# Travail individuel 4

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## Importation les librairies

```r
# Installer les packages
#install.packages("tm") # for text mining
#install.packages("SnowballC") # for text stemming
#install.packages("wordcloud") # word-cloud generator
#install.packages("RColorBrewer") # color palettes
#install.packages("syuzhet") # for sentiment analysis
#install.packages("ggplot2") # for plotting graphs
# Charger les libraries
library("tm")
```

```
## Loading required package: NLP
```

```r
library("SnowballC")
library("wordcloud")
```

```
## Loading required package: RColorBrewer
```

```r
library("RColorBrewer")
library("syuzhet")
library("ggplot2")
```

```
##
## Attaching package: 'ggplot2'

## The following object is masked from 'package:NLP':
##
##     annotate
```

## Lecture de texte

```r
text <- readLines(file.choose())
```

## Chargement des données sous forme de corpus

```
TextDoc <- Corpus(VectorSource(text))
```

# Netoyage

```
toSpace <- content_transformer(function (x , pattern ) gsub(pattern, " ", x))
TextDoc <- tm_map(TextDoc, toSpace, "/")
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, toSpace, "/"): transformation drops
## documents
```

```
TextDoc <- tm_map(TextDoc, toSpace, "200")
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, toSpace, "200"): transformation drops
## documents
```

```
TextDoc <- tm_map(TextDoc, toSpace, "\\|")
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, toSpace, "\\|"): transformation drops
## documents
```

```
TextDoc <- tm_map(TextDoc, toSpace,"")
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, toSpace, "\231"): transformation drops
## documents
```

```
TextDoc <- tm_map(TextDoc, toSpace,"€")
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, toSpace, "\200"): transformation drops
## documents
```

```
TextDoc <- tm_map(TextDoc, toSpace,"â")
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, toSpace, "â"): transformation drops
## documents
```

```
TextDoc <- tm_map(TextDoc, toSpace,""")
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, toSpace, """): transformation drops
## documents
```

```
TextDoc <- tm_map(TextDoc, toSpace,""")
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, toSpace, """): transformation drops
## documents
```

```r
TextDoc <- tm_map(TextDoc, toSpace,"€"")
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, toSpace, "\200""): transformation drops
## documents
```

## Transformation en miniscule, élimination des chiffres, et autres

```r
TextDoc <- tm_map(TextDoc, content_transformer(tolower))
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, content_transformer(tolower)):
## transformation drops documents
```

```r
TextDoc <- tm_map(TextDoc, removeNumbers)
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, removeNumbers): transformation drops
## documents
```

```r
TextDoc <- tm_map(TextDoc, removeWords, stopwords("english"))
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, removeWords, stopwords("english")):
## transformation drops documents
```

```r
TextDoc <- tm_map(TextDoc, removeWords, c("s", "company","team"))
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, removeWords, c("s", "company", "team")):
## transformation drops documents
```

```r
TextDoc <- tm_map(TextDoc, removePunctuation)
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, removePunctuation): transformation drops
## documents
```

```r
TextDoc <- tm_map(TextDoc, stripWhitespace)
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, stripWhitespace): transformation drops
## documents
```

```r
TextDoc <- tm_map(TextDoc, stemDocument)
```

```
## Warning in tm_map.SimpleCorpus(TextDoc, stemDocument): transformation drops
## documents
```

```r
class(TextDoc)
```

```
## [1] "SimpleCorpus" "Corpus"
```

```
inspect(TextDoc[[7]])
```

```
## <<PlainTextDocument>>
## Metadata:  7
## Content:  chars: 99
##
## thank pioneer leadership lowest violent crime rate quarter centuri cleanest environ quarter centuri
```

