Facebook Lab

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Research Question: How people react to an illegal migrant issue on FB.

First, authorize by using the Facebook token.

```
library(Rfacebook)
```

```
fb_app_id = "767570183395387"
fb_app_secret = "539a32d8923e44edfd3c7aa750dc14d6"
token = fbOAuth(fb_app_id, fb_app_secret)
```

```
token = readRDS("token.rds")
```

Second, get 20 posts on the page of CNN.And create a subset of the posts dataframe, including the ids, time, likes, messages, and the numbers of likes, comments and shares. By checking the id number to select the post I want.

```
posts = getPage("cnn", token, n=20)
```

```
## 20 posts
```

```
posts = subset(posts, select=c("id", "created_time", "likes_count", "comments_count
", "shares_count", "message"))
head(posts)
```

```
##                              id             created_time likes_count
## 1 5550296508_10156109518776509 2017-02-20T14:35:11+0000         168
## 2 5550296508_10156109408511509 2017-02-20T14:11:01+0000        1739
## 3 5550296508_10156109302916509 2017-02-20T13:35:05+0000         870
## 4 5550296508_10156109189861509 2017-02-20T13:00:03+0000         607
## 5 5550296508_10156109126206509 2017-02-20T12:31:03+0000         387
## 6 5550296508_10156109045526509 2017-02-20T12:02:33+0000        1117
##   comments_count shares_count
## 1            119           76
## 2            738          929
## 3            553          170
## 4            399          226
## 5             87           56
## 6            541          212
##
message
## 1                                                                    Trump
Building.org, TrumpFraud.org, ImBeingSuedByTheDonald.com, and more of the domains P
resident Donald J. Trump owns
## 2 President Donald J. Trump's reference to "what's happening last night in Swede
n" has baffled and angered the Scandinavian country, where the claim is front-page
news  http://cnn.it/2m3Xo4u
## 3                              President Donald J. Trump's inexperienced staff h
as failed to navigate Washington and prepare him adequately, his former campaign ma
nager Corey Lewandowski says
## 4
It was called "the most destructive 'weapon' of all time"
## 5                                      The tigers at Pyongyang zoo are lavish gi
fts to the North Korean leaders. See more from inside the world's most reclusive co
untry: http://cnn.it/2ldq10z
## 6            President Donald J. Trump opponents -- and supporters -- say the e
lection and turbulent early days of the new administration have left them anxious,
angry and afraid of Facebook
```

Third, the post I choose is about illegally crossing the border into Canada. To get this post, just check the post id, which is [6] in the dataframe. After I get this post, I collect the reactions and comments data, and create dataframes seperately. Present the reactions on this post by pie chart, using plotly.

```
post = getPost(posts$id[7], token, reactions = T, comments=F)
reactions = post$reactions
r_counts=table(reactions$from_type)

post = getPost(posts$id[7], token, comments = T, likes = F)
comments = post$comments
save(comments, file="fbcomments.rda")
head(comments)
```

```
##              from_id                 from_name
## 1 10208864057780495 Lynda Schaibly Sarkisian
## 2 10209874552038138            Anthony Hayes
## 3 10154553546709102               Tanya King
## 4  1722293901394501                   新井真優子
## 5   164992627340438                Paul James
## 6  1424597787564224       Brian Davies-Jones
##
message
## 1
Just can't watch CNN when Kayleigh McEnany is on. She has drank so much GOP Kool-Ai
d that it's spews out of her nose. She is pretty but it's too bad her brain never s
hows any LOGIC.
## 2
You can tell, she had military training by the sneak attack from behind, of a man 3
x's her size. She could of been a paid  spy from any Country.
## 3
That woman stalked and attacked him. She did not think she was part of a realty aho
w. Let her rot in prison for the rest of her life.
## 4
I dont know the why both government not yet clarify this problem. I think It’s comm
on to suppress a important fact in N Korean ...but the same Japan thought. Not enou
gh.   Actually people haven't known everything.
## 5
So....to make sure we back an invasion of North Korea we all need to understand tha
t just because his brother was killed we should expect retaliation WHICH is a wonde
rful narrative for warrrr!!
## 6 Not exactly sure what the big deal is,  i've had some siblings in the spur of
the moment... err.. never mind.  Just that those knife marks were on the bathroom d
oor for years when I was growing up....  certainly wouldn't expect the US to go to
war but with Trump being denied Iran by his Putin master... who knows.
##               created_time likes_count comments_count
## 1 2017-02-20T11:42:46+0000          18             14
## 2 2017-02-20T13:58:17+0000           2              0
## 3 2017-02-20T13:46:44+0000           0              3
## 4 2017-02-20T13:05:32+0000           1              0
## 5 2017-02-20T11:34:38+0000           6              6
## 6 2017-02-20T11:52:37+0000           0              0
##                                     id
## 1 10156108964211509_10156109001991509
## 2 10156108964211509_10156109367811509
## 3 10156108964211509_10156109329706509
## 4 10156108964211509_10156109202321509
## 5 10156108964211509_10156108974731509
## 6 10156108964211509_10156109021551509
```

```
library(plotly)
```

```
## Loading required package: ggplot2
```

```
##
## Attaching package: 'plotly'
```

