Reading Obama Search on NY Times via Lexis Nexis

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March 17, 2016

I downloaded the 500 most recent articles that appeared when searching NY Times on Lexis Nexis for the term "Obama".

I downloaded the resulting txt file directly from Lexis Nexis and saved it in the "data" directory.

We now read that file into R.

```
tx <- scan(file = "~/bret-research/twitter/aejmc-manuscript-2016/data/The_New_York_Times2016-03-17_16-0
```

We now partition the object `tx` into separate files.

```
library(wordtools) #install my R package 'wordtools'
tx_list <- split_tx(tx = tx, patt = "Copyright 20")
```

We examined the first 3 articles. It looks like the 8th line is always "LENGTH: _____ words". Let's verify this:

```
library(stringr)
sapply(FUN = function(x)which(str_detect(string = x, pattern = "LENGTH")), X = tx_list)
```

```
##   [1]  8  8  8 10  8  9  8  8  8  9  8  9  8  8  8  8  9  8  8  9 12  8  8
##  [24]  9  8  9  9  8  8  8  8  8  9  8  8  8  9  9  8  9  8  8  8  8  8  8
##  [47]  9  8  8  9  9 11  8  9  8  8  8  9  8  9  8  9  8  8  9  8  8  8  8
##  [70] 11  8 10  8  9 10  8  8 10  8  9  8  8  8  8  9  7  9  7  9  8  7  9
##  [93]  8  9  8  8  8  8  8 10  8  8  8  9  7  8  9  8 10  8  8  8  9  9  9
## [116]  9  8  9  8  8  9  9  9  8  8  9  8  9  9  9  8  8  9  9  9  9  9 10
## [139]  8  9  9  8 11  8  8  8  9  8  9  8  8  9  9  8  8  9  8  9 10  8  9
## [162]  8  9  9  8  9  9  9  9  9  9  9  8  8  9  9 19  8  9  8  9  8  9  9
## [185]  8  9  9  9 11  8  8  9  8  9  9  9  8 10 10  9  9  8  8  9  9  9  9
## [208]  9  8  8  9  9  8  9 10  8  8  8  9  8 12  9  8  9  9  8  9  9  9  9
## [231]  9  9  9  9  8  9  8  9  9  9  9  9  9  9  9 10  8 12  8  9  9  9  8
## [254]  8  8  8  8  9  8  9 10  8  9  8  8  9  9  9 12  8  8  8  8  8  9  9
## [277]  9  9  9  9 10  8  9  9  9 10  8  9  9 12  8  9  8  9  9  9  9 10  8
## [300]  8  8  9  9  9  8  9  9  9  9  9  8  9  9  9  8  8  8  9  9  9  8  9
## [323]  9  9  8  9  8  9  9  9  9  9 10  8  9  9  9  8  9  9  9  9  8  9 12
## [346]  8  9  9  9  8  9  8  9  9  8  9  9  8  9  8  9  9  9  9  9  8  9  8
## [369]  9  9 11  8  8  9  9  9 11  8  8  9  9  8 10  8  9  8  8  9  9  9 11
## [392]  8  8  8  9  9  8  9  9  8  9  8  9  8  9  9 10  8  9  9 10  8  9  9
## [415]  9  9  9  9  9  8  9  9  9  9  9 10  8  8  9  9  9 10  8  9  9  9  8
## [438]  9  9  9  8  9  9  8 10  8  8  8  8  9  8  9  8  8  9  9  9  9  9  9
## [461] 10  8  8  8  8  8  8  8  9  8  8  8 10  8  9  8  9  8  9  9 10 10  8
## [484]  9  8 11  8  8  9  8  8 10  8  9  8  8  8  8  9  8
```

```
# We were wrong!!
tx_list2<- sapply(FUN = function(x)x[-(1:which(str_detect(string = x, pattern = "LENGTH")))], X = tx_lis
```

We now need to remove text lines at the end of each article.

```
tx_list3 <- sapply(FUN = function(x)x[1:(-1 + which(str_detect(string = x, pattern = "URL")))], X = tx_
```

We saw that the code above gives an error, since some articles don't have a URL line.

