JMP Results for 2024, Exam 1

**Graph Builder**

Year in X box, Count in Y box



**Distributions year=2012**

Analyze / Distributions: Count in Y box, Year in BY box

**count**

**Quantiles**

|  |  |  |
| --- | --- | --- |
| 100.0% | maximum | 556 |
| 99.5% |  | 556 |
| 97.5% |  | 556 |
| 90.0% |  | 475 |
| 75.0% | quartile | 396 |
| 50.0% | median | 322 |
| 25.0% | quartile | 285 |
| 10.0% |  | 237.2 |
| 2.5% |  | 233 |
| 0.5% |  | 233 |
| 0.0% | minimum | 233 |

**Summary Statistics**

|  |  |
| --- | --- |
| Mean | 339.6 |
| Std Dev | 81.318422 |
| Std Err Mean | 20.996326 |
| Upper 95% Mean | 384.63264 |
| Lower 95% Mean | 294.56736 |
| N | 15 |
| N Missing | 0 |

**Distributions year=2017**

**count**

**Quantiles**

|  |  |  |
| --- | --- | --- |
| 100.0% | maximum | 413 |
| 99.5% |  | 413 |
| 97.5% |  | 413 |
| 90.0% |  | 330.2 |
| 75.0% | quartile | 249 |
| 50.0% | median | 205 |
| 25.0% | quartile | 193 |
| 10.0% |  | 164.4 |
| 2.5% |  | 147 |
| 0.5% |  | 147 |
| 0.0% | minimum | 147 |

**Summary Statistics**

|  |  |
| --- | --- |
| Mean | 227.66667 |
| Std Dev | 62.576429 |
| Std Err Mean | 16.157165 |
| Upper 95% Mean | 262.32034 |
| Lower 95% Mean | 193.013 |
| N | 15 |
| N Missing | 0 |

**Oneway Analysis of count By year**

Analyze / Fit Y by X / Count in Y box, Year in X box / Year is a “red bar” = nominal variable

Mean/ANOVA/Pooled T

Nonparametric / Wilcoxon/Kruskal-Wallis Test

Calculate residuals then Analyze/Distribution/Normal Quantile plot

**Oneway Anova**

**Summary of Fit**

|  |  |
| --- | --- |
| Rsquare | 0.389316 |
| Adj Rsquare | 0.367506 |
| Root Mean Square Error | 72.55514 |
| Mean of Response | 283.6333 |
| Observations (or Sum Wgts) | 30 |

**Pooled t Test**

2017-2012

Assuming equal variances

|  |  |  |  |
| --- | --- | --- | --- |
| Difference |  -111.93 | t Ratio |  -4.22495 |
| Std Err Dif | 26.49 | DF | 28 |
| Upper CL Dif |  -57.66 | Prob > |t| | 0.0002\* |
| Lower CL Dif |  -166.20 | Prob > t | 0.9999 |
| Confidence | 0.95 | Prob < t | 0.0001\* |

**Means for Oneway Anova**

| **Level** | **Number** | **Mean** | **Std Error** | **Lower 95%** | **Upper 95%** |
| --- | --- | --- | --- | --- | --- |
| 2012 | 15 | 339.600 | 18.734 | 301.23 | 377.97 |
| 2017 | 15 | 227.667 | 18.734 | 189.29 | 266.04 |

Std Error uses a pooled estimate of error variance

**Wilcoxon / Kruskal-Wallis Tests (Rank Sums)**

| **Level** | **Count** | **Score Sum** | **Expected Score** | **Score Mean** | **(Mean-Mean0)/Std0** |
| --- | --- | --- | --- | --- | --- |
| 2012 | 15 | 321.000 | 232.500 | 21.4000 | 3.650 |
| 2017 | 15 | 144.000 | 232.500 | 9.6000 |  -3.650 |

**Wilcoxon Two-Sample Test, Normal Approximation**

| **S** | **Z** | **Prob>|Z|** |
| --- | --- | --- |
| 144 |  -3.65007 | 0.0003\* |

**Kruskal-Wallis Test, ChiSquare Approximation**

| **ChiSquare** | **DF** | **Prob>ChiSq** |
| --- | --- | --- |
| 13.4748 | 1 | 0.0002\* |

**Distributions**

**Normal QQ plot of residuals for count**



**Analysis of differences (2017 count – 2012 count)**

Compute new column with difference = 2017 – 2012

Analyze / Distributions

Descriptive statistics

 Test Mean: null hypothesis mean = 0, t-test and Wilcoxon signed rank test

 Normal Quantile plot

**Distributions**

**Difference**

**Quantiles**

|  |  |  |
| --- | --- | --- |
| 100.0% | maximum |  -60 |
| 99.5% |  |  -60 |
| 97.5% |  |  -60 |
| 90.0% |  |  -62.4 |
| 75.0% | quartile |  -89 |
| 50.0% | median |  -110 |
| 25.0% | quartile |  -143 |
| 10.0% |  |  -149 |
| 2.5% |  |  -152 |
| 0.5% |  |  -152 |
| 0.0% | minimum |  -152 |

**Summary Statistics**

|  |  |
| --- | --- |
| Mean |  -111.9333 |
| Std Dev | 29.453272 |
| Std Err Mean | 7.6048022 |
| Upper 95% Mean |  -95.62265 |
| Lower 95% Mean |  -128.244 |
| N | 15 |
| N Missing | 0 |

**Test Mean**

|  |  |
| --- | --- |
| Hypothesized Value | 0 |
| Actual Estimate |  -111.93 |
| DF | 14 |
| Std Dev | 29.4533 |

|  | **t Test** | **Signed-Rank** |
| --- | --- | --- |
| Test Statistic |  -14.719 |  -60.0000 |
| Prob > |t| | <.0001\* | <.0001\* |
| Prob > t | 1.0000 | 1.0000 |
| Prob < t | <.0001\* | <.0001\* |

**Normal Quantile plot of differences**

