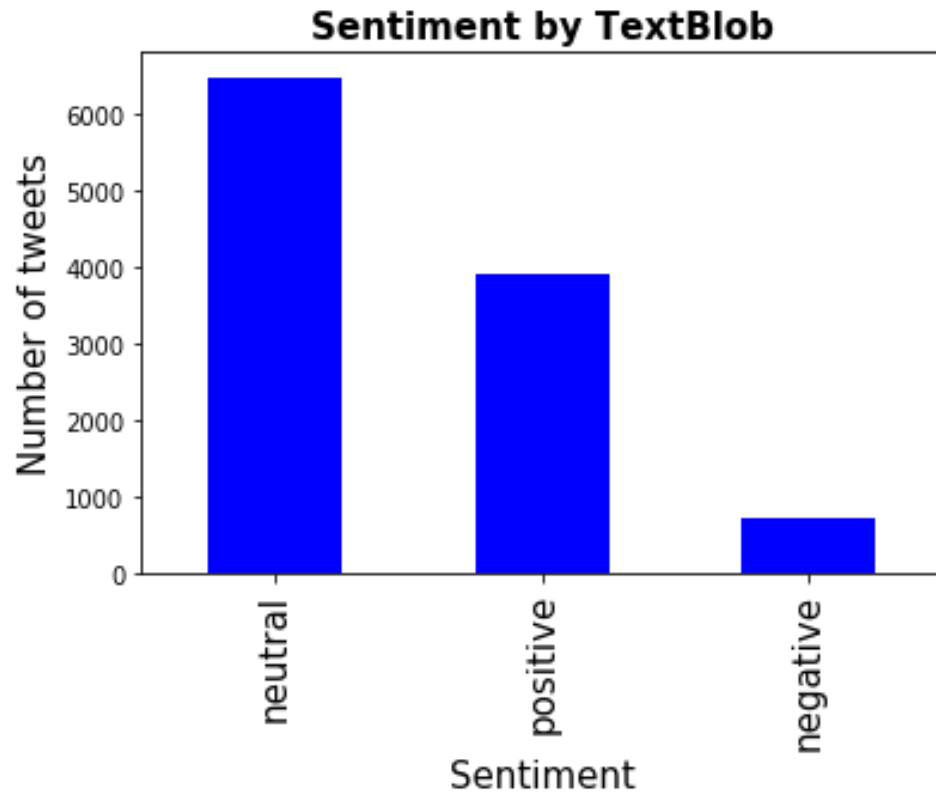


The after-Life of Stan Lee

Sentiment analysis -machine made-TextBlob

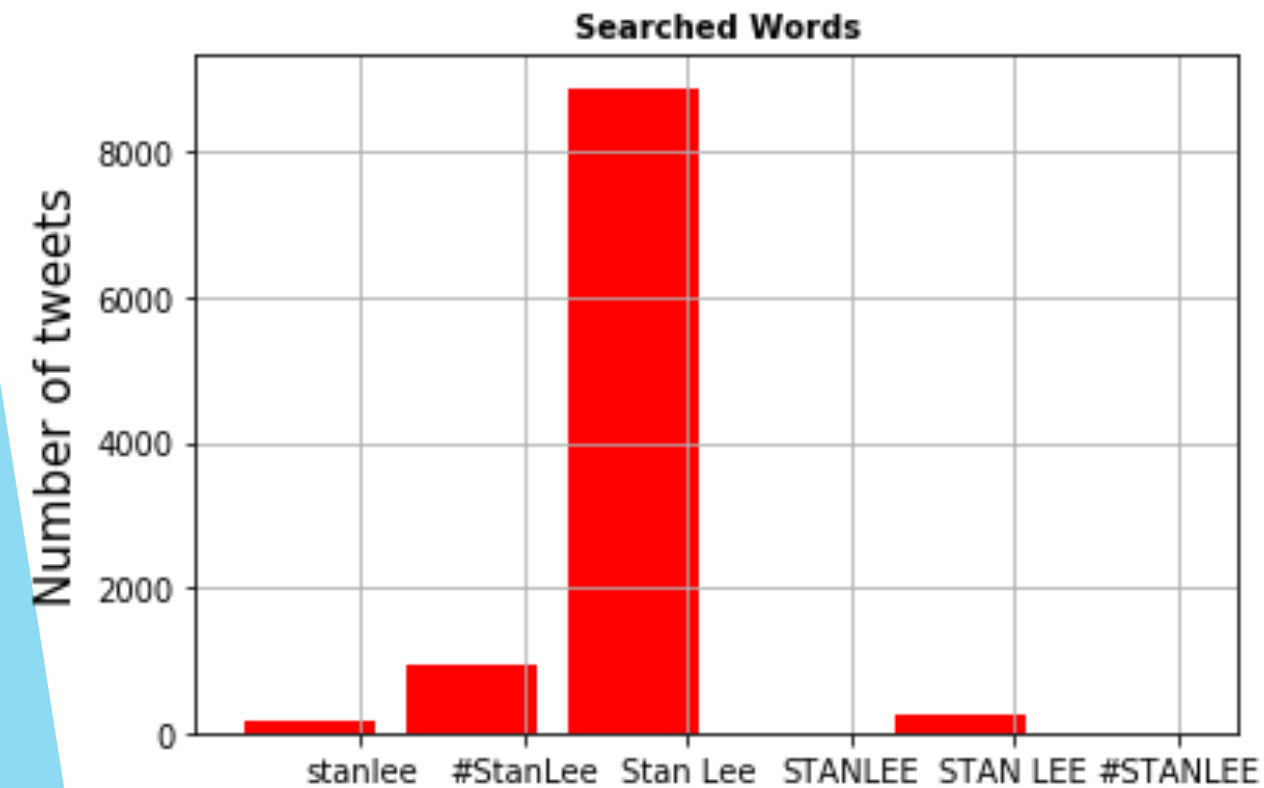


- ▶ Neutral: 6482
- ▶ Positive: 3896
- ▶ Negative: 726
- ▶ Total: 11,104

Good data is clean data

- ▶ Working with tweets in English
 - ▶ Removed punctuation, numbers, stopwords, special characters
 - ▶ Converted to lowercase
 - ▶ Converted sentiment analysis to dummies, used “Positive” only
 - ▶ MultinomialNB matrix accuracy score: **0.63**
 - ▶ Gaussian NB matrix accuracy score: **0.36**
- ▶ Working with tweets in English
 - ▶ Removed punctuation, numbers, stopwords, special characters
 - ▶ Converted to lowercase
 - ▶ Used the original Sentiment data
 - ▶ Removed top 30 most frequent words
 - ▶ Removed 2000 least frequent words
 - ▶ Removed all resulting blank rows
 - ▶ MultinomialNB matrix accuracy score: **0.83**
 - ▶ Gaussian NB matrix accuracy score: **0.83**

