



SENTIMENT ANALYSIS IN R

Let's talk about our feelings

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Definition: Sentiment Analysis

Sentiment analysis is *the process of extracting an author's emotional intent from text*



Why is sentiment analysis important?



Data Formats in this Course

Bag of Words DTM & TDM



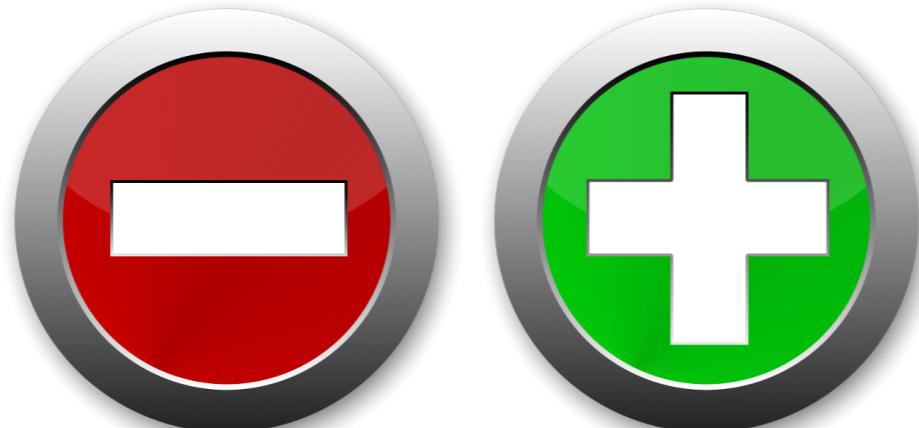
Docs	<u>yeah</u>	yeahah	yeahand	yeahgod	yeahhh	yeahho	yeahlong
1	8	0	0	0	0	0	0
2	1	0	0	0	0	0	0

Tidy Tribble...errr..Tibble



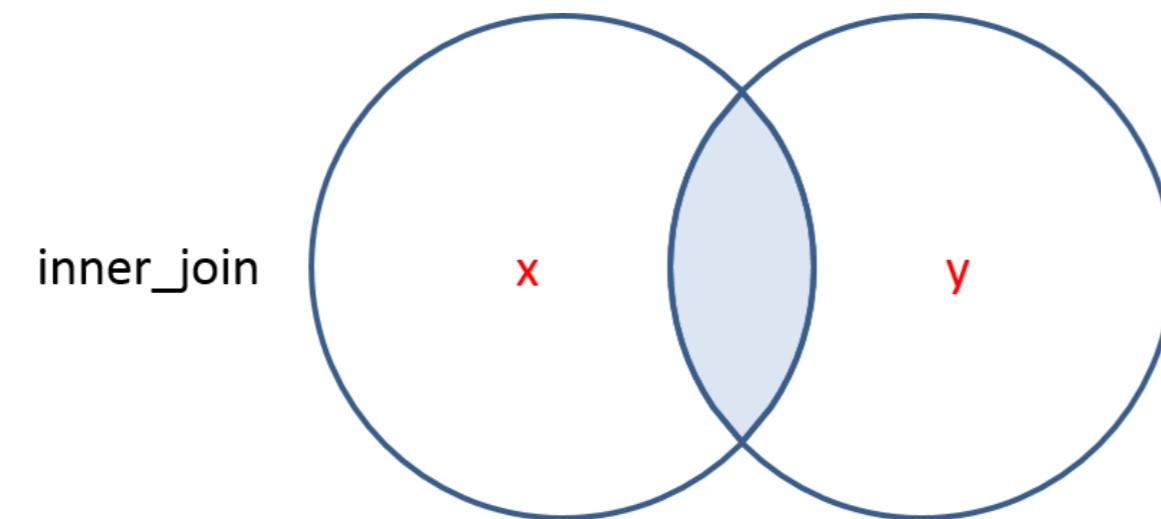
Chapter 1: qdap's Polarity Function

```
> library(qdap)  
  
> polarity(text$column)  
  
> polarity(text$column, text$factor_or_author_grouping)
```



