Psych 205
Assignment 4
Due Feb 23rd at 9:00am

We'll be analyzing data from Maglio & Polman (2014). This paper is in the readings folder on bcourses and you should read at least the introduction and first experiment.

The key figure of the first experiment is this one:

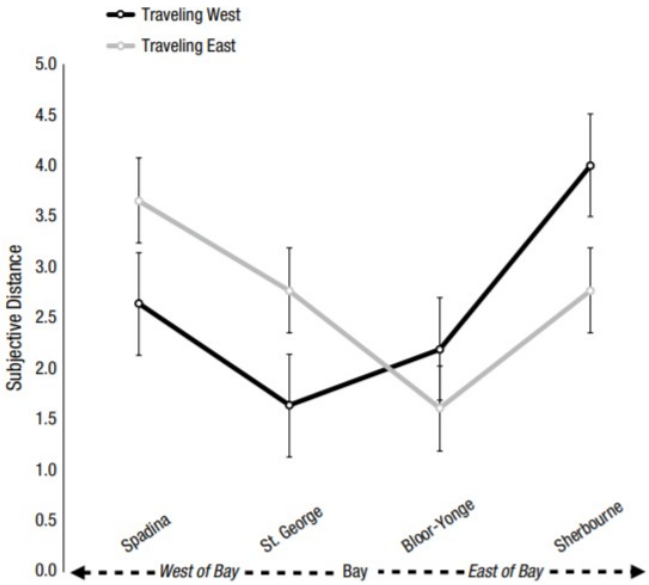

Fig. 1. Results from Study 1: subjective-distance rating as a function of the subway station being evaluated and the participant's orientation. All participants were physically located at the Bay Street station, at the midpoint between the St. George and Bloor-Yonge stations. Error bars indicate ±1 *SE*.

Q1. [3pts, SOLO] Load the data. Look for outliers and remove. Describe 3 checks you should do on the dataset you have loaded. Do them and fix any issues you find.

Q2. [2pts, SOLO] You may have noticed that the columns are not given useful names and are numbers. Figure out what each number in each column refers to (e.g., either East/West in the station column or which station in the station column), and then create new columns which have factors for East/West and subway station.

Q3. [5pts, HELP] Using the data provided, first replicate the above figure. Use stat_summary to compute means, and another stat_summary to compute the error bars.

Q4. [8pts, SOLO] Replot the same figure using a barplot (geom="bar") instead of a line plot. Which is a better visualization, bar plot or line plot? Why?

Q5. [4pts, HELP] In a few sentences each, explain what "standard error" bars mean at two different levels: (a) to an advanced undergraduate, and (b) to a five year old child.

Q6. [5pts, HELP] Make a plot, including standard error, illustrating whether there is a main effect of East-vs-West.

Q7. [5pts, SOLO] Make a plot, including standard error, illustrating whether there are main effects of Station.

Use ggplot to show a data set that would best be described (qualitatively) by each of the following patterns. Note that you do not need to simulate, create all of the data, or compute error bars—just create and plot a data frame with the right means and conditions by hand and plot it.

Q8 [3pts, HELP] (a) main effect of direction, no effect of station, no interactions

Q9 [3pts, HELP] (b) main effect of station, main effect of east/west, no interactions

Q10 [3pts, SOLO] (c) main effect of station, main effect of east/west, interaction

Q11 [3pts, SOLO] (d) main effect of station, no main effect of east/west, interaction

Q12 [3pts, SOLO] (d) main effect of station, no main effect of east/west, no interaction

Q13 [4pts, SOLO] In a few sentences, explain what a “main effect” is in this experiment to (a) an advanced undergraduate, and (b) to a five year old.