**Statistical Worksheet Submissions**

**University of Essex**

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Statistical Worksheet Submissions

# Unit 8: Statistical inference

### Exercise 1

|  |  |  |
| --- | --- | --- |
| **Diet B** | **n** | 50 |
|  | **Mean** | 3.710 |
|  | **SD** | 2.769 |

### Exercise 2

|  |  |  |
| --- | --- | --- |
| **Diet B** | **n** | 50 |
|  | **Mean** | 3.710 |
|  | **SD** | 2.769 |
|  | **Median** | 3.745 |
|  | **Q1** | 1.953 |
|  | **Q3** | 5.404 |
|  | **IQR** | 3.451 |

Both diets resulted in weight losses for the patients. However, Diet A has been more effective, we can determine this by the standard deviation being lower, and the mean being higher. Moreover, the 25th percentile of Diet A lost as much as the Mean of Diet B. This is a very significant difference to take into consideration.

### Exercise 3

Frequencies and percentages of Product A, Product B and Others

|  |  |  |
| --- | --- | --- |
| **Frequencies** | |  |
|  |  |  |
|  | **Area 1** | **Area 2** |
| **A** | 11 | 19 |
| **B** | 17 | 30 |
| **Other** | 42 | 41 |
| **Total** | **70** | 90 |
|  |  |  |
|  |  |  |
| **Percentages** | |  |
|  |  |  |
|  | **Area 1** | **Area 2** |
| **A** | 15.7 | 21.1 |
| **B** | 24.3 | 33.3 |
| **Other** | 60.0 | 45.6 |
| **Total** | **100** | 100 |

### Exercise 4

|  |  |  |
| --- | --- | --- |
| t-Test: Paired Two Sample for Means |  |  |
|  |  |  |
|  | *Agent1* | *Agent2* |
| Mean | 8.25 | 8.683333333 |
| Variance | 1.059090909 | 1.077878788 |
| Observations | 12 | 12 |
| Pearson Correlation | 0.901055812 |  |
| Hypothesized Mean Difference | 0 |  |
| df | 11 |  |
| t Stat | -3.263938591 |  |
| P(T<=t) one-tail | 0.003772997 |  |
| t Critical one-tail | 1.795884819 |  |
| P(T<=t) two-tail | 0.007545995 |  |
| t Critical two-tail | 2.20098516 |  |

### Exercise 5

I generated these statistics using the same add-on presented to calculate the t-Test. That based on salaries found for men and women the main statistical data as mean, median, st dev and more.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| *Men* | |  | *Female* | |
|  |  |  |  |  |
| Mean | 53.12 |  | Mean | 44.42 |
| Standard Error | 1.99 |  | Standard Error | 1.80 |
| Median | 52.10 |  | Median | 38.2 |
| Mode | 54.60 |  | Mode | 33.4 |
| Standard Deviation | 15.31 |  | Standard Deviation | 13.83 |
| Sample Variance | 234.49 |  | Sample Variance | 191.28 |
| Kurtosis | 0.44 |  | Kurtosis | 0.30 |
| Skewness | 0.70 |  | Skewness | 1.08 |
| Range | 69.90 |  | Range | 52.9 |
| Minimum | 31.00 |  | Minimum | 30 |
| Maximum | 100.90 |  | Maximum | 82.9 |
| Sum | 3134.20 |  | Sum | 2620.9 |
| Count | 59 |  | Count | 59 |
| Largest(1) | 100.90 |  | Largest(1) | 82.9 |
| Smallest(1) | 31.00 |  | Smallest(1) | 30 |
| Confidence Level(95.0%) | 3.99 |  | Confidence Level(95.0%) | 3.60 |

From these data, we can notice a significant gender gap in favor of men. The means are respectively 53k and 44k, 20.4% higher. The minimum salaries are around 30k for both, but 1) men have access to higher salaries in the order of 100k, while women get at most 82k. 2) Women’s salaries are less sparse and dense on the lower scale.

## Unit 9

### Exercise 1

Chart of Area 2

### Exercise 2

Location A and Location B are on the same chart. We can clearly see that in location A most of the flowers are Sparse/Abundant, and in Location B most are Absent/Sparse.

### Exercise 3

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  | **Class** | **Relative** |
| **Diet B** | **n** | 50.00 |  | **UCB** | **Frequency** |  | **Mark** | **Frequency** |
|  | **Mean** | 3.71 |  | 0 | 3 |  | -1 | 0.06 |
|  | **SD** | 2.77 |  | 2 | 10 |  | 1 | 0.2 |
|  |  |  |  | 4 | 15 |  | 3 | 0.3 |
|  | **Min** | -4.148 |  | 6 | 11 |  | 5 | 0.22 |
|  | **Max** | 10.539 |  | 8 | 8 |  | 7 | 0.16 |
|  | **Range** | 14.687 |  | 10 | 2 |  | 9 | 0.04 |
|  |  |  |  | 12 | 1 |  | 11 | 0.02 |
|  |  |  |  | **TOTAL** | 50 |  | **TOTAL** | 1 |

As shown before, from simple data, Diet A is more effective than Diet B. Basically patients on Diet A lost more weight and with more consistency.

For completeness, this is the chart of Diet A.

The 60% of patients on Diet A lost between 4 and 8 kg.  
Instead on Diet B the peak is less broad and at the same 30% but patients but patients then lost just between 2 to 4 kg.