# La Matrice "Termes par Document"

```
TextDoc_dtm <- TermDocumentMatrix(TextDoc)
inspect(TextDoc_dtm)
```

```
## <<TermDocumentMatrix (terms: 1263, documents: 156)>>
## Non-/sparse entries: 3552/193476
## Sparsity           : 98%
## Maximal term length: 16
## Weighting          : term frequency (tf)
## Sample             :
##           Docs
## Terms      132 137 145 22 32 67 74 76 82 88
##   america    1   0   1  0  0  0  0  1  0  0
##   american   0   1   0  0  2  0  1  2  0  0
##   centuri    0   1   1  0  0  0  0  0  2  1
##   must       0   0   0  1  1  0  0  1  1  2
##   new        0   0   0  0  2  0  1  2  0  0
##   now        1   0   1  1  1  2  0  0  1  1
##   secur      0   0   0  3  0  0  0  0  1  0
##   will       0   0   0  0  2  0  1  0  2  0
##   work       0   0   0  0  0  1  1  0  2  1
##   year       0   1   1  4  2  1  3  0  0  0
```

```
dtm_m <- as.matrix(TextDoc_dtm)
```

La Matrice "Termes par Document" (suite)

```
dtm_v <- sort(rowSums(dtm_m),decreasing=TRUE)
dtm_d <- data.frame(word = names(dtm_v),freq=dtm_v)
```

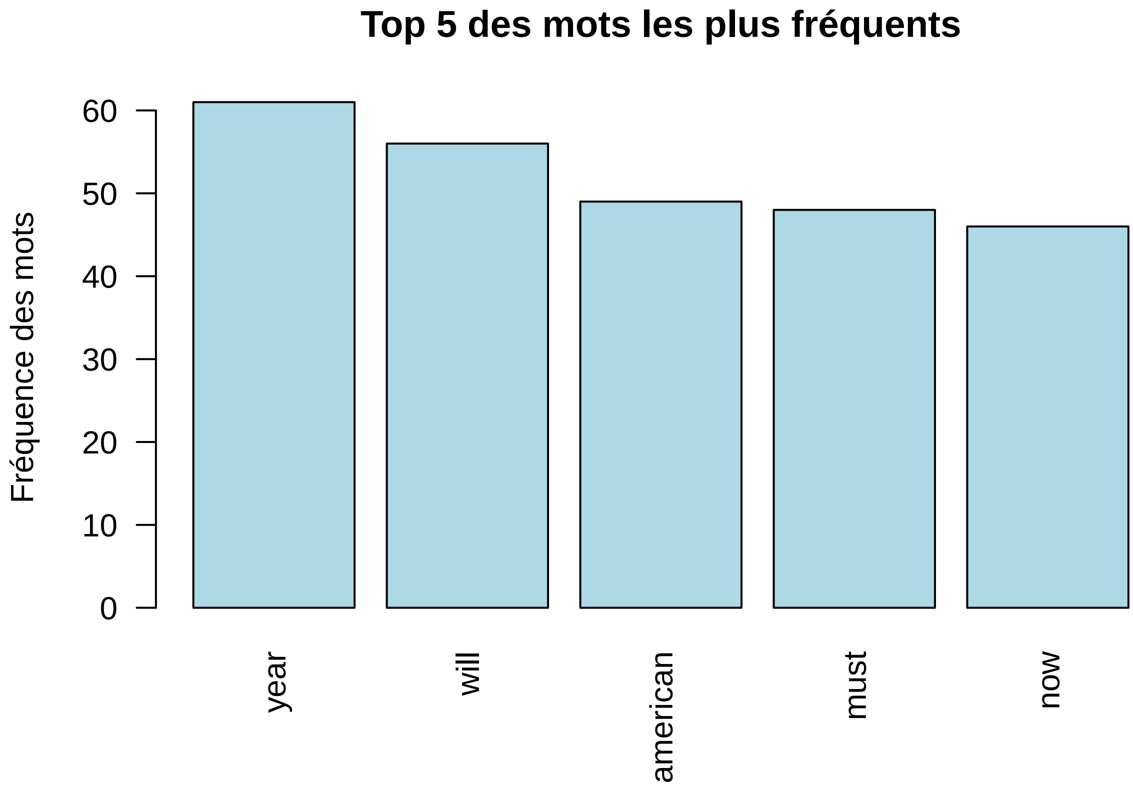
Afficher les mot les plus fréquents , ici on a choisit 15

```
head(dtm_d, 15)
```

```
##              word freq
## year         year   61
## will         will   56
## american american   49
## must         must   48
## now           now   46
## work         work   42
## america   america   37
## centuri   centuri   36
## secur       secur   33
## new           new   32
## school     school   30
## nation     nation   28
## support   support   28
## help         help   27
## congress congress   26
```

