Now available at

`http://dicook.github.io/Statistical_Thinking/tutorials/lab09/lab9help.pdf`

1 The Game

- Divide each group into two teams choose which team gets which store.
- Run sample_ day_ time.
- Look at the dt to find the time and day.
- Each team decides how many attendents to have that hour.
- Run compute_ earnings with the number of attendents for that hour.
- Repeat nine more times and add to get total earnings.
- The team with the store that gets the most money wins!

```
dt <- sample_day_time()
dt
compute_earnings(dt[[1]], dt[[2]], fl, mc)
```

Put the number of attendents for Flinders St as fl and for Melbourne Central as mc.

2 Question One

There's over 4000 estimates, don't write the whole regression.

Writing equations in markdown for pdf works the same way as in TeX,

```
$$\log(\hat{y_i}) = \beta_0 + \beta_1 Tues + \beta_2 Wed + \dots $$
```

$$\log(\hat{y_i}) = \beta_0 + \beta_1 Tues + \beta_2 Wed + \dots$$

If you're using Word or HTML this won't work.

3 Question Two

b. What day was that?

```
wday(ymd("2015-05-25"), label = TRUE)
```

4 Question Three

a. You might want to run the compute earnings function in a loop

```
Fl <- vector(length = 10)
Mc <- vector(length = 10)
sel_date <- ymd("2013-03-28")
for(k in 1:10){
  earn_Fl <- NULL
  earn_MC <- NULL
  for(i in 7:21){
    earn <- compute_earnings(sel_date, i, 3, 2)
    earn_Fl <- c(earn_Fl, earn[[1]])
    earn_MC <- c(earn_MC, earn[[2]])
  }
  Fl[k] <- sum(earn_Fl)
  Mc[k] <- sum(earn_MC)
}
Fl
Mc
c(min(Fl), max(Fl), min(Mc), max(Mc))
```

This will do the daily earnings for each store ten times, and give you the best and worst case for each store.

b. You have four predictions, MC Hot, MC Not, Fl Hot and Fl Not. Find the difference for each location.

```
pred <- exp(predict(ped_weath_sub_glm, newdat))
MC_diff <- pred[2] - pred[1]
Fl_diff <- pred[4] - pred[3]
```

Then we need to modify the compute earnings function.

```
compute_earnings2 <- function(sel_date, sel_time, Fl_attendants = 1, MC_attendants = 1) {

  Same as last time to start the function
  Change the next lines to substract Fl_diff and MC_diff

  Fl_count <- ped_sim_sub %>%
              filter(sensor_name == "Flinders Street Station Underpass") %>%
              select(new1) - Fl_diff
  MC_count <- ped_sim_sub %>%
              filter(sensor_name == "Melbourne Central") %>%
              select(new1) - MC_diff

  rest of the function is the same
```

```
}
```

Then run the loop you used in part a with the new compute earnings function.

5 Question 4

You want to run two loops, one for day of the month and one for time of day.

```
Make Fl and Mc vectors
Put the k loop here {
  Set both earn_Fl and earn_MC to NULL
  for(j in 1:31) {
    sel_date <- ymd("2013-03-1") + days(j) #change day of the month
    for(i in 7:21) {
      Same loop as before to update earn_Fl and earn_MC
    }
  }
  Update Fl[k] and Mc[k]
}
```