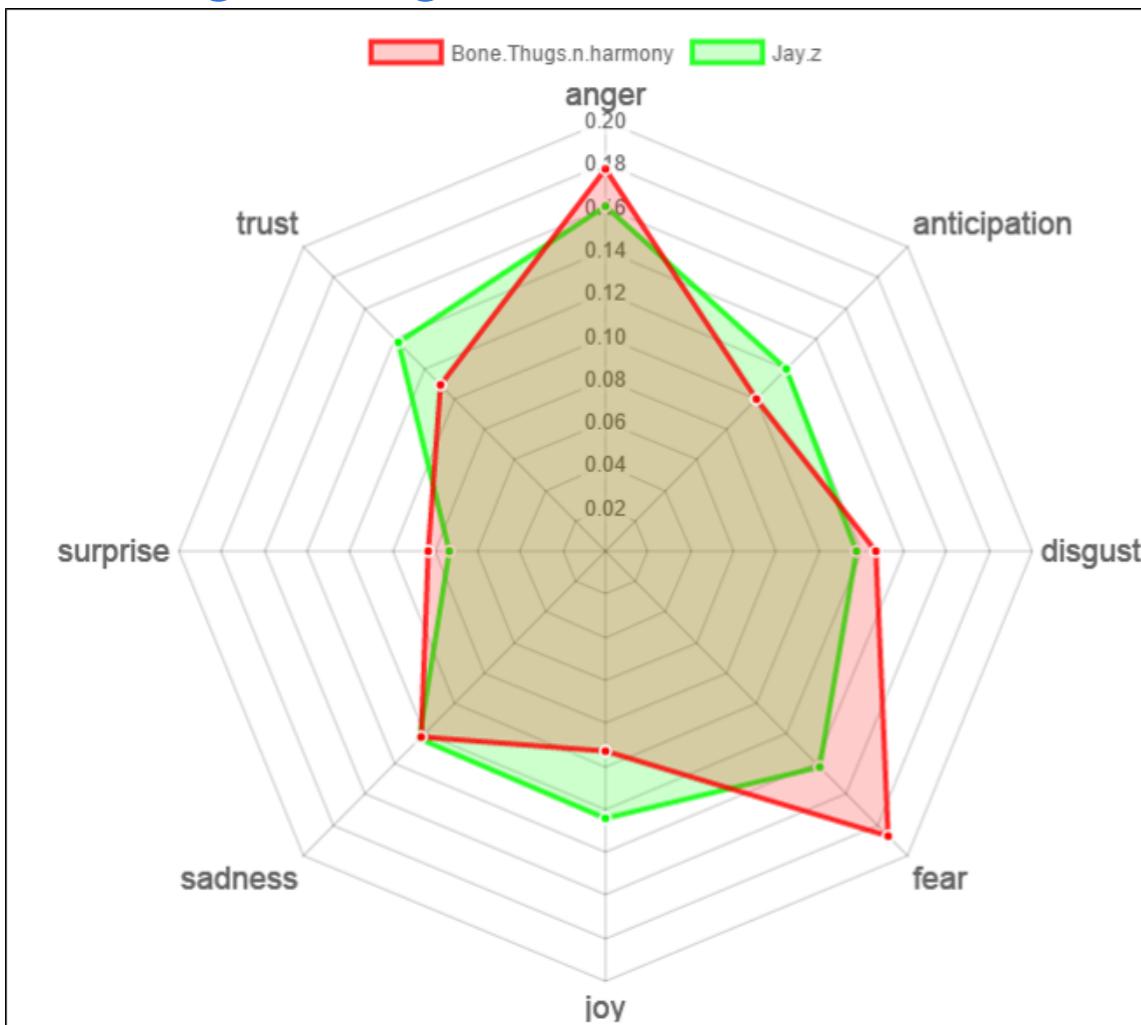
Chapter 2: tidytext inner joins

```
> library(tidytext)  
> inner_join(sentiment_words, some_text_to_be_analyzed)
```