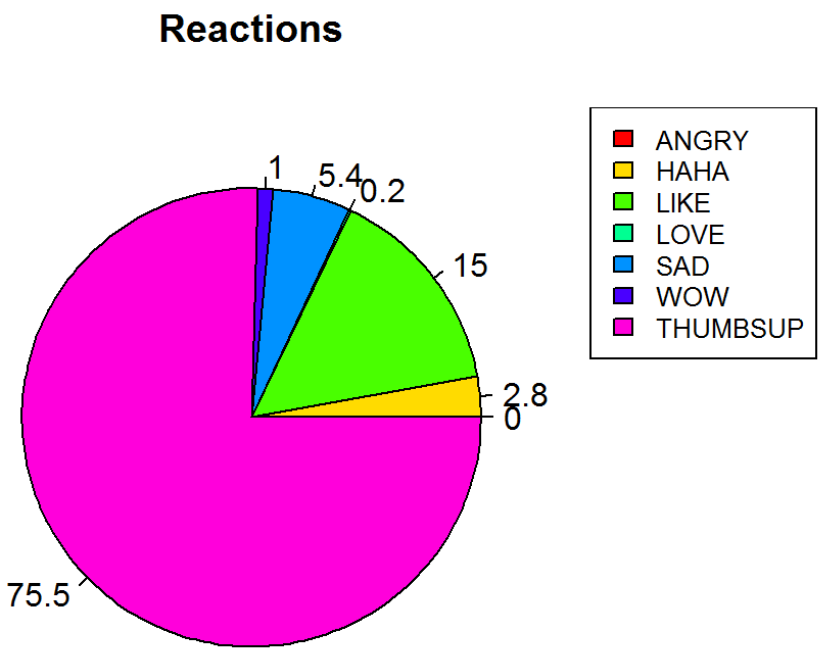
```
## The following object is masked from 'package:ggplot2':
##
##     last_plot
```

```
## The following object is masked from 'package:httr':
##
##     config
```

```
## The following object is masked from 'package:stats':
##
##     filter
```

```
## The following object is masked from 'package:graphics':
##
##     layout
```

```
x = c(1, 58, 305, 4,111,21,1537)
labels = c("ANGRY", "HAHA", "LIKE", "LOVE","SAD","WOW","THUMBSUP")
piepercent = round(100*x/sum(x), 1)
pie(x, labels = piepercent, main = "Reactions",col = rainbow(length(x)))
legend("topright",c("ANGRY", "HAHA", "LIKE", "LOVE","SAD","WOW","THUMBSUP"), cex =
0.8,
   fill = rainbow(length(x)))
```



Fifth, create a wordcloud of all the comments on this event. As the cloud shows, it mainly concerns about Canadian people.

```
library(quanteda)
```

```
## quanteda version 0.9.9.3
```

```
##
## Attaching package: 'quanteda'
```

```
## The following object is masked from 'package:utils':
##
##     View
```

```
## The following object is masked from 'package:base':
##
##     sample
```

