A Guide to Getting Your Facebook Ego-Centric Graph Data into `R` for Social Network Analysis

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1 Motivation

If you wish to be able to obtain the data for the your own ego-centric Facebook network for use in `R`, there are several ways to do so. None are particularly straightforward, but I have developed a procedure that should help streamline the process.

2 Disclaimer

I have had a few students tell me that this procedure does not work for them. I haven't figured out why, but it usually ends up being a problem with the Facebook app. If you get error messages when using the Facebook app (described below), there's nothing I can do to help you, unfortunately.

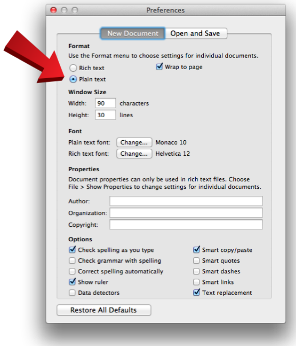
3 A heads up for Mac users

If you're using a Mac to do the following, you must make sure you have something configured correctly on your computer:

1. Open the program TextEdit on your Mac (this program comes free with all Macs). TextEdit is located in your Applications folder, in case you're having trouble finding it.
2. Go to TextEdit's preferences page. To do this, while the TextEdit program is open, press Ctrl + , (that's the comma key), and this will take you to the preferences page for TextEdit. While in the preferences page, make sure TextEdit is configured to use "Plain text" format. See Figure 1 for where this setting is:
3. You can now close the preferences page. We'll be coming back to TextEdit in a little bit.

4 Getting the attribute data of your Facebook alters

If you wish to obtain your own Facebook network data, you first must be willing to add an app to your Facebook profile. The app is called "Give Me My Data on Facebook" and can be obtained from `https://apps.facebook.com/give_me_my_data/`. You must allow the app to access your Facebook data (even if only for the purposes of downloading the data) in order for you to proceed.



Preferences

New Document | Open and Save

Format

Use the Format menu to choose settings for individual documents.

○ Rich text ☑ Wrap to page

● Plain text

Window Size

Width: 90 characters

Height: 30 lines

Font

Plain text font: Change... Monaco 10

Rich text font: Change... Helvetica 12

Properties

Document properties can only be used in rich text files. Choose File > Show Properties to change settings for individual documents.

Author:

Organization:

Copyright:

Options

☑ Check spelling as you type ☑ Smart copy/paste

□ Check grammar with spelling □ Smart quotes

□ Correct spelling automatically □ Smart dashes

☑ Show ruler □ Smart links

□ Data detectors ☑ Text replacement

Restore All Defaults

Figure 1: TextEdit's preferences page.

Assuming you have allowed the app to access your Facebook profile, you can now proceed. At this point, please follow these directions carefully. . .

1. Go to the page for the "Give Me My Data on Facebook" app, as shown in Figure 2.
2. From the "Data" drop-down menu, choose "Friends (data)" from the options, as shown in Figure 3.
3. From the "Format" drop-down menu, choose "JSON" from the options, as shown in Figure 4
4. After choosing the data and format you want, click on the "Give me my data" button. After a few seconds, the large box on the screen should be filled with text, resembling something like Figure 5.
5. Click inside the big box on the screen that contains all of this new text that has just appeared, and press command + A (on a Mac) or Ctrl + A (on Windows or Linux) to select all of the text in that box, as shown in Figure 6.
6. With the text selected, press command + C (on a Mac) or Ctrl + C (on Windows or Linux) to copy the text to the clipboard.
7. Next, if you're using Mac, go to TextEdit. If you're using Windows, open up Notepad (also free with Windows). Into either a blank TextEdit (Mac users) or Notepad (Windows users) document, I want you to paste the contents of the clipboard by pressing command + V (on a Mac) or Ctrl + V (on Windows). It should fill many pages/lines, and look something like Figure 7.
8. At the end of the giant chunk of text you just pasted, the last line of text will contain the `]` character. I need you to place your cursor after that `]` character, and hit Enter (or Return , depending on your keyboard). This will insert a new blank line at the end of the file.
9. I then want you to scroll back to the very beginning of the document. Once there, I want you to highlight and then delete all of the text that appears before the `[` character, as shown in Figures 8 and 9.
10. I then want you to save the file as `facebookData.txt`.
11. If you haven't saved the `facebookData.txt` file in your working directory for `R`, be sure to move the file there now.

