

# Association Rule Mining and Twitter

## Twitter API Setup

To access a Twitter API you will need to set up an account and receive a consumerKey, the consumerSecret, the access\_Token, and the access\_Secret. A popular library and API: “twitterR”.

Once you have your keys, you can set up the API.

```
requestURL='https://api.twitter.com/oauth/request_token'
accessURL='https://api.twitter.com/oauth/access_token'
authURL='https://api.twitter.com/oauth/authorize'

### NOTES: rtweet is another excellent option
## https://mkearney.github.io/blog/2017/06/01/intro-to-rtweet/
### https://rtweet.info/

### Install the needed packages...
#install.packages("twitterR")
#install.packages("ROAuth")
# install.packages("rtweet")
library(arules)

## Loading required package: Matrix

##
## Attaching package: 'arules'

## The following objects are masked from 'package:base':
##
##      abbreviate, write

library(rtweet)
library(twitterR)

##
## Attaching package: 'twitterR'

## The following object is masked from 'package:rtweet':
##
##      lookup_statuses

library(ROAuth)
library(jsonlite)

##
## Attaching package: 'jsonlite'

## The following object is masked from 'package:rtweet':
##
##      flatten

#install.packages("streamR")
#library(streamR)
#install.packages("rjson")
library(rjson)
```

```

##
## Attaching package: 'rjson'

## The following objects are masked from 'package:jsonlite':
##
##      fromJSON, toJSON

#install.packages("tokenizers")
library(tokenizers)
library(tidyverse)

## -- Attaching packages ----- tidyverse

## v ggplot2 3.1.1      v purrr 0.3.2
## v tibble 2.1.3       v dplyr 0.8.1
## v tidyr 0.8.3        v stringr 1.4.0
## v readr 1.3.1        v forcats 0.4.0

## -- Conflicts ----- tidyverse_conflicts()
## x tidyr::expand()    masks Matrix::expand()
## x dplyr::filter()    masks stats::filter()
## x purrr::flatten()   masks jsonlite::flatten(), rtweet::flatten()
## x rjson::fromJSON()  masks jsonlite::fromJSON()
## x dplyr::id()        masks twitterR::id()
## x dplyr::lag()       masks stats::lag()
## x dplyr::location()  masks twitterR::location()
## x dplyr::recode()    masks arules::recode()
## x rjson::toJSON()    masks jsonlite::toJSON()

library(plyr)

## -----
## You have loaded plyr after dplyr - this is likely to cause problems.
## If you need functions from both plyr and dplyr, please load plyr first, then dplyr:
## library(plyr); library(dplyr)
## -----

##
## Attaching package: 'plyr'

## The following objects are masked from 'package:dplyr':
##
##      arrange, count, desc, failwith, id, mutate, rename, summarise,
##      summarize

## The following object is masked from 'package:purrr':
##
##      compact

## The following object is masked from 'package:twitterR':
##
##      id

library(dplyr)
library(ggplot2)
#install.packages("syuzhet") ## sentiment analysis
library(syuzhet)

##

```

```
## Attaching package: 'syuzhet'

## The following object is masked from 'package:rtweet':
##
##      get_tokens

library(stringr)
#install.packages("arulesViz")
library(arulesViz)

## Loading required package: grid
```

## Collecting Tweets

Next we will set up the API and search for a particular hash tag. We will store the tweets with the designated hash in a csv file for safe keeping. Here, we choose “#Trump” in hopes to get a 100 tweets easily.

```
##### Using twittR #####
setup_twitter_oauth(consumerKey,consumerSecret,access_Token,access_Secret)
```

```
## [1] "Using direct authentication"

Search<-twitterR::searchTwitter("#Trump",n=100,since="2018-09-09")
(Search_DF <- twListToDF(Search))
```

```
##
## 1
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```

RT @CubanitoenCuba

RT @church143: Why

RT @AndyOstroy: @r

#Trump Business:\n1.

RT @howardfineman

3) Et le tweet du .

RT @Andy4691: The #Wh

RT @DonnaWR8: 2007 Kim

What's more dange

@SteveScalise @reall

RT @AndyOstroy: Jee

RT @peterdaou: You M

RT @CorentinSellin

RT @Gaby80192623: M

RT @EnkiWriter: The

RT @RompevientoTV: "I

#UN #UNSC #UNHR #N

RT @SteveVanderVeer

RT @AndyOstroy: @r

RT @dmon4ever: @mark

"Impeach

RT @TexanGalCindy: @

#WilliamBarr & #Mil

RT @FXLeadersCom: s

@realDonaldTrump A

RT @AndyOstroy: @r

## 30  
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## 83

RT @GreyBeard\_Biker: #BikerRally for #TRUMP #044.2\n#GreyBeardBikerApproved\n<U+0001F4AF>@rdrhwk  
RT @DonnaWR8: 2007 Kim  
RT @peterdaou: You M  
RT @BucholtzJulie: W  
RT @AndyOstroy: @r  
RT @howardfineman  
RT @peterdaou: You M  
RT @AndyOstroy: Je  
RT @DeplorableBabe  
RT @TexanGalCindy: @  
RT @peterdaou: You M  
RT @RitaCosby: Thr  
@MarkHammill #hol  
RT @RitaCosby: Thr  
RT @TheWisemanSaid:  
RT @howardfineman  
RT @RichardAngwin: TI  
Life with respect fo  
RT @JerusalemVow: Jol  
RT @CorentinSellin  
RT @CorentinSellin  
RT @AndyOstroy: @r  
RT @mog7546: LOOKING F  
RT @Emolclause: #B  
RT @AndyOstroy: Je  
RT @RompevientoTV: "I  
RT @AndyOstroy: Je  
@govfella @reall  
RT @AndyOstroy: @r  
Impeach, impeach,  
RT @AndyOstroy: @reall  
RT @battleofever: M  
@OutnumberedFNC\nFor  
RT @Andy4691: The #Wh  
RT @LuBonLez: The  
RT @excdragonfly369: Pure Evil\ncorrupt&cro  
RT @GreyBeard\_Biker: #BikerRally for #TRUMP #044.0\n#GreyBeardBikerApproved\n<U+2618>  
RT @SFDukie: Excel  
@USATODAY This thi  
RT @CorentinSellin  
RT @CorentinSellin  
RT @margie\_hathawa  
RT @AndyOstroy: Je  
RT @howardfineman  
RT @TheWisemanSaid2: @  
RT @CorentinSellin  
RT @zeusFanHouse: S  
The #Tr  
RT @howardfineman  
@realDonaldTrump @  
RT @peterdaou: You M  
RT @solarpapst: 36

