Lab 4 Activity

PSYC 7804 - Spring 2026

We will be looking at the `Chirot` data from the `car` package again. As a reminder, this is data on the the 1907 Romanian peasant revolt. Find a descriptions of the variables in the table below:

Variable	Description
intensity	Intensity of the rebellion
commerce	Commercialization of agriculture
tradition	Traditionalism
midpeasant	Strength of middle peasantry
inequality	Inequality of land tenure

run the following code to name the data you will be using as `dat`:

```
library(car)
dat <- Chirot
```

1. Treat `intensity` as the outcome and `tradition` and `inequality` as predictors and run a multiple regression. What is the R^2 of this model? What about the adjusted R^2? do you think that they are appreciably different?

2. The formula for adjusted R^2 is

$$R^2_{\text{adj}} = 1 - (1 - R^2)\frac{n-1}{n-k-1},$$

where R^2 is the original R^2 value, n is the sample size, and k is the number of predictors. In `R`, first define R^2, n, and k as variables; then, calculate the R^2_{adj} using the equation above.

- assuming all other variables stay the same, what happens to R^2_{adj} if $n = 100$ and if $n = 1,000$? Calculate R^2_{adj} assuming $n = 100$ and $n = 1,000$ and compare the results with the original unadjusted R^2.

3. Compute the bootstrapped confidence intervals for the two slopes of the regression in question 1. Run 3 different models with 100, 500, and 2000 bootstraps (remember to set a seed!). For each of them, print the confidence intervals and create histograms of the

- What differences do you see in the distributions of the bootstrapped slopes? Based on the confidence intervals, would you make any different conclusions about the significance of the slopes (the answer may vary depedning on the chosen seed)?