Homework 2C - DATA-312

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Abstract

This writeup explores the

ANALYSIS OF SENTIMENT IN DICKENS - USING THE BING LEXICON

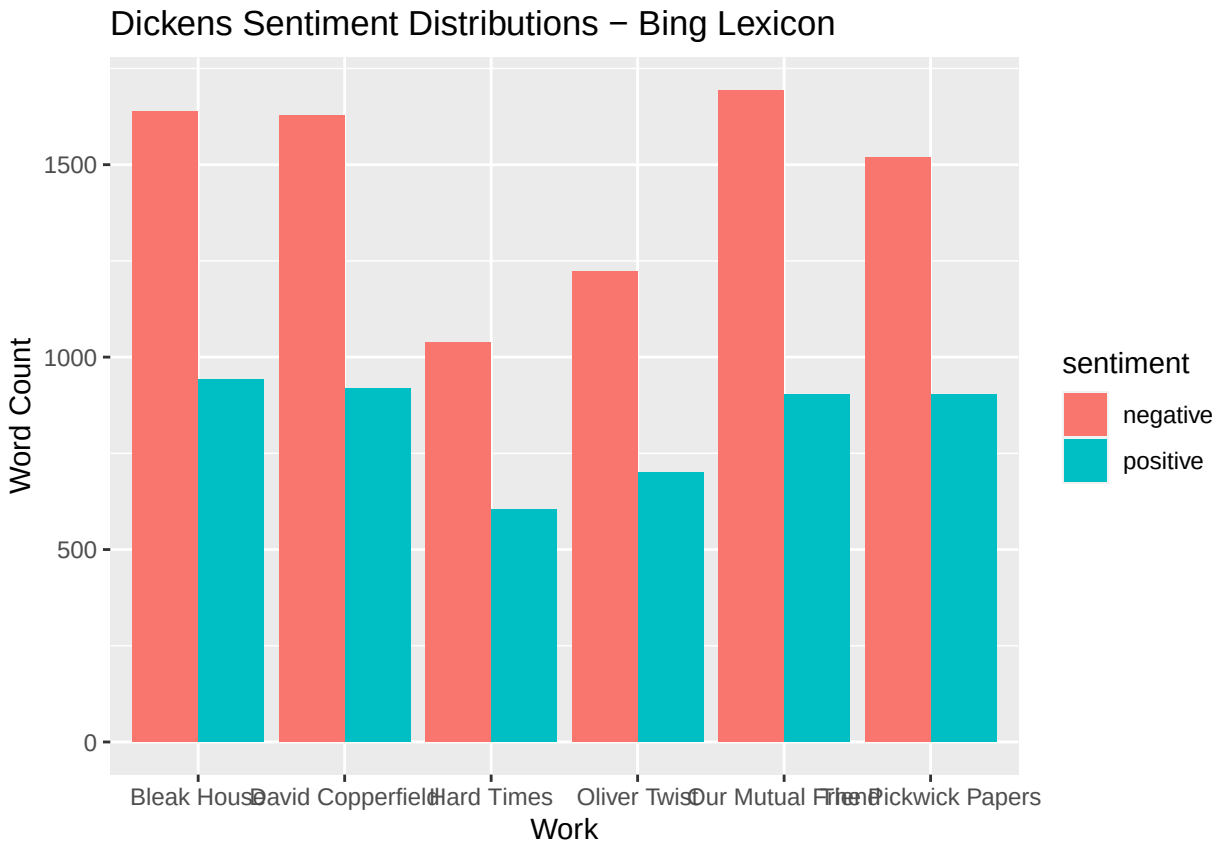
The Bing lexicon consists of 6786 words, sorted into two categories, negative and positive, based on their perceived connotations. Such a lexicon was applied to the dataframe of the select works of Dickens in an effort to begin to understand the balance of sentiment (or lack thereof) thematic in his work, both in terms of individual works and, if possible all of them. Is Dickens prone to writing generally negative works?

