debate.R

Ram

Fri Oct 21 22:48:18 2016

```
############  Hillary Vs Trump Presidential debate  #############


setwd('G:/DATASCIENCE/DS-PRACTICE-PROJECTS/7_text_mining/Hillary_VS_Trump')

library(dplyr)

## Warning: package 'dplyr' was built under R version 3.2.5

## 
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
## 
##     filter, lag

## The following objects are masked from 'package:base':
## 
##     intersect, setdiff, setequal, union

library(ggplot2)

## Warning: package 'ggplot2' was built under R version 3.2.5

library(wordcloud)

## Warning: package 'wordcloud' was built under R version 3.2.5

## Loading required package: RColorBrewer

library(tm)

## Warning: package 'tm' was built under R version 3.2.5

## Loading required package: NLP

## 
## Attaching package: 'NLP'

## The following object is masked from 'package:ggplot2':
## 
##     annotate

library(RSentiment)
```

```
## Warning: package 'RSentiment' was built under R version 3.2.5

library(data.table)

## Warning: package 'data.table' was built under R version 3.2.5

## -------------------------------------------------------------------------

## data.table + dplyr code now lives in dtplyr.
## Please library(dtplyr)!

## -------------------------------------------------------------------------

##
## Attaching package: 'data.table'

## The following objects are masked from 'package:dplyr':
##
##     between, last

library(stringr)
library(RColorBrewer)
#library(tidytext)
#library(data.table)
library(gridExtra)

debate <- read.csv('debate.csv',h=T, stringsAsFactors = F)
colnames(debate)

## [1] "Line"    "Speaker" "Text"    "Date"

str(debate)

## 'data.frame':    351 obs. of  4 variables:
##  $ Line   : int  1 2 3 4 5 6 7 8 9 10 ...
##  $ Speaker: chr  "Holt" "Audience" "Clinton" "Audience" ...
##  $ Text   : chr  "Good evening from Hofstra University in Hempstead, New
York. I'm Lester Holt, anchor of \"NBC Nightly News.\" I want to welcome"|
__truncated__ "(APPLAUSE)" "How are you, Donald?" "(APPLAUSE)" ...
##  $ Date   : chr  "2016-09-26" "2016-09-26" "2016-09-26" "2016-09-26" ...

nrow(debate)

## [1] 351

# Trump world cloud
Trump <- filter(debate, Speaker == 'Trump')
head(Trump$Speaker)

## [1] "Trump" "Trump" "Trump" "Trump" "Trump" "Trump"

head(Trump$Text)
```

```
## [1] "Thank you, Lester. Our jobs are fleeing the country. They're going to
Mexico. They're going to many other countries. You look at what China is
doing to our country in terms of making our product. They're devaluing their
currency, and there's nobody in our government to fight them. And we have a
very good fight. And we have a winning fight. Because they're using our
country as a piggy bank to rebuild China, and many other countries are doing
the same thing. So we're losing our good jobs, so many of them. When you look
at what's happening in Mexico, a friend of mine who builds plants said it's
the eighth wonder of the world. They're building some of the biggest plants
anywhere in the world, some of the most sophisticated, some of the best
plants. With the United States, as he said, not so much. So Ford is leaving.
You see that, their small car division leaving. Thousands of jobs leaving
Michigan, leaving Ohio. They're all leaving. And we can't allow it to happen
anymore. As far as child care is concerned and so many other things, I think
Hillary and I agree on that. We probably disagree a little bit as to numbers
and amounts and what we're going to do, but perhaps we'll be talking about
that later. But we have to stop our jobs from being stolen from us. We have
to stop our companies from leaving the United States and, with it, firing all
of their people. All you have to do is take a look at Carrier air
conditioning in Indianapolis. They left -- fired 1,400 people. They're going
to Mexico. So many hundreds and hundreds of companies are doing this."
## [2] "We cannot let it happen. Under my plan, I'll be reducing taxes
tremendously, from 35 percent to 15 percent for companies, small and big
businesses. That's going to be a job creator like we haven't seen since
Ronald Reagan. It's going to be a beautiful thing to watch. Companies will
come. They will build. They will expand. New companies will start. And I look
very, very much forward to doing it. We have to renegotiate our trade deals,
and we have to stop these countries from stealing our companies and our
jobs."
