

Statistical Inference Project: Part 2

Question

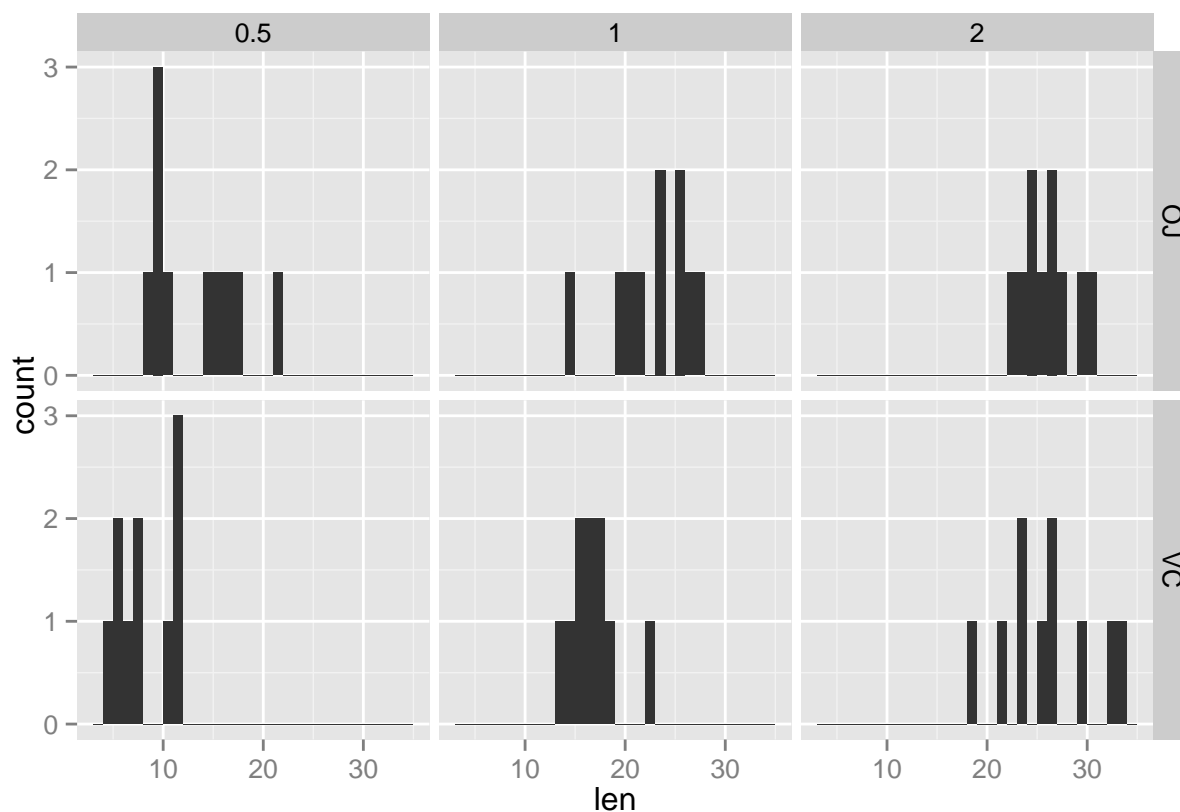
Now in the second portion of the class, we're going to analyze the ToothGrowth data in the R datasets package.

1. Load the ToothGrowth data and perform some basic exploratory data analyses
2. Provide a basic summary of the data.
3. Use confidence intervals and hypothesis tests to compare tooth growth by supp and dose. (Use the techniques from class even if there's other approaches worth considering)
4. State your conclusions and the assumptions needed for your conclusions.

Answers

A histogram of teeth length per dose and delivery type give us an idea of the results of these factors. At first glance, it seems that overall higher vitam C dosages result in longer teeth, though the delivery type doesn't seem to have much impact.

```
library(ggplot2)
dat <- ToothGrowth
ggplot(dat, aes(x = len)) + geom_histogram(binwidth=1) + facet_grid(supp ~ dose)
```



Based on this impression we hypothesise that more vitamin C results in longer teeth. To test this we will take the 0.5 dose cases as null hypothesis (the closest we get to no supplementary vitamin C) and test whether increased dosages have a significant impact.

Because we haven't got a huge amount of samples, we'll use the t interval.