Bearing in mind the nature of Dickens as a serial novelist, which explains the similarities in proportion for most of the works evaluated, it is obvious that there is a signifant overbearing of negative sentiment over positive. For each individual work, the count of words aligning with a negative sentiment per the Bing lexicon are significantly higher than words that are classified as negative.

```
tidy_dickens <- tidy_dickens %>% inner_join(bing_sentiments) %>% group_by(Name)
```

```
## Joining, by = "word"
```

```
tidy_dickens %>%
  count(sentiment) %>% ggplot(aes(Name, n, fill=sentiment)) +
  geom_col(position='dodge')  +
  labs(title="Dickens Sentiment Distributions - Bing Lexicon",
       x = "Work",
       y = "Word Count")
```



It is strongly implied here the conclusion that sad themes are recurrent in the work of Dickens. However, this assertion could be even more strongly substantiated by a chi-square test.

```
##
##  Pearson's Chi-squared test
##
## data:  ct
## X-squared = 4.0559, df = 5, p-value = 0.5414
```

```
##                     negative positive
## Bleak House             1637      941
## David Copperfield       1628      919
## Hard Times              1038      605
## Oliver Twist            1223      701
## Our Mutual Friend       1694      902
## The Pickwick Papers     1518      903
```

```
##                     negative positive
## Bleak House         1643.195 934.8047
## David Copperfield   1623.436 923.5639
## Hard Times          1047.234 595.7658
## Oliver Twist        1226.341 697.6588
## Our Mutual Friend   1654.668 941.3317
## The Pickwick Papers 1543.125 877.8752
```

```
##                       negative   positive
## Bleak House         -0.2816649  0.2816649
## David Copperfield    0.2084625 -0.2084625
```

```
## Hard Times          -0.5051040  0.5051040
## Oliver Twist        -0.1708915  0.1708915
## Our Mutual Friend    1.7834267 -1.7834267
## The Pickwick Papers -1.1705167  1.1705167
```

The Chi-Squared test identifies a p-value of 0.541393, meaning that there is no level of significance here from a more numerical standpoint. With this lack of significance in mind, it can be concluded, therefore, that it is a typicality in Dickens to write generally negative pieces. What a sad individual he was!

ANALYSIS OF SENTIMENT IN DICKENS - USING THE AFINN LEXICON

Similarly to the Bing lexicon, the AFINN lexicon is used to evaluate the sentiment of a variety of words. In this case, the AFINN lexicon includes 2477 words from the English language. The key difference though is that rather than sorting individual words into different categories, AFINN instead assigns each included word an integer between -5 (most negative) and 5 (most positive). This is helpful in allowing us to understand the weight of a word's sentiment. In other words, in addition to showing that a word is negative or positive, it also helps us understand how negative or how positive a word is.

Here, we apply the AFINN lexicon to our dataframe consisting of all words from the selected work of Dickens, to better conceptualize the weight of the sentiment, in supplement to the overall sentiment implied in the previous analysis.

```
## # A tibble: 6 x 2
##   Name                value
##   <chr>               <dbl>
## 1 Bleak House        -0.362
## 2 David Copperfield  -0.420
## 3 Hard Times         -0.355
## 4 Oliver Twist       -0.434
## 5 Our Mutual Friend  -0.451
## 6 The Pickwick Papers -0.395
```

It can be seen here that denser populations of words with negative connotations are present, particularly around -2. It can be seen that "Oliver Twist" and "Our Mutual Friend" both seem to contain exceptionally negative words with a sentiment of -5, the maximum negative value, whereas the latter works do not contain such words. "Hard Times" and "The Pickwick Papers" are the only works that evidently contain no words that equate to the maximum positive sentiment of 5, which is accomplished by the latter works. Generally, positive words have a sentiment around 2.

To give numerial insight, we once again conduct a Chi-Squared test to allow for better comprehension of the above graph.

```
##
##  Pearson's Chi-squared test
##
## data:  new_ct
## X-squared = 1.07, df = 5, p-value = 0.9567
```

```
##                     negative positive
## Bleak House              501      319
## David Copperfield        511      312
## Hard Times               359      233
## Oliver Twist             425      260
## Our Mutual Friend        519      305
## The Pickwick Papers      486      304
```

```
##                     negative positive
## Bleak House         506.5770 313.4230
## David Copperfield   508.4303 314.5697
```

```
## Hard Times          365.7239 226.2761
## Oliver Twist        423.1771 261.8229
## Our Mutual Friend   509.0481 314.9519
## The Pickwick Papers 488.0437 301.9563
```

```
##                       negative   positive
## Bleak House         -0.4428301  0.4428301
## David Copperfield    0.2037524 -0.2037524
## Hard Times          -0.6099106  0.6099106
## Oliver Twist         0.1555638 -0.1555638
## Our Mutual Friend    0.7887197 -0.7887197
## The Pickwick Papers -0.1646629  0.1646629
```