

Assignment 4  
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Contents:

Problem 1	3
Problem 2	3

1. Determine if the friendship paradox holds for my Facebook account.\* Compute the mean, standard deviation, and median of the number of friends that my friends have. Create a graph of the number of friends (y-axis) and the friends themselves, sorted by number of friends (y-axis). (The friends don't need to be labeled on the x-axis: just  $f_1, f_2, f_3, \dots, f_n$ .) Do include me in the graph and label me accordingly.

\* = This used to be more interesting when you could more easily download your friend's friends data from Facebook. Facebook now requires each friend to approve this operation, effectively making it impossible.

I will upload a csv file of my 2014 friends list on the #assignment-4 slack channel

Using the acnwala-friendcount.csv on slack, I created an R file which takes in the csv as input, then sorted it by friendcount, from lowest to highest. Then, a line graph is produced. Axes are then labeled, with the users on the x-axis and the friendcount on the y-axis. The graph is to gradually increase on the y-axis. The graph includes a point for acnwala, in blue, along with the mean, standard deviation, and median for the set of friendcounts. The values are color-coded in red, purple, and orange, respectively. The graph was then saved as a pdf file, Facebook.pdf. The same file name is used for the R file. The graph shows that the friendship paradox holds true.

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2. Determine if the friendship paradox holds for your Twitter account. Since Twitter is a directed graph, use "followers" as value you measure (i.e., "do your followers have more followers than you?").

Generate the same graph as in question #1, and calculate the same mean, standard deviation, and median values.

For the Twitter 1.1 API to help gather this data, see:

<https://developer.twitter.com/en/docs/accounts-and-users/follow-search-get-users/api-reference/get-followers-list>

If you do not have followers on Twitter (or don't have more than 50), then use my twitter account "acnwala".

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This one involves both a Python and an R file. First, the python file followercount is used to get the number of followers. A few things to note. I use the acnwala handle, as my own Twitter account lacks followers (a minimum of 50 was required for the assignment). The other thing to note is that I am using my Twitter app credentials for this assignment, so the credentials will have to be modified to fit another person's app. What the Python program does is open a text file (followercount.txt), and output the name of the follower along with the follower count of that particular follower. Two issues with this one involve the file itself possibly not being modified after the file (wherein print() has no issues to note) and the other issue being the RateLimitError if one tries to run the program multiple times in quick succession. After running the program, wait about 15 minutes before running it again, or possibly modify the rate limit to accommodate a value higher than 200.

Once followercount.txt has been created, an R file named Followers.R is created. This R file

goes the same way as the one for Problem 1, except this time for Twitter followers rather than Facebook friends (and the file read is not a csv file but a txt file). Again, this was a line graph, with users sorted from lowest follower count to highest follower count, meaning the graph gradually increases. Points were made for acnwala's follower count, along with the mean, standard deviation, and median values for the entire follower set. The colors are the same as before: blue for acnwala, red for mean, purple for standard deviation, and orange for median. The graph is saved into a pdf file sharing the name of the R file. The friendship paradox holds true in the case of acnwala's Twitter handle.

Files included:

acnwala-friendscount.csv – copy of the csv file

Assignment4Report.pdf – this file

Facebook.pdf – graph of the friendship paradox for Facebook friends

facebook.r – R file to generate the graph in Facebook.pdf

followercount.py – Python file to generate followers as well as followercount.txt (please modify this file to fit your Twitter app, filling out credentials and the chosen Twitter handle).

followercount.txt – output from followercount.py

Followers.pdf – graph of the friendship paradox for Twitter followers

Followers.r – R file to generate the graph in Followers.r