1) Plotting the Classics

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December 2019

Reference

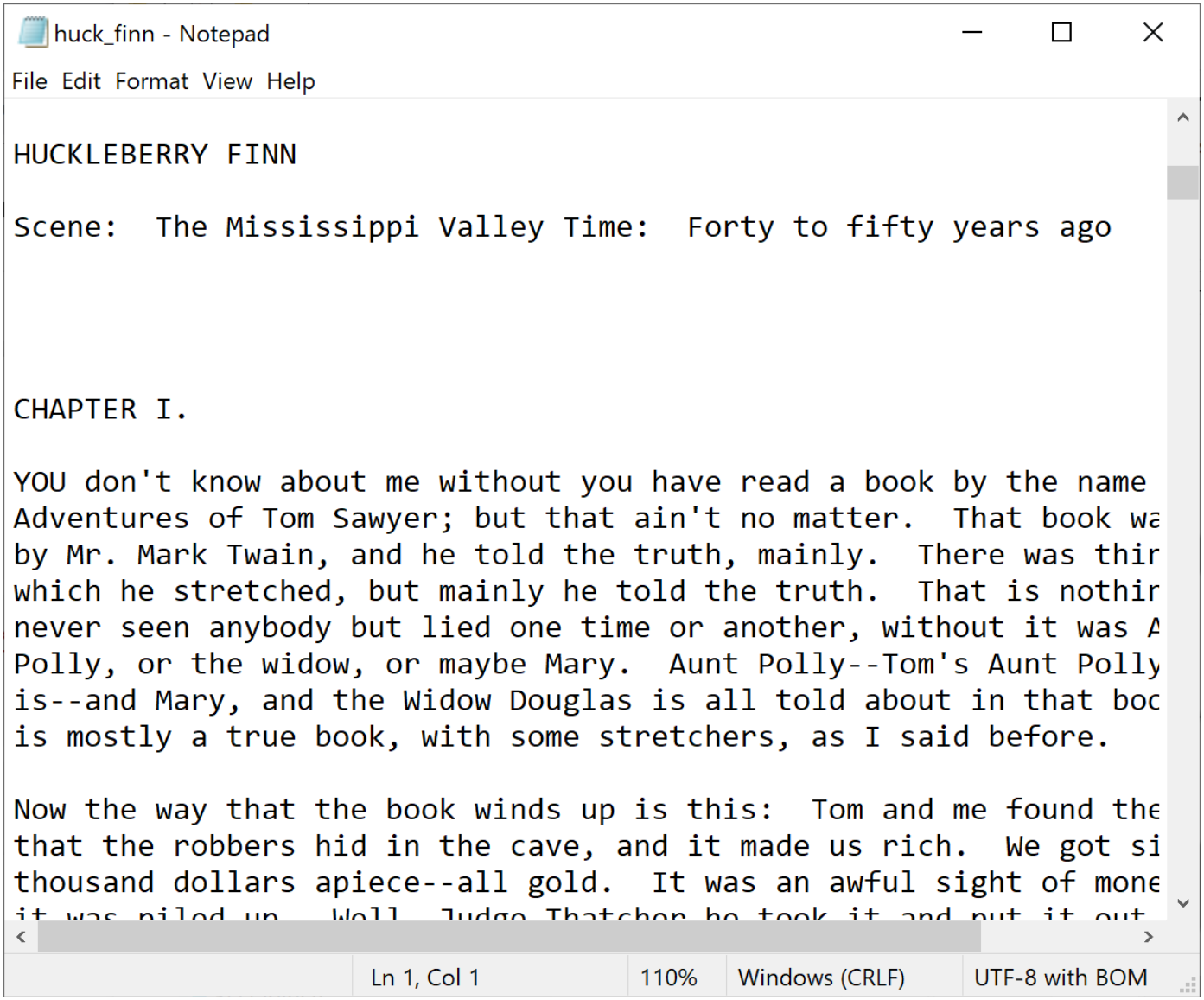
Tables, Graphics, and Figures from

Computational and Inferential Thinking: The Foundations of Data Science

Adhikari & DeNero (2019): Ch 1. Data Science

https://www.inferentialthinking.com/chapters/01/what-is-data-science.html

The Adventures of Huckleberry Finn by Mark Twain



Load the Book

```
from urllib.request import urlopen
import re
def read_url(url):
    return re.sub('\\s+', ' ', urlopen(url).read().decode())
```

```
huck_finn_url = 'https://www.inferentialthinking.com/data/huck_finn.txt'
huck_finn_text = read_url(huck_finn_url)
huck_finn_chapters = huck_finn_text.split('CHAPTER ')[44:]
```

Jim: central character

Huck: narrator

Tom: joins Huck and Jim after Chapter 30

Display the Chapters of Huckleberry Finn in a Table

```
from datascience import *
```