5 Getting the relational data for your Facebook egonet

With the alter attribute data in hand, now we must separately grab the relational data for your Facebook egonet.

1. Go back to the "Give Me My Data" app on Facebook.
2. This time, from the "Data" drop-down menu, select "Mutual Friends Network Graph," as shown in Figure 10.
3. As you did before, for the "Format" choose "JSON" from the drop-down menu, as in Figure 4.

4. Press the “Give me my data” button, and after a few seconds the large box on the screen should fill with text, as in Figure 11.

5. I want you to replicate steps 5 through 10 from the previous section. This time I want you to save the resulting text file as `facebookNet.txt`.

6. As before, if you haven’t saved this file to your working directory, please move it there now.

6 Getting the Data into R

At this point, you should have successfully created two files: `facebookData.txt` and `facebookNet.txt`, both of which should now be in your working directory.

If you haven’t already done so, launch `R` and set the working directory accordingly. For the steps that follow, I expect that you already have the `sna` package installed on your computer. In addition, I need you to install one more package in `R` (this will require that you have an Internet connection). To do so, perform the following steps:

1. Run the following command:

   ```
   install.packages("RJSONIO")
   ```

   You’ll probably be asked to select a download mirror. If so, try to pick one that’s reasonably close geographically.

2. Once you’ve been returned back to a normal command prompt, type the following commands:

   ```
   library(sna)
   library(RJSONIO)
   ```

3. I then want you to load in a special function for `R` that I wrote, which allows you to import these Facebook data into `R`. To do this, run the following command:

   ```
   source("http://people.umass.edu/racton/code/facebookScript.R")
   ```

4. This then provides you with a command you can use to read in those two files you created earlier. To import the Facebook data, you need to run the following command, **but make sure to specify your correct gender in the “yoursex” parameter**:

   ```
   fbData<-getFacebookGraph("facebookData.txt","facebookNet.txt",yoursex="male")
   ```

   The above command will probably take several seconds to run.

5. Finally, run the following two commands:

   ```
   fbNetwork<-fbData$graph
   nodeGenders<-fbData$genders
   ```

7 Drawing, manipulating your Facebook ego-net

If you’ve made it this far without errors, your data are ready to go. The object that we just created called `fbNetwork` is the adjacency matrix of your Facebook ego-net. You should be showing up in the last row and last column of the matrix. To find out how big your network is (the network size), you’d run the command:

```
nrow(fbNetwork)
```

and this will tell you how many rows are in your adjacency matrix (which tells you how many nodes there are in your network). Since you're in the last row (and column) of the adjacency matrix, then your row/column number is the same as the size of your network. For instance, if the above command is telling you that your network has 145 nodes in it, then that means your information is given in the 145th row and 145th column of the matrix and that you have 144 Facebook friends.

To draw a sociogram of your Facebook graph with the nodes colored in sex-stereotypic colors, you could do the following:

1. First, create a node coloring vector so that males are associated with one color and females with another. Here, I'll draw the males using a shade of blue and the females a shade of pink:

   ```
   nodeColors<-ifelse(nodeGenders=="male","dodgerblue","hotpink")
   ```

   To see a the built-in colors in `R`, run the following chunk of code to have a file called `RColors.pdf` generated in your working directory (which illustrates the colors for you):

   ```
   showCols1 <- function(bg = "gray", cex = 0.75, srt = 30) {
      m <- ceiling(sqrt(n <- length(cl <- colors())))
      length(cl) <- m*m; cm <- matrix(cl, m)
      ##
      require("graphics")
      op <- par(mar=rep(0,4), ann=FALSE, bg = bg); on.exit(par(op))
      plot(1:m,1:m, type="n", axes=FALSE)
      text(col(cm), rev(row(cm)), cm, col = cl, cex=cex, srt=srt)
   }
   pdf("Rcolors.pdf",width=11,height=8.5)
   showCols1()
   dev.off()
   ```

   You can then use any of the colors you see in `Rcolors.pdf` by their name, just as I did in the command above in which I used "dodgerblue" for the males and "hotpink" for the females.

