Part 2: Analysis of Tooth Growth Data

@tribetect

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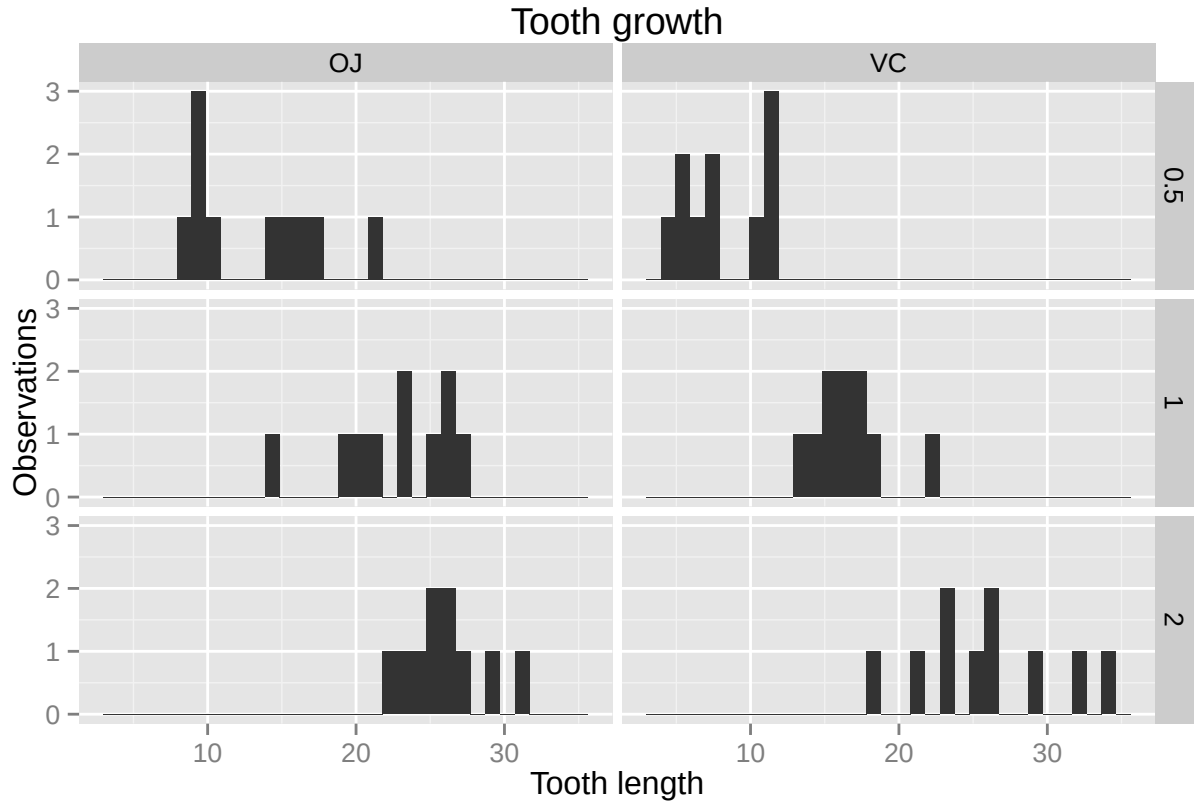
Overview

Exploratory data analysis

The data consists of 60 observations of growth, dose, and consists of two groups by growth supplement, 30 each of Orange Juice and 30 cases with

```
require(datasets); require(ggplot2)

qplot(len, data = ToothGrowth, facets = dose ~ supp, main = "Tooth growth", xlab = "Tooth length", ylab
```



Summary of exploratory data analysis

Comparative effectiveness of supplements

OJ may be more effective than VC, although the different may be very slight

Effect of dose

Higher doses of supplement may result in more growth

Hypothesis testing

Null hypothesis: H0: mean_OJ = mean_VC

Growth in teeth grouped by supplements OJ and VC is similar

H_alt: Growth in teeth grouped by supplements OJ and VC is NOT

```
t.test(len ~ supp, paired = FALSE, var.equal = TRUE, data = ToothGrowth)
```

```
##
##  Two Sample t-test
##
## data:  len by supp
## t = 1.9153, df = 58, p-value = 0.06039
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -0.1670064  7.5670064
## sample estimates:
## mean in group OJ mean in group VC
##         20.66333         16.96333
```

Assumptions

1. Length is predicted by dose and supp
2. 95% confidence level is sufficient in reducing the likelyhood of inferential errors
3. Two groups of total 60 subjects are an unpaired groups
4. The variances of the two groups are assumed equal variance

Conclusion

The two supplements, OJ and VC, do not differ significantly, we infer with 95% confidence. We do not reject our null hypothesis.