INTRO TO TEXT MINING: BAG OF WORDS

Common text mining visuals

Why make visuals?

- Good visuals lead to quick conclusions
- The brain efficiently processes visual information

Setting the scene

Term Document Matrix (TDM)

	Tweet1	Tweet2	Tweet3	...	Tweet_N
Term1	0	0	0	0	0
Term2	1	1	0	0	0
Term3	1	0	0	2	0
...	0	0	3	1	1
Term_N	0	0	1	1	0

Summed vector

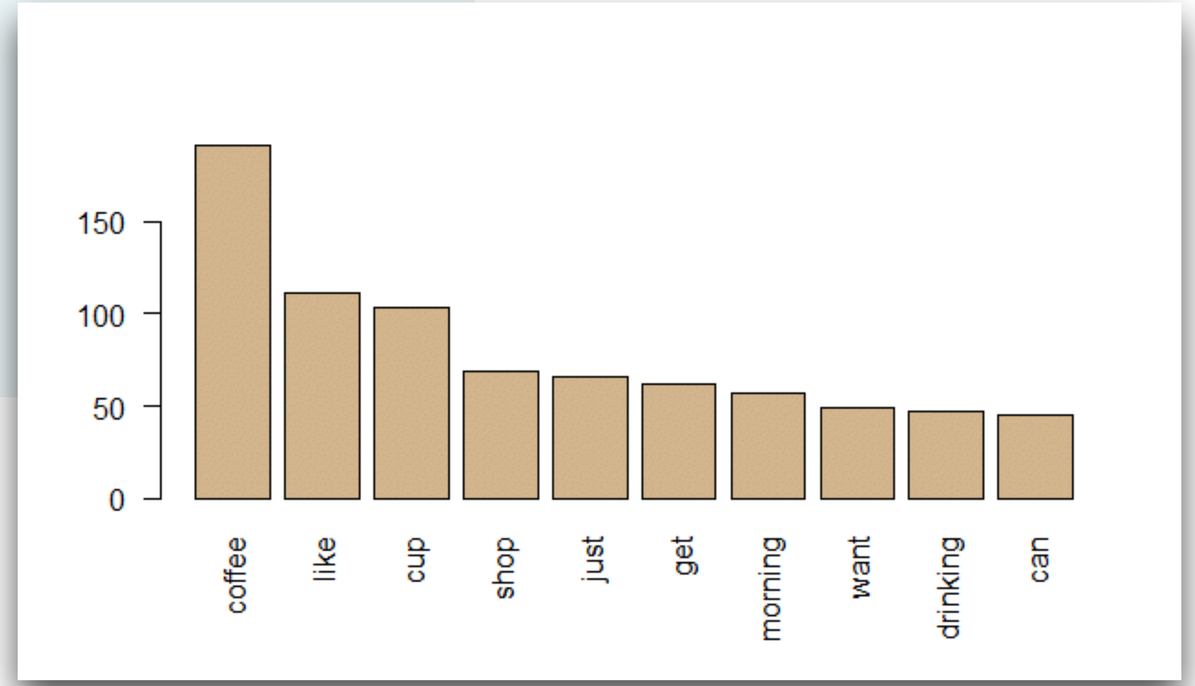
Sum
0
2
3
5
2

Term frequency plots with tm

```
> # Convert TDM to matrix
> coffee_m <- as.matrix(coffee_tdm)

> # Sum rows and sort by frequency
> term_frequency <- rowSums(coffee_m)
> term_frequency <- sort(term_frequency,
                         decreasing = TRUE)

> # Create a barplot
> barplot(term_frequency[1:10],
          col = "tan", las = 2)
```