Let's remove the blog posts then see if remaining articles have URL field.

```
myfun <- function(x, pattern = "Web Blog"){
  collapsed <- paste(x, collapse = " ")
  !stringr::str_detect(collapsed, pattern = pattern)
}


indswb <- sapply(FUN = myfun, X = tx_list2)
indsurl <- sapply(FUN = myfun, pattern = "URL", X = tx_list2)
cbind(indswb, indsurl)
```

```
##        indswb indsurl
##   [1,]   TRUE   FALSE
##   [2,]   TRUE   FALSE
##   [3,]   TRUE   FALSE
##   [4,]   TRUE   FALSE
##   [5,]   TRUE   FALSE
##   [6,]   TRUE   FALSE
##   [7,]   TRUE   FALSE
##   [8,]   TRUE   FALSE
##   [9,]   TRUE   FALSE
##  [10,]   TRUE   FALSE
##  [11,]  FALSE    TRUE
##  [12,]   TRUE   FALSE
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##  [14,]   TRUE   FALSE
##  [15,]   TRUE   FALSE
##  [16,]  FALSE    TRUE
##  [17,]   TRUE   FALSE
##  [18,]   TRUE   FALSE
##  [19,]   TRUE   FALSE
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##  [21,]   TRUE   FALSE
##  [22,]   TRUE   FALSE
##  [23,]  FALSE    TRUE
##  [24,]   TRUE   FALSE
##  [25,]  FALSE    TRUE
##  [26,]  FALSE    TRUE
##  [27,]   TRUE   FALSE
##  [28,]   TRUE   FALSE
##  [29,]   TRUE   FALSE
##  [30,]   TRUE   FALSE
##  [31,]   TRUE   FALSE
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##  [33,]   TRUE   FALSE
##  [34,]   TRUE   FALSE
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##  [36,]  FALSE    TRUE
```

```
##  [37,]   TRUE   FALSE
##  [38,]   TRUE   FALSE
##  [39,]  FALSE    TRUE
##  [40,]   TRUE   FALSE
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##  [46,]  FALSE    TRUE
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##  [49,]  FALSE    TRUE
##  [50,]  FALSE    TRUE
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##  [91,]  FALSE    TRUE
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## [396,]   TRUE   FALSE
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## [469,]   TRUE   FALSE
## [470,]   TRUE   FALSE
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## [496,]   TRUE   FALSE
## [497,]   TRUE   FALSE
## [498,]   TRUE   FALSE
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## [500,]   TRUE   FALSE
```

It looks like only the blog posts have no URL field. Let's remove the blog posts and then pipe it to remove the lines that contain URL and any later lines.

```
library(magrittr)
good_art <- tx_list2[indswb] %>%
  sapply(FUN = function(x){x[-(which(str_detect(x, "URL")):length(x))]})
```

Now we need to separate strings into individual words & remove punctuation.

```
library(tm)
```

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

```
stopwords <- tm::stopwords("SMART")
good2 <- sapply(FUN = function(x)paste(x, collapse = " "), X = good_art)  %>%
  stringr::str_split( pattern = " ") %>%
  sapply(FUN = function(x) gsub("'", "", x)) %>% # remove apostrophes
  sapply(FUN = function(x) gsub("[[:punct:]]", " ", x)) %>%  # replace punctuation with space
  sapply(FUN = function(x) gsub("[[:cntrl:]]", " ", x)) %>% # replace control characters with space
```

```
  sapply(FUN = function(x) gsub("^[[:space:]]+", "", x)) %>% # remove whitespace at beginning of docume
  sapply(FUN = function(x) gsub("[[:space:]]+$", "", x)) %>% # remove whitesp
  sapply(FUN = function(x)tolower(x)) %>%
  sapply(FUN = function(x)x[!(x == "")]) %>% # remove elements that are ""
  sapply(FUN = function(x)x[!(x %in% stopwords)]) # remove stopwords
```

```
# from http://cpsievert.github.io/LDAvis/reviews/reviews.html
# compute the table of terms:
n_min <- 3
term_table <- table(unlist(good2)) %>%
  sort(decreasing = TRUE)
term_table <- term_table[term_table >= n_min]
vocab <- names(term_table)
get_terms <- function(x) {
  index <- match(x, vocab)
  index <- index[!is.na(index)]
  rbind(as.integer(index - 1), as.integer(rep(1, length(index))))
}
documents <- lapply(good2, get_terms)
```

```
# Compute some statistics related to the data set:
D <- length(documents)  # number of documents (2,000)
W <- length(vocab)  # number of terms in the vocab (14,568)
doc.length <- sapply(documents, function(x) sum(x[2, ]))  # number of tokens per document [312, 288, 17
N <- sum(doc.length)  # total number of tokens in the data (546,827)
term.frequency <- as.integer(term_table)  # frequencies of terms in the corpus [8939, 5544, 2411, 2410,
```