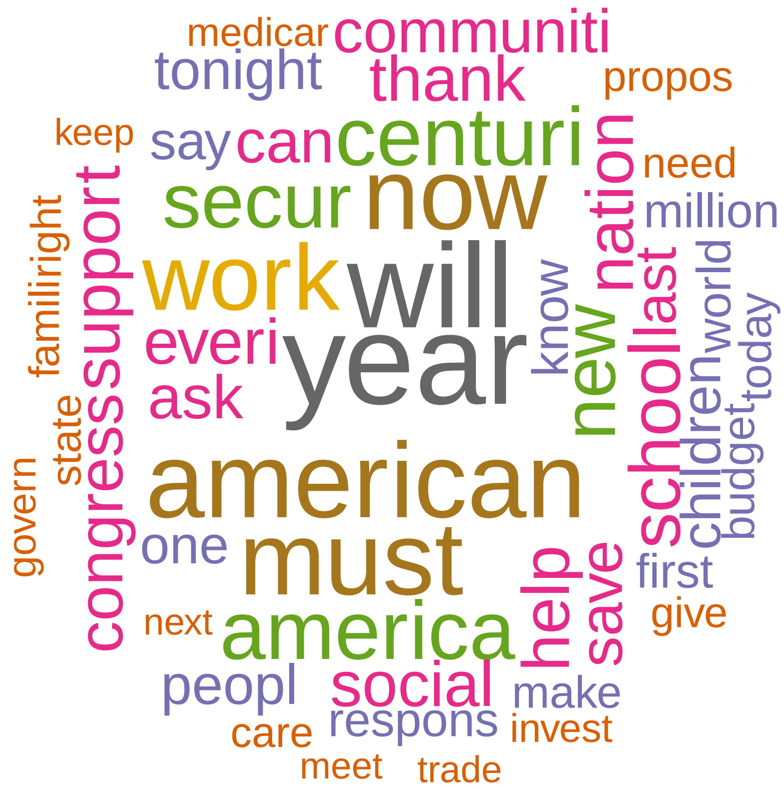
Tracer ces mots par un barplot()

```
barplot(dtm_d[1:5,]$freq,
        las = 2,
        names.arg = dtm_d[1:5,]$word,
        col ="lightblue",
        main ="Top 5 des mots les plus fréquents",
        ylab = "Fréquence des mots"
        )
```



Génération d’un nuage de mots (word cloud)

```r
set.seed(1234)
wordcloud(words = dtm_d$word,
          freq = dtm_d$freq,
          min.freq = 5,
          max.words=50,
          random.order=FALSE,
          rot.per=0.40,
          colors=brewer.pal(8, "Dark2")
          )
```