## [3] "Well, for one thing -- and before we start on that -- my father gave
me a very small loan in 1975, and I built it into a company that's worth
many, many billions of dollars, with some of the greatest assets in the
world, and I say that only because that's the kind of thinking that our
country needs. Our country's in deep trouble. We don't know what we're doing
when it comes to devaluations and all of these countries all over the world,
especially China. They're the best, the best ever at it. What they're doing
to us is a very, very sad thing. So we have to do that. We have to
renegotiate our trade deals. And, Lester, they're taking our jobs, they're
giving incentives, they're doing things that, frankly, we don't do. Let me
give you the example of Mexico. They have a VAT tax. We're on a different
system. When we sell into Mexico, there's a tax. When they sell in --
automatic, 16 percent, approximately. When they sell into us, there's no tax.
It's a defective agreement. It's been defective for a long time, many years,
but the politicians haven't done anything about it. Now, in all fairness to
Secretary Clinton -- yes, is that OK? Good. I want you to be very happy. It's
very important to me. But in all fairness to Secretary Clinton, when she
started talking about this, it was really very recently. She's been doing
this for 30 years. And why hasn't she made the agreements better? The NAFTA
agreement is defective. Just because of the tax and many other reasons, but
just because of the fact..."
```

```
## [4] "Secretary Clinton and others, politicians, should have been doing
this for years, not right now, because of the fact that we've created a
movement. They should have been doing this for years. What's happened to our
jobs and our country and our economy generally is -- look, we owe $20
trillion. We cannot do it any longer, Lester. "
## [5] "Well, the first thing you do is don't let the jobs leave. The
companies are leaving. I could name, I mean, there are thousands of them.
They're leaving, and they're leaving in bigger numbers than ever. And what
you do is you say, fine, you want to go to Mexico or some other country, good
luck. We wish you a lot of luck. But if you think you're going to make your
air conditioners or your cars or your cookies or whatever you make and bring
them into our country without a tax, you're wrong. And once you say you're
going to have to tax them coming in, and our politicians never do this,
because they have special interests and the special interests want those
companies to leave, because in many cases, they own the companies. So what
I'm saying is, we can stop them from leaving. We have to stop them from
leaving. And that's a big, big factor."
## [6] "That's called business, by the way."
```

```
nrow(Trump)
```

```
## [1] 131
```

```
colnames(Trump)
```

```
## [1] "Line"    "Speaker" "Text"    "Date"
```

```
Trump_Corp <- Corpus(VectorSource(Trump$Text))
Trump_Corp
```

```
## <<VCorpus>>
## Metadata:  corpus specific: 0, document level (indexed): 0
## Content:  documents: 131
```

```
summary(Trump_Corp)
```

```
##     Length Class             Mode
## 1   2      PlainTextDocument list
## 2   2      PlainTextDocument list
## 3   2      PlainTextDocument list
## 4   2      PlainTextDocument list
## 5   2      PlainTextDocument list
## 6   2      PlainTextDocument list
## 7   2      PlainTextDocument list
## 8   2      PlainTextDocument list
## 9   2      PlainTextDocument list
## 10  2      PlainTextDocument list
## 11  2      PlainTextDocument list
## 12  2      PlainTextDocument list
## 13  2      PlainTextDocument list
## 14  2      PlainTextDocument list
## 15  2      PlainTextDocument list
## 16  2      PlainTextDocument list
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## 122 2      PlainTextDocument list
## 123 2      PlainTextDocument list
## 124 2      PlainTextDocument list
## 125 2      PlainTextDocument list
## 126 2      PlainTextDocument list
## 127 2      PlainTextDocument list
## 128 2      PlainTextDocument list
## 129 2      PlainTextDocument list
## 130 2      PlainTextDocument list
## 131 2      PlainTextDocument list
```

```
inspect(Trump_Corp[20])
```

```
## <<VCorpus>>
## Metadata:  corpus specific: 0, document level (indexed): 0
## Content:  documents: 1
##
## [[1]]
## <<PlainTextDocument>>
## Metadata:  7
## Content:  chars: 95
```

```
writeLines(as.character(Trump_Corp[[20]]))
```

```
## You called it the gold standard of trade deals. You said it's the finest
deal you've ever seen.