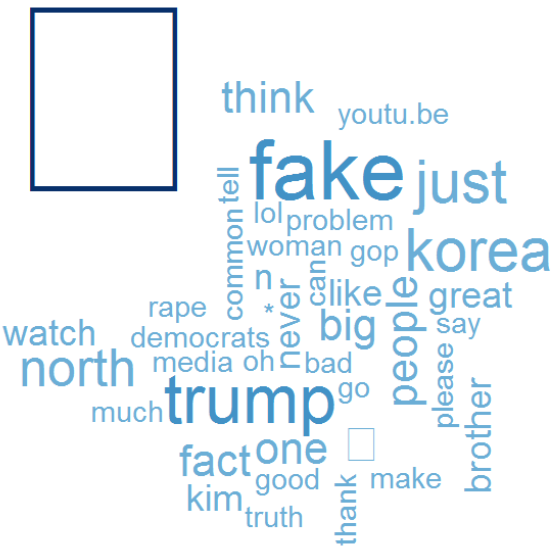
```
u_corpus = corpus(comments$message)
u_dfm = dfm(u_corpus)
u_dfm
```

```
## Document-feature matrix of: 74 documents, 615 features (97.5% sparse).
```

```
library(RColorBrewer)
stopwords = c(stopwords("english"), 'a','"', ',','&','the',"?","-","[","]","(",")",
"cnn","https", "rt", "news","who","you","this","too","for","in","by","http","will"
,"and","has","to","don't","/",":",".","bye","!","let",",",'"',"=")
u_dfm = dfm_select(u_dfm, stopwords,selection=c("remove"),valuetype=c("fixed"))
```

```
## removed 106 features, from 196 supplied (fixed) feature types
```

```
textplot_wordcloud(u_dfm, max.words = 50, colors = brewer.pal(9, "Blues")[5:9], sc
ale = c(9, .2))
```



Sixth, get the replies to the comments, so as to construct a connection between the users. And get the second layer of the connection, by catching people who reply to the comments.

```
post = getPost("5550296508_10156108813016509", token, likes=F)
comments = post$comments
replies = list()
for (comment in comments$id[comments$comments_count > 0]) {
creplies = getCommentReplies(comment, token)$replies
if (nrow(creplies) > 0) {
creplies$comment_id = comment
replies = c(replies, list(creplies))
}
}
replies = plyr::rbind.fill(replies)
```

```
replies2 = replies[c("from_name", "comment_id")]
comments2 = comments[c("id", "from_name")]
colnames(comments2) = c("comment_id", "to_name")
replies2 = merge(replies2, comments2)
replies2 = aggregate(replies2$comment_id, replies2[c("from_name", "to_name")], leng
th)
replies2 = subset(replies2, from_name != to_name)
```

Finally, draw a graph according to the connections.But the nodes on the graph are too crowded, so I only keep the people with over 2 comments on the connection graph. There are 5 main colors on the graph, which mean there are 5 main debates among the comments under this post.

```
library(igraph)
```

```
##
## Attaching package: 'igraph'
```

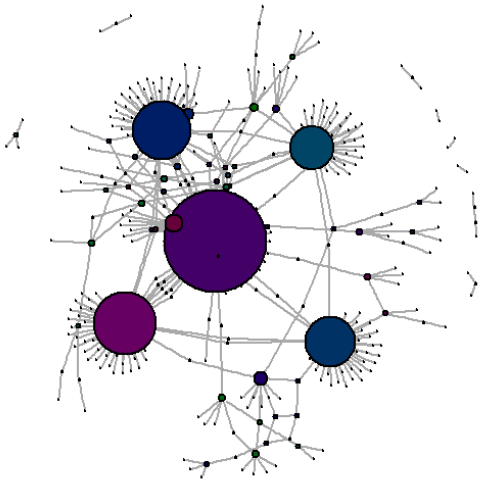
```
## The following object is masked from 'package:quanteda':
##
##     similarity
```

```
## The following objects are masked from 'package:plotly':
##
##     %>%, groups
```

```
## The following objects are masked from 'package:stats':
##
##     decompose, spectrum
```

```
## The following object is masked from 'package:base':
##
##     union
```

```
g = graph_from_data_frame(replies2, directed=F)
E(g)$weight = E(g)$x
V(g)$size = 0.5 + (.5 * degree(g))
clusters = edge.betweenness.community(g)$membership
pal = substr(rainbow(length(unique(clusters)), start=0.33, end=1, v=0.4), 1, 7)
V(g)$color = pal[match(clusters, unique(clusters))]
plot(g, vertex.label=NA,edge.arrow.size=1)
```



```
# Keep only people with >2 reply in largest component
g2 = igraph::decompose(g, min.vertices = 50)[[1]]
g2 =induced_subgraph(g2, degree(g2, V(g2), "in")>2)
# Label size based on betweenness centrality
centrality = betweenness(g2)
V(g2)$label.cex = 0.5 + 0.5 * centrality / max(centrality)
# color labels based on clustering
clusters = edge.betweenness.community(g2)$membership
pal = substr(rainbow(length(unique(clusters)), start=0.33, end=1, v=0.5), 1, 7)
V(g2)$label.color = pal[match(clusters, unique(clusters))]
layout = layout.reingold.tilford(g2, circular=T)
plot(g2, vertex.shape = "none", layout=layout, edge.arrow.size=4, edge.curved=TRUE
)
```

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