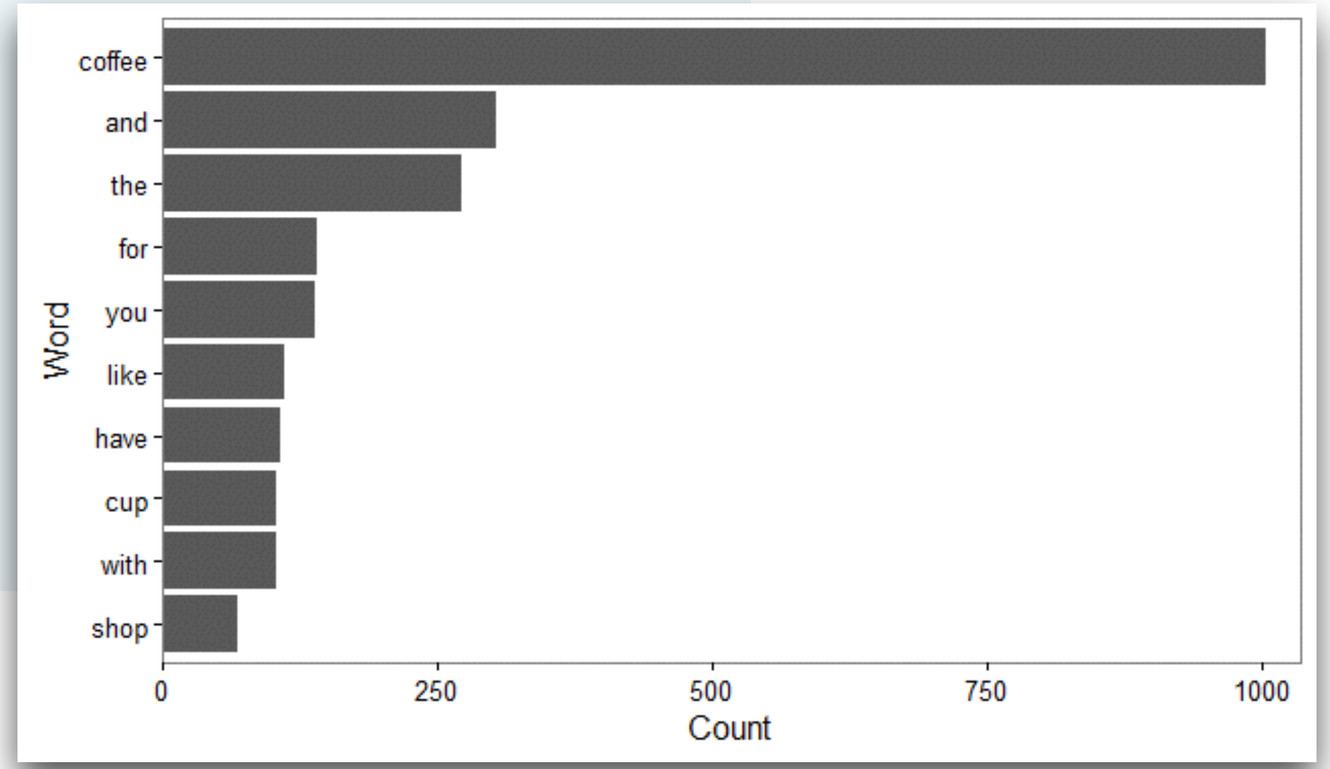


Term frequency plots with qdap

```
> # Load qdap package
> library(qdap)

> # Find term frequencies
> frequency <- freq_terms(
    tweets$text,
    top = 10,
    at.least = 3,
    stopwords = "Top200Words"
  )

> # Plot term frequencies
> plot(frequency)
```



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Let’s practice!

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Intro to word clouds

A simple word cloud

```
> # Convert TDM to matrix
> chardonnay_tdm <- TermDocumentMatrix(clean_chardonnay)
> chardonnay_m <- as.matrix(chardonnay_tdm)

> # Sum rows and sort by frequency
> term_frequency <- rowSums(chardonnay_m)
> word_freqs <- data.frame(term = names(term_frequency),
                           num = term_frequency)

> # Make word cloud
> wordcloud(word_freqs$term, word_freqs$num,
            max.words = 100, colors = "red")
```

The impact of stop words

```
clean_corpus <- function(corpus){
  corpus <- tm_map(corpus, removePunctuation)
  corpus <- tm_map(corpus, stripWhitespace)
  corpus <- tm_map(corpus, removeNumbers)
  corpus <- tm_map(corpus, content_transformer(tolower))
  corpus <- tm_map(corpus, removeWords,
                   c(stopwords("en"), "amp"))
  return(corpus)
}
```

Removing uninformative words

```
clean_corpus <- function(corpus){
  corpus <- tm_map(corpus, removePunctuation)
  corpus <- tm_map(corpus, stripWhitespace)
  corpus <- tm_map(corpus, removeNumbers)
  corpus <- tm_map(corpus, content_transformer(tolower))
  corpus <- tm_map(corpus, removeWords,
                   c(stopwords("en"), "amp",
                     "chardonnay", "wine", "glass"))
  return(corpus)
}
```

