# INTRODUCTION TO TEXT ANALYSIS IN R

April 18, 2019

Kaylee Alexander

askdata@duke.edu

# GOALS

- Introduce the Tidy Text format and package for analyzing texts in R
- Explore three (3) methods for importing text
  - Manual entry
  - Using the gutenbergr package
  - Importing .csv files
- Demonstrate and practice basic methods of text analysis in R
  - Basic text preparation
  - Word frequencies
  - Basic sentiment analysis

# TIDY TEXT

What is tidy data?

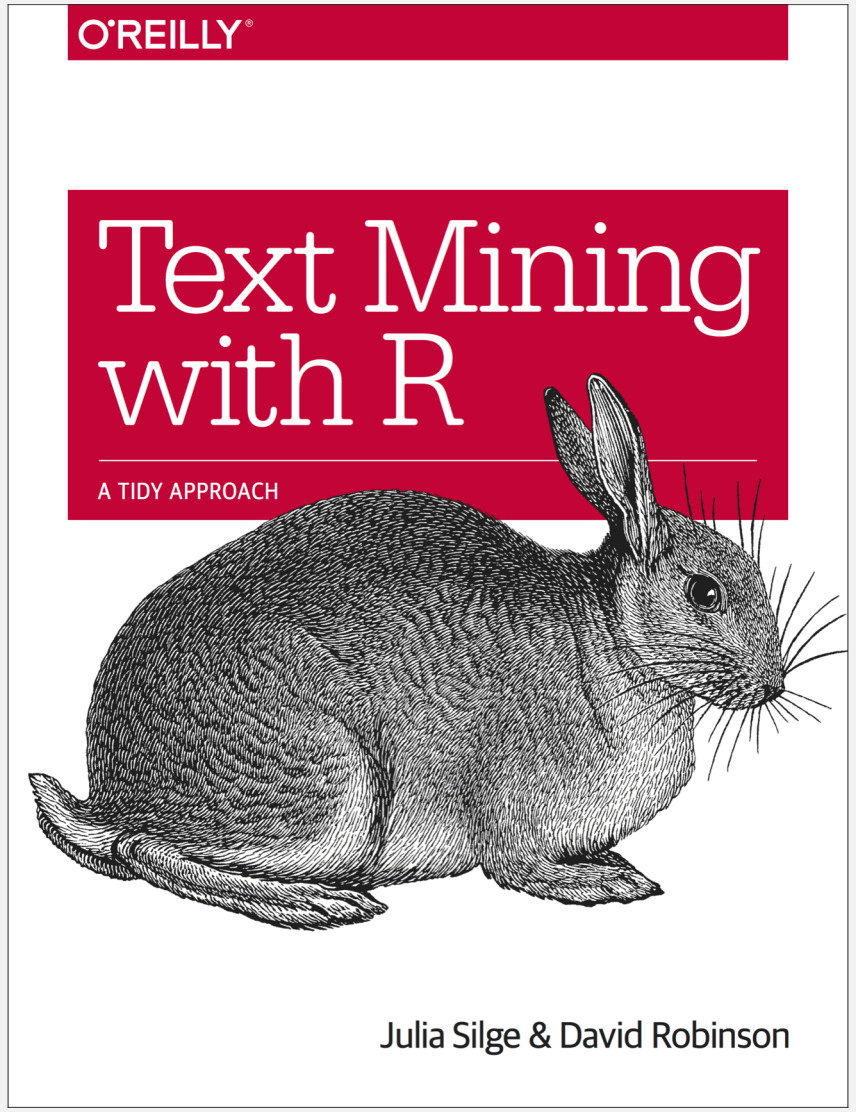
- Each variable is a column
- Each observation is a row
- Each type of observational unit is a table

(Hadley Wickham, 2014)

What is tidy text format?

- A table with one-token-per-row

(Julia Silge & David Robinson, 2019)




https://www.tidytextmining.com/

# TIDY TEXT

What is tidy data?

- Each variable is a column
- Each observation is a row
- Each type of observational unit is a table

(Hadley Wickham, 2014)

What is tidy text format?