```
Table().with_column('Chapters', huck_finn_chapters)
```

Chapters
I. YOU don't know about me without you have read a book ...
II. WE went tiptoeing along a path amongst the trees bac ...
III. WELL, I got a good going-over in the morning from o ...
IV. WELL, three or four months run along, and it was wel ...
V. I had shut the door to. Then I turned around and ther ...

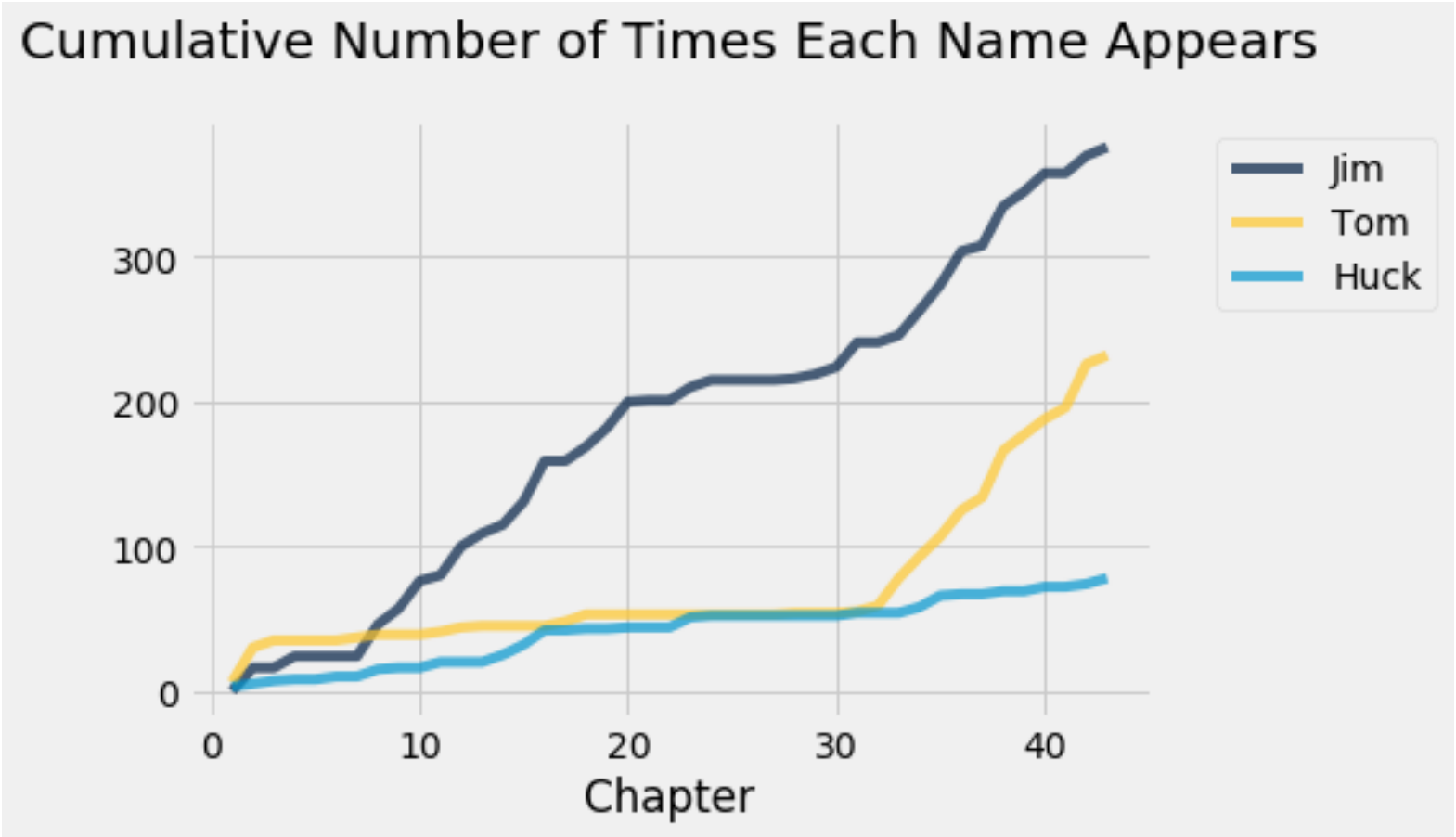
Counts in each Chapter

```
import numpy as np

import matplotlib
matplotlib.use('Agg', warn=False)
%matplotlib inline

import matplotlib.pyplot as plots
plots.style.use('fivethirtyeight')
import warnings
warnings.simplefilter(action="ignore",
                      category=FutureWarning)
```

```
counts = Table().with_columns([
        'Jim', np.char.count(huck_finn_chapters, 'Jim'),
        'Tom', np.char.count(huck_finn_chapters, 'Tom'),
        'Huck', np.char.count(huck_finn_chapters, 'Huck')
    ])
```

