Statistics– WORKSHEET 6

1- Total Variation = Residual Variation + Regression Variation

2- binomial

3- 2

4- Type-I error

5- Confidence coefficient

6- Increases

7- Hypothesis

8- All of the mentioned

9- 0

10- Bayes' Theorem is a way of finding a [probability](https://www.mathsisfun.com/data/probability.html) when we know certain other probabilities.

The formula is:

P(A|B) = *P(A) P(B|A) P***(B)**

|  |  |  |
| --- | --- | --- |
| Which tells us: |  | how often A happens *given that B happens*, written **P(A|B)**, |
| When we know: |  | how often B happens *given that A happens*, written **P(B|A)** |
|  |  | and how likely A is on its own, written **P(A)** |
|  |  | and how likely B is on its own, written **P(B)** |

11-

A z-score can be placed on a [normal distribution](https://www.statisticshowto.com/probability-and-statistics/normal-distributions/) curve. Z-scores range from -3 standard deviations (which would fall to the far left of the normal distribution curve) up to +3 standard deviations (which would fall to the far right of the normal distribution curve). In order to use a z-score, you need to know the [mean](https://www.statisticshowto.com/probability-and-statistics/statistics-definitions/mean-median-mode/#mean) μ and also the population standard deviation σ.

Z-scores are a way to compare results to a “normal” population. Results from tests or surveys have thousands of possible results and units; those results can often seem meaningless. For example, knowing that someone’s weight is 150 pounds might be good information, but if you want to compare it to the “[average](https://www.statisticshowto.com/arithmetic-mean/)” person’s weight, looking at a vast table of data can be overwhelming (especially if some weights are recorded in kilograms). A z-score can tell you where that person’s weight is compared to the average population’s mean weight.

12-

A t-test is a type of inferential [statistic](https://www.investopedia.com/terms/s/statistics.asp) used to determine if there is a significant difference between the means of two groups, which may be related in certain features. It is mostly used when the data sets, like the data set recorded as the outcome from flipping a coin 100 times, would follow a normal distribution and may have unknown variances. A t-test is used as a hypothesis testing tool, which allows testing of an [assumption](https://www.investopedia.com/ask/answers/073115/what-assumptions-are-made-when-conducting-ttest.asp) applicable to a population.

A t-test looks at the t-statistic, the [t-distribution](https://www.investopedia.com/terms/t/tdistribution.asp) values, and the degrees of freedom to determine the statistical significance. To conduct a test with three or more means, one must use an [analysis of variance](https://www.investopedia.com/terms/a/anova.asp).

13-

Percentile” is in everyday use, but there is no universal definition for it. The most common definition of a percentile is a number where a certain percentage of scores fall below that number. You might know that you scored 67 out of 90 on a test. But that figure has no real meaning unless you know what percentile you fall into. If you know that your score is in the 90th percentile, that means you scored better than 90% of people who took the test.

14-

An ANOVA test is a way to find out if survey or experiment results are [significant](https://www.statisticshowto.com/what-is-statistical-significance/). In other words, they help you to figure out if you need to [reject the null hypothesis](https://www.statisticshowto.com/support-or-reject-null-hypothesis/) or accept the [alternate hypothesis](https://www.statisticshowto.com/what-is-an-alternate-hypothesis/).

Basically, you’re testing groups to see if there’s a difference between them. Examples of when you might want to test different groups:

* A group of psychiatric patients are trying three different therapies: counseling, medication and biofeedback. You want to see if one therapy is better than the others.
* A manufacturer has two different processes to make light bulbs. They want to know if one process is better than the other.
* Students from different colleges take the same exam. You want to see if one college outperforms the other.

15-

The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups. This guide will provide a brief introduction to the one-way ANOVA, including the assumptions of the test and when you should use this test. If you are familiar with the one-way ANOVA, but would like to carry out a one-way ANOVA analysis, go to our guide: [One-way ANOVA in SPSS Statistics](https://statistics.laerd.com/spss-tutorials/one-way-anova-using-spss-statistics.php).