

Text Mining

```
## -- Attaching packages -----
## v ggplot2 3.3.0      v purrr  0.3.4
## v tibble  3.0.1      v dplyr  0.8.5
## v tidyr   1.0.2      v stringr 1.4.0
## v readr   1.3.1      v forcats 0.5.0

## -- Conflicts ----- ti
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
```

Importing data

```
filename = "mayday.csv"
text = read.csv(filename, sep="|", header=FALSE, stringsAsFactors=FALSE)
names(text) = c("word")
```

Filtering stop words

```
words = text %>% unnest_tokens(word, word) %>% filter(!word%in%stop_words$word)
word_table = words %>% count(word) %>% arrange(desc(n))
```

Top 20 unique words in the text, less stop words

```
## # A tibble: 20 x 2
##   word          n
##   <chr>      <int>
## 1 workers      39
## 2 singapore    35
## 3 people       31
## 4 brother      27
## 5 day          25
## 6 government    24
## 7 leadership    22
## 8 team          21
## 9 it's          19
## 10 unions       19
## 11 lee          18
## 12 exceptional  16
## 13 swee         14
## 14 country      13
## 15 don't        13
## 16 leaders      12
## 17 minister     12
## 18 ntuc         12
## 19 jobs         11
## 20 job          10
```

Sentiments

we use NRC to get our sentiments. A description of NRC, taken from NRC website: The NRC Emotion Lexicon is a list of English words and their associations with eight basic emotions (anger, fear, anticipation, trust, surprise, sadness, joy, and disgust) and two sentiments (negative and positive). The annotations were manually done by crowdsourcing.

For more info about National Research Council Canada (NRC) Emotion Lexicon, please visit: <http://saifmohammad.com/WebPages/NRC-Emotion-Lexicon.htm>

```
senti = inner_join(words, get_sentiments("nrc"), by = "word")
senti_table = senti %>% group_by(sentiment) %>% summarize(n = n(), percent = round(n()/nrow(senti)*100))
```

All the sentiments in the text

```
## # A tibble: 10 x 3
##   sentiment      n percent
##   <chr>      <int>   <dbl>
## 1 positive    294     27
## 2 trust       209     19
## 3 anticipation 119     11
## 4 negative    119     11
## 5 joy         107     10
## 6 fear        87      8
## 7 anger        59      5
## 8 sadness      51      5
## 9 surprise     37      3
## 10 disgust     25      2
```

All the sentiments breakdown

```
## anger
```

word	sentiment
angry	anger
bad	anger
bad	anger
bad	anger
battle	anger
cancer	anger
cancer	anger
cancer	anger
cancer	anger
challenge	anger
clashing	anger
conflict	anger
cross	anger
deserve	anger
destroying	anger
dying	anger
evil	anger
fierce	anger
fierce	anger
fight	anger
fight	anger
fighting	anger
fighting	anger

word	sentiment
fighting	anger
hot	anger
ill	anger
ill	anger
insecure	anger
intense	anger
kick	anger
lose	anger
lose	anger
lose	anger
lose	anger
lose	anger
money	anger
opposition	anger
opposition	anger
playful	anger
politics	anger
politics	anger
politics	anger
politics	anger
politics	anger
powerful	anger
resisting	anger
revolution	anger
revolution	anger
shooting	anger
strike	anger
strike	anger
strike	anger
tackle	anger
turmoil	anger
upheaval	anger
words	anger
words	anger
youth	anger
youth	anger
youth	anger

anticipation

word	sentiment
advance	anticipation
advance	anticipation
advance	anticipation
airport	anticipation
board	anticipation
board	anticipation
bonus	anticipation
career	anticipation
celebrated	anticipation
celebrating	anticipation
champion	anticipation
coming	anticipation