```

## 84
## 85 RT @excdragonfly369: <U+3010>Google<U+0001F1FA><U+0001F
## 86 RT @dmon4ever: @mark
## 87 RT @RichardAngwin: T
## 88 RT @excdragonfly369: <U+3010>Google<U+0001F1FA><U+0001F
## 89
## 90
## 91 Trump's Potential Imp
## 92 RT @charlievp: @
## 93 RT @AndyOstroy: Je
## 94 RT @GarethPorter:
## 95 RT @JerusalemVow: Jo
## 96 @SpeakerPelosi Impe
## 97 RT @AngeloCiocca: Secondo #DiMaio l'amiciz
## 98 RT @AndyOstroy: @r
## 99 #RushLimbaugh blub
## 100 RT @outerspacemanI

```

##	favorited	favoriteCount	replyToSN	created	truncated
## 1	FALSE	0	<NA>	2019-10-01 16:56:38	FALSE
## 2	FALSE	0	<NA>	2019-10-01 16:56:36	FALSE
## 3	FALSE	0	<NA>	2019-10-01 16:56:35	FALSE
## 4	FALSE	0	<NA>	2019-10-01 16:56:34	FALSE
## 5	FALSE	0	<NA>	2019-10-01 16:56:33	FALSE
## 6	FALSE	1	<NA>	2019-10-01 16:56:28	TRUE
## 7	FALSE	0	<NA>	2019-10-01 16:56:27	FALSE
## 8	FALSE	1	CorentinSellin	2019-10-01 16:56:26	TRUE
## 9	FALSE	0	<NA>	2019-10-01 16:56:25	FALSE
## 10	FALSE	0	<NA>	2019-10-01 16:56:20	FALSE
## 11	FALSE	0	<NA>	2019-10-01 16:56:20	TRUE
## 12	FALSE	0	SteveScalise	2019-10-01 16:56:19	TRUE
## 13	FALSE	0	<NA>	2019-10-01 16:56:19	FALSE
## 14	FALSE	0	<NA>	2019-10-01 16:56:16	FALSE
## 15	FALSE	0	<NA>	2019-10-01 16:56:14	FALSE
## 16	FALSE	0	<NA>	2019-10-01 16:56:13	FALSE
## 17	FALSE	0	<NA>	2019-10-01 16:56:12	FALSE
## 18	FALSE	0	<NA>	2019-10-01 16:56:12	FALSE
## 19	FALSE	0	<NA>	2019-10-01 16:56:11	FALSE
## 20	FALSE	0	<NA>	2019-10-01 16:56:11	TRUE
## 21	FALSE	0	<NA>	2019-10-01 16:56:11	FALSE
## 22	FALSE	0	<NA>	2019-10-01 16:56:08	FALSE
## 23	FALSE	0	<NA>	2019-10-01 16:56:08	FALSE
## 24	FALSE	0	<NA>	2019-10-01 16:56:04	TRUE
## 25	FALSE	0	<NA>	2019-10-01 16:56:03	FALSE
## 26	FALSE	0	<NA>	2019-10-01 16:56:01	TRUE
## 27	FALSE	0	<NA>	2019-10-01 16:56:00	FALSE
## 28	FALSE	0	realDonaldTrump	2019-10-01 16:55:58	TRUE
## 29	FALSE	0	<NA>	2019-10-01 16:55:57	FALSE
## 30	FALSE	0	<NA>	2019-10-01 16:55:56	FALSE
## 31	FALSE	0	<NA>	2019-10-01 16:55:54	FALSE
## 32	FALSE	0	<NA>	2019-10-01 16:55:50	FALSE
## 33	FALSE	0	<NA>	2019-10-01 16:55:46	FALSE
## 34	FALSE	0	<NA>	2019-10-01 16:55:46	FALSE
## 35	FALSE	0	<NA>	2019-10-01 16:55:43	FALSE
## 36	FALSE	0	<NA>	2019-10-01 16:55:42	FALSE

## 37	FALSE	0		<NA>	2019-10-01 16:55:40	FALSE
## 38	FALSE	0		<NA>	2019-10-01 16:55:40	FALSE
## 39	FALSE	0		<NA>	2019-10-01 16:55:34	FALSE
## 40	FALSE	0		<NA>	2019-10-01 16:55:28	FALSE
## 41	FALSE	1	MarkHammill		2019-10-01 16:55:27	TRUE
## 42	FALSE	0		<NA>	2019-10-01 16:55:27	FALSE
## 43	FALSE	0		<NA>	2019-10-01 16:55:23	FALSE
## 44	FALSE	0		<NA>	2019-10-01 16:55:19	FALSE
## 45	FALSE	0		<NA>	2019-10-01 16:55:18	FALSE
## 46	FALSE	0		<NA>	2019-10-01 16:55:17	TRUE
## 47	FALSE	0		<NA>	2019-10-01 16:55:14	FALSE
## 48	FALSE	0		<NA>	2019-10-01 16:55:13	FALSE
## 49	FALSE	0		<NA>	2019-10-01 16:55:11	FALSE
## 50	FALSE	0		<NA>	2019-10-01 16:55:10	FALSE
## 51	FALSE	0		<NA>	2019-10-01 16:55:06	FALSE
## 52	FALSE	0		<NA>	2019-10-01 16:55:05	FALSE
## 53	FALSE	0		<NA>	2019-10-01 16:55:05	FALSE
## 54	FALSE	0		<NA>	2019-10-01 16:55:05	FALSE
## 55	FALSE	0	realDonaldTrump		2019-10-01 16:55:03	FALSE
## 56	FALSE	0		<NA>	2019-10-01 16:55:03	FALSE
## 57	FALSE	0		<NA>	2019-10-01 16:54:58	FALSE
## 58	FALSE	0	govfella		2019-10-01 16:54:54	TRUE
## 59	FALSE	0		<NA>	2019-10-01 16:54:54	FALSE
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## 63	FALSE	1	OutnumberedFNC		2019-10-01 16:54:49	TRUE
## 64	FALSE	0		<NA>	2019-10-01 16:54:46	FALSE
## 65	FALSE	0		<NA>	2019-10-01 16:54:42	FALSE
## 66	FALSE	0		<NA>	2019-10-01 16:54:42	FALSE
## 67	FALSE	0		<NA>	2019-10-01 16:54:41	FALSE
## 68	FALSE	0		<NA>	2019-10-01 16:54:39	FALSE
## 69	FALSE	0	USATODAY		2019-10-01 16:54:39	TRUE
## 70	FALSE	0		<NA>	2019-10-01 16:54:39	FALSE
## 71	FALSE	0		<NA>	2019-10-01 16:54:35	FALSE
## 72	FALSE	0		<NA>	2019-10-01 16:54:33	FALSE
## 73	FALSE	0		<NA>	2019-10-01 16:54:33	FALSE
## 74	FALSE	0		<NA>	2019-10-01 16:54:31	FALSE
## 75	FALSE	0		<NA>	2019-10-01 16:54:31	FALSE
## 76	FALSE	0	ChatByCC		2019-10-01 16:54:27	FALSE
## 77	FALSE	0		<NA>	2019-10-01 16:54:27	FALSE
## 78	FALSE	0		<NA>	2019-10-01 16:54:25	FALSE
## 79	FALSE	1		<NA>	2019-10-01 16:54:25	FALSE
## 80	FALSE	0		<NA>	2019-10-01 16:54:19	FALSE
## 81	FALSE	0	realDonaldTrump		2019-10-01 16:54:19	TRUE
## 82	FALSE	0		<NA>	2019-10-01 16:54:18	FALSE
## 83	FALSE	0		<NA>	2019-10-01 16:54:14	FALSE
## 84	FALSE	0		<NA>	2019-10-01 16:54:13	TRUE
## 85	FALSE	0		<NA>	2019-10-01 16:54:12	FALSE
## 86	FALSE	0		<NA>	2019-10-01 16:54:12	FALSE
## 87	FALSE	0		<NA>	2019-10-01 16:54:11	FALSE
## 88	FALSE	0		<NA>	2019-10-01 16:54:09	FALSE
## 89	FALSE	0		<NA>	2019-10-01 16:54:07	FALSE
## 90	FALSE	0		<NA>	2019-10-01 16:54:03	FALSE

## 91	FALSE	0	<NA>	2019-10-01 16:54:03	FALSE
## 92	FALSE	0	<NA>	2019-10-01 16:54:01	FALSE
## 93	FALSE	0	<NA>	2019-10-01 16:53:58	FALSE
## 94	FALSE	0	<NA>	2019-10-01 16:53:51	FALSE
## 95	FALSE	0	<NA>	2019-10-01 16:53:47	FALSE
## 96	FALSE	0	SpeakerPelosi	2019-10-01 16:53:46	TRUE
## 97	FALSE	0	<NA>	2019-10-01 16:53:46	FALSE
## 98	FALSE	0	<NA>	2019-10-01 16:53:45	FALSE
## 99	FALSE	0	<NA>	2019-10-01 16:53:41	TRUE
## 100	FALSE	0	<NA>	2019-10-01 16:53:40	FALSE
##	replyToSID		id	replyToUID	
## 1	<NA>	1179077673366310912	<NA>		
## 2	<NA>	1179077666743476224	<NA>		
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## 35	<NA>	1179077442151096323	<NA>		
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## 42	<NA>	1179077376199860225	<NA>		
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## 44	<NA>	1179077344079818752	<NA>
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## 73	<NA>	1179077148629520384	<NA>
## 74	<NA>	1179077143592083456	<NA>
## 75	<NA>	1179077142522613762	<NA>
## 76	1179073698420015105	1179077126122868736	732980827
## 77	<NA>	1179077125158121477	<NA>
## 78	<NA>	1179077118124122113	<NA>
## 79	<NA>	1179077115284574209	<NA>
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## 81	1178820044802940929	1179077090227970049	25073877
## 82	<NA>	1179077087912747009	<NA>
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## 84	<NA>	1179077066957959168	<NA>
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## 95	<NA>	1179076958329737217	<NA>
## 96	1179037172768243713	1179076952671473664	15764644
## 97	<NA>	1179076951547531264	<NA>



```
# 98 <NA> 1179076950020804609 <NA>  
# 99 <NA> 1179076932966633472 <NA>  
# 100 <NA> 1179076929523195905 <NA>  
  
##### statusSource  
# 1 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 2 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 3 <a href="http://twitter.com/#!/download/ipad" rel="nofollow">Twitter for iPad</a>  
# 4 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 5 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 6 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 7 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 8 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 9 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 10 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 11 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 12 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 13 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 14 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 15 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 16 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 17 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 18 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 19 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 20 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 21 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 22 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 23 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 24 <a href="http://twitter.com" rel="nofollow">Twitter Web Client</a>  
# 25 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 26 <a href="http://www.myplume.com/" rel="nofollow">Plume for Android</a>  
# 27 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 28 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 29 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 30 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 31 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 32 <a href="http://twitter.com" rel="nofollow">Twitter Web Client</a>  
# 33 <a href="http://twitter.com/#!/download/ipad" rel="nofollow">Twitter for iPad</a>  
# 34 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 35 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 36 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 37 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 38 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 39 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 40 <a href="http://twitter.com/download/android" rel="nofollow">Twitter for Android</a>  
# 41 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 42 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 43 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 44 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 45 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 46 <a href="https://about.twitter.com/products/tweetdeck" rel="nofollow">TweetDeck</a>  
# 47 <a href="http://twitter.com/#!/download/ipad" rel="nofollow">Twitter for iPad</a>  
# 48 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>  
# 49 <a href="https://mobile.twitter.com" rel="nofollow">Twitter Web App</a>  
# 50 <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>
```



## 4	jmkrej	152	TRUE	FALSE	NA	NA
## 5	steph93065	1	TRUE	FALSE	NA	NA
## 6	ardini_robert	0	FALSE	FALSE	NA	NA
## 7	DLeppi	8	TRUE	FALSE	NA	NA
## 8	CorentinSellin	0	FALSE	FALSE	NA	NA
## 9	dont_lie_45	12	TRUE	FALSE	NA	NA
## 10	BillyKanada	1211	TRUE	FALSE	NA	NA
## 11	GrasshopperPhil	0	FALSE	FALSE	NA	NA
## 12	paintbynotes	0	FALSE	FALSE	NA	NA
## 13	mjhillenbrand	16	TRUE	FALSE	NA	NA
## 14	ckkoch3	6768	TRUE	FALSE	NA	NA
## 15	debbiefrombklyn	0	FALSE	FALSE	NA	NA
## 16	megati15	8	TRUE	FALSE	NA	NA
## 17	LuisCastroCuba	9	TRUE	FALSE	NA	NA
## 18	Bigobie1102	1	TRUE	FALSE	NA	NA
## 19	SithDraek	2	TRUE	FALSE	NA	NA
## 20	tngadd	0	FALSE	FALSE	NA	NA
## 21	1Stillbreathin	3	TRUE	FALSE	NA	NA
## 22	CANNIVEST	152	TRUE	FALSE	NA	NA
## 23	spookytate	65	TRUE	FALSE	NA	NA
## 24	mrubin1971	0	FALSE	FALSE	NA	NA
## 25	highcou15624370	3	TRUE	FALSE	NA	NA
## 26	CaringInfo	0	FALSE	FALSE	NA	NA
## 27	belle_aura	2	TRUE	FALSE	NA	NA
## 28	AngelicFusion	0	FALSE	FALSE	NA	NA
## 29	ramonaqt	85	TRUE	FALSE	NA	NA
## 30	Tstephen16	1211	TRUE	FALSE	NA	NA
## 31	Margare72080491	6768	TRUE	FALSE	NA	NA
## 32	FedUpPatriots1	1	TRUE	FALSE	NA	NA
## 33	SoTiredOfTrump	152	TRUE	FALSE	NA	NA
## 34	Helens31Self	8	TRUE	FALSE	NA	NA
## 35	marciabilyk	6768	TRUE	FALSE	NA	NA
## 36	emolument2017	16	TRUE	FALSE	NA	NA
## 37	SierranWolf	485	TRUE	FALSE	NA	NA
## 38	cacharly	3	TRUE	FALSE	NA	NA
## 39	SavetheUSA_	6768	TRUE	FALSE	NA	NA
## 40	MikedoyleDoylem	406	TRUE	FALSE	NA	NA
## 41	kimkm46	0	FALSE	FALSE	NA	NA
## 42	Kimba212Jupiter	406	TRUE	FALSE	NA	NA
## 43	AthansChristi	7	TRUE	FALSE	NA	NA
## 44	cottage_orchard	8	TRUE	FALSE	NA	NA
## 45	OurTurnToRescue	42	TRUE	FALSE	NA	NA
## 46	SetonMotley	0	FALSE	FALSE	NA	NA
## 47	VeronicaTalbot9	80	TRUE	FALSE	NA	NA
## 48	Paco15	18	TRUE	FALSE	NA	NA
## 49	ID19561029	18	TRUE	FALSE	NA	NA
## 50	LisaDeVine	152	TRUE	FALSE	NA	NA
## 51	BuckaRubby	314	TRUE	FALSE	NA	NA
## 52	SuezWillson	396	TRUE	FALSE	NA	NA
## 53	mmonchy1	16	TRUE	FALSE	NA	NA
## 54	NewGirl4444	16	TRUE	FALSE	NA	NA
## 55	saaaggood	0	FALSE	FALSE	NA	NA
## 56	ChipoclesMx	2	TRUE	FALSE	NA	NA
## 57	cmerfy	16	TRUE	FALSE	NA	NA

## 58	nophreak	0	FALSE	FALSE	NA	NA
## 59	DoldineR	152	TRUE	FALSE	NA	NA
## 60	yaesluap	0	FALSE	FALSE	NA	NA
## 61	12Harmonicas	221	TRUE	FALSE	NA	NA
## 62	NavyMomFL	257	TRUE	FALSE	NA	NA
## 63	TexanGalCindy	3	FALSE	FALSE	NA	NA
## 64	chitowprincess1	12	TRUE	FALSE	NA	NA
## 65	Zanka2018	1	TRUE	FALSE	NA	NA
## 66	excdragonfly369	114	TRUE	FALSE	NA	NA
## 67	todaysege	7	TRUE	FALSE	NA	NA
## 68	silverncopper	1	TRUE	FALSE	NA	NA
## 69	TexaRicanRacing	0	FALSE	FALSE	NA	NA
## 70	CoutureG	8	TRUE	FALSE	NA	NA
## 71	JJDreau	18	TRUE	FALSE	NA	NA
## 72	Diobletoi	4	TRUE	FALSE	NA	NA
## 73	pinuspalustris	16	TRUE	FALSE	NA	NA
## 74	JamesVolfson	8	TRUE	FALSE	NA	NA
## 75	moefromcanada	16	TRUE	FALSE	NA	NA
## 76	grayjack	0	FALSE	FALSE	NA	NA
## 77	talinay64	310	TRUE	FALSE	NA	NA
## 78	Leica0071	130	TRUE	FALSE	NA	NA
## 79	LuBonLez	1	FALSE	FALSE	NA	NA
## 80	ann_crossley	8	TRUE	FALSE	NA	NA
## 81	ObviousAnd	0	FALSE	FALSE	NA	NA
## 82	tomnickell001	6768	TRUE	FALSE	NA	NA
## 83	GernotDreher	19	TRUE	FALSE	NA	NA
## 84	Joshknowles1985	0	FALSE	FALSE	NA	NA
## 85	excdragonfly369	22	TRUE	FALSE	NA	NA
## 86	CarpeDiemHP	65	TRUE	FALSE	NA	NA
## 87	ebizarch	42	TRUE	FALSE	NA	NA
## 88	excdragonfly369	28	TRUE	FALSE	NA	NA
## 89	kaysey6594	4	TRUE	FALSE	NA	NA
## 90	kaysey6594	4	TRUE	FALSE	NA	NA
## 91	JaanaNystrom	0	FALSE	FALSE	NA	NA
## 92	VirginiaLoughn1	5	TRUE	FALSE	NA	NA
## 93	oufenix	16	TRUE	FALSE	NA	NA
## 94	HameedPooya	30	TRUE	FALSE	NA	NA
## 95	GeneCrimson	80	TRUE	FALSE	NA	NA
## 96	yaesluap	0	FALSE	FALSE	NA	NA
## 97	SalvatoreBelliz	8	TRUE	FALSE	NA	NA
## 98	uhkals	85	TRUE	FALSE	NA	NA
## 99	jamiesearsdj	0	FALSE	FALSE	NA	NA
## 100	outerspacemanII	1	TRUE	FALSE	NA	NA