```

```
getTransformations()
```

```
## [1] "removeNumbers"     "removePunctuation" "removeWords"
## [4] "stemDocument"      "stripWhitespace"
```

```
toSpace <- content_transformer(function(x, pattern) gsub(pattern, ' ', x))
#docs <- tm_map(docs, content_transformer(gsub), pattern = '-|:|/@|\\||',
replacement = ' ')
Trump_Corp <- tm_map(Trump_Corp, toSpace, '-:/@\\|')
Trump_Corp <- tm_map(Trump_Corp,content_transformer(tolower))
Trump_Corp <- tm_map(Trump_Corp, removeNumbers)
Trump_Corp <- tm_map(Trump_Corp, removePunctuation)
Trump_Corp <- tm_map(Trump_Corp, removeWords, stopwords("english"))
# removing own stop words
#Trump_Corp <- tm_map(Trump_Corp, removeWords, c('abc','xyz'))
Trump_Corp <- tm_map(Trump_Corp, stripWhitespace)
#Stemming
#Trump_Corp <- tm_map(Trump_Corp,stemDocument)
```

```r
# Specific Transformation - usually after Stemming
#toString <- content_transformer(function(x, from, to) gsub(from,to,x))
#Trump_Corp <- tm_map(Trump_Corp, toString, 'abc', 'xyz')

# Document-Term Matrices / Term-Document Matrices
Trump_dtm <- DocumentTermMatrix(Trump_Corp)
#Trump_dtmr <-DocumentTermMatrix(Trump_Corp, control=list(wordLengths=c(4,
20),bounds = list(global = c(3,27))))
Trump_dtm
```

```
## <<DocumentTermMatrix (documents: 131, terms: 1123)>>
## Non-/sparse entries: 2878/144235
## Sparsity           : 98%
## Maximal term length: 18
## Weighting          : term frequency (tf)
```

```r
class(Trump_dtm)
```

```
## [1] "DocumentTermMatrix"    "simple_triplet_matrix"
```

```r
dim(Trump_dtm)
```

```
## [1]  131 1123
```

```r
# Operations on term-document matrices
Trump_freq <- colSums(as.matrix(Trump_dtm))
head(Trump_freq)
```

```
##    ability       able absolutely     abused  according   accurate 
##          2          7          2          1          1          2
```

```r
#length should be total number of terms
length(Trump_freq)
```

```
## [1] 1123
```

```r
#create sort order (descending)
Trump_ord <- order(Trump_freq)
head(Trump_ord)
```

```
## [1]  4  5  7  8  9 11
```

```r
#inspect least frequently occurring terms
Trump_freq[head(Trump_ord)]
```

```
##     abused  according accurately        act     action        add 
##          1          1          1          1          1          1
```

```r
#inspect most frequently occurring terms
Trump_freq[tail(Trump_ord)]
```

```
##   think    just  theyre    look   going country 
##      38      39      41      44      47      50
```

```
# Distributon of term frequencies
head(table(Trump_freq),15)

## Trump_freq
##   1   2   3   4   5   6   7   8   9  10  11  12  13  14  15
## 542 198 103  56  63  28  23  21  11   9   6   8   4   7   7

tail(table(Trump_freq),15)

## Trump_freq
## 26 27 28 29 30 32 34 35 37 38 39 41 44 47 50
##  1  2  1  1  1  2  1  1  1  1  1  1  1  1  1

# Removing Sparse Terms
#dim(Trump_dtm)
#Trump_dtms <- removeSparseTerms(Trump_dtm, 0.001)
#dim(Trump_dtms)
# Identifying frequent Items and Associations
findFreqTerms(Trump_dtm, lowfreq=20)

##  [1] "cant"      "clinton"   "companies" "country"   "dont"
##  [6] "get"       "going"     "good"      "just"      "know"
## [11] "like"      "look"      "many"      "much"      "now"
## [16] "one"       "people"    "said"      "say"       "secretary"
## [21] "thats"     "theyre"    "thing"     "things"    "think"
## [26] "want"      "way"       "well"      "will"      "years"

findAssocs(Trump_dtm, 'country', corlimit=0.6)

## $country
##  trillion     money financial   illegal     learn
##      0.71      0.67      0.64      0.64      0.63

# Correlation plots
#plot(Trump_dtm, terms=findFreqTerms(Trump_dtm, lowfreq=20))

# Quantitative analysis of the Text

# Hillary Word Clous
Clinton <- filter(debate, Speaker == 'Clinton')
head(Clinton$Speaker)

## [1] "Clinton" "Clinton" "Clinton" "Clinton" "Clinton" "Clinton"

nrow(Clinton)

## [1] 96

colnames(Clinton)

## [1] "Line"    "Speaker" "Text"    "Date"
```

```
Clinton_Corp <- Corpus(VectorSource(Clinton$Text))
Clinton_Corp
```

```
## <<VCorpus>>
## Metadata:  corpus specific: 0, document level (indexed): 0
## Content:  documents: 96
```

```
summary(Clinton_Corp)
```

```
##    Length Class             Mode
## 1  2      PlainTextDocument list
## 2  2      PlainTextDocument list
## 3  2      PlainTextDocument list
## 4  2      PlainTextDocument list
## 5  2      PlainTextDocument list
## 6  2      PlainTextDocument list
## 7  2      PlainTextDocument list
## 8  2      PlainTextDocument list
## 9  2      PlainTextDocument list
## 10 2      PlainTextDocument list
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## 94 2      PlainTextDocument list
## 95 2      PlainTextDocument list
## 96 2      PlainTextDocument list
```

```
inspect(Clinton_Corp[20])
```

```
## <<VCorpus>>
## Metadata:  corpus specific: 0, document level (indexed): 0
## Content:  documents: 1
##
## [[1]]
## <<PlainTextDocument>>
## Metadata:  7
## Content:  chars: 167
```

```
writeLines(as.character(Clinton_Corp[[20]]))
```

```
## Well, Donald, I know you live in your own reality, but that is not the
facts. The facts are -- I did say I hoped it would be a good deal, but when
it was negotiated...