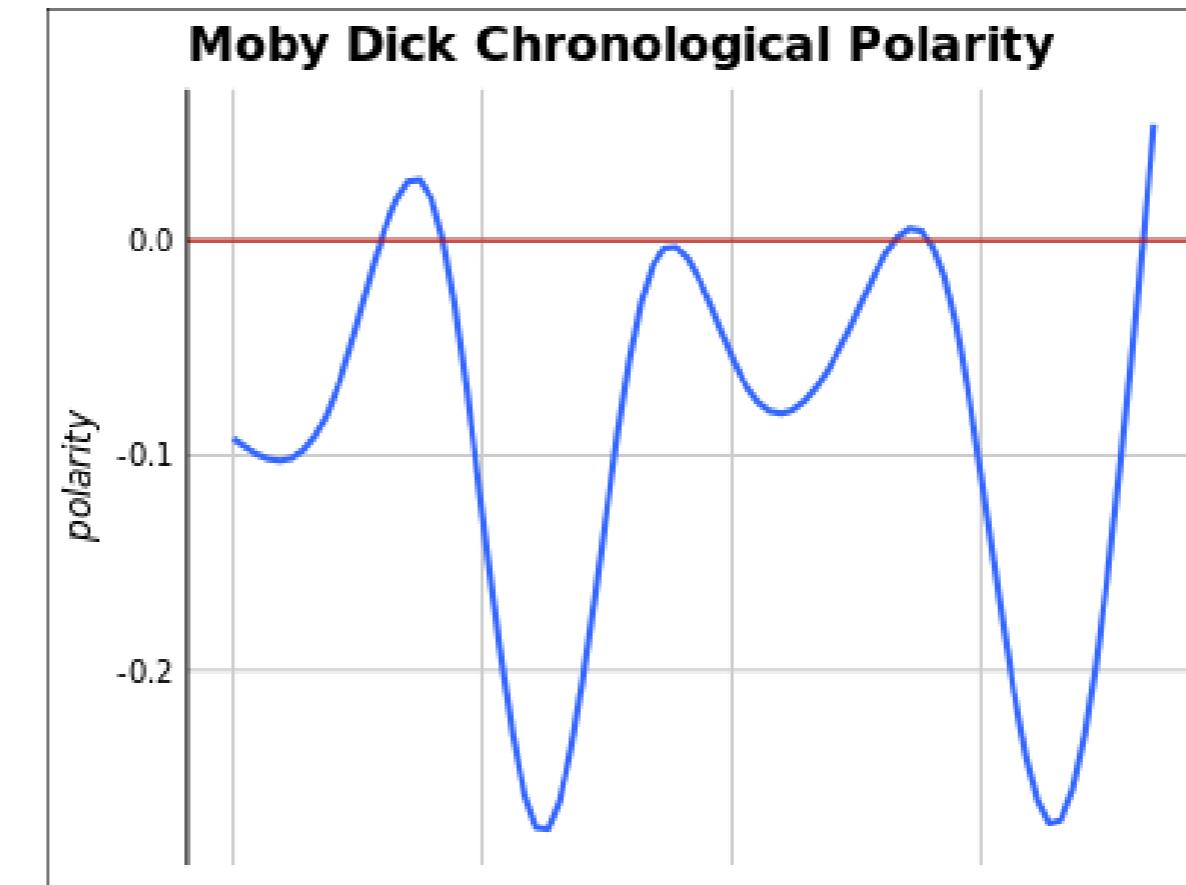


Chapter 3: Visualizing Sentiment

htmlwidgets.org radar chart



ggplot2 line chart



Chapter 4: Case Study on Property Rentals

The screenshot shows the Airbnb search interface for Boston, MA, United States. The map on the left displays various rental locations with red pins. The main search results on the right show four different listings:

- (6) Guest House Harvard & MIT**
Private room · 17 reviews · Cambridge
\$85
- Back Bay 1BR Apt / Heart of Boston!**
Entire home/apt · 26 reviews · Back Bay, Boston
\$239
- Comfy private queen bed in Brighton**
Private room · 32 reviews · Allston-Brighton, Brighton
\$83
- large 2 bdrm South End by Copley Sq**
Entire home/apt · 3 reviews · South End, Boston
\$275



SENTIMENT ANALYSIS IN R

Let's practice!



SENTIMENT ANALYSIS IN R

**How many words do YOU
know? Subjectivity
lexicons, Zipf's Law & Least
Effort**

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Subjectivity Lexicon

```
> library(qdap)
> library(magrittr)

> text_df %$% polarity(text)
```

Returns a "polarity" object with positive and negative scores.

A **subjectivity lexicon** is a predefined list of words associated with emotional context such as positive/negative, or specific emotions like "frustration" or "joy"

Where to get subjectivity lexicons?

- qdap's `polarity()` function uses a lexicon from `hash_sentiment_hui`
- tidytext has a `sentiments` tibble with
 - **NRC** - Words according to 8 emotions like "angry" or "joy" and Pos/Neg
 - **Bing** - Words labeled positive or negative
 - **AFINN** - Words scored from -5 to 5

```
library(lexicon)
```

Name	Description
dodds_sentiment	Mechanical Turk Sentiment Words
hash_emoticons	Translations of basic punctuation emoticons :)
hash_sentiment_huliu	U of IL @CHI Polarity (+/-) word research
hash_sentiment_jockers	A lexicon inherited from library(syuzhet)
hash_sentiment_nrc	5468 words crowdsourced scoring between -1 & 1

No way! Too few words.