word	sentiment
commemoration	anticipation
competition	anticipation
competition	anticipation
continue	anticipation
continue	anticipation
council	anticipation
daily	anticipation
deal	anticipation
deserve	anticipation
develop	anticipation
draft	anticipation
draft	anticipation
engaged	anticipation
engaged	anticipation
enjoy	anticipation
enjoy	anticipation
enjoy	anticipation
enjoy	anticipation
enjoy	anticipation
enjoying	anticipation
excel	anticipation
excited	anticipation
exciting	anticipation
expect	anticipation
grandchildren	anticipation
grandchildren	anticipation
grow	anticipation
grow	anticipation
grow	anticipation
happen	anticipation
happen	anticipation
happy	anticipation
happy	anticipation
holiday	anticipation
holiday	anticipation
hungry	anticipation
improve	anticipation
improve	anticipation
improve	anticipation
improve	anticipation
income	anticipation
inspire	anticipation
lesson	anticipation
medical	anticipation
money	anticipation
passion	anticipation
passionate	anticipation
passionate	anticipation
pay	anticipation
planning	anticipation
powerful	anticipation
precious	anticipation

word	sentiment
youth	anticipation
youth	anticipation
youth	anticipation

disgust

word	sentiment
aghast	disgust
angry	disgust
bad	disgust
bad	disgust
bad	disgust
cancer	disgust
cancer	disgust
cancer	disgust
cancer	disgust
congress	disgust
dying	disgust
evil	disgust
fierce	disgust
fierce	disgust
ignorant	disgust
ill	disgust
ill	disgust
intense	disgust
john	disgust
lose	disgust
lose	disgust
lose	disgust
lose	disgust
lose	disgust
powerful	disgust

fear

word	sentiment
advance	fear
advance	fear
advance	fear
aghast	fear
bad	fear
bad	fear
bad	fear
cancer	fear
cancer	fear
cancer	fear
cancer	fear
challenge	fear
change	fear
clashing	fear
concerned	fear

word	sentiment
resisting	fear
retirement	fear
revolution	fear
revolution	fear
seize	fear
shooting	fear
surprise	fear
turmoil	fear
upheaval	fear
volunteer	fear
wan	fear
watch	fear
worry	fear
worry	fear
worry	fear
worry	fear
worse	fear
youth	fear
youth	fear
youth	fear

joy

word	sentiment
achieve	joy
achieve	joy
advance	joy
advance	joy
advance	joy
bonus	joy
celebrated	joy
celebrating	joy
champion	joy
commemoration	joy
confidence	joy
create	joy
deal	joy
engaged	joy
engaged	joy
enjoy	joy
enjoy	joy
enjoy	joy
enjoy	joy
enjoy	joy
enjoying	joy
equality	joy
established	joy
established	joy
excel	joy
excited	joy
exciting	joy
freedom	joy

word	sentiment
friend	joy
grandchildren	joy
grandchildren	joy
greatness	joy
grow	joy
grow	joy
grow	joy
happy	joy
happy	joy
holiday	joy
holiday	joy
improve	joy
improve	joy
improve	joy
improve	joy
income	joy
inspire	joy
intense	joy
money	joy
notable	joy
outstanding	joy
outstanding	joy
outstanding	joy
outstanding	joy
outstanding	joy
outstanding	joy
outstanding	joy
passion	joy
passionate	joy
passionate	joy
pay	joy
playful	joy
pledge	joy
powerful	joy
precious	joy
precious	joy
precious	joy
pride	joy
progress	joy
promise	joy
promise	joy
promise	joy
proud	joy
proud	joy
proud	joy
recreation	joy
rejoice	joy
respect	joy
retirement	joy
rising	joy
share	joy
share	joy

word	sentiment
sing	joy
sing	joy
sing	joy
sing	joy
sing	joy
special	joy
special	joy
special	joy
special	joy
special	joy
succeed	joy
successful	joy
successful	joy
successful	joy
successful	joy
superman	joy
surprise	joy
sweet	joy
sweet	joy
thriving	joy
volunteer	joy
wages	joy
wages	joy
wages	joy
youth	joy
youth	joy
youth	joy

negative

word	sentiment
aghast	negative
angry	negative
bad	negative
bad	negative
bad	negative
badly	negative
battle	negative
bleak	negative
bottom	negative
cancer	negative
cancer	negative
cancer	negative
cancer	negative
challenge	negative
clashing	negative
communist	negative
competition	negative
competition	negative
conflict	negative
cross	negative
destroying	negative