```

```
getTransformations()
```

```
## [1] "removeNumbers"     "removePunctuation" "removeWords"
## [4] "stemDocument"      "stripWhitespace"
```

```
toSpace <- content_transformer(function(x, pattern) gsub(pattern, ' ', x))
#docs <- tm_map(docs, content_transformer(gsub), pattern = '-|:|/@|\\||',
replacement = ' ')
Clinton_Corp <- tm_map(Clinton_Corp, toSpace, '-:/@\\|')
Clinton_Corp <- tm_map(Clinton_Corp,content_transformer(tolower))
Clinton_Corp <- tm_map(Clinton_Corp, removeWords, stopwords("english"))
Clinton_Corp <- tm_map(Clinton_Corp, removeNumbers)
Clinton_Corp <- tm_map(Clinton_Corp, removePunctuation)
Clinton_Corp <- tm_map(Clinton_Corp, stripWhitespace)
#Stem document
#Clinton_Corp <- tm_map(Clinton_Corp,stemDocument)
#writeLines(as.character(Clinton_Corp[[30]]))

# Document-Term Matrices / Term-Document Matrices
Clinton_dtm <- DocumentTermMatrix(Clinton_Corp)
Clinton_dtm
```

```
## <<DocumentTermMatrix (documents: 96, terms: 1210)>>
## Non-/sparse entries: 2399/113761
## Sparsity           : 98%
## Maximal term length: 17
## Weighting          : term frequency (tf)
```

```
dim(Clinton_dtm)

## [1]   96 1210

class(Clinton_dtm)

## [1] "DocumentTermMatrix"    "simple_triplet_matrix"

dim(Clinton_dtm)

## [1]   96 1210

# Operations on term-document matrices
Clinton_freq <- colSums(as.matrix(Clinton_dtm))
head(Clinton_freq)

##       able     abroad absolutely      abyss     access accordance 
##          6          3          3          1          1          1

#length should be total number of terms
length(Clinton_freq)

## [1] 1210

#create sort order (descending)
Clinton_ord <- order(Clinton_freq)
head(Clinton_ord)

## [1]  4  5  6  7  8 10

#inspect least frequently occurring terms
Clinton_freq[head(Clinton_ord)]