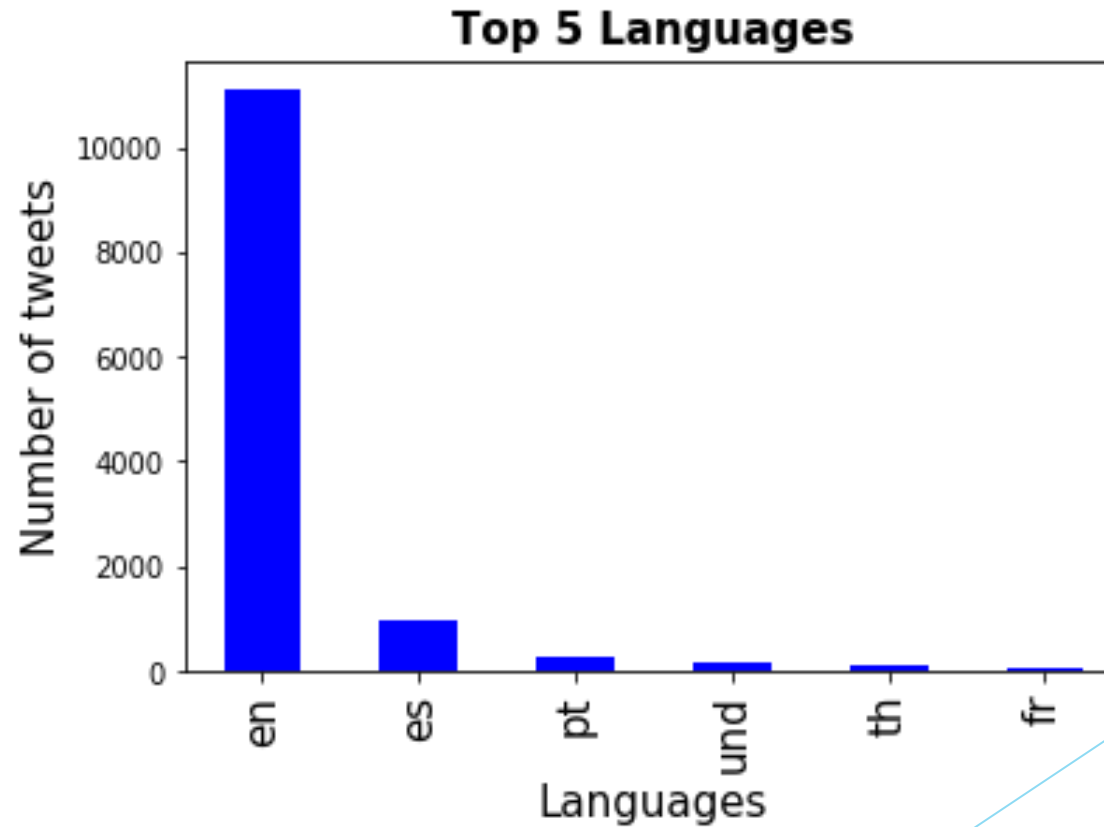
Gathering Data



- ▶ Tweets collected: 13028
- ▶ 'stanlee': 163
- ▶ '#StanLee': 929
- ▶ 'Stan Lee': 8890
- ▶ 'STANLEE': 3
- ▶ 'STAN LEE': 249
- ▶ '#STANLEE': 2

Top 5 Languages

- ▶ English: 11104
- ▶ Spanish: 947
- ▶ Portuguese: 266
- ▶ no language detected: 163
- ▶ Thailand: 84
- ▶ French: 83



Marvel Character Analysis

- ▶ Which characters are the most mentioned from
 - ▶ "Stan Lee" topic tweets
 - ▶ 258 out of 13028 tweets have the marvel characters
 - ▶ Display the number of tweets based on the characters
 - ▶ Display the characters based on languages
 - ▶ "Marvel Character" topic tweets
 - ▶ Total 1399 tweets
 - ▶ Graphs the bag of words based on n-grams(onegram/bigram/fourgram)
- ▶ How many times Stan Lee mentioned from the marvel character topic tweets

Marvel Character Analysis - Stan Lee

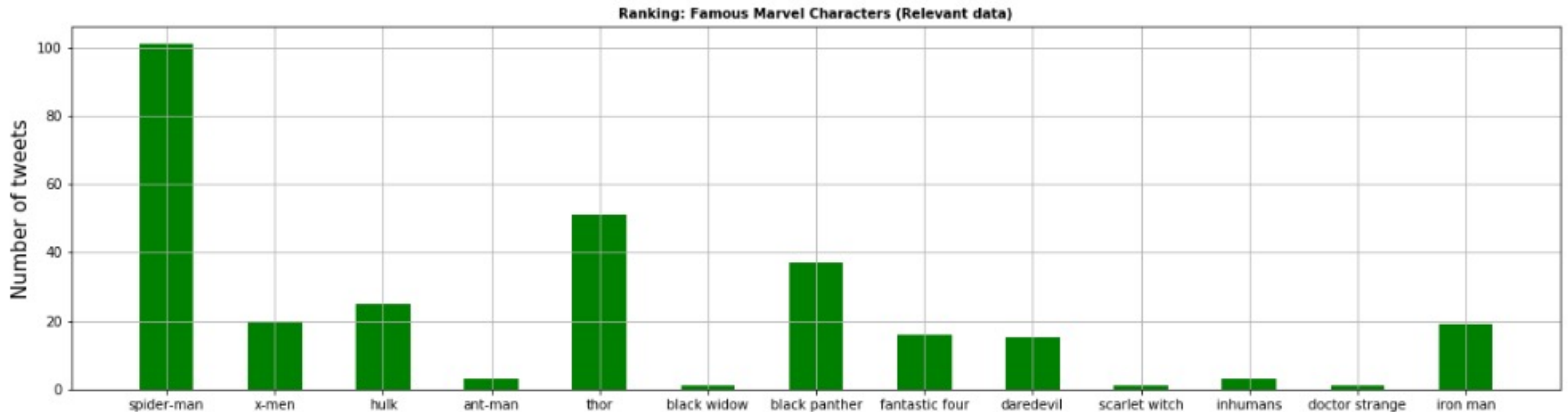
- ▶ The dataframe has all characters columns

[illegible]

Marvel Character Analysis - Stan Lee

► Stan Lee" topic tweets

spider-man: 101, x-men:20, hulk:25, ant-man:3,
thor:51, black widow:1, black panther:37, fantastic four:16,
daredevil:15, scarlet witch:1, injumans:3, doctor strange:1, iron man :19
There is no 'nick fury' and 'hawkeye'