word	sentiment
lose	negative
lose	negative
mourning	negative
opposition	negative
opposition	negative
outstanding	negative
outstanding	negative
outstanding	negative
outstanding	negative
outstanding	negative
outstanding	negative
perish	negative
resisting	negative
retirement	negative
revolution	negative
revolution	negative
seize	negative
serve	negative
shooting	negative
spent	negative
spoke	negative
spoke	negative
spoke	negative
spoke	negative
spoke	negative
spoke	negative
strike	negative
strike	negative
strike	negative
tired	negative
tough	negative
turmoil	negative
upheaval	negative
vice	negative
wait	negative
wan	negative
weakened	negative
weakened	negative
words	negative
words	negative
worry	negative
worry	negative
worry	negative
worry	negative
worse	negative

positive

word	sentiment
ability	positive
achieve	positive

word	sentiment
building	positive
building	positive
cabinet	positive
cabinet	positive
career	positive
careful	positive
carefully	positive
celebrated	positive
celebrating	positive
champion	positive
civil	positive
commemoration	positive
committed	positive
commonwealth	positive
completely	positive
completely	positive
confidence	positive
continue	positive
continue	positive
contribute	positive
council	positive
count	positive
courtesy	positive
create	positive
crucial	positive
culture	positive
cute	positive
deal	positive
dedication	positive
deserve	positive
determination	positive
develop	positive
discussion	positive
doctor	positive
educational	positive
effective	positive
effort	positive
emulate	positive
engaged	positive
engaged	positive
enjoy	positive
enjoy	positive
enjoy	positive
enjoy	positive
enjoy	positive
enjoying	positive
equality	positive
established	positive
established	positive
excel	positive
excited	positive
exciting	positive

word	sentiment
expect	positive
extraordinary	positive
extraordinary	positive
fair	positive
forward	positive
forward	positive
forward	positive
foundation	positive
freedom	positive
friend	positive
gold	positive
grandchildren	positive
grandchildren	positive
grateful	positive
greatness	positive
grow	positive
grow	positive
grow	positive
guide	positive
happy	positive
happy	positive
holiday	positive
holiday	positive
improve	positive
improve	positive
improve	positive
improve	positive
improved	positive
improving	positive
improving	positive
improving	positive
including	positive
income	positive
inspire	positive
intense	positive
job	positive
job	positive
job	positive
job	positive
job	positive
job	positive
job	positive
job	positive
job	positive
join	positive
joined	positive
joined	positive
lead	positive
lead	positive
leader	positive
leader	positive

word	sentiment
leader	positive
leader	positive
learn	positive
learn	positive
learn	positive
learn	positive
learning	positive
legal	positive
lesson	positive
level	positive
medical	positive
model	positive
money	positive
notable	positive
organized	positive
outstanding	positive
outstanding	positive
outstanding	positive
outstanding	positive
outstanding	positive
outstanding	positive
outstanding	positive
passion	positive
passionate	positive
passionate	positive
pay	positive
pilot	positive
planning	positive
playful	positive
pledge	positive
powerful	positive
precious	positive
precious	positive
precious	positive
precise	positive
president	positive
president	positive
president	positive
president	positive
president	positive
pride	positive
prime	positive
prime	positive
prime	positive
prime	positive
prime	positive
prime	positive
productive	positive
productive	positive
productivity	positive
profession	positive
professional	positive
progress	positive

word	sentiment
progressive	positive
promise	positive
promise	positive
promise	positive
protect	positive
protect	positive
proud	positive
proud	positive
proud	positive
public	positive
public	positive
question	positive
question	positive
real	positive
recreation	positive
rejoice	positive
renewal	positive
renewal	positive
renewal	positive
renewal	positive
represented	positive
respect	positive
retirement	positive
revolution	positive
revolution	positive
rising	positive
script	positive
share	positive
share	positive
shoulder	positive
shoulder	positive
sing	positive
sing	positive
sing	positive
sing	positive
sing	positive
special	positive
special	positive
special	positive
special	positive
special	positive
speech	positive
speech	positive
speech	positive
stable	positive
standing	positive
study	positive
succeed	positive
successful	positive
successful	positive
successful	positive
successful	positive

word	sentiment
suitable	positive
suitable	positive
superman	positive
supported	positive
supporting	positive
surprise	positive
survive	positive
sweet	positive
sweet	positive
talent	positive
talent	positive
talent	positive
task	positive
technology	positive
thriving	positive
tribute	positive
tribute	positive
tribute	positive
tribute	positive
tribute	positive
tribute	positive
unique	positive
university	positive
vigorous	positive
volunteer	positive
wages	positive
wages	positive
wages	positive
word	positive
youth	positive
youth	positive
youth	positive