##       abyss      access  accordance accountable    accurate      action 
##           1           1           1           1           1           1

#inspect most frequently occurring terms
Clinton_freq[tail(Clinton_ord)]

##  going   know    can people   well  think 
##     26     28     30     33     36     39

# Distributon of term frequencies
head(table(Clinton_freq),15)

## Clinton_freq
##   1   2   3   4   5   6   7   8   9  10  11  13  14  15  16 
## 749 194  75  64  26  26  18  15   4   8   4   2   1   3   5

tail(table(Clinton_freq),15)

## Clinton_freq
## 14 15 16 17 18 20 21 22 23 26 28 30 33 36 39 
##  1  3  5  2  2  2  1  1  1  2  1  1  1  1  1
```

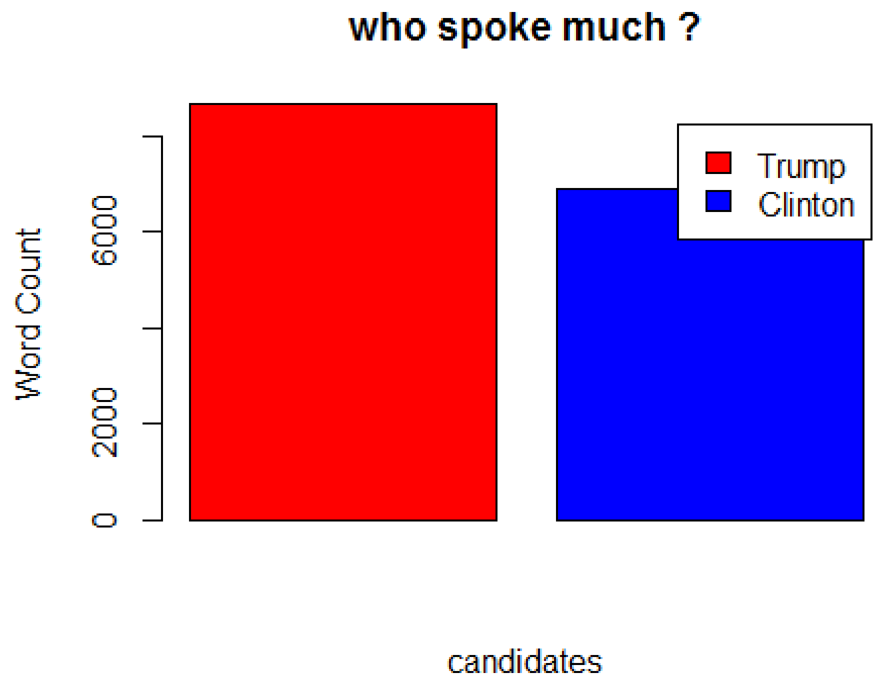
```
# Removing Sparse Terms
#dim(Trump_dtm)
#Trump_dtms <- removeSparseTerms(Trump_dtm, 0.001)
#dim(Trump_dtms)
# Identifying frequent Items and Associations
findFreqTerms(Clinton_dtm, lowfreq=20)
```

```
##  [1] "can"    "donald" "going"  "know"   "need"   "one"    "people"
##  [8] "really" "think"  "want"   "well"   "will"
```

```
findAssocs(Clinton_dtm, 'country', corlimit=0.6)
```

```
## $country
## numeric(0)
```

```
# Correlation plots
#plot(Trump_dtm, terms=findFreqTerms(Trump_dtm, lowfreq=20))

#plotting word frequencies

# Who spoke much
Trump_total_words <- 0

for(line in seq(1,nrow(Trump))) {
  talk <- Trump[line, 'Text']
  words <- str_split(talk, ' ')
  Trump_total_words <- Trump_total_words + lengths(words)
#  return Trump_total_words
}

Clinton_total_words <- 0

for(line in seq(1,nrow(Clinton))) {
  talk <- Trump[line, 'Text']
  words <- str_split(talk, ' ')
  Clinton_total_words <- Clinton_total_words + lengths(words)
  #  return Trump_total_words
}

barplot(c(Trump_total_words,Clinton_total_words), xlab=c('candidates'),
ylab=c('Word Count'),
        main = 'who spoke much ?',
        col = c('red','blue'), legend=c('Trump','Clinton'))
```



```