```
TransactionTweetsFile = "Choc.csv"
(Search_DF$text[1])
```

```
## [1] "RT @RobotAli6n: #Trump and Rudy Giuliani are perfectly normal and above board. WE must be the p
```

```
## Start the file
```

```
Trans <- file(TransactionTweetsFile)
```

```
## Tokenize to words
```

```
Tokens<-tokenizers::tokenize_words(Search_DF$text[1],stopwords = stopwords::stopwords("en"),
lowercase = TRUE, strip_punct = TRUE, strip_numeric = TRUE,simplify = TRUE)
```

```
## Write squished tokens
```

```

cat(unlist(str_squish(Tokens)), "\n", file=Trans, sep=",")
close(Trans)

## Append remaining lists of tokens into file
## Recall - a list of tokens is the set of words from a Tweet
Trans <- file(TransactionTweetsFile, open = "a")
for(i in 2:nrow(Search_DF)){
  Tokens<-tokenize_words(Search_DF$text[i], stopwords = stopwords::stopwords("en"),
    lowercase = TRUE, strip_punct = TRUE, simplify = TRUE)
  cat(unlist(str_squish(Tokens)), "\n", file=Trans, sep=",")
}
close(Trans)

```

## Tweets as Transactions

In this section we will read in the tweets stored in the CSV file using the (Association Rule Mining) ARM library. Each tweet will be considered a basket of words. We can use ARM to determine associations of words in tweets.

```

##### Read in the tweet transactions
TweetTrans <- read.transactions(TransactionTweetsFile,
                                rm.duplicates = FALSE,
                                format = "basket",
                                sep=",",
                                ## cols =
                                )
inspect(TweetTrans)

```

```

##      items
## [1] {board,
##      ehzxbmrxpmx,
##      giuliani,
##      https,
##      must,
##      normal,
##      perfectly,
##      problem,
##      robotali6n,
##      rt,
##      rudy,
##      t.co,
##      trump}
## [2] {ca,
##      como,
##      cubanitoencuba,
##      de,
##      dicen,
##      él,
##      ella,
##      en,
##      es,
##      ha,
##      muchos,

```

```

##      negocios,
##      por,
##      que,
##      quieren,
##      rt,
##      saber,
##      sucio,
##      tienen,
##      tipo,
##      trinidad,
##      trump,
##      un}
## [3] {church143,
##      election,
##      first,
##      get,
##      junk,
##      kag,
##      maga,
##      making,
##      money,
##      people,
##      qanon,
##      rid,
##      rt,
##      soros,
##      tw}
## [4] {andyostroy,
##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      rt,
##      traitor,
##      unlike,
##      you're}
## [5] {china,
##      eyv2vmmpgs,
##      handle,
##      https,
##      know,
##      rt,
##      stevebannon,
##      t.co,
##      trump,
##      trumpatwar}
## [6] {1,
##      2,
##      3,
##      avijvxjazl,
##      bankruptcy,

```

```

##      business,
##      claim,
##      get,
##      https,
##      money,
##      owes,
##      settle,
##      small,
##      syphon,
##      t.co,
##      trump,
##      workers}
## [7] {amplifies,
##      anyone,
##      better,
##      breakdown,
##      exploits,
##      howardfineman,
##      realdonaldtrump,
##      rt,
##      suspicion,
##      system,
##      understands}
## [8] {1,
##      3,
##      au,
##      cx7f8ni8j2,
##      d,
##      démocratie,
##      doit,
##      du,
##      et,
##      être,
##      https,
##      il,
##      incarnation,
##      jour,
##      le,
##      littéral,
##      p,
##      président,
##      pris,
##      se,
##      sens,
##      t.co,
##      trump,
##      tweet,
##      veut}
## [9] {administration,
##      andy4691,
##      corrupt,
##      iamthewhistleblower,
##      impeach,
##      putting,

```

```

##      rt,
##      rudygiulianimeltdown,
##      stop,
##      trump,
##      whistleblower}
## [10] {2007,
##      clement,
##      donnawr8,
##      election,
##      kim,
##      one,
##      praying,
##      predicted,
##      presidency,
##      president,
##      re,
##      religious,
##      rt,
##      trump,
##      y}
## [11] {accuser,
##      attempts,
##      calls,
##      confront,
##      dangerous,
##      democrat,
##      eliminate,
##      https,
##      phone,
##      right,
##      t.co,
##      trump's,
##      u6khhwvndg,
##      what's}
## [12] {1,
##      9yjobxnd5a,
##      de,
##      https,
##      lessen,
##      realdonaldtrump,
##      russia,
##      sanctions,
##      seeking,
##      stevescalise,
##      t.co,
##      trump,
##      trying,
##      two,
##      ways}
## [13] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,

```



```

##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      rt,
##      snowflake,
##      whining}
## [14] {barr,
##      co,
##      commun,
##      foreign,
##      go,
##      gop,
##      governments,
##      hypocrites,
##      intel,
##      maga,
##      peterdaou,
##      pompeo,
##      rt,
##      shaking,
##      trump}
## [15] {gopcomplicit,
##      gopcowards,
##      https,
##      huyirybqs5,
##      maga,
##      magats,
##      republicanparty,
##      republicans,
##      t.co,
##      trump}
## [16] {2,
##      abracadabrantisque,
##      affaires,
##      assisté,
##      corentinsellin,
##      de,
##      déjà,
##      des,
##      est,
##      étrangères,
##      il,
##      la,
##      ministre,
##      particulière,
##      pompeo,
##      rt,
##      situation,
##      us}
## [17] {ahora,

```

```

##      australia,
##      confirma,
##      flote,
##      gaby80192623,
##      la,
##      le,
##      otro,
##      pidió,
##      problemas,
##      q,
##      rt,
##      sale,
##      se,
##      si,
##      siempre,
##      suma,
##      tenía,
##      trump,
##      verdad}
## [18] {apocalypse,
##      barr,
##      cnn,
##      conquest,
##      death,
##      enkiwriter,
##      famine,
##      four,
##      giuliani,
##      horsemen,
##      https,
##      msnbc,
##      pompeo,
##      rt,
##      t,
##      trump,
##      war}
## [19] {artículo,
##      brillante,
##      con,
##      conéctate,
##      de,
##      del,
##      después,
##      dh,
##      director,
##      este,
##      globa,
##      la,
##      programa,
##      rompevientotv,
##      rt,
##      tedlewis3,
##      trump,
##      vida}

```

```

## [20] {9rumbzp0ku,
##      austria,
##      canada,
##      eu,
##      france,
##      germany,
##      https,
##      italy,
##      mexico,
##      nato,
##      scandinavia,
##      switzerland,
##      t.co,
##      trump,
##      uk,
##      un,
##      unhr,
##      unsc,
##      us}
## [21] {evangeli,
##      franklin_graham,
##      goal,
##      gop,
##      got,
##      points,
##      robertjeffress,
##      rt,
##      scare,
##      stevevanderveen,
##      talking}
## [22] {andyostroy,
##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      rt,
##      traitor,
##      unlike,
##      you're}
## [23] {anything,
##      deep,
##      dmon4ever,
##      interest,
##      jaeare53,
##      marklevinshow,
##      neck,
##      pelosi,
##      personal,
##      rt,
##      ukraine}
## [24] {aeifdp,

```