2. Now you can proceed with drawing the graph:

   ```
   gplot(fbNetwork,gmode="graph",vertex.col=nodeColors,edge.col= rgb(red=0,green=0,blue=0,alpha=0.1))
   ```

   Depending on how large your network is and how slow your computer is, the image may take anywhere from a few seconds to a few minutes to draw on the screen. Be patient. In the above command, feel free to tweak the alpha level (lower values lead to more transparent edges, higher values lead to more opaque edges).

   Using the data from my network, I get the sociogram shown in Figure 12.

3. To see your network with you taken out of the picture, you might do something like the following. In my case, I'm in row number 333. This means I need to remove myself from the 333rd row and column of `fbNetwork`, and I need to remove myself from the 333rd position of the `nodeColors` vector:

   ```
   gplot(fbNetwork[-333,-333],gmode="graph",vertex.col=nodeColors[-333],edge.col=
      rgb(red=0,green=0,blue=0,alpha=0.1))
   ```

   When I do this, I get a network that looks like the one in Figure 13. I purposely generated Figure 13 to preserve the node positions from Figure 12 to help facilitate direct comparison. A more natural layout for the ego-less network would be that given in Figure 14, in which I *don't* preserve the node positions from Figure 12. In doing so, one can see more clearly how disconnected the graph becomes once ego is removed.

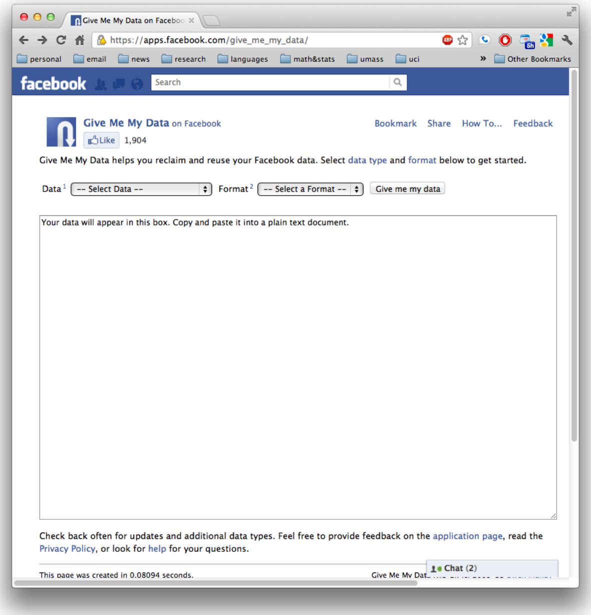
You might prefer to export the image to a `.pdf` instead so that you better zoom into different regions of the sociogram to see the details. Also, it's probably helpful to add in the node labels so that you can know who is who, and better discern the clustering in your network. Consider the following lines of code:

```
pdf("myFacebookGraph.pdf",width=10,height=10)
gplot(fbNetwork,gmode="graph",vertex.col=nodeColors,edge.col=
    rgb(red=0,green=0,blue=0,alpha=0.1),label=rownames(fbNetwork),
    label.cex=0.2,label.col="red",label.pos=5)
dev.off()
```

If any of your friends have special accent characters in their names, this might cause `R` to print some warning messages to the screen. For instance, you might see several warning messages printed to the screen that look something like:

```
Warning messages:
1:  In strwidth(label[use], cex = label.cex) :  conversion failure on ’Lo Juadillo’ in
’mbcsToSbcs’:  dot substituted for <ed>
```

I can’t find a quick fix for this, but it should still generate your `.pdf` file.



Give Me My Data on Facebook

Give Me My Data helps you reclaim and reuse your Facebook data. Select data type and format below to get started.

Data[1] -- Select Data -- Format[2] -- Select a Format -- Give me my data

Your data will appear in this box. Copy and paste it into a plain text document.

Check back often for updates and additional data types. Feel free to provide feedback on the application page, read the Privacy Policy, or look for help for your questions.