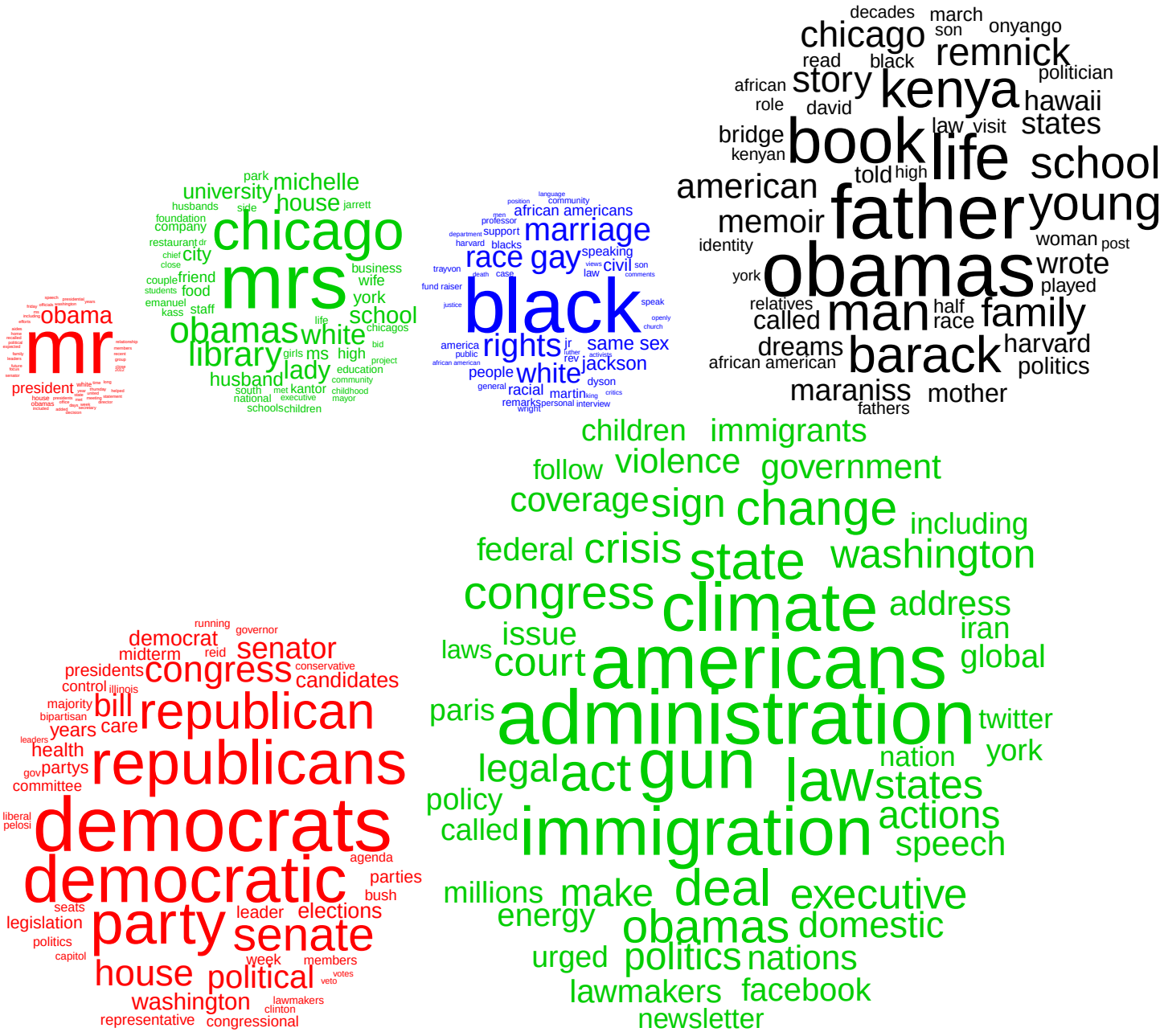
```
# MCMC and model tuning parameters:
K <- 20
G <- 5000
alpha <- 0.02
eta <- 0.02

# Fit the model:
library(lda)
set.seed(357)
t1 <- Sys.time()
fit <- lda.collapsed.gibbs.sampler(documents = documents, K = K, vocab = vocab,
                                   num.iterations = G, alpha = alpha,
                                   eta = eta, initial = NULL, burnin = 0,
                                   compute.log.likelihood = TRUE)
t2 <- Sys.time()
t2 - t1  # about 12 minutes on laptop
```