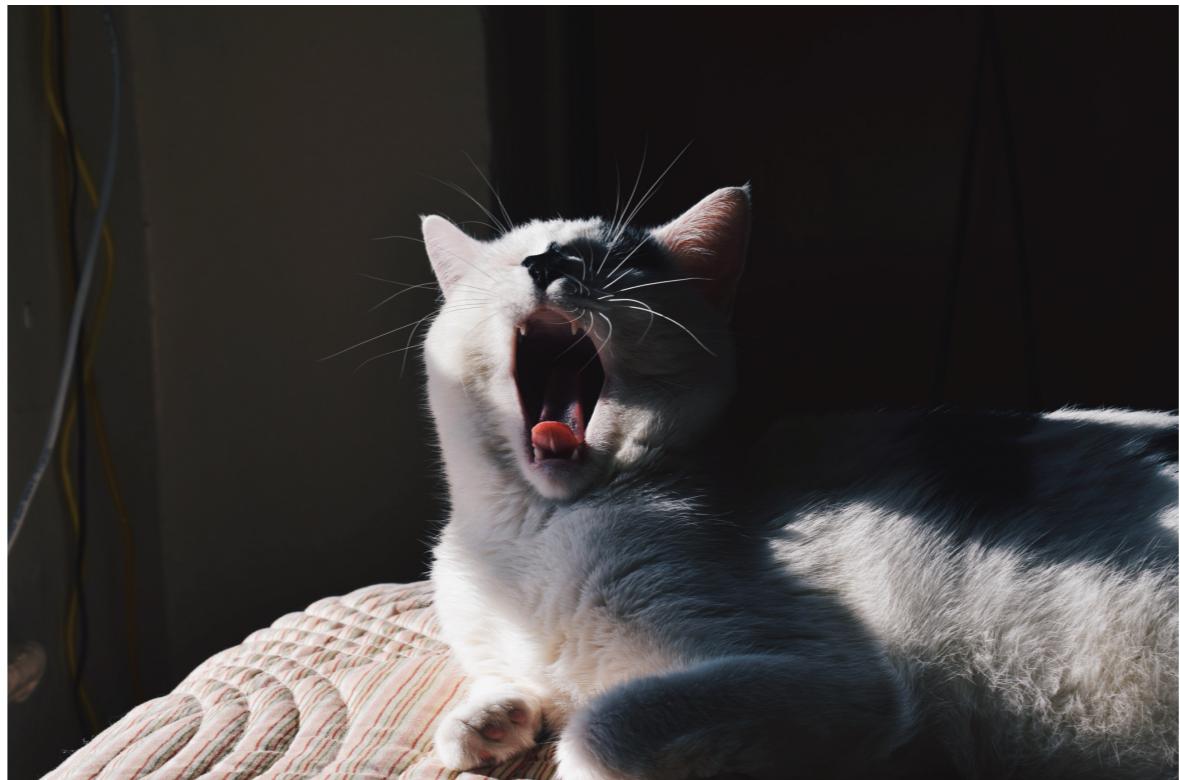
- Zipf's Law
- Principle of Least Effort

