AE 15: Model Comparison

Tips Data

Driver: _____, Reporter: _____, Gopher: _____

> **!** Important
>
> - Open RStudio and create a subfolder in your AE folder called "AE-15".
> - Go to the Canvas and locate your `AE-15` assignment to get started.
> - Upload the `ae-15.qmd` and `tip-data.csv` files into the folder you just created. The `.qmd` and PDF responses are due in Canvas. You can check the due date on the Canvas assignment.

Packages + data

```
library(tidyverse)
library(broom)
library(yardstick)
library(ggformula)
library(patchwork)
library(knitr)
library(kableExtra)

tips <- read_csv("tip-data.csv") |>
  drop_na(Party)
```

What factors are associated with the amount customers tip at a restaurant? To answer this question, we will use data collected in 2011 by a student at St. Olaf who worked at a local restaurant.[1]

The variables we'll focus on for this analysis are

[1] Dahlquist, Samantha, and Jin Dong. 2011. "The Effects of Credit Cards on Tipping." Project for Statistics 212-Statistics for the Sciences, St. Olaf College.

- `Tip`: amount of the tip
- `Meal`: which meal this was (`Lunch`, `Dinner`, `Late Night`)
- `Party`: number of people in the party
- `Age`: Age category of person paying the bill (`Yadult`, `Middle`, `SenCit`)

Analysis goal

The goals of this activity are to comparing models with: - R^2 vs. R^2_{Adj} - AIC and BIC

Exercise 1

Fit two models:

1. `tip_fit_1`: predict `Tip` from `Party`, `Age`, and `Meal`
2. `tip_fit_2`: predict `Tip` from `Party`, `Age`, `Meal`, and `Day`.

Exercise 2

Apply `glance` to both models above to find the R^2 and R^2_{adj} values?

Exercise 3

1. Which model would we choose based on R^2?
2. Which model would we choose based on Adjusted R^2?
3. Which statistic should we use to choose the final model - R^2 or Adjusted R^2? Why?

Exercise 4

Reference the output from Exercise 2.

1. Which model would we choose based on AIC?
2. Which model would we choose based on BIC?

Exercise 5 (Time Permitting)

Find the best model you can! You have until the end of class! Team with the best model gets a seriously great high-five.

To submit the AE

> **!** Important
>
> - Render the document to produce the PDF with all of your work from today's class.
> - Upload your QMD and PDF files to the Canvas assignment.