**PH 1700 Homework 1**

Xu Zuo, M.S.

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**Answer 2.35**

Table 1 is a summary table of I and U plants. Each group includes 8 samples. The table shows the descriptive statistics of pod weights from two groups, including mean, standard deviation, minimum and maximum.

Table 1. Descriptive statistics for I and U plants. Obs: number of observations; Std. Dev.: standard deviation; Min: minimum; Max: maximum.



**Answer 2.36**

Figure 1 shows the box plots for the I and U groups. The distribution shows that plants in the I group generally have heavier pod weights. Sample 7 in the U group has the pot weight of 2.11 and was plotted as an outliner in the graph.



Figure 1. Box plots of I and U groups.

**Answer 2.37**

Plants in the I group generally grow better than plants in the U group, since the I group has higher mean and lower standard deviation in terms of pod weights. If the pod weight is one of the metrics that assesses the plant growth, then the statistics indicate that inoculation is effective for soybean growth.

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**Answer 2.38**

Table 2. Descriptive statistics for variable C. Obs: number of observations; Std. Dev.: standard deviation; Min: minimum; Max: maximum.



**Answer 2.39**

Table 3. Descriptive statistics for variable C by tobacco use group. Cat\_pyr: categories of 10 pack-year groups; N: number of observations; sd: standard deviation.





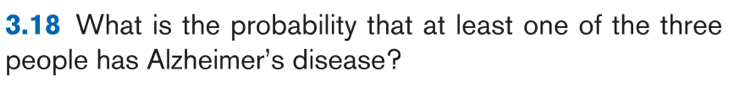
Figure 2. Scatter plot for variable C by tobacco use group. Cat\_pyr: categories of 10 pack-year groups. Each group number corresponds to a pack year group: 1-> 0-9.9 pack years; 2-> 10-19.9 pack years; 3-> 20-29.9 pack years; 4-> 30-39.9 pack years; 5-> 40+ pack years.

**Answer 2.40**

The figure implies that C is decreasing as the difference in pack-years increases. This might indicate that the heavier-smoking twin has a smaller lumbar spine bone mineral density, which suggests that tobacco use has a negative relationship with lumbar spine bone mineral density.

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Table

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**Answer 3.18**

We denote A = {77-year-old man has Alzheimer’s disease}, B = {76-year-old woman has Alzheimer’s disease}, C = {82-year-old woman has Alzheimer’s disease}.

**Answer 3.22**

Table

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**Answer 3.87**

|  |  |  |
| --- | --- | --- |
|  | Disease | |
| Test | positive | negative |
| positive | 12 | 12 |
| negative | 4 | 34 |

Table 4. True positives, true negatives, false positives and false negatives of the CMMS test.

**Answer 3.88**

**Additional Question**

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**Answer 4.60**

We have the binomial distribution with n=200, p=0.0074

Text

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**Answer 10.124**