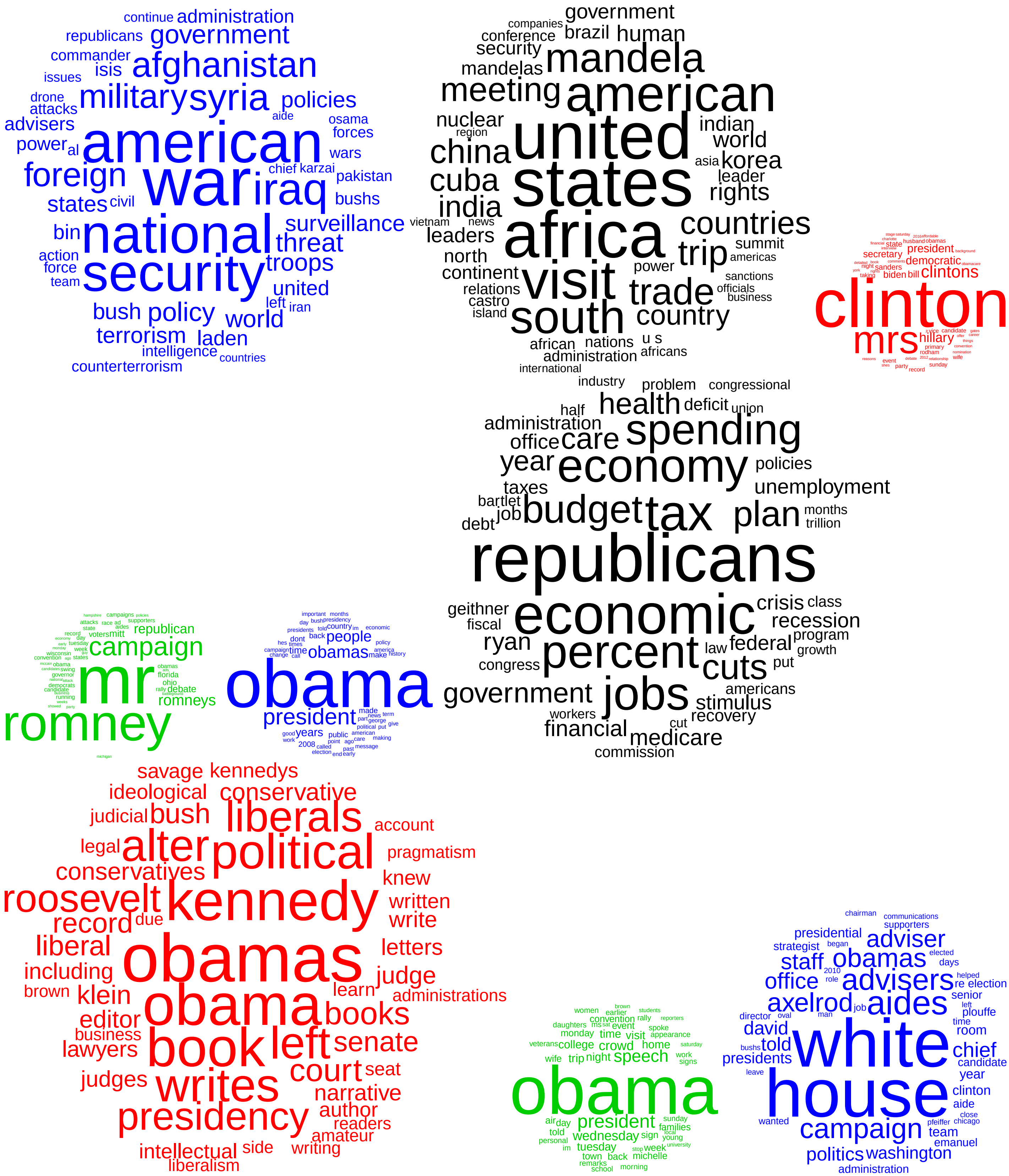
```
## Time difference of 9.28813 mins
```

```
library(wordcloud)
```