This page was created in 0.08094 seconds.

Give Me My Dat

Figure 2: The main page for the app.

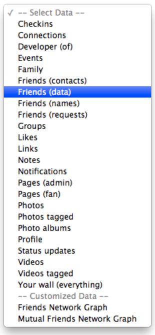


Figure 3: Selecting the data you want.

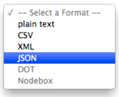
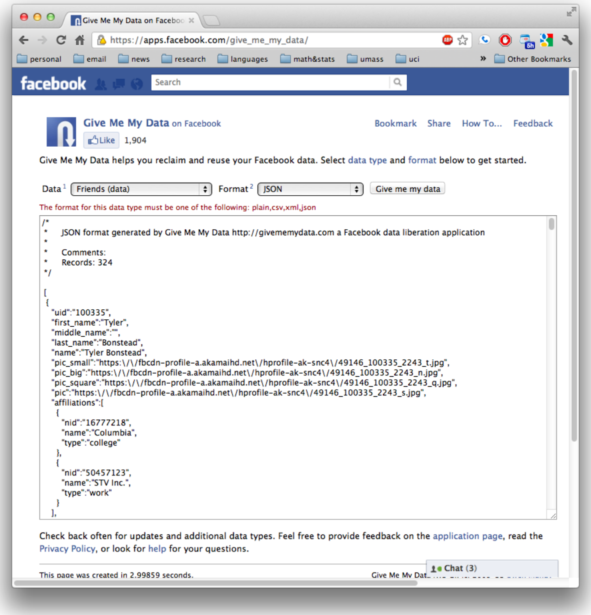


Figure 4: Selecting the format you want.



Give Me My Data helps you reclaim and reuse your Facebook data. Select data type and format below to get started.

Data[1] Friends (data) Format[2] JSON

The format for this data type must be one of the following: plain,csv,xml,json

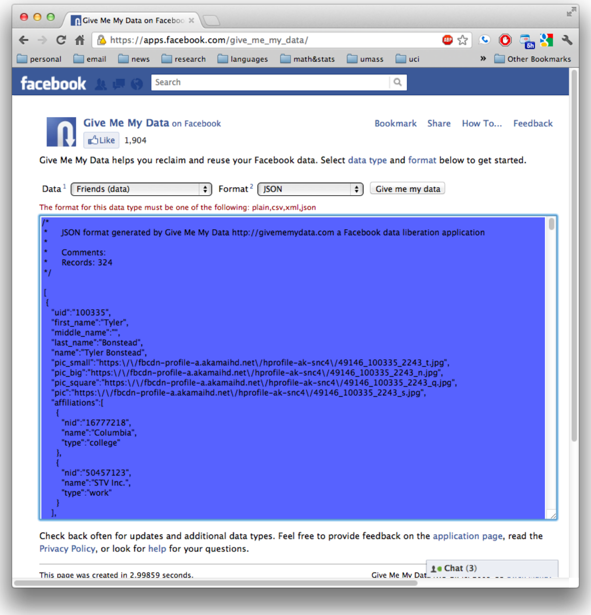
```
/*
 *    JSON format generated by Give Me My Data http://givememydata.com a Facebook data liberation application
 *
 *    Comments:
 *    Records: 324
 */

[
 {
   "uid":"100335",
   "first_name":"Tyler",
   "middle_name":"",
   "last_name":"Bonstead",
   "name":"Tyler Bonstead",
   "pic_small":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/49146_100335_2243_t.jpg",
   "pic_big":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/49146_100335_2243_n.jpg",
   "pic_square":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/49146_100335_2243_q.jpg",
   "pic":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/49146_100335_2243_s.jpg",
   "affiliations":[
     {
       "nid":"16777218",
       "name":"Columbia",
       "type":"college"
     },
     {
       "nid":"50457123",
       "name":"STV Inc.",
       "type":"work"
     }
   ],
```

Check back often for updates and additional data types. Feel free to provide feedback on the application page, read the Privacy Policy, or look for help for your questions.

This page was created in 2.99859 seconds.

Figure 5: What happens after pressing “Give me my data.”