Cumulative Counts over Chapters

```
cum_counts = counts.cumsum().with_column('Chapter', np.arange(1, 44, 1))
cum_counts.plot(column_for_xticks=3)
plots.title('Cumulative Number of Times Each Name Appears', y=1.08);
```



Little Women by Louisa May Alcott

```
path_data = 'https://www.inferentialthinking.com/data/'
little_women_url = path_data + 'little_women.txt'
little_women_text = read_url(little_women_url)
little_women_chapters = little_women_text.split('CHAPTER ')[1:]
```

```
Table().with_column('Chapters', little_women_chapters)
```

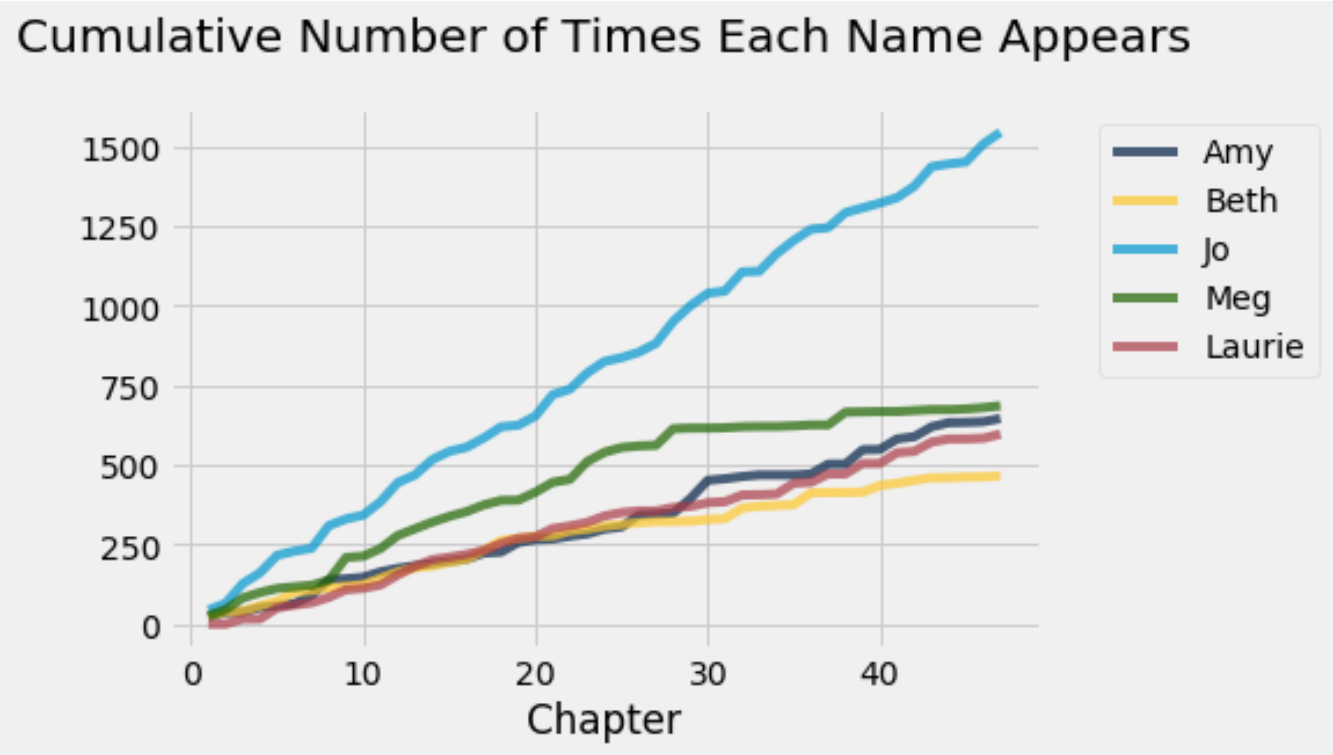
Chapters
ONE PLAYING PILGRIMS "Christmas won't be Christmas witho ...
TWO A MERRY CHRISTMAS Jo was the first to wake in the gr ...
THREE THE LAURENCE BOY "Jo! Jo! Where are you?" cried Me ...
FOUR BURDENS "Oh, dear, how hard it does seem to take up ...
FIVE BEING NEIGHBORLY "What in the world are you going t ...

Counts of Names and Cumulative Counts

```
counts = Table().with_columns([
        'Amy', np.char.count(little_women_chapters, 'Amy'),
        'Beth', np.char.count(little_women_chapters, 'Beth'),
        'Jo', np.char.count(little_women_chapters, 'Jo'),
        'Meg', np.char.count(little_women_chapters, 'Meg'),
        'Laurie', np.char.count(little_women_chapters, 'Laurie'),
    ])
```

```
cum_counts = counts.cumsum().with_column('Chapter', np.arange(1, 48,
cum_counts.plot(column_for_xticks=5)