```

##      community,
##      ez61biupsb,
##      https,
##      impeachment,
##      intelligence,
##      loser,
##      qj5u4pu9eb,
##      real,
##      t.co,
##      trump}
## [25] {admin,
##      corrupt,
##      fact,
##      hoax,
##      investigation,
##      obama,
##      outnumberedfnc,
##      perpetrated,
##      rt,
##      russian,
##      spy,
##      texangalcindy,
##      us,
##      years}
## [26] {amp,
##      collectively,
##      contacts,
##      foreign,
##      four,
##      gflq38hosr,
##      https,
##      leaders,
##      least,
##      mikepompeo,
##      participated,
##      t.co,
##      trump,
##      williamsbarr}
## [27] {appeal,
##      close,
##      diminished,
##      dollar,
##      fxleaderscom,
##      gold,
##      haven,
##      lower,
##      lows,
##      month,
##      prices,
##      rt,
##      safe,
##      slid,
##      st,
##      trade,

```

```

##      two,
##      us,
##      xauusd}
## [28] {administration,
##      american,
##      citizen,
##      hell,
##      https,
##      know,
##      like,
##      realdonaldtrump,
##      t.co,
##      talki,
##      trump,
##      yazfdvyugu}
## [29] {andyostroy,
##      around,
##      day,
##      gentlemen,
##      ladies,
##      posti,
##      present,
##      president,
##      re,
##      realdonaldtrump,
##      rt,
##      sits,
##      states,
##      tweeting,
##      united}
## [30] {2007,
##      clement,
##      donnawr8,
##      election,
##      kim,
##      one,
##      praying,
##      predicted,
##      presidency,
##      president,
##      re,
##      religious,
##      rt,
##      trump,
##      y}
## [31] {barr,
##      co,
##      commun,
##      foreign,
##      go,
##      gop,
##      governments,
##      hypocrites,
##      intel,

```

```

##      maga,
##      peterdaou,
##      pompeo,
##      rt,
##      shaking,
##      trump}
## [32] {bucholtzjulie,
##      call,
##      cheney,
##      crooked,
##      every,
##      liz,
##      phone,
##      rep,
##      rt,
##      s,
##      set,
##      street,
##      thinks,
##      trump,
##      trying,
##      ukraine,
##      wyoming}
## [33] {andyostroy,
##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      rt,
##      traitor,
##      unlike,
##      you're}
## [34] {amplifies,
##      anyone,
##      better,
##      breakdown,
##      exploits,
##      howardfineman,
##      realdonaldtrump,
##      rt,
##      suspicion,
##      system,
##      understands}
## [35] {barr,
##      co,
##      commun,
##      foreign,
##      go,
##      gop,
##      governments,
##      hypocrites,

```

```

##      intel,
##      maga,
##      peterdaou,
##      pompeo,
##      rt,
##      shaking,
##      trump}
## [36] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      rt,
##      snowflake,
##      whining}
## [37] {biden,
##      changed,
##      complaint,
##      deplorablebabe,
##      impeachment,
##      rt,
##      support,
##      trump,
##      ukraine,
##      whistleblower}
## [38] {admin,
##      corrupt,
##      fact,
##      hoax,
##      investigation,
##      obama,
##      outnumberedfnc,
##      perpetrated,
##      rt,
##      russian,
##      spy,
##      texangalcindy,
##      us,
##      years}
## [39] {barr,
##      co,
##      commun,
##      foreign,
##      go,
##      gop,
##      governments,
##      hypocrites,

```

```

##      intel,
##      maga,
##      peterdaou,
##      pompeo,
##      rt,
##      shaking,
##      trump}
## [40] {america,
##      bra,
##      freedom,
##      part,
##      patriots,
##      poland,
##      poles,
##      program,
##      ritacosby,
##      rt,
##      soon,
##      stalwart,
##      thrilled,
##      truly,
##      us,
##      visawaiver}
## [41] {elected,
##      hollywood,
##      https,
##      independents,
##      like,
##      making,
##      markhammill,
##      robertdenero,
##      sure,
##      t.co,
##      trump,
##      zycdmetkbi}
## [42] {america,
##      bra,
##      freedom,
##      part,
##      patriots,
##      poland,
##      poles,
##      program,
##      ritacosby,
##      rt,
##      soon,
##      stalwart,
##      thrilled,
##      truly,
##      us,
##      visawaiver}
## [43] {claimed,
##      congressman,
##      essence,

```



```

##      law,
##      legal,
##      one,
##      parody,
##      quote,
##      realdonaldtrump,
##      rt,
##      t,
##      thewisemansaid2}
## [44] {amplifies,
##      anyone,
##      better,
##      breakdown,
##      exploits,
##      howardfineman,
##      realdonaldtrump,
##      rt,
##      suspicion,
##      system,
##      understands}
## [45] {1u,
##      civilwar,
##      correct,
##      handle,
##      maga,
##      october1st,
##      resist,
##      richardangwin,
##      rt,
##      supporter,
##      tcot,
##      traitor,
##      trump,
##      tuesdayth,
##      way}
## [46] {communal,
##      https,
##      individual,
##      life,
##      mandate,
##      n3dhsdsir6,
##      property,
##      respect,
##      states,
##      t.co,
##      united,
##      ve}
## [47] {brennan,
##      cia,
##      hater,
##      head,
##      islam,
##      jerusalemvow,
##      john,

```

```

##      love,
##      obama,
##      president,
##      rt,
##      s,
##      talks,
##      traitor,
##      trump}
## [48] {avec,
##      ce,
##      cette,
##      congrès,
##      corentinsellin,
##      dimpeachment,va,bien,au,delà,de,son,sort,le,,
##      entre,
##      et,
##      joue,
##      le,
##      président,
##      procédure,
##      qui,
##      rt,
##      se,
##      trump}
## [49] {avec,
##      ce,
##      cette,
##      congrès,
##      corentinsellin,
##      dimpeachment,va,bien,au,delà,de,son,sort,le,,
##      entre,
##      et,
##      joue,
##      le,
##      président,
##      procédure,
##      qui,
##      rt,
##      se,
##      trump}
## [50] {andyostroy,
##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      rt,
##      traitor,
##      unlike,
##      you're}
## [51] {2016,
##      activities,

```

```

##      agencies,
##      aid,
##      asked,
##      barr,
##      cia,
##      dirt,
##      fbi,
##      foreign,
##      inquiry,
##      intel,
##      looking,
##      mog7546,
##      officials,
##      rt,
##      wanted}
## [52] {2020,
##      22,
##      breaking:folks,
##      emolclause,
##      gop,
##      national,
##      reelection,
##      remember,
##      rt,
##      s,
##      sacrifice,
##      senators}
## [53] {044.2,
##      91jaopp,
##      annettesn01,
##      bikerrally,
##      grannyanon1969,
##      greybeard_biker,
##      greybeardbikerapproved,
##      mama,
##      rdrhwke,
##      rt,
##      trump}
## [54] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      rt,
##      snowflake,
##      whining}
## [55] {clown,

```

```

##      loser,
##      messed,
##      realdonaldtrump,
##      really,
##      running,
##      scared,
##      time,
##      trump,
##      trumpimpeachment}
## [56] {artículo,
##      brillante,
##      con,
##      conéctate,
##      de,
##      del,
##      después,
##      dh,
##      director,
##      este,
##      globa,
##      la,
##      programa,
##      rompevientotv,
##      rt,
##      tedlewis3,
##      trump,
##      vida}
## [57] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      rt,
##      snowflake,
##      whining}
## [58] {answers,
##      birth,
##      certificate,
##      cvq1k9jaau,
##      govfella,
##      https,
##      questions,
##      realdonaldtrump,
##      rest,
##      t.co,
##      uvpk2izanx}
## [59] {andyostroy,

```

```

##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      rt,
##      traitor,
##      unlike,
##      you're}
## [60] {cares,
##      hate,
##      https,
##      impeach,
##      lies,
##      nancy,
##      nm2nbpbtva,
##      t.co}
## [61] {andyostroy,
##      asap,
##      dear,
##      he's,
##      liar,
##      office,
##      pathological,
##      realdonaldtrump,
##      reasons,
##      remove,
##      republican,
##      rt,
##      senators,
##      trump}
## [62] {ago,
##      battleofever,
##      community,
##      eliminated,
##      first,
##      hand,
##      intel,
##      knowled,
##      months,
##      must,
##      provide,
##      quietly,
##      requirement,
##      rt,
##      us,
##      whistleblowers}
## [63] {admin,
##      corrupt,
##      fact,
##      hoax,
##      https,

```

```

##      investigation,
##      jbtillryrf,
##      obama,
##      outnumberedfnc,
##      perpetrated,
##      russian,
##      spy,
##      t.co,
##      us,
##      years}
## [64] {administration,
##      andy4691,
##      corrupt,
##      iamthewhistleblower,
##      impeach,
##      putting,
##      rt,
##      rudygiulianimeltdown,
##      stop,
##      trump,
##      whistleblower}
## [65] {2020,
##      administration,
##      america,
##      c8ddrp,
##      cleanse,
##      corrupt,
##      democracy,
##      https,
##      lubonlez,
##      must,
##      rt,
##      t.co,
##      trump,
##      votebluenomatterwho}
## [66] {bush,
##      clinton,
##      corrupt,
##      crooked,
##      evil,
##      excdragonfly369,
##      gitmo,
##      hillary,
##      maga,
##      obama,
##      patriot,
##      pure,
##      qanon,
##      rt,
##      squad,
##      trump}
## [67] {044.0,
##      1stairdel_usmcr,
##      bikerrally,

```

```

##      cdoranharader,
##      fedupf,
##      greybeard_biker,
##      greybeardbikerapproved,
##      rt,
##      trinitysfaith,
##      trump}
## [68] {appropriati,
##      borderwall,
##      excellent,
##      fund,
##      lawful,
##      mexico,
##      reminder,
##      repeatedly,
##      rt,
##      sfdukie,
##      spent,
##      taken,
##      trump,
##      vowed}
## [69] {basis,
##      chaos,
##      fabricated,
##      family,
##      https,
##      iraq,
##      liz_cheney,
##      t,
##      t.co,
##      thing,
##      tree,
##      usatoday,
##      yyskc4aydu}
## [70] {2,
##      abracadabrantisque,
##      affaires,
##      assisté,
##      corentinsellin,
##      de,
##      déjà,
##      des,
##      est,
##      étrangères,
##      il,
##      la,
##      ministre,
##      particulière,
##      pompeo,
##      rt,
##      situation,
##      us}
## [71] {avec,
##      ce,

```

```

##      cette,
##      congrès,
##      corentinsellin,
##      dimpeachment,va,bien,au,delà,de,son,sort,le,,
##      entre,
##      et,
##      joue,
##      le,
##      président,
##      procédure,
##      qui,
##      rt,
##      se,
##      trump}
## [72] {america,
##      believe,
##      birthday,
##      carter,
##      embodies,
##      gives,
##      happy,
##      jimmy,
##      lo,
##      man,
##      margie_hathaway,
##      much,
##      president,
##      reason,
##      rt}
## [73] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      rt,
##      snowflake,
##      whining}
## [74] {amplifies,
##      anyone,
##      better,
##      breakdown,
##      exploits,
##      howardfineman,
##      realdonaldtrump,
##      rt,
##      suspicion,
##      system,

```