# Word Frequency
#plotting word frequencies
Trump_freq_sort <- sort(colSums(as.matrix(Trump_dtm)), decreasing=TRUE)
head(Trump_freq_sort)

## country   going    look  theyre    just   think 
##      50      47      44      41      39      38

Trump_wf=data.frame(word = names(Trump_freq_sort), freq=Trump_freq_sort)
head(Trump_wf)

##            word freq
## country country   50
## going     going   47
## look       look   44
## theyre   theyre   41
## just       just   39
## think     think   38

# Trump_wf <- transform(Trump_wf, word=reorder(word,freq)) # for reordering 
the plot
# Trump_word <- ggplot(subset(Trump_wf, Trump_freq_sort >15), aes(word, freq, 
fill= 'blue')) +
#   geom_bar(stat='identity') + labs(title='Trump') +
#   theme(axis.text.x=element_text(angle=45, hjust=1)) +
#   coord_flip()
```

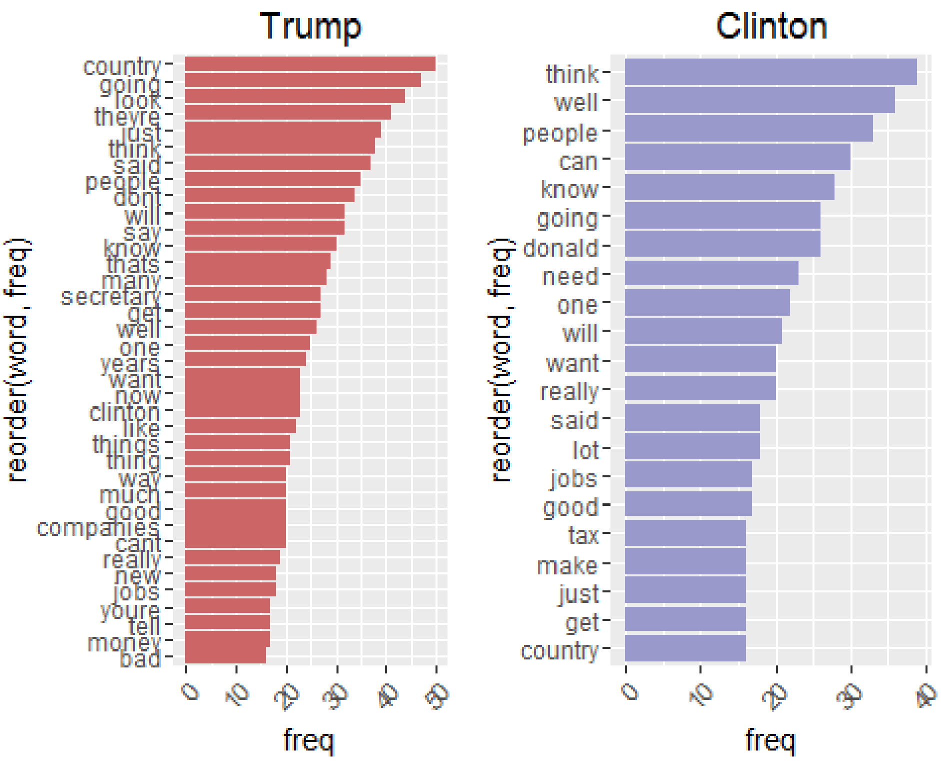
```r
Trump_word <- ggplot(subset(Trump_wf, Trump_freq_sort >15), aes(y=freq,
x=reorder(word, freq))) +
  geom_bar(stat='identity', fill='#CC6666') + labs(title='Trump') +
  theme(axis.text.x=element_text(angle=45, hjust=1)) +
  coord_flip()

Clinton_freq_sort <- sort(colSums(as.matrix(Clinton_dtm)), decreasing=TRUE)
head(Clinton_freq_sort)
```

```
##  think   well people    can   know donald
##     39     36     33     30     28     26
```

```r
Clinton_wf=data.frame(word = names(Clinton_freq_sort),
freq=Clinton_freq_sort)
head(Clinton_wf)
```

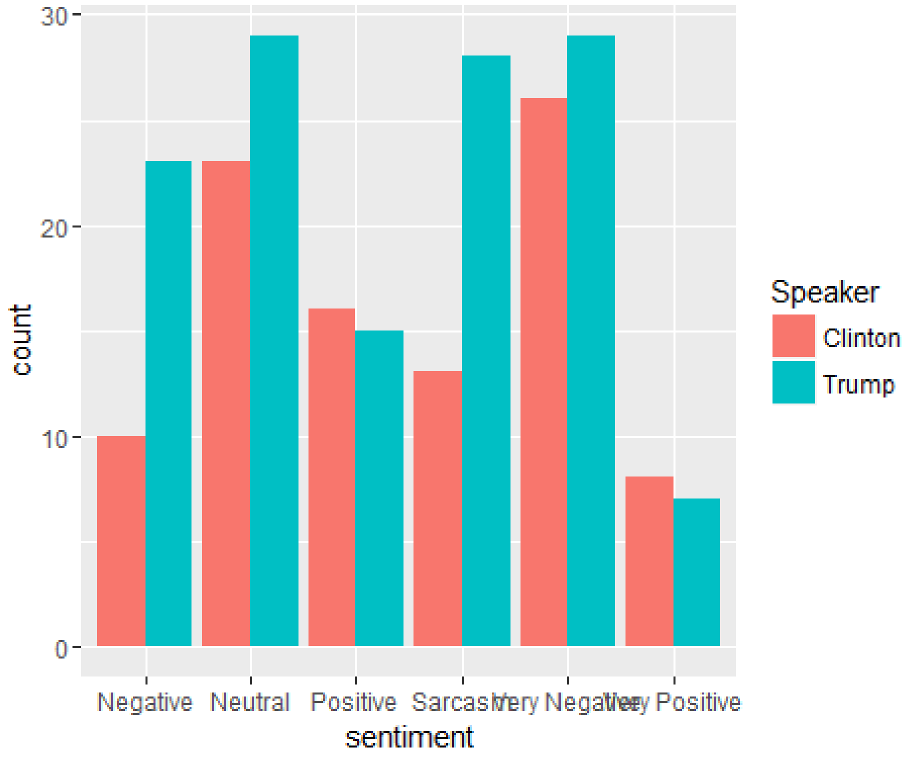
```
##          word freq
## think   think   39
## well     well   36
## people people   33
## can       can   30
## know     know   28
## donald donald   26
```

```r
# Clinton_wf <- transform(Clinton_wf, word=reorder(word,freq))
# Clinton_word <- ggplot(subset(Clinton_wf, Clinton_freq_sort >15), aes(word,
freq)) +
