One-Way ANOVAs in R

What is an ANOVA?

- **An**alysis **o**f **Va**riance

- Compare 2 or more means
  - IV = 1+ categorical with 2+ levels
  - DV = 1 continuous

- One-way = 1 IV (the most simple)

Assumptions for ANOVAs

- Normality
- Homogeneity of Variance – equal amount of change among the groups
- Sample Size – 20 rows per IV
- Independence – groups are unrelated

To Test Homogeneity of Variance

- Bartlett's or Fligner's test
- You want a p value > .05 to pass the assumption
- If you don't pass, use the Welch's One-Way Test

```
bartlett.test(DV ~ IV, data=dataFrame)
fligner.test(DV ~ IV, data=dataFrame)
```

ANOVA

- With homogeneity of variance

```
modelName <- aov(DV ~ IV)
```

- Without homogeneity of variance

```
modelName <- lm(DV ~ IV, data=dataFrame)
Anova(modelName, Type="II", white.adjust=TRUE)
```

What are Post Hocs

- *post hoc* literally means “after this” in latin
- What you do AFTER an analysis to make sense of it

pairwise.t.test(DV, IV, p.adjust=“bonferroni”)

- Then use dplyr aggregation to get the means for each category