

Now available at

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

1 The Game

- Divide each group into two teams and pick locations
- Decide how many people to have at your store for each hour
- Run `sample_day_time`
- Look at the `dt` to find the time and day
- Run `compute_earnings` with the number of attendents for that hour.
- Repeat nine more times and calculate total earnings

```
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

Writing equations in markdown works the same as TeX,

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

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

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

```
earn_Fl <- NULL
earn_MC <- NULL
sel_date <- ymd("2013-03-28")
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]])
}
earn_Fl
earn_MC
sum(earn_Fl)
sum(earn_MC)
```

This will do the daily earnings for each store. We want to run it ten times and get the best and worst case scenarios.

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

  This part changes to add the 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.

```
Set both earn_Fl and earn_MC to NULL
for(j in 1:31) {
  sel_date <- ymd("2013-03-1") + days(j)
  for(i in 7:21) {
    Same loop as before to update earn_Fl and earn_MC
  }
}
sum(earn_Fl)
sum(earn_MC)
```