Give Me My Data helps you reclaim and reuse your Facebook data. Select data type and format below to get started.

Data[1] Friends (data) Format[2] JSON

The format for this data type must be one of the following: plain,csv,xml,json

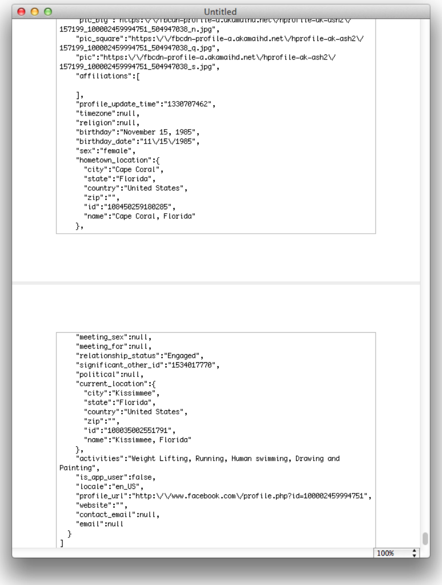
```
/*
 *    JSON format generated by Give Me My Data http://givememydata.com a Facebook data liberation application
 *
 *    Comments:
 *    Records: 324
 */

[
 {
   "uid":"100335",
   "first_name":"Tyler",
   "middle_name":"",
   "last_name":"Bonstead",
   "name":"Tyler Bonstead",
   "pic_small":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/49146_100335_2243_t.jpg",
   "pic_big":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/49146_100335_2243_n.jpg",
   "pic_square":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/49146_100335_2243_q.jpg",
   "pic":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/49146_100335_2243_s.jpg",
   "affiliations":[
     {
       "nid":"16777218",
       "name":"Columbia",
       "type":"college"
     },
     {
       "nid":"50457123",
       "name":"STV Inc.",
       "type":"work"
     }
   ],
```

Check back often for updates and additional data types. Feel free to provide feedback on the application page, read the Privacy Policy, or look for help for your questions.

This page was created in 2.99859 seconds.

Figure 6: The text inside the large box has been selected (highlighted here in blue).

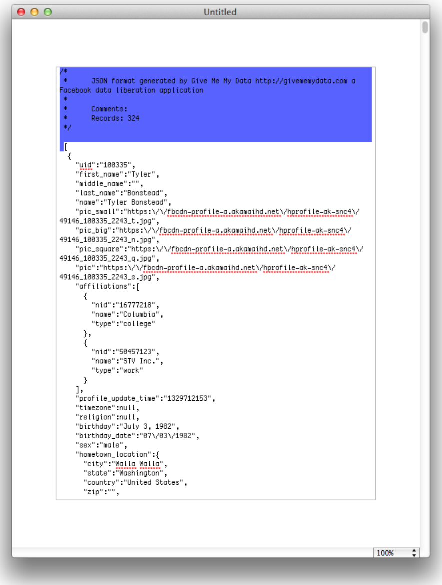


```
    "pic_big":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-ash2\/
157199_100002459994751_504947038_n.jpg",
    "pic_square":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-ash2\/
157199_100002459994751_504947038_q.jpg",
    "pic":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-ash2\/
157199_100002459994751_504947038_s.jpg",
    "affiliations":[

    ],
    "profile_update_time":"1330707462",
    "timezone":null,
    "religion":null,
    "birthday":"November 15, 1985",
    "birthday_date":"11\/15\/1985",
    "sex":"female",
    "hometown_location":{
      "city":"Cape Coral",
      "state":"Florida",
      "country":"United States",
      "zip":"",
      "id":"108450259180285",
      "name":"Cape Coral, Florida"
    },
```

```
    "meeting_sex":null,
    "meeting_for":null,
    "relationship_status":"Engaged",
    "significant_other_id":"1534017770",
    "political":null,
    "current_location":{
      "city":"Kissimmee",
      "state":"Florida",
      "country":"United States",
      "zip":"",
      "id":"108035002551791",
      "name":"Kissimmee, Florida"
    },
    "activities":"Weight Lifting, Running, Human swimming, Drawing and
Painting",
    "is_app_user":false,
    "locale":"en_US",
    "profile_url":"http:\/\/www.facebook.com\/profile.php?id=100002459994751",
    "website":"",
    "contact_email":null,
    "email":null
  }
]
```