Génération des associations

```r
# Trouver des associations
findAssocs(TextDoc_dtm, terms = c("war","peace","peopl"), corlimit = 0.25)
```

```
## $war
##       cold     answer    depress dispossess    largest    overcom   prejudic
##       0.75       0.71       0.71       0.71       0.71       0.71       0.71
##    struggl   twilight        win     racial      class    barrier       long
##       0.71       0.71       0.71       0.60       0.49       0.49       0.46
##      middl       lift    generat    percent      point    arsenal  framework
##       0.39       0.39       0.38       0.36       0.35       0.35       0.35
##     height        iii     attack     bomber    captain     desert     execut
##       0.35       0.35       0.35       0.35       0.35       0.35       0.35
##   flawless       flew        fox       jeff     machin       oper     superb
##       0.35       0.35       0.35       0.35       0.35       0.35       0.35
## taliaferro   advisori    alabama      board        bus        goe    journey
##       0.35       0.35       0.35       0.35       0.35       0.35       0.35
##      other       rosa       sens     sought throughout       sinc      start
##       0.35       0.35       0.35       0.35       0.35       0.31       0.30
##        end      great
##       0.29       0.29
##
## $peace
## numeric(0)
##
## $peopl
##        news      podium       pride         ago      welfar        hire
##        0.52        0.52        0.52        0.49        0.48        0.40
##     tonight        roll       choos        lose     digniti        move
##        0.35        0.35        0.35        0.35        0.35        0.35
## partnership      republ        real      access      beyond     coverag
##        0.35        0.35        0.35        0.34        0.34        0.34
##     jefford     kennedi    moynihan       offer        roth      bought
##        0.34        0.34        0.34        0.34        0.34        0.34
##      expens    advisori     alabama       board         bus         goe
##        0.34        0.34        0.34        0.34        0.34        0.34
##     journey       other        rosa        sens      sought  throughout
##        0.34        0.34        0.34        0.34        0.34        0.34
##       china        good    thousand       anoth        five       bring
##        0.32        0.31        0.31        0.31        0.31        0.30
##      health       insur      longer         get       hundr      realli
##        0.29        0.29        0.27        0.27        0.27        0.27
##        past     liberti
##        0.27        0.27
```

```r
# Trouver des associations pour des mots qui se produisent au moins 50 fois
findAssocs(TextDoc_dtm,
           terms = findFreqTerms(TextDoc_dtm, lowfreq = 50),
           corlimit = 0.25)
```

```
## $year
##       six      last    fulfil    reserv      wise      next      knew     sound
##      0.48      0.43      0.39      0.39      0.39      0.37      0.37      0.35
##     anoth   surplus    improv     spend      five     grant     enact     joint
##      0.35      0.34      0.33      0.33      0.30      0.29      0.28      0.28
##   patient fifthgrad  fiveyear      hurt      less  literaci     mount     rapid
##      0.28      0.28      0.28      0.28      0.28      0.28      0.28      0.28
##     skill      team     train    corpor      opic     untap     felon     fugit
##      0.28      0.28      0.28      0.28      0.28      0.28      0.28      0.28
##    murder   schedul   stalker  straight       now      pass      bill   oversea
##      0.28      0.28      0.28      0.28      0.26      0.26      0.26      0.26
##
## $will
##    asid   divis    heal    love   anoth    hope    time    look   reach   hundr
##    0.44    0.42    0.42    0.42    0.39    0.39    0.37    0.37    0.33    0.33
## exhaust    full   older suffici   unabl    educ    said   cover payment   decis
##    0.31    0.31    0.31    0.31    0.31    0.28    0.28    0.27    0.27    0.27
##  listen    five    hour   shape   found   ideal
##    0.27    0.27    0.27    0.27    0.27    0.27
```

Score des sentiments

```
syuzhet_vector <- get_sentiment(text,method="syuzhet")
head(syuzhet_vector)
```

```
## [1]  0.9  1.0  3.1  1.0 -1.0  0.0
```

```
summary(syuzhet_vector)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -4.5000  0.3875  1.6250  1.5506  2.7125  7.4500
```

```
#par la methode bing
bing_vector <- get_sentiment(text, method="bing")
head(bing_vector)
```

```
## [1] 0 1 1 2 0 1
```

```
summary(bing_vector)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##  -4.000   0.000   1.000   1.026   2.000   7.000
```

```
#par la metheode affin
afinn_vector <- get_sentiment(text, method="afinn")
head(afinn_vector)
```

```
## [1]  2  2  4 -1 -3 -1
```

```
summary(afinn_vector)
```

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -16.000   0.000   2.000   2.744   6.000  18.000
```

Extraction des émotions