plots.title('Cumulative Number of Times Each Name Appears', y=1.08);
```

Jo: protagonist



Meg, Beth, and Amy: Jo's sisters

Chapter 27: Jo moves to New York alone

Laurie: young man who marries one of the girls in the end

Count the Characters and Periods

```
chars_periods_little_women = Table().with_columns([
        'Little Women Chapter Length', [len(s) for s in little_women_chap
        'Number of Periods', np.char.count(little_women_chapters, '.')
    ])
chars_periods_little_women
```

Little Women Chapter Length	Number of Periods
21759	189
22148	188
20558	231
25526	195
23395	255

Count the Characters and Periods

```
chars_periods_huck_finn = Table().with_columns([
        'Huck Finn Chapter Length', [len(s) for s in huck_finn_chapters],
        'Number of Periods', np.char.count(huck_finn_chapters, '.')
    ])
chars_periods_huck_finn
```

Huck Finn Chapter Length	Number of Periods
7026	66
11982	117
8529	72
6799	84
8166	91

100 to 150: Characters per Period

```
plots.figure(figsize=(6, 6))
plots.scatter(chars_periods_huck_finn.column(1),
              chars_periods_huck_finn.column(0),
              color='darkblue')
plots.scatter(chars_periods_little_women.column(1),
              chars_periods_little_women.column(0),
              color='gold')
plots.xlabel('Number of periods in chapter')
plots.ylabel('Number of characters in chapter');
```

Twitter (140-character limit)