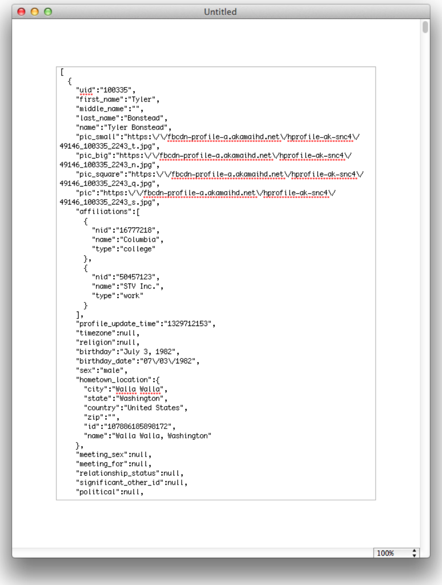
Figure 7: The pasted text inside TextEdit (on a Mac).



```
/*
 *      JSON format generated by Give Me My Data http://givememydata.com a
Facebook data liberation application
 *
 *      Comments:
 *      Records: 324
 */

 [
  {
    "uid":"100335",
    "first_name":"Tyler",
    "middle_name":"",
    "last_name":"Bonstead",
    "name":"Tyler Bonstead",
    "pic_small":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/
49146_100335_2243_t.jpg",
    "pic_big":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/
49146_100335_2243_n.jpg",
    "pic_square":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/
49146_100335_2243_q.jpg",
    "pic":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/
49146_100335_2243_s.jpg",
    "affiliations":[
      {
        "nid":"16777218",
        "name":"Columbia",
        "type":"college"
      },
      {
        "nid":"50457123",
        "name":"STV Inc.",
        "type":"work"
      }
    ],
    "profile_update_time":"1329712153",
    "timezone":null,
    "religion":null,
    "birthday":"July 3, 1982",
    "birthday_date":"07\/03\/1982",
    "sex":"male",
    "hometown_location":{
      "city":"Walla Walla",
      "state":"Washington",
      "country":"United States",
      "zip":"",
```

Figure 8: The text before the [character, highlighted.



```
[
  {
    "uid":"100335",
    "first_name":"Tyler",
    "middle_name":"",
    "last_name":"Bonstead",
    "name":"Tyler Bonstead",
    "pic_small":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/
49146_100335_2243_t.jpg",
    "pic_big":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/
49146_100335_2243_n.jpg",
    "pic_square":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/
49146_100335_2243_q.jpg",
    "pic":"https:\/\/fbcdn-profile-a.akamaihd.net\/hprofile-ak-snc4\/
49146_100335_2243_s.jpg",
    "affiliations":[
      {
        "nid":"16777218",
        "name":"Columbia",
        "type":"college"
      },
      {
        "nid":"50457123",
        "name":"STV Inc.",
        "type":"work"
      }
    ],
    "profile_update_time":"1329712153",
    "timezone":null,
    "religion":null,
    "birthday":"July 3, 1982",
    "birthday_date":"07\/03\/1982",
    "sex":"male",
    "hometown_location":{
      "city":"Walla Walla",
      "state":"Washington",
      "country":"United States",
      "zip":"",
      "id":"107886185898172",
      "name":"Walla Walla, Washington"
    },
    "meeting_sex":null,
    "meeting_for":null,
    "relationship_status":null,
    "significant_other_id":null,
    "political":null,
```

Figure 9: Deleting the text before the [character.