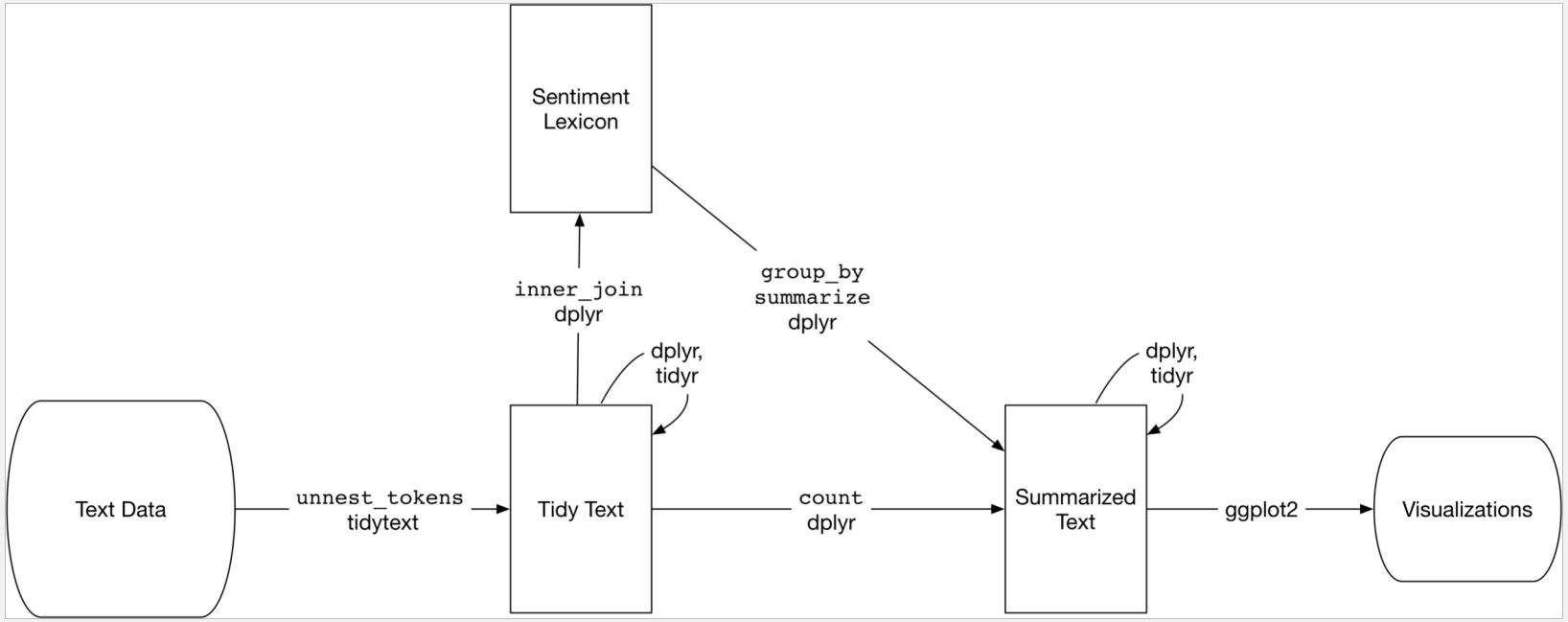
- A table with one-token-per-row

(Julia Silge & David Robinson, 2019)

"A **token** is a meaningful unit of text, such as a word, that we are interested in using for analysis, and tokenization is the process of splitting text into tokens. This one-token-per-row structure is in contrast to the ways text is often stored in current analyses, perhaps as strings or in a document-term matrix. For tidy text mining, the **token** that is stored in each row is most often a single word, but can also be an n-gram, sentence, or paragraph. In the tidytext package, we provide functionality to tokenize by commonly used units of text like these and convert to a one-term-per-row format."

https://www.tidytextmining.com/

# SENTIMENT ANALYSIS




(Julia Silge & David Robinson, 2019)

# ASSUMPTIONS FOR TODAY

- Focusing on the Tidy Text approach to text analysis in R
- Working with single words as tokens
- While we will be removing stop words (i.e. and, the, a, an, etc.), we will not be concerned word stems (roots), or adjusting for pluralization or verb tense

# PACKAGES TO BE USED

- **tidytext** for text tokenization, accessing stopwords and sentiment lexicons
- **dplyr** for data manipulation
- **gutenbergr** for accessing texts via Project Gutenberg
- **ggplot2 / ggthemes** for data visualization
- **stringr** for recognizing patterns using regular expressions
- **tidyr** for creating tidy data

# SYNTAX REMINDERS

- R uses **<-** to assign values to variables
- R uses **==** to represent equality of values
- R uses **%>%** to represent a pipe that moves the output of one operation to another operation.

# ADDITIONAL RESOURCES

- Basic Text Processing in R (Taylor Arnold & Lauren Tilton): https://programminghistorian.org/en/lessons/basic-text-processing-in-r

- Stop word lists in languages other than English:
  - Example: https://rdrr.io/cran/lsa/man/stopwords.html (German, Dutch, French, Polish & Arabic)