Exam 1.

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1. What are T scores**? 5 points**

* T scores is a ratio between two groups that shows the difference within the groups. The larger the t score, the more difference between the groups and the opposite for smaller t scores (smaller t score – the groups are more similar).

1. Give one example where you apply Paired T Test**? 5 points**

* If I was a doctor and tested one patient’s blood pressure every month of this year and compared them to the blood pressures of the same patient from the previous year

1. What is statistical significance? **5 points**

* A term that means that observations aren’t very possible assuming a null hypothesis. It is normally shown through a p value. The p value is compared to a chosen “alpha value” and if the p value is lower than that value it is considered statistically significant

1. What is the difference between a one-sample t-test and a paired t-test? **5 points**

* **A one sample t-test compares the mean of one group to a known mean**
* **A paired t-test compares the means of one object or person at different times**

1. What is a factorial ANOVA? **5 points**

* A analysis of variance method that compares 2 or more groups with more than 1 categorical independent variable. (Two-way ANOVA is an example)

1. What are assumptions of factorial ANOVA? **5 points**

* The data is normally distributed , the groups have similar variance, the data is independent

1. What is the R function for **One way ANOVA? 5 points**

* **Aov()**
* **The value is df (degree of freedom)**

1. **What does correlation coefficient tell you? 5 points**

* **Correlation coefficient compares two groups and tells us what the relationship between the groups are. We can also derive the magnitude and direction of the relationship. The range of the r^2 value must be between -1 and 1.**

9) **What are the assumptions of the Pearson correlation coefficient**? **5 points**

**-** The data is normally distributed , the groups have similar variance, the data is independent

- the pearson correlation coefficient compares unranked variables

10) What are the main assumptions of T-test? **5 points**

* The data is normally distributed , the groups have similar variance, the data is independent
* Calculates a t-value, showing the magnitude of the difference between two groups.
* Compares two samples, null hypothesis that there is no difference and alternate hypothesis that there is a difference between the two groups

**11) Calculate Paired T Test with R: 50 points**

**Using** following 2 variables, calculate P value, and distribution plot.

x = c(1000,230,12333,3455,23,12,3,4,45,56,78)

y = c(1,2,3,4,5,6,7,8,9,10,11)

pts = seq(-4.5,4.5,length=100)

plot(pts,dt(pts,df=9),col='red',type='l')

lines(density(x), col='green')

lines(density(y), col='blue')

ttest = t.test(x,y)

x = c(1000,230,12333,3455,23,12,3,4,45,56,78)

y = c(1,2,3,4,5,6,7,8,9,10,11)

Email R program Exam1.R and Exam1.pdf plot to get full points.

Upload Exam1.R and Exam1.pdf plot to your Git repository.