```
d<-get_nrc_sentiment(text)
head (d,10)
```

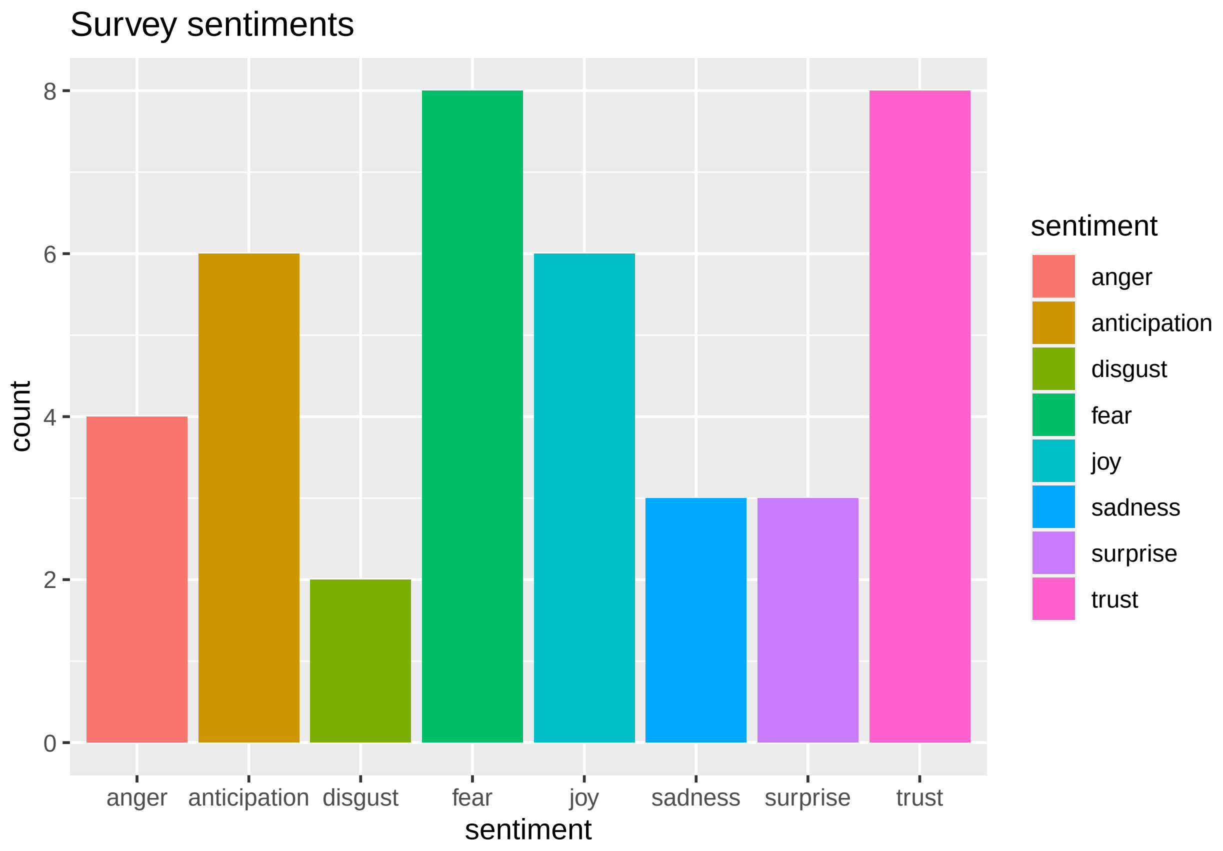
```
##    anger anticipation disgust fear joy sadness surprise trust negative positive
## 1      0            0       1    0   0       0        0     3        1        2
## 2      0            0       0    0   0       0        0     1        0        1
## 3      0            0       0    2   1       0        0     1        0        3
## 4      0            0       0    0   0       0        0     0        0        2
## 5      0            2       0    2   3       1        1     0        3        3
## 6      0            1       0    0   0       0        0     1        1        1
## 7      2            0       1    1   0       1        1     0        3        0
## 8      1            1       0    1   1       0        0     1        1        1
## 9      1            2       1    2   1       1        1     3        3        8
## 10     0            0       0    0   0       0        0     1        0        1
```

Classification des émotions (suite)

