Z-scores

[Science](), [Statistics]()

Running Head: Z-Scores Statistics: Z-Scores goes here of your Introduction In statistics we often have to compare two scores calculated using different units or scales and it is difficult to establish a comparison between these raw scores. Raw scores are the original numbers we get in a statistical experiment. In such cases Standardization or Z-scores is used to establish a comparison between these raw scores. Z-Scores provide a direct measurement of size of score relative to other scores of the distribution and relative to mean of the distribution in terms of standard deviation. Z-score can be simply calculated using the formula,

Where

Negative z-scores are below the mean and positive z-scores are above the mean. (Urdan, 2005)

Inferences from Eric's example

a) The z-score of 1. 33 represents a positive value. The value is positive because the raw score of 21 is above the mean value of 17.

b) On another day when Eric reach on the job in 12 minutes, we can find the z-score by the following working;

The negative value of the z-score represents a value below the mean of 17.

c) In Eric's third trip raw score of 17 is equal to the mean value, therefore we can deduce without any calculations that the value of the z-scores is 0 because anything divided by zero will result in zero.

Uses of z-scores

a) Z-score provide the location of a raw score relative to the mean in terms of standard deviations. In Eric's trip the values of 1. 33, -1. 67 and 0 give the location of raw score relative to the mean value of 17 in terms of standard deviation e. g. a z-score of 1. 33 the location of the raw score of 21 at a distance of 1. 33 standard deviations from the mean of 17.

b) Z-scores also provide the location of a specific raw value relative to average standard deviation. In Eric's trip example all z-score values can be compared to the average standard deviation 3 to deduce the location of a raw score relative to average standard deviation of the population.

c) In case of normal distribution z-scores can be used to determine the percentile scores. Percentiles can tell the percentage of the population that fall above or below a raw score. In Eric's trip example if the sample is normally distributed than we can determine the percentage when Eric reach late to his job.

Standard Normal Curve and Z-scores

There is a close relationship between z-scores and standard normal curve. If we have a standard normal curve we can determine the relative frequencies of z-scores and raw scores, percentile rank of a raw score, a raw score based on a percentile and the population between a raw score and the mean. However, all these calculations are possible if we have a normal distribution of the population. (Heiman, 2011)

References

Urdan, C., Timothy. (2005). Statistics in Plain English. USA, Lawrance Erlbaum Associates.

Heiman, W., Gray. (2011). Basic Statistics for the Behavioral Sciences. USA, Wadsworth CENGAGE Learning