Lab 6 Activity

We will be using the same data from Lab 6. Click here and copy the code from the chunk on the right and run to load the data.

```
library(rio)
```

```
## Warning: package 'rio' was built under R version 4.4.2
```

```
dat <- import("https://github.com/quinix45/PSYC-7804-Regression-Lab-Slides/raw/refs/heads/main/Slides%20
```

Our variables of interest are once again `y = happiness`, `x = age`, and `z = friends`.

1. In Lab 6 we observed that the partial correlation between two variables accounting for a third variable is the correlation of the residuals from `x ~ z` and `y ~ z`:

```
resid_y_z <- residuals(lm(happiness ~ friends, dat))
resid_x_z <- residuals(lm(age ~ friends, dat))

cor(resid_x_z, resid_y_z)
```

```
## [1] -0.162955
```

- What is the resulting regression coefficient if we run a regression predicting the residuals of `y` with the residuals of `x`? How is this type of regression coefficient called? (This was discussed in Lab 5)
- can you transform the residuals of `y` and the residuals of `x` such that running a regression between the two will result in the partial correlation?

2. Run a regression model with `friends` predicting `happiness`. Then, run an additional model that also includes `age` as a predictor. Is the improvement in R^2 significant when adding `age` to the model?

- Calculate ΔR^2.

3. Compare the two models from the previous question with both AIC and BIC. What model should you select according to each? Do they "agree" with each other?

- Do either the BIC or the AIC "agree" with the ΔR^2 significance test from the previous question?