#   geom_bar(stat='identity') + labs(title='Hillary') +
#   theme(axis.text.x=element_text(angle=45, hjust=1)) +
#   coord_flip()

Clinton_word <- ggplot(subset(Clinton_wf, Clinton_freq_sort >15), aes(y=freq,
x=reorder(word, freq))) +
  geom_bar(stat='identity', fill="#9999CC") + labs(title='Clinton') +
  theme(axis.text.x=element_text(angle=45, hjust=1)) +
  coord_flip()

grid.arrange(Trump_word,Clinton_word,ncol=2)
```



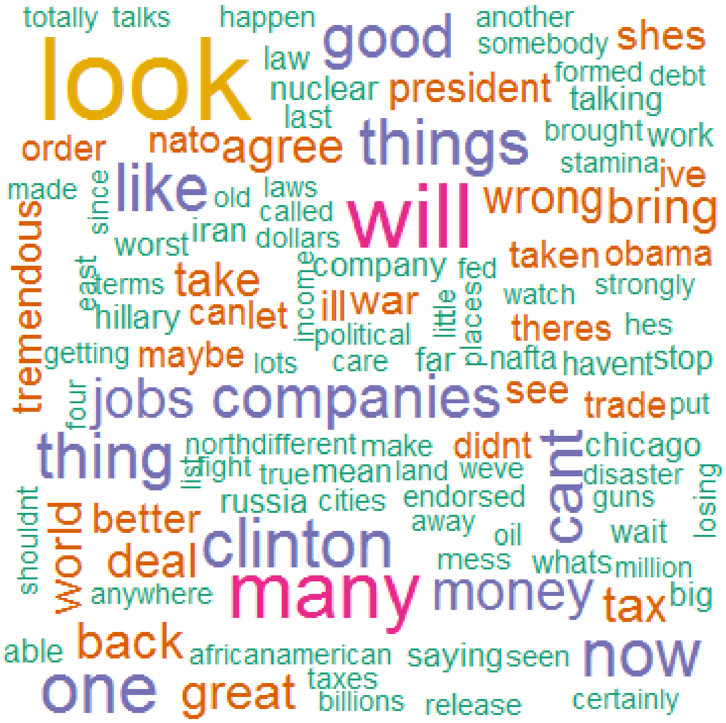
```
# Sentiment Analysis

Trump_score <- calculate_score(Trump$Text)
Trump_senti <- calculate_sentiment(Trump$Text)
Trump_senti$Speaker <- 'Trump'
class(Trump_senti$Speaker)

## [1] "character"

colnames(Trump_senti)

## [1] "text"      "sentiment" "Speaker"

#Trump_total_senti <- calculate_total_presence_sentiment(Trump$Text)

Clinton_score <- calculate_score(Clinton$Text)
Clinton_senti <- calculate_sentiment(Clinton$Text)
Clinton_senti$Speaker <- 'Clinton'
class(Clinton_senti$Speaker)

## [1] "character"

#Clinton_total_senti <- calculate_total_presence_sentiment(Clinton$Text)

Total_senti <- rbind(Trump_senti,Clinton_senti)
colnames(Total_senti)

## [1] "text"      "sentiment" "Speaker"
```

```
nrow(Total_senti)

## [1] 227

Total_senti$Speaker <- as.factor(Total_senti$Speaker)
ggplot(Total_senti, aes(sentiment, fill=Speaker))+geom_bar(position='dodge')
```

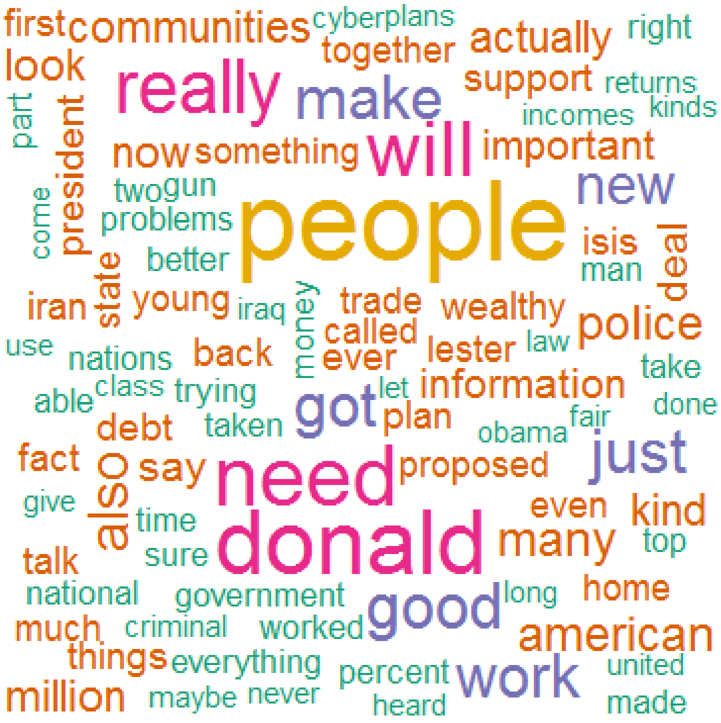


```
# Word Cloud

#setting the same seed each time ensures consistent look across clouds
set.seed(210)
#limit words by specifying min frequency
#wordcloud(names(Trump_freq),Trump_freq, min.freq=10)
#.add color
wordcloud(names(Trump_freq),Trump_freq,min.freq=5,colors=brewer.pal(6,'Dark2'
))

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : people could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : theyre could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : secretary could not be fit on page. It will not be
plotted.
