Weekly Summary Template

Marc Hughes

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Tuesday, Feb 7

> **!** TIL
>
> Include a *very brief* summary of what you learnt in this class here.
> Today, I learnt the following concepts in class:
>
> 1. Interpretation of regression coefficients
> 2. How to do regression with categorical covariates
> 3. How to relevel/reorder the baseline level

Provide more concrete details here. You can also use footenotes[1] if you like

```
library(tidyverse)
```

In class we were shown how to relevel the baseline level using the 'relevel()' function.

```
# before
iris$Species
```

[1] You can include some footnotes here

```
  [1] setosa     setosa     setosa     setosa     setosa     setosa
  [7] setosa     setosa     setosa     setosa     setosa     setosa
 [13] setosa     setosa     setosa     setosa     setosa     setosa
 [19] setosa     setosa     setosa     setosa     setosa     setosa
 [25] setosa     setosa     setosa     setosa     setosa     setosa
 [31] setosa     setosa     setosa     setosa     setosa     setosa
 [37] setosa     setosa     setosa     setosa     setosa     setosa
 [43] setosa     setosa     setosa     setosa     setosa     setosa
 [49] setosa     setosa     versicolor versicolor versicolor versicolor
 [55] versicolor versicolor versicolor versicolor versicolor versicolor
 [61] versicolor versicolor versicolor versicolor versicolor versicolor
 [67] versicolor versicolor versicolor versicolor versicolor versicolor
 [73] versicolor versicolor versicolor versicolor versicolor versicolor
 [79] versicolor versicolor versicolor versicolor versicolor versicolor
 [85] versicolor versicolor versicolor versicolor versicolor versicolor
 [91] versicolor versicolor versicolor versicolor versicolor versicolor
 [97] versicolor versicolor versicolor versicolor virginica  virginica
[103] virginica  virginica  virginica  virginica  virginica  virginica
[109] virginica  virginica  virginica  virginica  virginica  virginica
[115] virginica  virginica  virginica  virginica  virginica  virginica
[121] virginica  virginica  virginica  virginica  virginica  virginica
[127] virginica  virginica  virginica  virginica  virginica  virginica
[133] virginica  virginica  virginica  virginica  virginica  virginica
[139] virginica  virginica  virginica  virginica  virginica  virginica
[145] virginica  virginica  virginica  virginica  virginica  virginica
Levels: setosa versicolor virginica
```

```r
iris$Species <- relevel(iris$Species, "virginica")

# after
iris$Species
```

```
  [1] setosa     setosa     setosa     setosa     setosa     setosa
  [7] setosa     setosa     setosa     setosa     setosa     setosa
 [13] setosa     setosa     setosa     setosa     setosa     setosa
 [19] setosa     setosa     setosa     setosa     setosa     setosa
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 [43] setosa     setosa     setosa     setosa     setosa     setosa
 [49] setosa     setosa     versicolor versicolor versicolor versicolor
```

```
 [55] versicolor versicolor versicolor versicolor versicolor versicolor
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 [73] versicolor versicolor versicolor versicolor versicolor versicolor
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 [91] versicolor versicolor versicolor versicolor versicolor versicolor
 [97] versicolor versicolor versicolor versicolor virginica  virginica
[103] virginica  virginica  virginica  virginica  virginica  virginica
[109] virginica  virginica  virginica  virginica  virginica  virginica
[115] virginica  virginica  virginica  virginica  virginica  virginica
[121] virginica  virginica  virginica  virginica  virginica  virginica
[127] virginica  virginica  virginica  virginica  virginica  virginica
[133] virginica  virginica  virginica  virginica  virginica  virginica
[139] virginica  virginica  virginica  virginica  virginica  virginica
[145] virginica  virginica  virginica  virginica  virginica  virginica
Levels: virginica setosa versicolor
```

Thursday, Feb 9

> **!** TIL
>
> Include a *very brief* summary of what you learnt in this class here.
> Today, I learnt the following concepts in class:
>
> 1. What 'names spaces' are how they allow for the calling of repeat function names across different packages
> 2. I learned that if we have a high R Squared then the p-value is significant but a significant p-value does not guarantee a high R Squared
> 3. I learned how to do multiple regression with categorical covariates.

I learned about the interpretation for coefficients in a regression model with multiple covariates.

```
library(ISLR2)
```

```
Warning: package 'ISLR2' was built under R version 4.2.2
```

```
attach(Credit)
```

```
df<- Credit %>%
  tibble()
df
```

```
# A tibble: 400 x 11
   Income Limit Rating Cards   Age Educat~1 Own   Student Married Region Balance
    <dbl> <dbl>  <dbl> <dbl> <dbl>    <dbl> <fct> <fct>   <fct>   <fct>    <dbl>
 1   14.9  3606    283     2    34       11 No    No      Yes     South      333
 2  106.   6645    483     3    82       15 Yes   Yes     Yes     West       903
 3  105.   7075    514     4    71       11 No    No      No      West       580
 4  149.   9504    681     3    36       11 Yes   No      No      West       964
 5   55.9  4897    357     2    68       16 No    No      Yes     South      331
 6   80.2  8047    569     4    77       10 No    No      No      South     1151
 7   21.0  3388    259     2    37       12 Yes   No      No      East       203
 8   71.4  7114    512     2    87        9 No    No      No      West       872
 9   15.1  3300    266     5    66       13 Yes   No      No      South      279
10   71.1  6819    491     3    41       19 Yes   Yes     Yes     East      1350
# ... with 390 more rows, and abbreviated variable name 1: Education
```

```
df3 <- df %>% select(Income, Rating, Limit)
df3
```

```
# A tibble: 400 x 3
   Income Rating Limit
    <dbl>  <dbl> <dbl>
 1   14.9    283  3606
 2  106.     483  6645
 3  105.     514  7075
 4  149.     681  9504
 5   55.9    357  4897
 6   80.2    569  8047
 7   21.0    259  3388
 8   71.4    512  7114
 9   15.1    266  3300
10   71.1    491  6819
# ... with 390 more rows
```

```
model <- lm(Limit ~ Income + Rating, df3)
model
```

```
Call:
lm(formula = Limit ~ Income + Rating, data = df3)

Coefficients:
(Intercept)       Income       Rating
  -532.4711       0.5573      14.7711
```

1. β_0 is the expected value of y when $income = 0$ and $rating = 0$
2. β_1 is saying that if *rating* is held constant and *income* changes by 1 unit, then the corresponding change in the 'limit' is 0.5573
3. β_2 is saying that if 'income' is held constant and 'rating' changes by 1 unit, then corresponding change in 'limit' is 14.771