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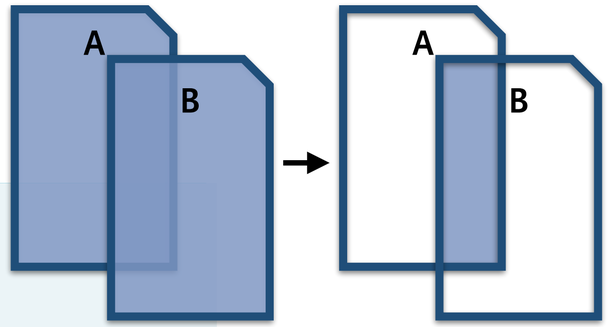
Other word clouds and word networks

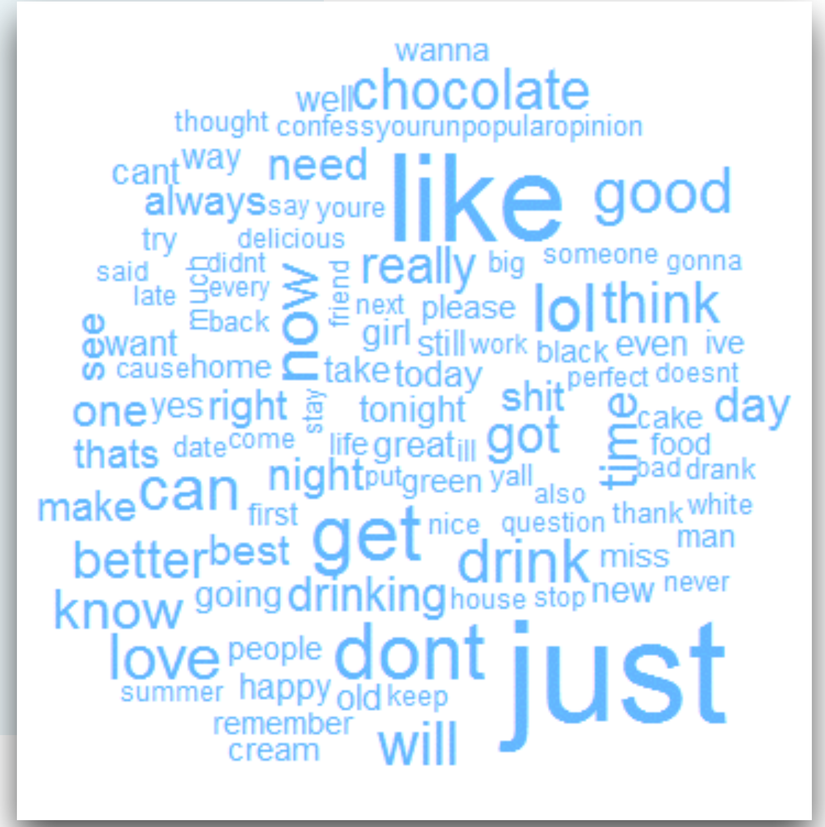
Commonality clouds



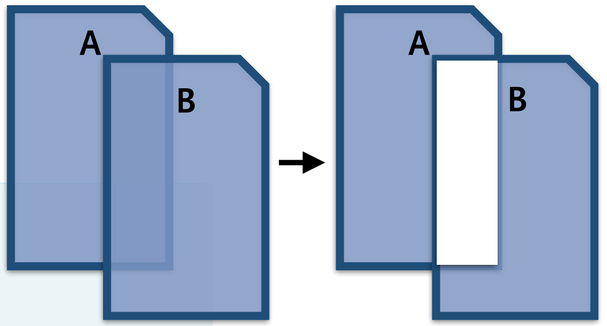

```
> # Combine both corpora: all_tweets
> all_coffee <- paste(coffee_tweets$text, collapse = "")
> all_chardonay <- paste(chardonnay_tweets$text,
                         collapse = "")
> all_tweets <- c(all_coffee, all_chardonnay)

> # Clean all_tweets
> all_tweets <- VectorSource(all_tweets)
> all_corpus <- VCorpus(all_tweets)
> all_clean <- clean_corpus(all_corpus)
> all_dm <- TermDocumentMatrix(all_clean)
> all_m <- as.matrix(all_tdm)

> # Make commonality cloud
> commonality.cloud(all_m, colors = "steelblue1",
                    max.words = 100)
```