```

```
## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : think could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : time could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : done could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : happened could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : everybody could not be fit on page. It will not be
plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : youve could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : dont could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : tell could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : years could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors
## = brewer.pal(6, : regulations could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : community could not be fit on page. It will not be
plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : started could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : lot could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : percent could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : thousands could not be fit on page. It will not be
plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : place could not be fit on page. It will not be plotted.
## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : important could not be fit on page. It will not be
plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : whether could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : job could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : way could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : number could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors
## = brewer.pal(6, : experience could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : spent could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : much could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : first could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : nobody could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : problem could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : inner could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : returns could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : hundreds could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : never could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : well could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : long could not be fit on page. It will not be plotted.
## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : murders could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : help could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : lester could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : question could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : almost could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : youre could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : major could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors
## = brewer.pal(6, : relationships could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors
## = brewer.pal(6, : politicians could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : also could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : countries could not be fit on page. It will not be
plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : paying could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : day could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : terrible could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : nothing could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : isis could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : said could not be fit on page. It will not be plotted.
## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : middle could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : sean could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : right could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : mexico could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : deals could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : going could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : new could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : times could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : used could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : china could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : approve could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : believe could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : fact could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : business could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : name could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : campaign could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : website could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : states could not be fit on page. It will not be plotted.
## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : trillion could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : doesnt could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : hannity could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : defend could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : respond could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : just could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : taking could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : york could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : even could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : something could not be fit on page. It will not be
plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : theyve could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : got could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : probably could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : country could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : thats could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : give could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : know could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : really could not be fit on page. It will not be plotted.
## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : biggest could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors
## = brewer.pal(6, : temperament could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : police could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : leaving could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors
## = brewer.pal(6, : everything could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : want could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : get could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : come could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : cyber could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : killed could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : greatest could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : need could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : korea could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : bad could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : ever could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : single could not be fit on page. It will not be plotted.

## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : say could not be fit on page. It will not be plotted.
## Warning in wordcloud(names(Trump_freq), Trump_freq, min.freq = 5, colors =
## brewer.pal(6, : mayor could not be fit on page. It will not be plotted.
```



```
#wordcloud(names(Trump_freqr),Trump_freqr,max.words=100,colors=brewer.pal(6,'
Dark2'))

#limit words by specifying min frequency
#wordcloud(names(Clinton_freq),Clinton_freq, min.freq=10)
#.add color
wordcloud(names(Clinton_freq),Clinton_freq,min.freq=5,colors=brewer.pal(6,'Da
rk2'))

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : business could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : going could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : one could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : economy could not be fit on page. It will not be
## plotted.
## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : well could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : states could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : nuclear could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : want could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : weapons could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : jobs could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : different could not be fit on page. It will not
be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : thing could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : know could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : said could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : can could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : justice could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : working could not be fit on page. It will not be
## plotted.
## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : put could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : believe could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : tax could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : middle could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : future could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : paid could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : pay could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : years could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : country could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : hope could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : everyone could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : get could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : looked could not be fit on page. It will not be
## plotted.
## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : think could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : lot could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : world could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : system could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : see could not be fit on page. It will not be
## plotted.

## Warning in wordcloud(names(Clinton_freq), Clinton_freq, min.freq = 5,
## colors = brewer.pal(6, : federal could not be fit on page. It will not be
## plotted.
```



```
#wordcloud(names(Clinton_freqr),Clinton_freqr,max.words=100,colors=brewer.pal
(6,'Dark2'))
```