```

##      understands}
## [75] {aid,
##      back,
##      call,
##      held,
##      phone,
##      real,
##      realdonaldtrump,
##      rt,
##      spec,
##      stevescalise,
##      thewisemansaid2,
##      transcript}
## [76] {chatbycc,
##      destroy,
##      efforts,
##      fail,
##      failed,
##      scam,
##      steph93065,
##      trump,
##      ukrainian}
## [77] {à,
##      bon,
##      ce,
##      combien,
##      corentinsellin,
##      de,
##      dévissage,
##      donc,
##      est,
##      et,
##      la,
##      lourdes,
##      question,
##      révélations,
##      rt,
##      rythme,
##      temps,
##      trump}
## [78] {cnn,
##      kamalaharris,
##      monday,
##      nded,
##      president,
##      rt,
##      said,
##      senator,
##      susp,
##      threats,
##      trump,
##      tter,
##      tw,
##      whis,

```

```

##      zeusfanhouse}
## [79] {2020,
##      administration,
##      america,
##      c8ddrpzj3q,
##      cleanse,
##      corrupt,
##      democracy,
##      https,
##      must,
##      t.co,
##      trump,
##      votebluenomatterwho}
## [80] {amplifies,
##      anyone,
##      better,
##      breakdown,
##      exploits,
##      howardfineman,
##      realdonaldtrump,
##      rt,
##      suspicion,
##      system,
##      understands}
## [81] {breitbartnews,
##      breitbarts,poll,numbers,obvious,https,t.co,7gj4c3xag4,,
##      making,
##      numbers,
##      poll,
##      realdonaldtrump,
##      thank}
## [82] {barr,
##      co,
##      commun,
##      foreign,
##      go,
##      gop,
##      governments,
##      hypocrites,
##      intel,
##      maga,
##      peterdaou,
##      pompeo,
##      rt,
##      shaking,
##      trump}
## [83] {36,
##      ausgegeben,
##      deutch,
##      ein,
##      es,
##      für,
##      hr,
##      im,

```

```

##      jahr,
##      kostenloser,
##      militär,
##      mrd,
##      öpnv,
##      rt,
##      solarpapst,
##      sollen,
##      trump,
##      weil,
##      werden,
##      zusätzlich}
## [84] {believe,
##      dcnef4q0in,
##      democrats,
##      dont,
##      everything,
##      https,
##      read,
##      related,
##      republican,
##      sensor,
##      t.co,
##      trump,
##      trying}
## [85] {bush,
##      clinton,
##      democrat,
##      excdragonfly369,
##      gitmo,
##      google,
##      hillary,
##      immigrant,
##      kag,
##      obama,
##      patriot,
##      pedo,
##      qanon,
##      racist,
##      rt,
##      squad,
##      trump}
## [86] {anything,
##      deep,
##      dmon4ever,
##      interest,
##      jaeare53,
##      marklevinshow,
##      neck,
##      pelosi,
##      personal,
##      rt,
##      ukraine}
## [87] {1u,

```

```

##      civilwar,
##      correct,
##      handle,
##      maga,
##      october1st,
##      resist,
##      richardangwin,
##      rt,
##      supporter,
##      tcot,
##      traitor,
##      trump,
##      tuesdayth,
##      way}
## [88] {bush,
##      clinton,
##      democrat,
##      excdragonfly369,
##      gitmo,
##      google,
##      hillary,
##      immigrant,
##      kag,
##      obama,
##      patriot,
##      pedo,
##      qanon,
##      racist,
##      rt,
##      squad,
##      trump}
## [89] {amp,
##      day,
##      eh4p1yatjx,
##      https,
##      independence,
##      love,
##      must,
##      pray,
##      rt,
##      t.co,
##      teisha_powell,
##      trump,
##      win}
## [90] {crazy,
##      https,
##      kgyl6xeoc0,
##      must,
##      rt,
##      socialist,
##      t.co,
##      teisha_powell,
##      trump,
##      warren,

```

```

##      win,
##      zuckerberg}
## [91] {criminalpresident,
##      daily,
##      gop,
##      https,
##      impeachment,
##      potential,
##      sdgsqa6dvt,
##      show,
##      snowballs,
##      t.co,
##      trump,
##      trump's,
##      ukrainesandal,
##      usa}
## [92] {1930,
##      2,
##      can't,
##      charlievp,
##      early,
##      germangovt,
##      happen,
##      like,
##      maddow,
##      remarkably,
##      rt,
##      s,
##      takeover,
##      think}
## [93] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      rt,
##      snowflake,
##      whining}
## [94] {believing,
##      chump,
##      cycle,
##      flip,
##      garethporter,
##      news,
##      rouhani,
##      rt,
##      snookering,

```

```

##      t,
##      took,
##      trump,
##      ukraine,
##      use}
## [95] {brennan,
##      cia,
##      hater,
##      head,
##      islam,
##      jerusalemvow,
##      john,
##      love,
##      obama,
##      president,
##      rt,
##      s,
##      talks,
##      traitor,
##      trump}
## [96] {cares,
##      https,
##      impeach,
##      lies,
##      nancy,
##      rnpiyf58xi,
##      speakerpelosi,
##      t.co}
## [97] {angelociocca,
##      dimaio,
##      lamicizia,di,conte,con,trump,avrebbe,evitato,dazi,la,verità,wto,da,il,via,libera,ai,dazi,usa,
##      rt,
##      secondo}
## [98] {andyostroy,
##      around,
##      day,
##      gentlemen,
##      ladies,
##      posti,
##      present,
##      president,
##      re,
##      realdonaldtrump,
##      rt,
##      sits,
##      states,
##      tweeting,
##      united}
## [99] {badly,
##      blubbering,
##      case,
##      ever,
##      gop,
##      https,

```

```
##      never,
##      protects,
##      realdonaldtrump,
##      rushlimbaugh,
##      t.co,
##      zzczrynxdn}
## [100] {business,
##      killing,
##      man,
##      michellemazuro,
##      minding,
##      outerspacemani,
##      punishment,
##      rt,
##      sanctuary,
##      young}
```

```
## See the words that occur the most
Sample_Trans <- sample(TweetTrans, 50)
summary(Sample_Trans)
```

```
## transactions as itemMatrix in sparse format with
## 50 rows (elements/itemsets/transactions) and
## 653 columns (items) and a density of 0.02067381
##
## most frequent items:
##      rt      trump      https      t.co
##      36      28      14      14
## realdonaldtrump      (Other)
##      11      572
##
## element (itemset/transaction) length distribution:
## sizes
## 5 7 8 9 10 11 12 13 14 15 16 18 20 23
## 1 1 2 1 1 8 7 2 4 15 2 3 2 1
##
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##      5.0    11.0    14.0    13.5    15.0    23.0
##
## includes extended item information - examples:
## labels
## 1 044.0
## 2 044.2
## 3      1
```

```
## Read the transactions data into a dataframe
TweetDF <- read.csv(TransactionTweetsFile, header = FALSE, sep = ",")
head(TweetDF)
```

```
##      V1      V2      V3      V4      V5      V6
## 1  rt      robotali6n      trump      rudy      giuliani perfectly
## 2  rt cubanitoencuba      muchos      como      ella      tienen
## 3  rt      church143      people making      money      election
## 4  rt      andyostroy realdonaldtrump unlike repadamschiff      isn't
## 5  rt      trumpatwar      stevebannon      china      know      handle
## 6 trump      business      1      claim      bankruptcy      syphon
```

```
##           V7      V8      V9      V10     V11     V12      V13     V14
## 1      normal board      must    problem https    t.co ehzxbmrpmx
## 2      negocios    en trinidad    quieren saber    de      trump dicen
## 3           get    rid    junk      get    rid    soros      first maga
## 4 pathologically lying corrupt    traitor you're dictato
## 5           trump https      t.co eyv2vmmpgs
## 6           money      2    settle    workers small    owes      3    get
##      V15 V16      V17 V18    V19 V20 V21 V22 V23 V24 V25
## 1
## 2    que    es      un tipo sucio que por él    ha    ca
## 3 qanon    kag      tw
## 4
## 5
## 6 https t.co avijvxjzl
```

```
(str(TweetDF))
```

```
## 'data.frame':    101 obs. of  25 variables:
## $ V1 : Factor w/ 22 levels "3","chatbycc",...: 13 13 13 13 13 17 13 1 3 13 ...
## $ V2 : Factor w/ 60 levels "", "administration",...: 46 17 15 6 57 13 31 24 1 5 ...
## $ V3 : Factor w/ 59 levels "", "1", "2", "2007",...: 53 40 42 44 49 2 44 31 1 57 ...
## $ V4 : Factor w/ 65 levels "", "2", "à", "administration",...: 53 15 37 59 12 13 8 58 1 45 ...
## $ V5 : Factor w/ 66 levels "", "044.0", "044.2",...: 21 19 36 48 30 7 5 18 1 60 ...
## $ V6 : Factor w/ 66 levels "", "agencies",...: 44 61 17 32 25 59 64 36 1 11 ...
## $ V7 : Factor w/ 60 levels "", "2020", "attempts",...: 37 36 21 39 55 34 19 16 1 55 ...
## $ V8 : Factor w/ 64 levels "", "1stairdel_usmcr",...: 10 20 47 29 25 3 6 40 1 5 ...
## $ V9 : Factor w/ 61 levels "", "2020", "aeifdp",...: 35 55 28 12 53 52 5 56 1 25 ...
## $ V10: Factor w/ 64 levels "", "1", "1930",...: 45 48 22 59 19 64 56 14 1 28 ...
## $ V11: Factor w/ 56 levels "", "abracadabrantese",...: 28 44 41 56 1 48 49 20 1 42 ...
## $ V12: Factor w/ 46 levels "", "1u", "ahora",...: 36 11 33 13 1 28 1 31 1 1 ...
## $ V13: Factor w/ 42 levels "", "3", "7gj4c3xag4",...: 15 36 17 1 1 2 1 6 1 1 ...
## $ V14: Factor w/ 44 levels "", "affaires",...: 1 9 25 1 1 15 1 34 1 1 ...
## $ V15: Factor w/ 31 levels "", "9yjobxnd5a",...: 1 25 24 1 1 16 1 19 1 1 ...
## $ V16: Factor w/ 23 levels "", "2016", "bra",...: 1 8 12 1 1 20 1 10 1 1 ...
## $ V17: Factor w/ 18 levels "", "australia",...: 1 15 14 1 1 3 1 12 1 1 ...
## $ V18: Factor w/ 13 levels "", "assisté", "bien",...: 1 11 1 1 1 1 1 12 1 1 ...
## $ V19: Factor w/ 11 levels "", "9rumbz0ku",...: 1 11 1 1 1 1 1 6 1 1 ...
## $ V20: Factor w/ 9 levels "", "ai", "d", "de",...: 1 7 1 1 1 1 1 3 1 1 ...
## $ V21: Factor w/ 8 levels "", "1", "dazi",...: 1 7 1 1 1 1 1 2 1 1 ...
## $ V22: Factor w/ 7 levels "", "démocratie",...: 1 4 1 1 1 1 1 2 1 1 ...
## $ V23: Factor w/ 5 levels "", "de", "ha", "p",...: 1 3 1 1 1 1 1 4 1 1 ...
## $ V24: Factor w/ 4 levels "", "ca", "https",...: 1 2 1 1 1 1 1 3 1 1 ...
## $ V25: Factor w/ 2 levels "", "t.co": 1 1 1 1 1 1 1 2 1 1 ...

