Week 7 Workshop

Katie Miller

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library(tidyverse)

## ── Attaching core tidyverse packages ──────────────────────── tidyverse 2.0.0 ──  
## ✔ dplyr 1.1.1 ✔ readr 2.1.4  
## ✔ forcats 1.0.0 ✔ stringr 1.5.0  
## ✔ ggplot2 3.4.2 ✔ tibble 3.2.1  
## ✔ lubridate 1.9.2 ✔ tidyr 1.3.0  
## ✔ purrr 1.0.1   
## ── Conflicts ────────────────────────────────────────── tidyverse\_conflicts() ──  
## ✖ dplyr::filter() masks stats::filter()  
## ✖ dplyr::lag() masks stats::lag()  
## ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors

library(here)

## here() starts at /Users/katie/git/ES\_193DS\_week7

library(lterdatasampler)  
  
library(performance)  
library(broom)  
library(flextable)

##   
## Attaching package: 'flextable'  
##   
## The following object is masked from 'package:purrr':  
##   
## compose

library(ggeffects)  
library(car)

## Loading required package: carData  
##   
## Attaching package: 'car'  
##   
## The following object is masked from 'package:dplyr':  
##   
## recode  
##   
## The following object is masked from 'package:purrr':  
##   
## some

library(naniar)

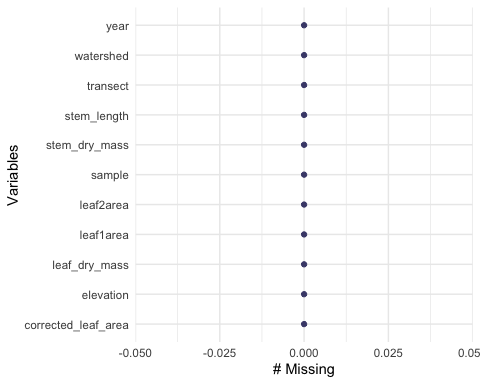
# Linear Models

How does stem length *predict* stem dry mass?

maples\_data <- hbr\_maples %>%   
 filter(year == 2003 & watershed == "Reference")

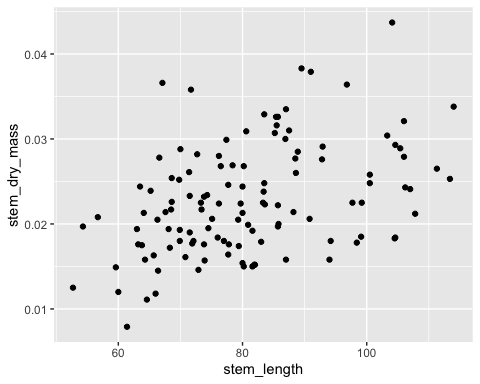
Visualize missing data

gg\_miss\_var(maples\_data)



Exploratory data visualization

ggplot(data = maples\_data, aes(x= stem\_length, y = stem\_dry\_mass)) +  
 geom\_point()



Let’s try a model

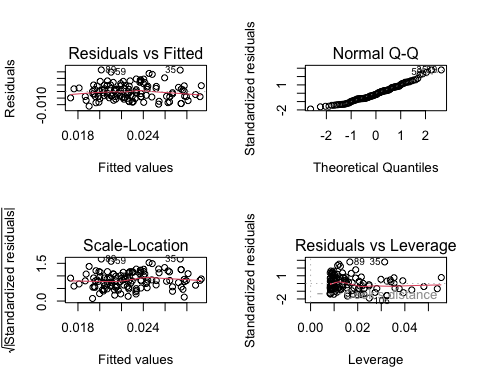
maples\_model <- lm(stem\_dry\_mass ~ stem\_length,  
 data = maples\_data)  
  
maples\_model

##   
## Call:  
## lm(formula = stem\_dry\_mass ~ stem\_length, data = maples\_data)  
##   
## Coefficients:  
## (Intercept) stem\_length   
## 0.0070033 0.0001958

Check assumptions

I. linear relationship: yes! Plot in console II. independence of errors: yes! (based on data collection) III. Homoskedasicity of errors: yes! (residuals vs. fitted plot) IV. Normally distrobuted errors: yes! (QQ plot of residuals)

par(mfrow = c(2, 2))  
plot(maples\_model)



turn off 2 x 2 grid

dev.off()

## null device   
## 1