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

```
for (i in 1:K){
  cloud.data<-sort(fit$topics[i,], decreasing=TRUE)[1:50]
  wordcloud(names(cloud.data), freq=cloud.data, scale=c(3,.10), min.freq=1, rot.per=0, random.order=FALS
}
```

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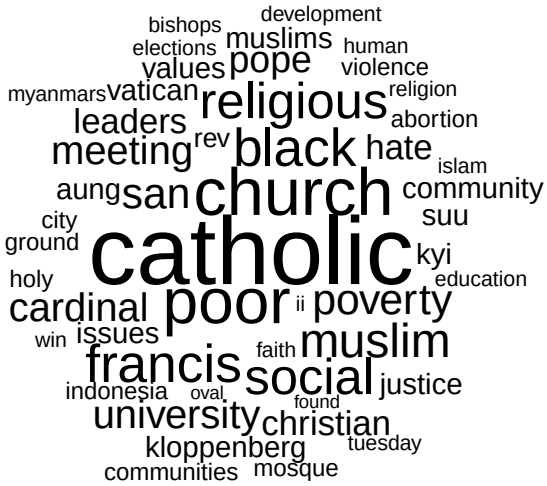
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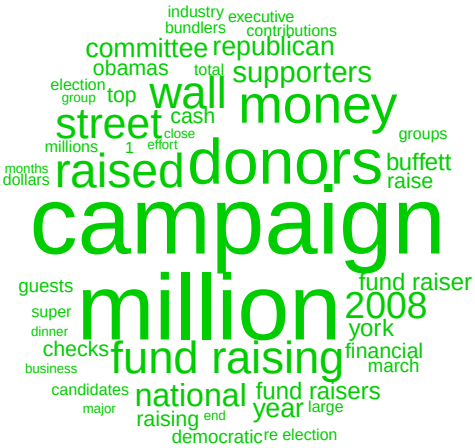
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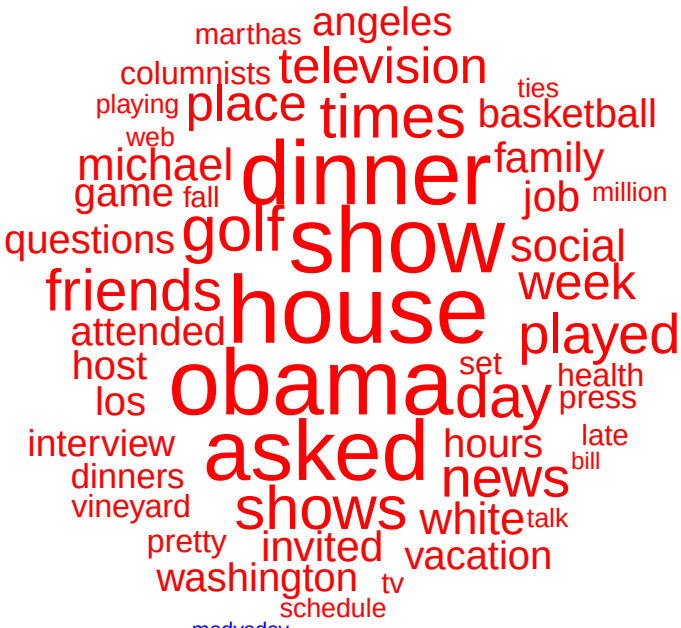
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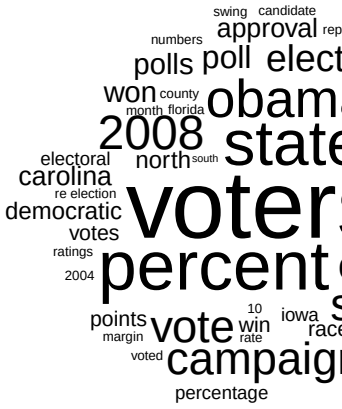
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