## NULL
```

## Cleaning the text data

Note that cleaning the text data is very important in text mining applications. Tweets are especially “messy”. We will remove “rt”, “http”, etc and any other strings of no importance.

```
## Convert all columns to char
TweetDF<-TweetDF %>%
  mutate_all(as.character)
(str(TweetDF))
```



```
## 'data.frame': 101 obs. of 25 variables:
## $ V1 : chr "rt" "rt" "rt" "rt" ...
## $ V2 : chr "robotali6n" "cubanitoencuba" "church143" "andystroy" ...
## $ V3 : chr "trump" "muchos" "people" "realdonaldtrump" ...
## $ V4 : chr "rudy" "como" "making" "unlike" ...
## $ V5 : chr "giuliani" "ella" "money" "repadamschiff" ...
## $ V6 : chr "perfectly" "tienen" "election" "isn't" ...
## $ V7 : chr "normal" "negocios" "get" "pathologically" ...
## $ V8 : chr "board" "en" "rid" "lying" ...
## $ V9 : chr "must" "trinidad" "junk" "corrupt" ...
## $ V10: chr "problem" "quieren" "get" "traitor" ...
## $ V11: chr "https" "saber" "rid" "you're" ...
## $ V12: chr "t.co" "de" "soros" "dictato" ...
## $ V13: chr "ehzxbmrpmx" "trump" "first" "" ...
## $ V14: chr "" "dicen" "maga" "" ...
## $ V15: chr "" "que" "qanon" "" ...
## $ V16: chr "" "es" "kag" "" ...
## $ V17: chr "" "un" "tw" "" ...
## $ V18: chr "" "tipo" "" "" ...
## $ V19: chr "" "sucio" "" "" ...
## $ V20: chr "" "que" "" "" ...
## $ V21: chr "" "por" "" "" ...
## $ V22: chr "" "él" "" "" ...
## $ V23: chr "" "ha" "" "" ...
## $ V24: chr "" "ca" "" "" ...
## $ V25: chr "" "" "" "" ...
```

```
## NULL
```

```
# We can now remove certain words
```

```
TweetDF[TweetDF == "t.co"] <- ""
```

```
TweetDF[TweetDF == "rt"] <- ""
```

```
TweetDF[TweetDF == "http"] <- ""
```

```
TweetDF[TweetDF == "https"] <- ""
```

```
## Clean with grepl - every row in each column
```

```
MyDF<-NULL
```

```
for (i in 1:ncol(TweetDF)){
```

```
  MyList=c() # each list is a column of logicals ...
```

```
  MyList=c(MyList,grepl("[:digit:]", TweetDF[[i]]))
```

```
  MyDF<-cbind(MyDF,MyList) ## create a logical DF
```

```
  ## TRUE is when a cell has a word that contains digits
```

```
}
```

```
## For all TRUE, replace with blank
```

```
TweetDF[MyDF] <- ""
```

```
(head(TweetDF,10))
```

```
##      V1      V2      V3      V4      V5      V6
## 1                trump    rudy    giuliani    perfectly
## 2      cubanitoencuba    muchos    como    ella    tienen
## 3                people    making    money    election
## 4      andystroy    realdonaldtrump    unlike    repadamschiff    isn't
## 5      trumpatwar    stevebannon    china    know    handle
## 6    trump      business    claim    bankruptcy    syphon
## 7      howardfineman    realdonaldtrump    better    anyone    understands
```

```

## 8          et          le  tweet          du          jour
## 9
## 10          whistleblower putting          stop  corrupt
##          V7          V8          V9          V10
## 1          normal          board          must          problem
## 2          negocios          en  trinidad          quieren
## 3          get          rid          junk          get
## 4  pathologically          lying  corrupt          traitor
## 5          trump
## 6          money          settle          workers
## 7          exploits          amplifies breakdown          suspicion
## 8          du          président          trump          doit
## 9
## 10          trump administration          impeach iamthewhistleblower
##          V11          V12          V13  V14          V15 V16          V17
## 1          ehzxbmrpmx
## 2          saber          de          trump dicen          que es          un
## 3          rid  soros          first maga          qanon kag          tw
## 4          you're dictato
## 5
## 6          small  owes          get          avijvxjzl
## 7          system
## 8          être  pris          au  sens littéral  il          se
## 9
## 10 rudygiulianimeltdown
##          V18          V19 V20 V21          V22 V23 V24 V25
## 1
## 2  tipo          sucio que por          él  ha  ca
## 3
## 4
## 5
## 6
## 7
## 8  veut incarnation  d          démocratie  p
## 9
## 10

```

```

# Now we save the dataframe using the write table command
write.table(TweetDF, file = "UpdatedChocolate.csv", col.names = FALSE,
            row.names = FALSE, sep = ",")
TweetTrans <- read.transactions("UpdatedChocolate.csv", sep = ",",
                                format("basket"), rm.duplicates = TRUE)

```

```

## distribution of transactions with duplicates:
## items
## 1 2 3 5 6
## 18 7 2 1 2

```

```
inspect(TweetTrans)
```

```

##          items
## [1] {board,
##          ehzxbmrpmx,
##          giuliani,
##          must,

```

```

##      normal,
##      perfectly,
##      problem,
##      rudy,
##      trump}
## [2] {ca,
##      como,
##      cubanitoencuba,
##      de,
##      dicen,
##      él,
##      ella,
##      en,
##      es,
##      ha,
##      muchos,
##      negocios,
##      por,
##      que,
##      quieren,
##      saber,
##      sucio,
##      tienen,
##      tipo,
##      trinidad,
##      trump,
##      un}
## [3] {election,
##      first,
##      get,
##      junk,
##      kag,
##      maga,
##      making,
##      money,
##      people,
##      qanon,
##      rid,
##      soros,
##      tw}
## [4] {andystroy,
##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      traitor,
##      unlike,
##      you're}
## [5] {china,
##      handle,
##      know,

```

```

##      stevebannon,
##      trump,
##      trumpatwar}
## [6] {avijvxjazl,
##      bankruptcy,
##      business,
##      claim,
##      get,
##      money,
##      owes,
##      settle,
##      small,
##      syphon,
##      trump,
##      workers}
## [7] {amplifies,
##      anyone,
##      better,
##      breakdown,
##      exploits,
##      howardfineman,
##      realdonaldtrump,
##      suspicion,
##      system,
##      understands}
## [8] {au,
##      d,
##      démocratie,
##      doit,
##      du,
##      et,
##      être,
##      il,
##      incarnation,
##      jour,
##      le,
##      littéral,
##      p,
##      président,
##      pris,
##      se,
##      sens,
##      trump,
##      tweet,
##      veut}
## [9] {}
## [10] {administration,
##      corrupt,
##      iamthewhistleblower,
##      impeach,
##      putting,
##      rudygiulianimeltdown,
##      stop,
##      trump,

```

```

##      whistleblower}
## [11] {clement,
##      election,
##      kim,
##      one,
##      praying,
##      predicted,
##      presidency,
##      president,
##      re,
##      religious,
##      trump,
##      y}
## [12] {accuser,
##      attempts,
##      calls,
##      confront,
##      dangerous,
##      democrat,
##      eliminate,
##      phone,
##      right,
##      trump's,
##      what's}
## [13] {de,
##      lessen,
##      realdonaldtrump,
##      russia,
##      sanctions,
##      seeking,
##      stevescalise,
##      trump,
##      trying,
##      two,
##      ways}
## [14] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      snowflake,
##      whining}
## [15] {barr,
##      co,
##      commun,
##      foreign,
##      go,

```

```

##      gop,
##      governments,
##      hypocrites,
##      intel,
##      maga,
##      peterdaou,
##      pompeo,
##      shaking,
##      trump}
## [16] {gopcomplicit,
##      gopcowards,
##      maga,
##      magats,
##      republicanparty,
##      republicans,
##      trump}
## [17] {abracadabrantique,
##      affaires,
##      assisté,
##      corentinsellin,
##      de,
##      déjà,
##      des,
##      est,
##      étrangères,
##      il,
##      la,
##      ministre,
##      particulière,
##      pompeo,
##      situation,
##      us}
## [18] {ahora,
##      australia,
##      confirma,
##      flote,
##      la,
##      le,
##      otro,
##      pidió,
##      problemas,
##      q,
##      sale,
##      se,
##      si,
##      siempre,
##      suma,
##      tenía,
##      trump,
##      verdad}
## [19] {apocalypse,
##      barr,
##      cnn,
##      conquest,

```

```

##      death,
##      enkiwriter,
##      famine,
##      four,
##      giuliani,
##      horsemen,
##      msnbc,
##      pompeo,
##      t,
##      trump,
##      war}
## [20] {artículo,
##      brillante,
##      con,
##      conéctate,
##      de,
##      del,
##      después,
##      dh,
##      director,
##      este,
##      globa,
##      la,
##      programa,
##      rompevientotv,
##      trump,
##      vida}
## [21] {austria,
##      canada,
##      eu,
##      france,
##      germany,
##      italy,
##      mexico,
##      nato,
##      scandinavia,
##      switzerland,
##      trump,
##      uk,
##      un,
##      unhr,
##      unsc,
##      us}
## [22] {evangeli,
##      franklin_graham,
##      goal,
##      gop,
##      got,
##      points,
##      robertjeffress,
##      scare,
##      stevevanderveen,
##      talking}
## [23] {andyostroy,

```

```

##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      traitor,
##      unlike,
##      you're}
## [24] {anything,
##      deep,
##      interest,
##      marklevinshow,
##      neck,
##      pelosi,
##      personal,
##      ukraine}
## [25] {aeifdp,
##      community,
##      impeachment,
##      intelligence,
##      loser,
##      real,
##      trump}
## [26] {admin,
##      corrupt,
##      fact,
##      hoax,
##      investigation,
##      obama,
##      outnumberedfnc,
##      perpetrated,
##      russian,
##      spy,
##      texangalcindy,
##      us,
##      years}
## [27] {amp,
##      collectively,
##      contacts,
##      foreig,
##      four,
##      leaders,
##      least,
##      mikepompeo,
##      participated,
##      trump,
##      williambarr}
## [28] {appeal,
##      close,
##      diminished,
##      dollar,
##      fxleaderscom,

```