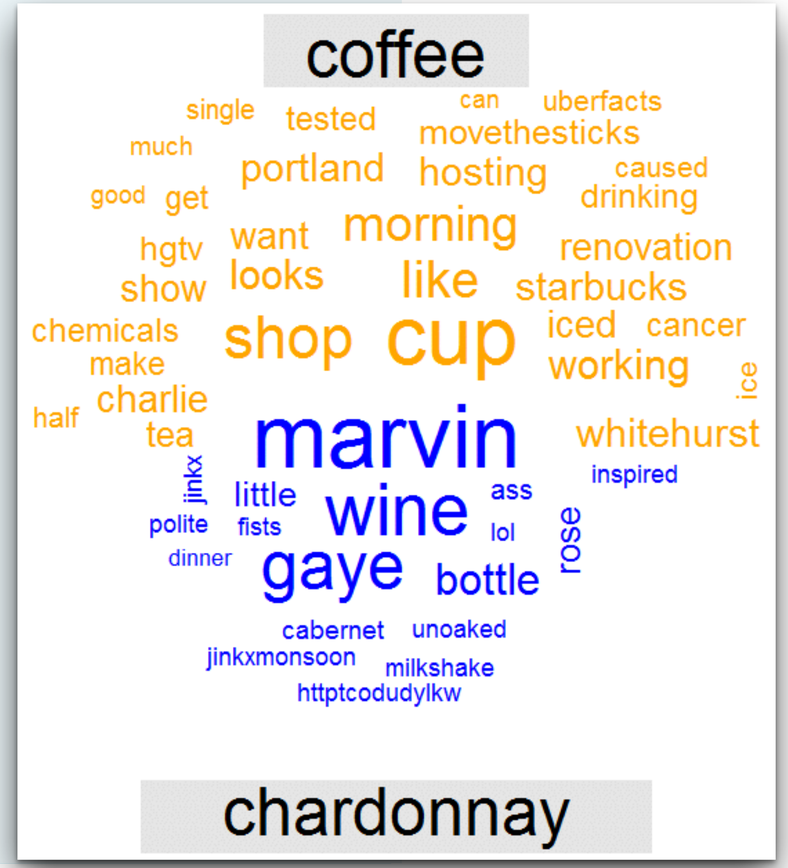
Comparison clouds




```
> # Combine both corpora: all_tweets
> all_coffee <- paste(coffee_tweets$text, collapse = "")
> all_chardonay <- paste(chardonnay_tweets$text,
                         collapse = "")
> all_tweets <- c(all_coffee, all_chardonnay)

> # Clean all_tweets
> all_tweets <- VectorSource(all_tweets)
> all_corpus <- VCorpus(all_tweets)
> all_clean <- clean_corpus(all_corpus)
> all_tdm <- TermDocumentMatrix(all_clean)
> colnames(all_tdm) <- c("coffee", "chardonnay")
> all_m <- as.matrix(all_tdm)

> # Make comparison cloud
> comparison.cloud(all_m,
                   colors = c("orange", "blue"),
                   max.words = 50)
```



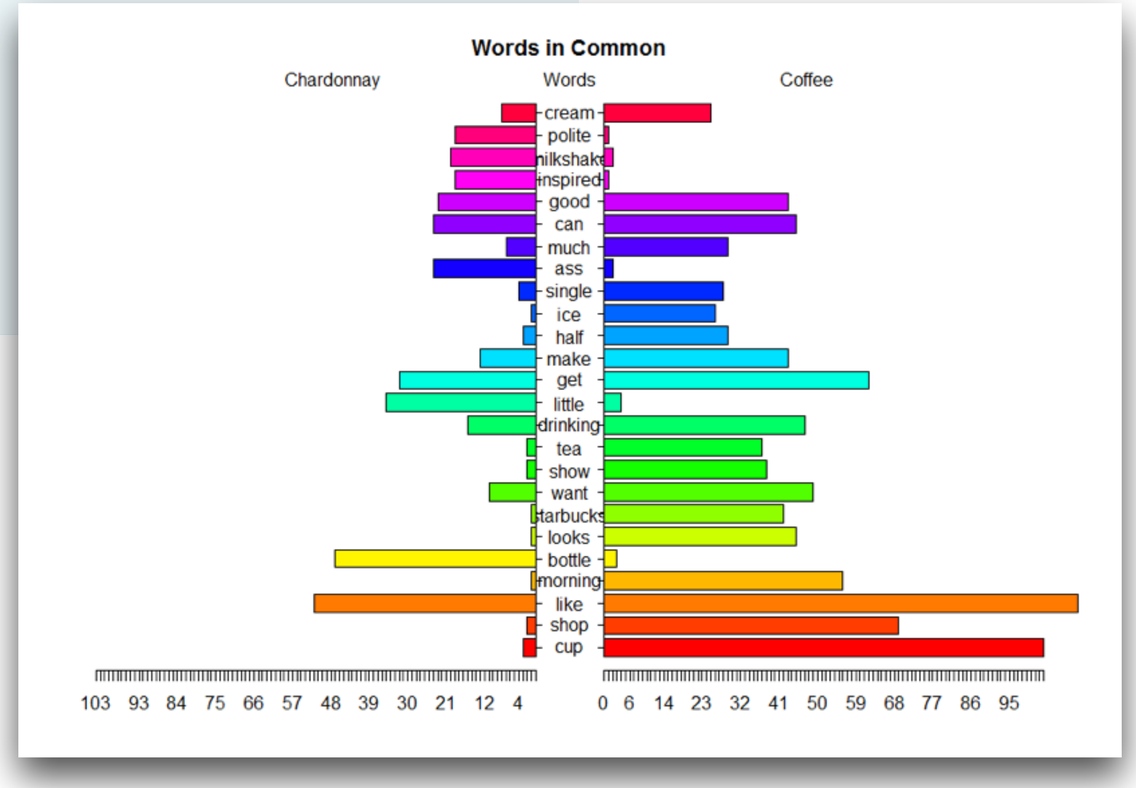
Pyramid plots

```
> # Identify terms shared by both documents
> common_words <- subset(
    all_tdm_m,
    all_tdm_m[, 1] > 0 & all_tdm_m[, 2] > 0
  )

> # Find most commonly shared words
> difference <- abs(common_words[, 1] - common_words[, 2])
> common_words <- cbind(common_words, difference)
> common_words <- common_words[order(common_words[, 3],
                                     decreasing = TRUE), ]
> top25_df <- data.frame(x = common_words[1:25, 1],
                         y = common_words[1:25, 2],
                         labels = rownames(common_words[1:25, ]))
```

