EVEN MORE Secret Sauce of Stats Success

Student’s Name

Institution

Date

Q1**: Determine the range of values in which you would expect to find the average weekly sales for the entire sales force in your company 90% of the time, and calculate the following.**

|  |  |
| --- | --- |
| *Column1* | |
|  |  |
| Mean | 3966.643077 |
| Standard Error | 323.0310322 |
| Median | 3907.096154 |
| Mode | #N/A |
| **Standard Deviation** | **2284.174334** |
| **Sample Variance** | **5217452.388** |
| Kurtosis | -1.285406114 |
| Skewness | 0.096968234 |
| Range | 7164.865385 |
| Minimum | 569.25 |
| Maximum | 7734.115385 |
| Sum | 198332.1538 |
| Count | 50 |
| Confidence Level (95.0%) | 649.1551509 |

Based on the analysis of the average weekly sales of 50 employees, the range values for the expected average weekly sales for the company are 7164.86. However, the mean of average sales is 3966.64, the median is 323.03, and the standard deviation for the average weekly sales is 2284.17. However, the maximum range is 7734.11, and the minimum range is 569.25. The analysis of average weekly sales also indicates that the variance is 5217452.388. However, if the confidence level is increased to 95%, the average weekly sale of the company would increase as well. And based on the analysis of the weekly sales data, the average weekly increased from 541.578 to 649.156. This gives the company an increase of 107.578 of the average weekly sales. But if the company decides to increase the sample size to one hundred and fifty (150), the mean of the sample sales would increase as well and therefore, and the company would be able to get closer to the population.

Q2**: Based on the calculated confidence interval for weekly sales on the sample of 50 reps at a 90% confidence level, calculate the following.**

|  |  |
| --- | --- |
| *Average Weekly Sales* | |
|  |  |
| Mean | 3966.643077 |
| Standard Error | 323.0310322 |
| Median | 3907.096154 |
| Mode | #N/A |
| Standard Deviation | 2284.174334 |
| Sample Variance | 5217452.388 |
| Kurtosis | -1.285406114 |
| Skewness | 0.096968234 |
| Range | 7164.865385 |
| Minimum | 569.25 |
| Maximum | 7734.115385 |
| Sum | 198332.1538 |
| Count | 50 |
| Confidence Level (90.0%) | 541.5779655 |

The analysis of weekly sales of the rep indicates that the average weekly sale when the confidential level is 90% is 541.578.

Q3**: Determine whether there is a statistically different average weekly sale between Sales Rep A and Sales Rep B by doing the following**.

|  |  |
| --- | --- |
| ***Rep B*** | |
|  |  |
| Mean | 4118.866667 |
| Standard Error | 278.2098469 |
| Median | 4396 |
| Mode | #N/A |
| Standard Deviation | 1523.818089 |
| Sample Variance | 2322021.568 |
| Kurtosis | -0.943725802 |
| Skewness | -0.375169677 |
| Range | 5290 |
| Minimum | 1032 |
| Maximum | 6322 |
| Sum | 123566 |
| Count | 30 |
| Confidence Level (95.0%) | 569.003017 |

|  |  |
| --- | --- |
| *Rep A* | |
|  |  |
| Mean | 4972.266667 |
| Standard Error | 368.099649 |
| Median | 4703 |
| Mode | #N/A |
| Standard Deviation | 2016.164811 |
| Sample Variance | 4064920.547 |
| Kurtosis | -0.836646761 |
| Skewness | -0.293387285 |
| Range | 6817 |
| Minimum | 1052 |
| Maximum | 7869 |
| Sum | 149168 |
| Count | 30 |
| Confidence Level (90.0%) | 625.4480506 |

The analysis of the weekly sales for rep A and B indicates that there are differences in the mean of weekly sales registered by two sale reps. The average mean for rep A is 4972.27 and rep B registered an average weekly sale of 4118.866667. Therefore, the difference between the two reps is 854.

|  |  |  |
| --- | --- | --- |
| t-Test: Two-Sample Assuming Equal Variances | |  |
|  |  |  |
|  | *Weekly Rep A* | *Weekly Rep B* |
| Mean | 4972.266667 | 4118.866667 |
| Variance | 4064920.547 | 2322021.568 |
| Observations | 30 | 30 |
| Pooled Variance | 3193471.057 |  |
| Hypothesized Mean Difference | 0 |  |
| df | 58 |  |
| t Stat | 1.849552979 |  |
| P(T<=t) one-tail | 0.034737668 |  |
| t Critical one-tail | 1.671552763 |  |
| P(T<=t) two-tail | 0.069475336 |  |
| t Critical two-tail | 2.001717468 |  |

The analysis of the weekly sales for rep A and B indicates a unique trend of the sales of the product in a week. Based on the data, it is clear the two sales records for both reps A and B are the same. The analysis established that the P-Value of the two reps A and B is 0.069475. The P- value obtained is higher than the significant value of 0.05 provided, and therefore, the null hypothesis is accepted. This could mean that there is a relationship between weekly sales for Rep A and B. Though rep A made the highest sales compared to rep B, their weekly sales still have some similarities. However, the difference between rep A and B is 854. It means that rep A made a higher sale of 854 than rep B.

Q4: Determine whether this person's average weekly sales are higher than the average weekly sales for the 50 sales reps whose data you used to develop confidence intervals.

|  |  |  |
| --- | --- | --- |
| z-Test: Two Sample for Means | |  |
|  |  |  |
|  | *Average Weekly Sales* | *Rep A* |
| Mean | 3966.643077 | 4972.266667 |
| Known Variance | 0.05 | 0.05 |
| Observations | 50 | 30 |
| Hypothesized Mean Difference | 0 |  |
| z | -19473.81708 |  |
| P(Z<=z) one-tail | 0 |  |
| z Critical one-tail | 1.644853627 |  |
| P(Z<=z) two-tail | 0 |  |
| z Critical two-tail | 1.959963985 |  |

The statistical analysis of the weekly sales for 50 employees and rep B indicates that rep B has a high average sales compared to the average sales for 50 employees. It is established that the average sales for 50 employees are 3966 while the average sales for Rep A are 4972. This means that the difference in average sales between 50 employees and rep B is 1006. It is, therefore; clear that rep A, made a high sales compared to the 50 employees. And thus, in terms of promotion, I can decide to promote rep B for registering higher sales during the month. It is also pointed out that the P- value for the average weekly sales for 50 employees and rep B is 0, P-value =0). The P-Value is, therefore, less than the significant value of 0.05 provided. This means that the null hypothesis is rejected and therefore, there is no direct relationship between the two variables. It could also mean that the average weekly sales of 50 employees and the weekly sales of rep A are not the same.