```

##      gold,
##      haven,
##      lower,
##      lows,
##      month,
##      prices,
##      safe,
##      slid,
##      st,
##      trade,
##      two,
##      us,
##      xauusd}
## [29] {administration,
##      american,
##      citizen,
##      hell,
##      know,
##      like,
##      realdonaldtrump,
##      talki,
##      trump,
##      yazfdvyugu}
## [30] {andyostroy,
##      around,
##      day,
##      gentlemen,
##      ladies,
##      posti,
##      present,
##      president,
##      re,
##      realdonaldtrump,
##      sits,
##      states,
##      tweeting,
##      united}
## [31] {clement,
##      election,
##      kim,
##      one,
##      praying,
##      predicted,
##      presidency,
##      president,
##      re,
##      religious,
##      trump,
##      y}
## [32] {barr,
##      co,
##      commun,
##      foreign,
##      go,

```

```

##      gop,
##      governments,
##      hypocrites,
##      intel,
##      maga,
##      peterdaou,
##      pompeo,
##      shaking,
##      trump}
## [33] {bucholtzjulie,
##      call,
##      cheney,
##      crooked,
##      every,
##      liz,
##      phone,
##      rep,
##      s,
##      set,
##      street,
##      thinks,
##      trump,
##      trying,
##      ukraine,
##      wyoming}
## [34] {andyostroy,
##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      traitor,
##      unlike,
##      you're}
## [35] {amplifies,
##      anyone,
##      better,
##      breakdown,
##      exploits,
##      howardfineman,
##      realdonaldtrump,
##      suspicion,
##      system,
##      understands}
## [36] {barr,
##      co,
##      commun,
##      foreign,
##      go,
##      gop,
##      governments,
##      hypocrites,

```

```

##      intel,
##      maga,
##      peterdaou,
##      pompeo,
##      shaking,
##      trump}
## [37] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      snowflake,
##      whining}
## [38] {biden,
##      changed,
##      complaint,
##      deplorablebabe,
##      impeachment,
##      support,
##      trump,
##      ukraine,
##      whistleblower}
## [39] {admin,
##      corrupt,
##      fact,
##      hoax,
##      investigation,
##      obama,
##      outnumberedfnc,
##      perpetrated,
##      russian,
##      spy,
##      texangalcindy,
##      us,
##      years}
## [40] {barr,
##      co,
##      commun,
##      foreign,
##      go,
##      gop,
##      governments,
##      hypocrites,
##      intel,
##      maga,
##      peterdaou,
##      pompeo,

```

```

##      shaking,
##      trump}
## [41] {america,
##      bra,
##      freedom,
##      part,
##      patriots,
##      poland,
##      poles,
##      program,
##      ritacosby,
##      soon,
##      stalwart,
##      thrilled,
##      truly,
##      us,
##      visawaiver}
## [42] {elected,
##      hollywood,
##      independents,
##      like,
##      making,
##      markhammill,
##      robertdenero,
##      sure,
##      trump,
##      zycdmetkbi}
## [43] {america,
##      bra,
##      freedom,
##      part,
##      patriots,
##      poland,
##      poles,
##      program,
##      ritacosby,
##      soon,
##      stalwart,
##      thrilled,
##      truly,
##      us,
##      visawaiver}
## [44] {claimed,
##      congressman,
##      essence,
##      law,
##      legal,
##      one,
##      parody,
##      quote,
##      realdonaldtrump,
##      t}
## [45] {amplifies,
##      anyone,

```

```

##      better,
##      breakdown,
##      exploits,
##      howardfineman,
##      realdonaldtrump,
##      suspicion,
##      system,
##      understands}
## [46] {civilwar,
##      correct,
##      handle,
##      maga,
##      resist,
##      richardangwin,
##      supporter,
##      tcot,
##      traitor,
##      trump,
##      tuesdayth,
##      way}
## [47] {communal,
##      individual,
##      life,
##      mandate,
##      property,
##      respect,
##      states,
##      united,
##      ve}
## [48] {brennan,
##      cia,
##      hater,
##      head,
##      islam,
##      jerusalemvow,
##      john,
##      love,
##      obama,
##      president,
##      s,
##      talks,
##      traitor,
##      trump}
## [49] {au,
##      avec,
##      bien,
##      ce,
##      cette,
##      congrès,
##      corentinsellin,
##      d'impeachment,
##      de,
##      delà,
##      entre,

```

```

##      et,
##      joue,
##      le,
##      président,
##      procédure,
##      qui,
##      se,
##      son,
##      sort,
##      trump,
##      va}
## [50] {au,
##      avec,
##      bien,
##      ce,
##      cette,
##      congrès,
##      corentinsellin,
##      d'impeachment,
##      de,
##      delà,
##      entre,
##      et,
##      joue,
##      le,
##      président,
##      procédure,
##      qui,
##      se,
##      son,
##      sort,
##      trump,
##      va}
## [51] {andyostroy,
##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      traitor,
##      unlike,
##      you're}
## [52] {activities,
##      agencies,
##      aid,
##      asked,
##      barr,
##      cia,
##      dirt,
##      fbi,
##      foreign,
##      inquiry,

```

```

##      intel,
##      looking,
##      officials,
##      wanted}
## [53] {breaking:folks,
##      emolclause,
##      gop,
##      national,
##      reelection,
##      remember,
##      s,
##      sacrifice,
##      senators}
## [54] {bikerrally,
##      greybeard_biker,
##      greybeardbikerapproved,
##      mama,
##      rdrhwke,
##      trump}
## [55] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      snowflake,
##      whining}
## [56] {clown,
##      looser,
##      messed,
##      realdonaldtrump,
##      really,
##      running,
##      scared,
##      time,
##      trump,
##      trumpimpeachment}
## [57] {artículo,
##      brillante,
##      con,
##      conéctate,
##      de,
##      del,
##      después,
##      dh,
##      director,
##      este,
##      globa,

```

```

##      la,
##      programa,
##      rompevientotv,
##      trump,
##      vida}
## [58] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      snowflake,
##      whining}
## [59] {answers,
##      birth,
##      certificate,
##      govfella,
##      questions,
##      realdonaldtrump,
##      rest}
## [60] {andyostroy,
##      corrupt,
##      dictato,
##      isn't,
##      lying,
##      pathologically,
##      realdonaldtrump,
##      repadamschiff,
##      traitor,
##      unlike,
##      you're}
## [61] {cares,
##      hate,
##      impeach,
##      lies,
##      nancy}
## [62] {andyostroy,
##      asap,
##      dear,
##      he's,
##      liar,
##      office,
##      pathological,
##      realdonaldtrump,
##      reasons,
##      remove,
##      republican,
##      senators,

```



```

##      trump}
## [63] {ago,
##      battleofever,
##      community,
##      eliminated,
##      first,
##      hand,
##      intel,
##      knowled,
##      months,
##      must,
##      provide,
##      quietly,
##      requirement,
##      us,
##      whistleblowers}
## [64] {admin,
##      corrupt,
##      fact,
##      hoax,
##      investigation,
##      obama,
##      outnumberedfnc,
##      perpetrated,
##      russian,
##      spy,
##      us,
##      years}
## [65] {administration,
##      corrupt,
##      iamthewhistleblower,
##      impeach,
##      putting,
##      rudygiulianimeltdown,
##      stop,
##      trump,
##      whistleblower}
## [66] {administration,
##      america,
##      cleanse,
##      corrupt,
##      democracy,
##      lubonlez,
##      must,
##      trump,
##      votebluenomatterwho}
## [67] {bush,
##      clinton,
##      corrupt,
##      crooked,
##      evil,
##      gitmo,
##      hillary,
##      maga,

```

```

##      obama,
##      patriot,
##      pure,
##      qanon,
##      squad,
##      trump}
## [68] {bikerrally,
##      cdoranharader,
##      fedupf,
##      greybeard_biker,
##      greybeardbikerapproved,
##      trinitysfaith,
##      trump}
## [69] {appropriati,
##      borderwall,
##      excellent,
##      fund,
##      lawful,
##      mexico,
##      reminder,
##      repeatedly,
##      sfdukie,
##      spent,
##      taken,
##      trump,
##      vowed}
## [70] {basis,
##      chaos,
##      fabricated,
##      family,
##      iraq,
##      liz_cheney,
##      t,
##      thing,
##      tree,
##      usatoday}
## [71] {abracadabrantisque,
##      affaires,
##      assisté,
##      corentinsellin,
##      de,
##      déjà,
##      des,
##      est,
##      étrangères,
##      il,
##      la,
##      ministre,
##      particulière,
##      pompeo,
##      situation,
##      us}
## [72] {au,
##      avec,

```

```

##      bien,
##      ce,
##      cette,
##      congrès,
##      corentinsellin,
##      d'impeachment,
##      de,
##      delà,
##      entre,
##      et,
##      joue,
##      le,
##      président,
##      procédure,
##      qui,
##      se,
##      son,
##      sort,
##      trump,
##      va}
## [73] {america,
##      believe,
##      birthday,
##      carter,
##      embodies,
##      gives,
##      happy,
##      jimmy,
##      lo,
##      man,
##      margie_hathaway,
##      much,
##      president,
##      reason}
## [74] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,
##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      snowflake,
##      whining}
## [75] {amplifies,
##      anyone,
##      better,
##      breakdown,
##      exploits,
##      howardfineman,

```

```

##      realdonaldtrump,
##      suspicion,
##      system,
##      understands}
## [76] {aid,
##      back,
##      call,
##      held,
##      phone,
##      real,
##      realdonaldtrump,
##      spec,
##      stevescalise,
##      transcript}
## [77] {chatbycc,
##      destroy,
##      efforts,
##      fail,
##      failed,
##      scam,
##      trump,
##      ukrainian}
## [78] {à,
##      bon,
##      ce,
##      combien,
##      corentinsellin,
##      de,
##      dévissage,
##      donc,
##      est,
##      et,
##      la,
##      lourdes,
##      question,
##      révélations,
##      rythme,
##      temps,
##      trump}
## [79] {cnn,
##      kamalaharris,
##      monday,
##      nded,
##      president,
##      said,
##      senator,
##      susp,
##      threats,
##      trump,
##      tter,
##      tw,
##      whis,
##      zeusfanhouse}
## [80] {administration,

```

```

##      america,
##      cleanse,
##      corrupt,
##      democracy,
##      must,
##      trump,
##      votebluenomatterwho}
## [81] {amplifies,
##      anyone,
##      better,
##      breakdown,
##      exploits,
##      howardfineman,
##      realdonaldtrump,
##      suspicion,
##      system,
##      understands}
## [82] {breitbart's,
##      breitbartnews,
##      making,
##      numbers,
##      obvious,
##      poll,
##      realdonaldtrump,
##      thank}
## [83] {barr,
##      co,
##      commun,
##      foreign,
##      go,
##      gop,
##      governments,
##      hypocrites,
##      intel,
##      maga,
##      peterdaou,
##      pompeo,
##      shaking,
##      trump}
## [84] {ausgegeben,
##      deutch,
##      ein,
##      es,
##      für,
##      hr,
##      im,
##      jahr,
##      kostenloser,
##      militär,
##      mrd,
##      öpnv,
##      solarpapst,
##      sollen,
##      trump,

```