sadness

word	sentiment
bad	sadness
bad	sadness
bad	sadness
badly	sadness
bleak	sadness
bottom	sadness
cancer	sadness
cancer	sadness
cancer	sadness
cancer	sadness
concerned	sadness
conflict	sadness
cross	sadness
destroying	sadness
doubt	sadness
dying	sadness

word	sentiment
evil	sadness
funeral	sadness
funeral	sadness
funeral	sadness
funeral	sadness
ill	sadness
ill	sadness
income	sadness
insecure	sadness
leave	sadness
lose	sadness
lose	sadness
lose	sadness
lose	sadness
lose	sadness
mourning	sadness
perish	sadness
resisting	sadness
retirement	sadness
revolution	sadness
revolution	sadness
sing	sadness
sing	sadness
sing	sadness
sing	sadness
sing	sadness
tough	sadness
turmoil	sadness
upheaval	sadness
wan	sadness
worry	sadness
worry	sadness
worry	sadness
worry	sadness
worse	sadness

surprise

word	sentiment
advance	surprise
advance	surprise
advance	surprise
aghast	surprise
bonus	surprise
deal	surprise
excel	surprise
excited	surprise
exciting	surprise
expect	surprise
greatness	surprise
intense	surprise
leave	surprise

word	sentiment
brother	trust
brother	trust
brother	trust
brother	trust
brother	trust
brother	trust
brother	trust
brother	trust
brother	trust
brother	trust
brother	trust
budget	trust
cabinet	trust
cabinet	trust
champion	trust
committed	trust
committee	trust
committee	trust
committee	trust
committee	trust
commonwealth	trust
confidence	trust
congress	trust
constantly	trust
constantly	trust
continue	trust
continue	trust
council	trust
count	trust
crucial	trust
deal	trust
deserve	trust
determination	trust
doctor	trust
doubt	trust
economy	trust
economy	trust
economy	trust
economy	trust
educational	trust
effective	trust
engaged	trust
engaged	trust
enjoy	trust
enjoy	trust
enjoy	trust
enjoy	trust
enjoy	trust
enjoying	trust
equality	trust
establish	trust
excel	trust

word	sentiment
excited	trust
expect	trust
father	trust
fill	trust
fill	trust
freedom	trust
friend	trust
grandchildren	trust
grandchildren	trust
greatness	trust
grow	trust
grow	trust
grow	trust
guide	trust
happy	trust
happy	trust
improve	trust
improve	trust
improve	trust
improve	trust
income	trust
inspire	trust
institute	trust
institute	trust
institute	trust
institute	trust
intense	trust
leader	trust
leader	trust
leader	trust
leader	trust
leading	trust
legal	trust
lesson	trust
level	trust
medical	trust
money	trust
nation	trust
nation	trust
nation	trust
nation	trust
notable	trust
operation	trust
passion	trust
passionate	trust
passionate	trust
pay	trust
personal	trust
persuade	trust
pilot	trust
planning	trust
playful	trust

word	sentiment
pledge	trust
powerful	trust
president	trust
president	trust
president	trust
president	trust
president	trust
professional	trust
promise	trust
promise	trust
promise	trust
proud	trust
proud	trust
proud	trust
real	trust
rejoice	trust
respect	trust
retirement	trust
serve	trust
share	trust
share	trust
shoulder	trust
shoulder	trust
sing	trust
sing	trust
sing	trust
sing	trust
sing	trust
stable	trust
succeed	trust
successful	trust
successful	trust
successful	trust
successful	trust
superman	trust
supporting	trust
sweet	trust
sweet	trust
system	trust
system	trust
system	trust
system	trust
system	trust
system	trust
system	trust
system	trust
system	trust
team	trust
team	trust
team	trust
team	trust
team	trust

word	sentiment
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
team	trust
trade	trust
trade	trust
trade	trust
trade	trust
translation	trust
trust	trust
trust	trust
trust	trust
trust	trust
trust	trust
vigorous	trust
volunteer	trust
word	trust