```
td<-data.frame(t(d))
td_new <- data.frame(rowSums(td[2:10]))
names(td_new)[1] <- "count"
td_new <- cbind("sentiment" = rownames(td_new), td_new)
rownames(td_new) <- NULL
td_new2<-td_new[1:8,]
```

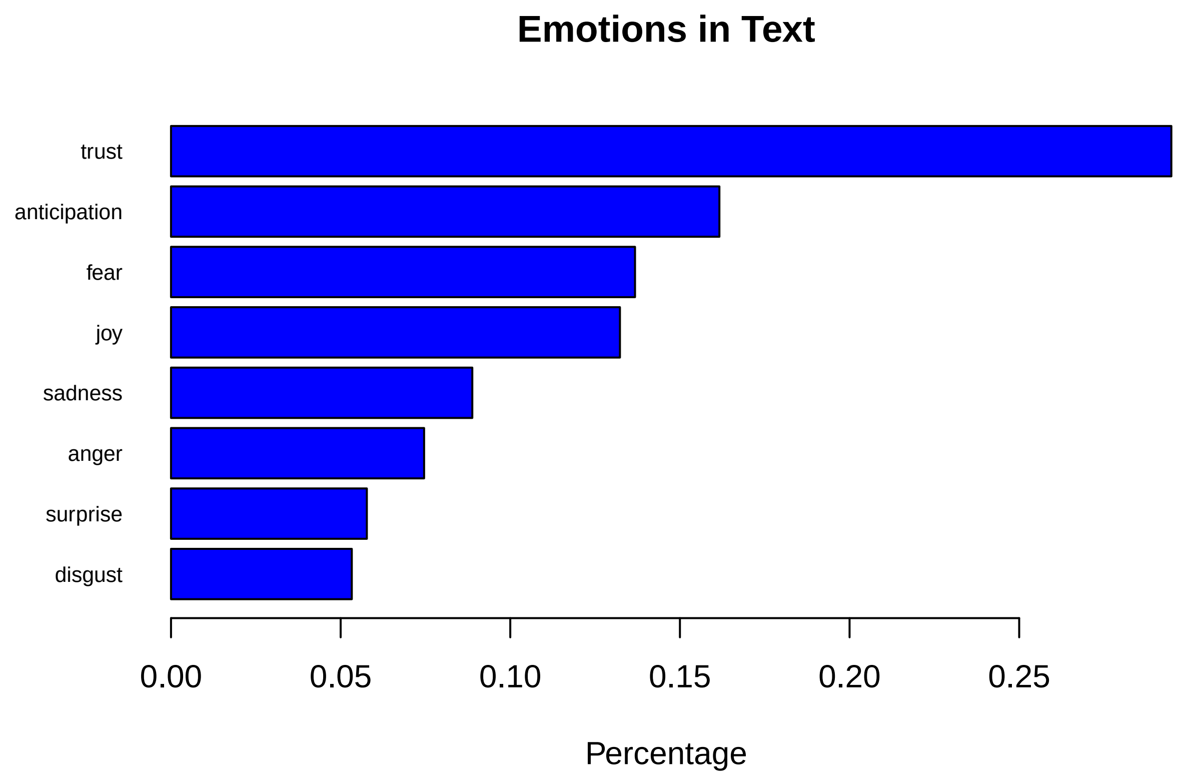
Classification des émotions - nombre de mots associés à chaque sentiment

```
quickplot(sentiment,
          data=td_new2,
          weight=count,
          geom="bar",
          fill=sentiment,
          ylab="count")+
  ggtitle("Survey sentiments")
```



Classification des émotions (suite)

```
barplot(
        sort(
          colSums(prop.table(d[, 1:8]))
          ),
        horiz = TRUE,
        cex.names = 0.7,
        las = 1,
        main = "Emotions in Text",
        xlab="Percentage",
        col="blue"
  )
```



# Commentaires

Cette analyse de text du président Bill Clinton, lors de son discours annuel tant que president des etats unis, nous montre plein de confiance avec esprit d'anticipation et un sentiement de peur. Il a cité,les mots 'americans', 'must' , 'year' , 'will' , qui peut signifier son intention de faire quelques chose cette année pour les americans.