```

##      weil,
##      werden,
##      zusätzlich}
## [85] {believe,
##      democrats,
##      dont,
##      everything,
##      read,
##      related,
##      republican,
##      sensor,
##      trump,
##      trying}
## [86] {bush,
##      clinton,
##      democrat,
##      gitmo,
##      google,
##      hillary,
##      immigrant,
##      kag,
##      obama,
##      patriot,
##      pedo,
##      qanon,
##      racist,
##      squad,
##      trump}
## [87] {anything,
##      deep,
##      interest,
##      marklevinshow,
##      neck,
##      pelosi,
##      personal,
##      ukraine}
## [88] {civilwar,
##      correct,
##      handle,
##      maga,
##      resist,
##      richardangwin,
##      supporter,
##      tcot,
##      traitor,
##      trump,
##      tuesdayth,
##      way}
## [89] {bush,
##      clinton,
##      democrat,
##      gitmo,
##      google,
##      hillary,

```

```

##      immigrant,
##      kag,
##      obama,
##      patriot,
##      pedo,
##      qanon,
##      racist,
##      squad,
##      trump}
## [90] {amp,
##      day,
##      independence,
##      love,
##      must,
##      pray,
##      teisha_powell,
##      trump,
##      win}
## [91] {crazy,
##      must,
##      socialist,
##      teisha_powell,
##      trump,
##      warren,
##      win,
##      zuckerberg}
## [92] {criminalpresident,
##      daily,
##      gop,
##      impeachment,
##      potential,
##      show,
##      snowballs,
##      trump,
##      trump's,
##      ukrainesandal,
##      usa}
## [93] {can't,
##      charliep,
##      early,
##      germangovt,
##      happen,
##      like,
##      maddow,
##      remarkably,
##      s,
##      takeover,
##      think}
## [94] {andyostroy,
##      another,
##      boss,
##      bullied,
##      corrupt,
##      cowardly,

```

```

##      jeez,
##      just,
##      like,
##      little,
##      pathetic,
##      pompe,
##      snowflake,
##      whining}
## [95] {believing,
##      chump,
##      cycle,
##      flip,
##      garethporter,
##      news,
##      rouhani,
##      snookering,
##      t,
##      took,
##      trump,
##      ukraine,
##      use}
## [96] {brennan,
##      cia,
##      hater,
##      head,
##      islam,
##      jerusalemvow,
##      john,
##      love,
##      obama,
##      president,
##      s,
##      talks,
##      traitor,
##      trump}
## [97] {cares,
##      impeach,
##      lies,
##      nancy,
##      speakerpelosi}
## [98] {ai,
##      angelociocca,
##      avrebbe,
##      con,
##      conte,
##      da,
##      dazi,
##      di,
##      dimaio,
##      evitato,
##      il,
##      l'amicizia,
##      la,
##      libera,

```



```

##      secondo,
##      trump,
##      usa,
##      verità,
##      via,
##      wto}
## [99] {andyostroy,
##      around,
##      day,
##      gentlemen,
##      ladies,
##      posti,
##      present,
##      president,
##      re,
##      realdonaldtrump,
##      sits,
##      states,
##      tweeting,
##      united}
## [100] {badly,
##      blubbering,
##      case,
##      ever,
##      gop,
##      never,
##      protects,
##      realdonaldtrump,
##      rushlimbaugh,
##      zzzczynxdn}
## [101] {business,
##      killing,
##      man,
##      michellemazuros,
##      minding,
##      outerspacemanii,
##      punishment,
##      sanctuary,
##      young}

```

## ARM

Next we will apply the apriori algorithm to find the associations including computing the support, confidence and lift. Read more on the arules library to tweak / tune the following code to achieve desired results.

```

# So that you do not have an enormous amount of rules, you can thresholds for
# support, confidence and lift ... also minlength for the rules.
TweetTrans_rules = arules::apriori(TweetTrans,
    parameter = list(support=.025, confidence=.75, minlen=3))

```

```

## Apriori
##
## Parameter specification:

```

```
## confidence minval smax arem aval originalSupport maxtime support minlen
##      0.75    0.1    1 none FALSE          TRUE      5  0.025    3
## maxlen target  ext
##      10  rules FALSE
##
## Algorithmic control:
## filter tree heap memopt load sort verbose
##      0.1 TRUE TRUE  FALSE TRUE    2    TRUE
##
## Absolute minimum support count: 2
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[616 item(s), 101 transaction(s)] done [0.00s].
## sorting and recoding items ... [113 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3 4 5 6 7 8 9 10 done [0.95s].
## writing ... [15569350 rule(s)] done [5.04s].
## creating S4 object ... done [10.73s].
```

```
inspect(TweetTrans_rules[1:10])
```

```
##      lhs                      rhs      support  confidence
## [1] {admin,perpetrated}      => {fact}      0.02970297 1
## [2] {fact,perpetrated}      => {admin}      0.02970297 1
## [3] {admin,fact}            => {perpetrated} 0.02970297 1
## [4] {admin,perpetrated}      => {hoax}      0.02970297 1
## [5] {hoax,perpetrated}      => {admin}      0.02970297 1
## [6] {admin,hoax}            => {perpetrated} 0.02970297 1
## [7] {admin,perpetrated}      => {investigation} 0.02970297 1
## [8] {investigation,perpetrated} => {admin}      0.02970297 1
## [9] {admin,investigation}    => {perpetrated} 0.02970297 1
## [10] {admin,perpetrated}     => {russian}    0.02970297 1
##      lift      count
## [1] 33.66667 3
## [2] 33.66667 3
## [3] 33.66667 3
## [4] 33.66667 3
## [5] 33.66667 3
## [6] 33.66667 3
## [7] 33.66667 3
## [8] 33.66667 3
## [9] 33.66667 3
## [10] 33.66667 3
```

```
## sorted
```

```
SortedRules_conf <- sort(TweetTrans_rules, by="confidence", decreasing=TRUE)
inspect(SortedRules_conf[1:20])
```

```
##      lhs                      rhs      support
## [1] {admin,perpetrated}      => {fact}      0.02970297
## [2] {fact,perpetrated}      => {admin}      0.02970297
## [3] {admin,fact}            => {perpetrated} 0.02970297
## [4] {admin,perpetrated}      => {hoax}      0.02970297
## [5] {hoax,perpetrated}      => {admin}      0.02970297
## [6] {admin,hoax}            => {perpetrated} 0.02970297
```

```
## [7] {admin,perpetrated}      => {investigation} 0.02970297
## [8] {investigation,perpetrated} => {admin} 0.02970297
## [9] {admin,investigation}    => {perpetrated} 0.02970297
## [10] {admin,perpetrated}      => {russian} 0.02970297
## [11] {perpetrated,russian}    => {admin} 0.02970297
## [12] {admin,russian}          => {perpetrated} 0.02970297
## [13] {admin,perpetrated}      => {outnumberedfnc} 0.02970297
## [14] {outnumberedfnc,perpetrated} => {admin} 0.02970297
## [15] {admin,outnumberedfnc}    => {perpetrated} 0.02970297
## [16] {admin,perpetrated}      => {years} 0.02970297
## [17] {perpetrated,years}      => {admin} 0.02970297
## [18] {admin,years}            => {perpetrated} 0.02970297
## [19] {admin,perpetrated}      => {spy} 0.02970297
## [20] {perpetrated,spy}        => {admin} 0.02970297
##      confidence lift      count
## [1] 1          33.66667 3
## [2] 1          33.66667 3
## [3] 1          33.66667 3
## [4] 1          33.66667 3
## [5] 1          33.66667 3
## [6] 1          33.66667 3
## [7] 1          33.66667 3
## [8] 1          33.66667 3
## [9] 1          33.66667 3
## [10] 1          33.66667 3
## [11] 1          33.66667 3
## [12] 1          33.66667 3
## [13] 1          33.66667 3
## [14] 1          33.66667 3
## [15] 1          33.66667 3
## [16] 1          33.66667 3
## [17] 1          33.66667 3
## [18] 1          33.66667 3
## [19] 1          33.66667 3
## [20] 1          33.66667 3
```

```
SortedRules_sup <- sort(TweetTrans_rules, by="support", decreasing=TRUE)
inspect(SortedRules_sup[1:20])
```

```
##      lhs      rhs      support confidence lift
## [1] {snowflake,whining} => {pompe} 0.05940594 1 16.83333
## [2] {pompe,whining}     => {snowflake} 0.05940594 1 16.83333
## [3] {pompe,snowflake}   => {whining} 0.05940594 1 16.83333
## [4] {snowflake,whining} => {pathetic} 0.05940594 1 16.83333
## [5] {pathetic,whining}   => {snowflake} 0.05940594 1 16.83333
## [6] {pathetic,snowflake} => {whining} 0.05940594 1 16.83333
## [7] {snowflake,whining} => {little} 0.05940594 1 16.83333
## [8] {little,whining}     => {snowflake} 0.05940594 1 16.83333
## [9] {little,snowflake}   => {whining} 0.05940594 1 16.83333
## [10] {snowflake,whining}  => {another} 0.05940594 1 16.83333
## [11] {another,whining}   => {snowflake} 0.05940594 1 16.83333
## [12] {another,snowflake} => {whining} 0.05940594 1 16.83333
## [13] {snowflake,whining} => {boss} 0.05940594 1 16.83333
## [14] {boss,whining}      => {snowflake} 0.05940594 1 16.83333
## [15] {boss,snowflake}    => {whining} 0.05940594 1 16.83333
```

```

## [16] {snowflake,whining} => {just}      0.05940594 1      16.83333
## [17] {just,whining}      => {snowflake} 0.05940594 1      16.83333
## [18] {just,snowflake}    => {whining}   0.05940594 1      16.83333
## [19] {snowflake,whining} => {jeez}     0.05940594 1      16.83333
## [20] {jeez,whining}      => {snowflake} 0.05940594 1      16.83333
##      count
## [1] 6
## [2] 6
## [3] 6
## [4] 6
## [5] 6
## [6] 6
## [7] 6
## [8] 6
## [9] 6
## [10] 6
## [11] 6
## [12] 6
## [13] 6
## [14] 6
## [15] 6
## [16] 6
## [17] 6
## [18] 6
## [19] 6
## [20] 6

```

## Displaying Results

The results will be displayed as an interactive graph.

```

plot (SortedRules_sup[1:50],method="graph",interactive=TRUE,shading="confidence")
plot (SortedRules_conf[1:50],method="graph",interactive=TRUE,shading="confidence")

```