1** | **4** | |
| **213.6** | **2200** | **0** | **2** | |
| **221.1** | **2300** | **1** | **1** | |
| **233** | **2200** | **0** | **3** | |
| **242.1** | **2300** | **0** | **3** | |
| **245.4** | **2100** | **1** | **1** | |
| **246.1** | **2100** | **0** | **3** | |
| **252.3** | **2600** | **0** | **4** | |
| **257.2** | **2100** | **0** | **4** | |
| **263.1** | **2300** | **1** | **5** | |
| **266.6** | **2400** | **0** | **4** | |
| **270.8** | **2500** | **0** | **4** | |
| **271.8** | **2100** | **0** | **2** | |
| **281.3** | **2100** | **0** | **2** | |
| **292.4** | **2100** | **0** | **3** | |
| **326.3** | **2100** | **0** | **5** | |
| **327.2** | **2500** | **0** | **3** | |
| **345.3** | **2600** | **0** | **4** | |
|  | | | | |
| **Price of home** | | | | **Price** |
| **Size home** | | | | **Size** |
| **Existence of swimming Pool or not** | | | | **Pool** |
| **Level of the distance from the town center** | | | | **Town** |

REMARK / SUGGESTIONS

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