Zipf's Law in Action

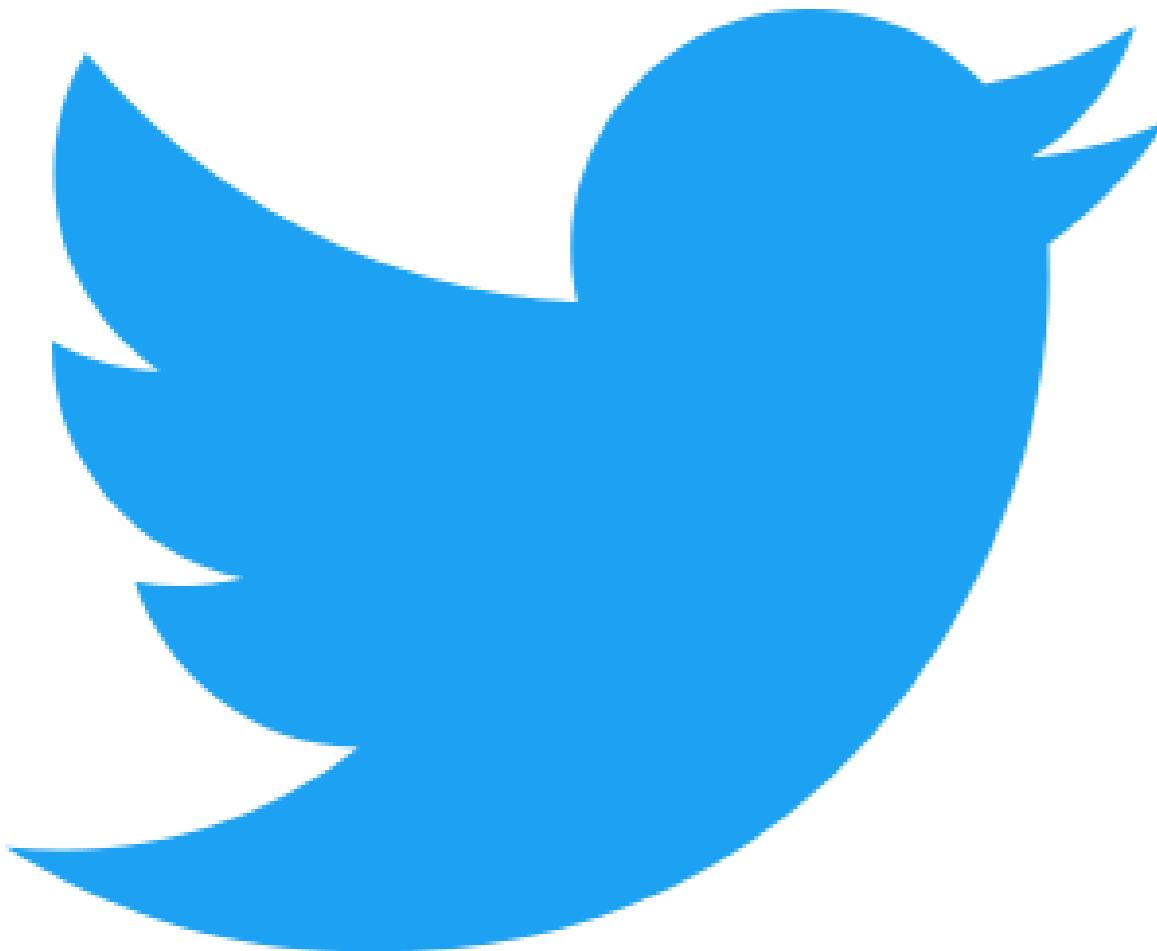
Rank	City	2010 Census Population	Actual %	Zipf's Expected %
1	New York	8,175,133	100%	...
2	LA	3,792,621	46%	50%
3	Chicago	2,695,598	33%	33%
4	Houston	2,100,263	26%	25%
5	Philadelphia	1,526,006	19%	20%

Principle of Least Effort

If there are several ways of achieving the same goal, people will choose the least demanding course of action



Up Next...





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Let's practice!



SENTIMENT ANALYSIS IN R

Explore qdap's polarity & built-in lexicon

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polarity()

An example subjectivity lexicon

Word	Polarity
Amazing	Positive
Bad	Negative
Good	Positive
...	...
Wonderful	Positive

Context Cluster

Example Context Cluster

The DataCamp sentiment course is very GOOD for learning.

Context Cluster, continued

Example Context Cluster

The DataCamp sentiment course is very GOOD for learning.

Term	Class	Word Count
Very	Amplifier	1
Good	Polarized Term/Positive	1
All other words	Neutral	7

Context Cluster Glossary

- **Polarized Term** - words associated with positive/negative
- **Neutral Term** - no emotional context
- **Negator** - words that invert polarized meaning e.g. "not good"
- **Valence Shifters** - words that effect the emotional context
 - **Amplifiers** - words that increase emotional intent
 - **De-Amplifiers** - words that decrease emotional intent

Context Cluster Scoring

Term	Class	Word Count	Polarity Value
Very	Amplifier	1	0.8
Good	Polarized Term/Positive	1	1
All other words	Neutral	7	0

Example Context Cluster

The DataCamp sentiment course is very GOOD for learning.

Polarity Calculation

Class	Word Count	Polarity Value
Amplifier	1	0.8
Polarized Term/Positive	1	1
Neutral	7	0
Sum	9	1.8

Example Context Cluster

The DataCamp sentiment course is very GOOD for learning.

$$1. 1 + 0.8 = 1.8$$

$$2. 1+1+7 = 9$$

$$3. \frac{1.8}{\sqrt{9}}$$

Answer: 0.6



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Let's practice!