Exercise 10. Review : Quantitative Biology.

Patients with leukemia have a lower WBC count than healthy patients. Also it has been found that WBC count lowers when cancer patients undergo chemotherapy.

Using the dataset provided in Canvas called PatientData.csv, **write R code and write descriptions and conclusions** for the following task.

1. Show descriptive stats with 2 relevant graphs
2. Show a t test between WBC count for healthy patient vs. any of the cancer patient. Make at least one relevant graph with the t test.
3. Show a chi-square test of independence between age and sex. Also make a contingency table.
4. Show an ANOVA between WBC count for different types of cancer patients. Make at least one relevant graph for ANOVA.
5. Follow up the ANOVA with a tukey post-hoc test between WBC count for different types of cancer patients from the lecture slide.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cancer | WBCcount | age | Smoking: yes or no | Sex: female or male |
| Healthy |  |  |  |  |
| Healthy |  |  |  |  |
| Lung\_Cancer |  |  |  |  |
| Lung\_Cancer |  |  |  |  |
| Thoraric\_Cancer |  |  |  |  |
| Thoraric\_Cancer |  |  |  |  |
| Breast\_Cancer |  |  |  |  |
| Breast\_Cancer |  |  |  |  |

Use the code given below to help you in task 4 and 5.

model <- aov(WBCcount~cancer,data=PatientData)

summary(model)

TukeyHSD(model,"WBCcount",ordered=TRUE)

plot(TukeyHSD(model,"WBCcount"))