

<https://classroom.github.com/a/WRpAuFge>

The dataset `finches` is, as best I know, real data from Charles Darwin's adventures through the Galapagos islands. All measurements taken on finches are recorded in millimeters. You can find the CSV of the dataset at the following link:

<https://raw.githubusercontent.com/roualdes/data/master/finches.csv>

1. Read in the dataset using the function `read.csv`.
2. Make an appropriate `ggplot2` plot of the variables `taillength` and `winglength`. Store your plot into a variable `p`.
3. Assume the wing and tail length measurements are linearly related via the simple linear regression model. Use the likelihood method together with `optim` to estimate the (population) linear relationship between wing (`x`) and tail (`y`) length of finches from the Galapagos islands.
4. Add this line to your plot `p` via the `ggplot` layer (function) `geom_smooth(se=FALSE, method='lm')`.
5. Write 2 complete English sentences describing this estimated model in context of these data, one for the slope and one for the intercept.
6. Using the bootstrap method, calculate a 94% confidence interval for the population intercept and slope that describe the linear relationship between wing and tail length of Galapagos finches.
7. Write a complete English sentence describing each confidence interval in the context of these data.
8. Add one line for each of the bootstrap estimated lines (both intercept and slope) to your plot `p`. Color the line blue and make it 50% transparent with the argument `alpha`. Hints: See `?scales::alpha` and `?ggplot2::geom_abline`. You'll need to turn your bootstrap estimates into a dataframe first. If you used `boot::boot()`, your R estimates are in the element named `t` within the object returned from `boot::boot()`.