Pyramid plots

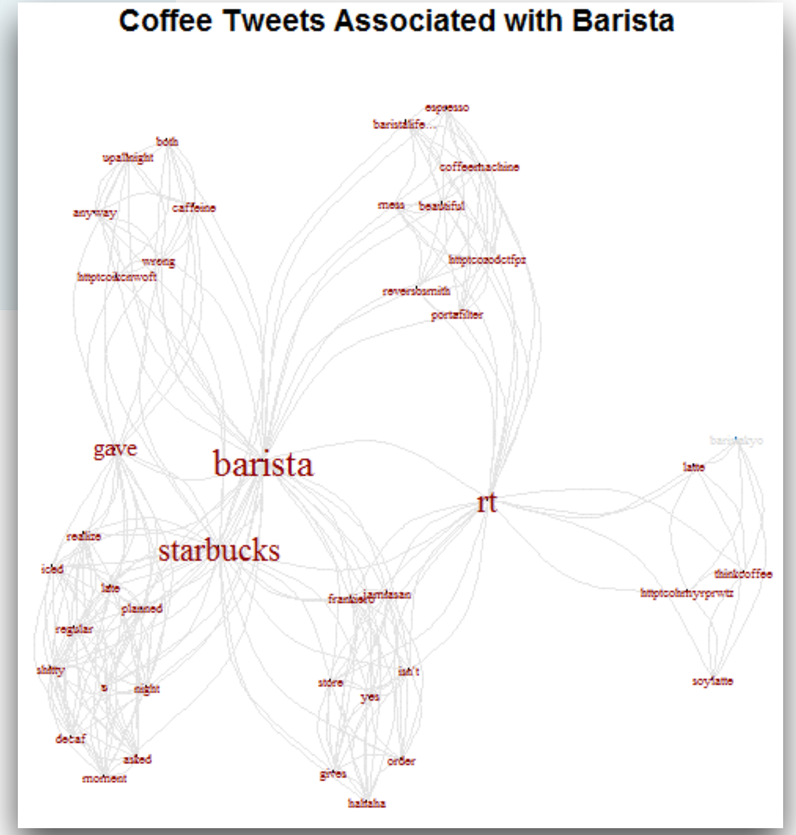
```
> # Make pyramid plot
> pyramid.plot(top25_df$x, top25_df$y,
               labels = top25_df$labels,
               main = "Words in Common",
               gap = 8, laxly = NULL,
               raxlab = NULL, unit = NULL,
               top.labels = c("Chardonnay",
                              "Words",
                              "Coffee"))
```



Word networks

```
# Create word network
> word_associate(coffee_tweets$text, match.string = c("barista"),
                 stopwords = c(Top200Words, "coffee", "amp"),
                 network.plot = TRUE,
                 cloud.colors = c("gray85", "darkred"))

# Add title
title(main = "Barista Coffee Tweet Associations")
```



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