ASSIGNMENT 1

1. a) (10/43)\*100=23.26

b) (2/46)\*100= 4.34

c) treatment group

d) The placebo effect could explain the observed difference in the percentages of patients who are pain-free 24 hours after having acupuncture in the two groups. The treatment group got migraine-specific acupuncture, which may have resulted in some patients perceiving pain alleviation due to the belief that the treatment would work (placebo effect). The control group, on the other hand, received placebo acupuncture, which may not have elicited the same level of expectation for pain treatment, resulting in a lower percentage of reported pain relief in that group. This shows that psychological variables and expectations, rather than acupuncture's effectiveness, may have played a role in the observed discrepancy.

1. a) To study the Buteyko method can reduce asthma symptoms and improve quality of life.

b) asthma patients aged 18-69 are subjects in this study, 600 patients were included.

c) Variables of the study are Quality of life, activity, asthma symptoms, medication reduction.

Quality of life – categorical and ordinal.

activity – categorical and ordinal.

asthma symptoms – categorical and ordinal

medication reduction – categorical and ordinal.

1. a) test involving sucrose are “controls” and tests involving Aspartame and erythritol are “treatments” because these substances are being tested how hummingbirds respond to them in comparison to sucrose.

b) The response variable in the study is Duration of time which is numerical and continuous values.

c) To determine ability of taste receptor(T1R1-T1R3) in hummingbirds to taste sweet and response to sweet and non-sweet compounds like aspartame and erythritol.

1. a) Sample size of 437 healthy young volunteers were chosen from University of Virginia Community.

b) This study can’t be generalized as the study will determine the use of Echinacea among 437 healthy young volunteers only.

c) The findings of this study cannot be used to establish casual relationships because there is limited scope as this study was done on healthy young adults only and this study may not represent the broader population.

1. a) This study comes under experimental study as they have given different doses of vitamin C (independent variables) to observe effect on cold duration and severity (Dependent variables).

b) Vitamin C dosage (1g Vitamin C, 3g Vitamin C, or 3g Vitamin C plus) are explanatory

variables. The response variables are measure of common cold duration and severity.

c) Yes, the fact that participants may not adhere to and take their pills introduces a confounding variable to the study. This is because the efficiency of the vitamin C treatment is dependent on participants taking the pills as directed. If some individuals do not take their medications, the results may be affected, making it impossible to establish the exact effectiveness of the treatment.

1. a) This is an experimental study.

b) The group which has been assigned to do exercise twice a week is considered as treatment group. The group which has been instructed not to exercise is control group.

c) Based on the age group divided on the sample, blocking is used.

d) To some extent, this study helps to establish causality in terms of experimental control, as it involves random assignment to treatment and control groups. This experiment cannot be generalized to a larger population because this study did not consider the age groups under 18 and above 55 years.

e) Yes, this study may be successful in determining and comparing mental health in both the samples if the sample size is more to draw meaningful conclusions. By considering this one I can say the study can be funded.

1. a) Mean of (1) is 8 and mean of (2) is 8.7. Therefore, Mean(1) < Mean(2). This suggests that, on average, the values in distribution (2) are slightly higher than those in distribution (1).

The standard deviation of distribution (1) appears to be lower than that of distribution (2).

b) Mean of (1) is 10 and mean of (2) is 7.5. Therefore, Mean(1) > Mean(2). This suggests that, on average, the values in distribution (1) are slightly higher than those in distribution (2).

The standard deviation of distribution (2) greater than that of distribution (1).

c) mean of (1) is 5 and mean of (2) is 25. Therefore, Mean(1) < Mean(2).

The standard deviation of distribution (2) is same as distribution (1).

d) Mean of (1) is 300 and mean of(2) is 300. Therefore, Mean(1) = Mean(2).

Standard deviation of (2) is greater than standard deviation of (1).

1. a) The distribution of daily AQI values in Durham, NC in 2011 is skewed to the right. This indicates that days with lower AQI values dominate days with higher AQI values. According to the histogram, most days had AQI values less than 50, which is considered "good" air quality. However, there were a few days when the AQI was above 100, indicating "unhealthy" air quality.

b) Lowest daily AQI is10 and Highest is 60(by eliminating outliers). Median can be calculated as 30.

c) We can expect the mean AQI value to be greater than the median AQI value since the distribution of daily AQI values is skewed to the right.

1. a) (372/910)\*100 = 40.88

40.88 percent Tampa, FL voters identify themselves as conservatives.

b) (278/910)\*100 = 30.55

30.55 88 percent Tampa, FL voters are in favor of the citizenship option.

c) (57/910)\*100 = 6.26

6.26 percent Tampa, FL voters identify themselves as conservatives and are in favor of the citizenship option.

d) conservative = 15.3%, moderate = 33.1% and liberal=57.7%.

1. a) fig 1 shows linear and fig 3 shows non-linear and both shows positive association.

b) fig 4 shows negative linear association.

c) fig 2 shows no association.