

## STA 3180 Statistical Modelling: Nonparametric Tests

### Extra Practice Problems: Nonparametric Tests

#### 1. What is the Mann-Whitney U test?

Solution: The Mann-Whitney U test is a nonparametric test used to compare two independent samples to determine if there is a statistically significant difference between them. To solve this problem, we would first calculate the U statistic for each sample, which is the sum of the ranks of the observations in the sample. We would then compare the two U statistics to determine if there is a statistically significant difference between them. [CORRECT]

#### 2. What is the Kruskal-Wallis test?

Solution: The Kruskal-Wallis test is a nonparametric test used to compare more than two independent samples to determine if there is a statistically significant difference between them. To solve this problem, we would first calculate the H statistic for each sample, which is the sum of the ranks of the observations in the sample. We would then compare the H statistics to determine if there is a statistically significant difference between them. [CORRECT]

#### 3. What is the Wilcoxon signed-rank test?

Solution: The Wilcoxon signed-rank test is a nonparametric test used to compare two related samples to determine if there is a statistically significant difference between them. To solve this problem, we would first calculate the W statistic for each sample, which is the sum of the ranks of the observations in the sample. We would then compare the two W statistics to determine if there is a statistically significant difference between them. [CORRECT]

#### 4. What is the chi-square test?

Solution: The chi-square test is a parametric test used to compare two categorical variables to determine if there is a statistically significant association between them. To solve this problem, we would first calculate the chi-square statistic, which is the sum of the squared differences between the observed and expected frequencies of the two variables. We would then compare the chi-square statistic to the critical value to determine if there is a statistically significant association between the two variables. [INCORRECT]

Correct Answer: The chi-square test is a nonparametric test used to compare two categorical variables to determine if there is a statistically significant association between them. To solve this problem, we would first calculate the chi-square statistic, which is the sum of the squared differences between the observed and expected frequencies of the two variables. We would then compare the chi-square statistic to the critical value to determine if there is a statistically significant association between the two variables. [CORRECT]