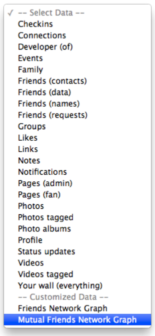
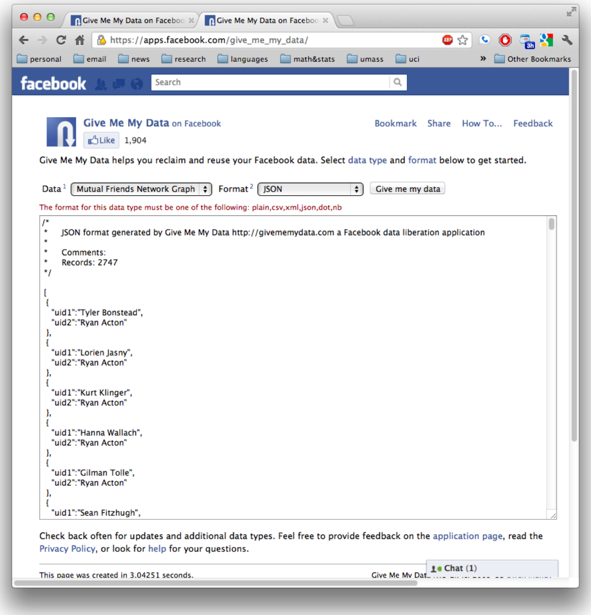


Figure 10: Selecting the "Mutual Friends Network Graph" option.



Give Me My Data helps you reclaim and reuse your Facebook data. Select data type and format below to get started.

Data [1] Mutual Friends Network Graph Format [2] JSON

The format for this data type must be one of the following: plain,csv,xml,json,dot,nb

```
/*
 *    JSON format generated by Give Me My Data http://givememydata.com a Facebook data liberation application
 *
 *    Comments:
 *    Records: 2747
 */

[
 {
  "uid1":"Tyler Bonstead",
  "uid2":"Ryan Acton"
 },
 {
  "uid1":"Lorien Jasny",
  "uid2":"Ryan Acton"
 },
 {
  "uid1":"Kurt Klinger",
  "uid2":"Ryan Acton"
 },
 {
  "uid1":"Hanna Wallach",
  "uid2":"Ryan Acton"
 },
 {
  "uid1":"Gilman Tolle",
  "uid2":"Ryan Acton"
 },
 {
  "uid1":"Sean Fitzhugh",
```

Check back often for updates and additional data types. Feel free to provide feedback on the application page, read the Privacy Policy, or look for help for your questions.

This page was created in 3.04251 seconds. Give Me My Dat

Figure 11: Lots of text filled in the box after pressing the button.

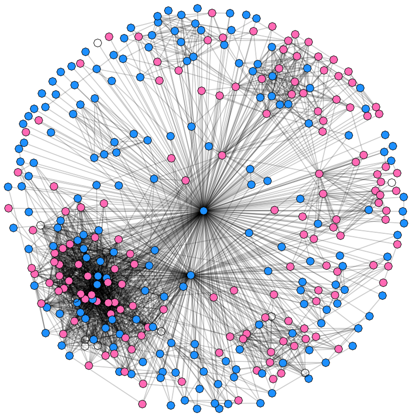


Figure 12: Network with ego included

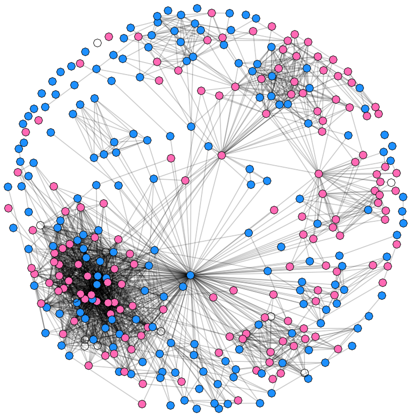


Figure 13: Network with ego excluded

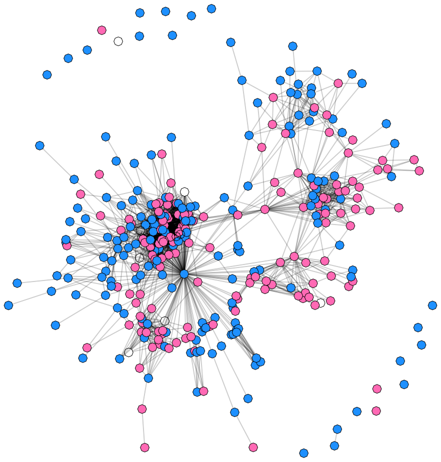


Figure 14: Network with ego excluded, node positions redrawn