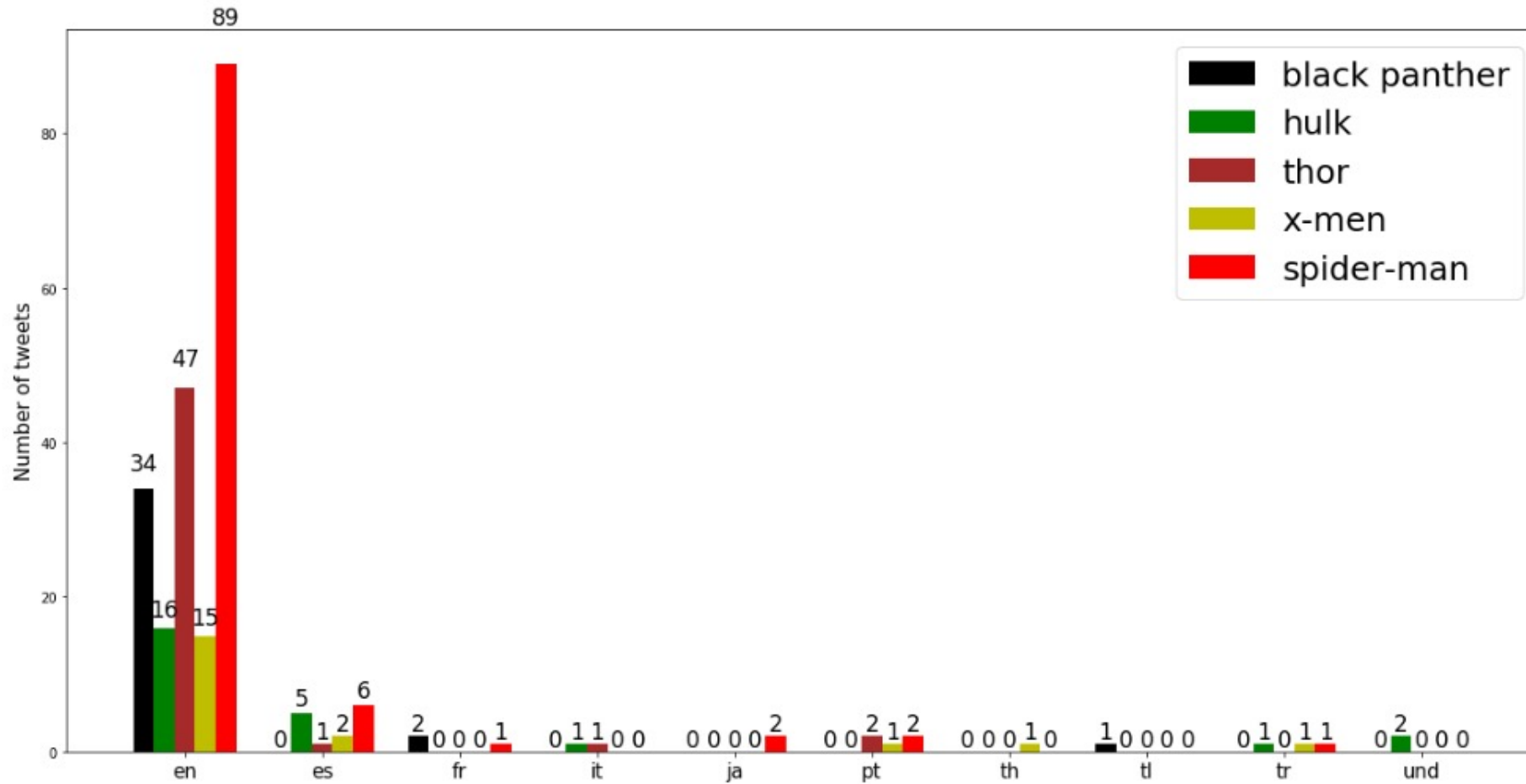
Marvel Character Analysis - Stan Lee

- ▶ Convert the values to 1 or 0 to count the number of each characters
- ▶ Remove all other character columns except the ones shown on the right image
- ▶ The image shows the sum of characters based on each language

	black panther	hulk	thor	x-men	spider-man
lang					
en	34.0	16.0	47.0	15.0	89.0
es	0.0	5.0	1.0	2.0	6.0
fr	2.0	0.0	0.0	0.0	1.0
it	0.0	1.0	1.0	0.0	0.0
ja	0.0	0.0	0.0	0.0	2.0
pt	0.0	0.0	2.0	1.0	2.0
th	0.0	0.0	0.0	1.0	0.0
tl	1.0	0.0	0.0	0.0	0.0
tr	0.0	1.0	0.0	1.0	1.0
und	0.0	2.0	0.0	0.0	0.0

Marvel Character Analysis - Stan Lee

► Characters by languages



Marvel Character Analysis - Marvel Character

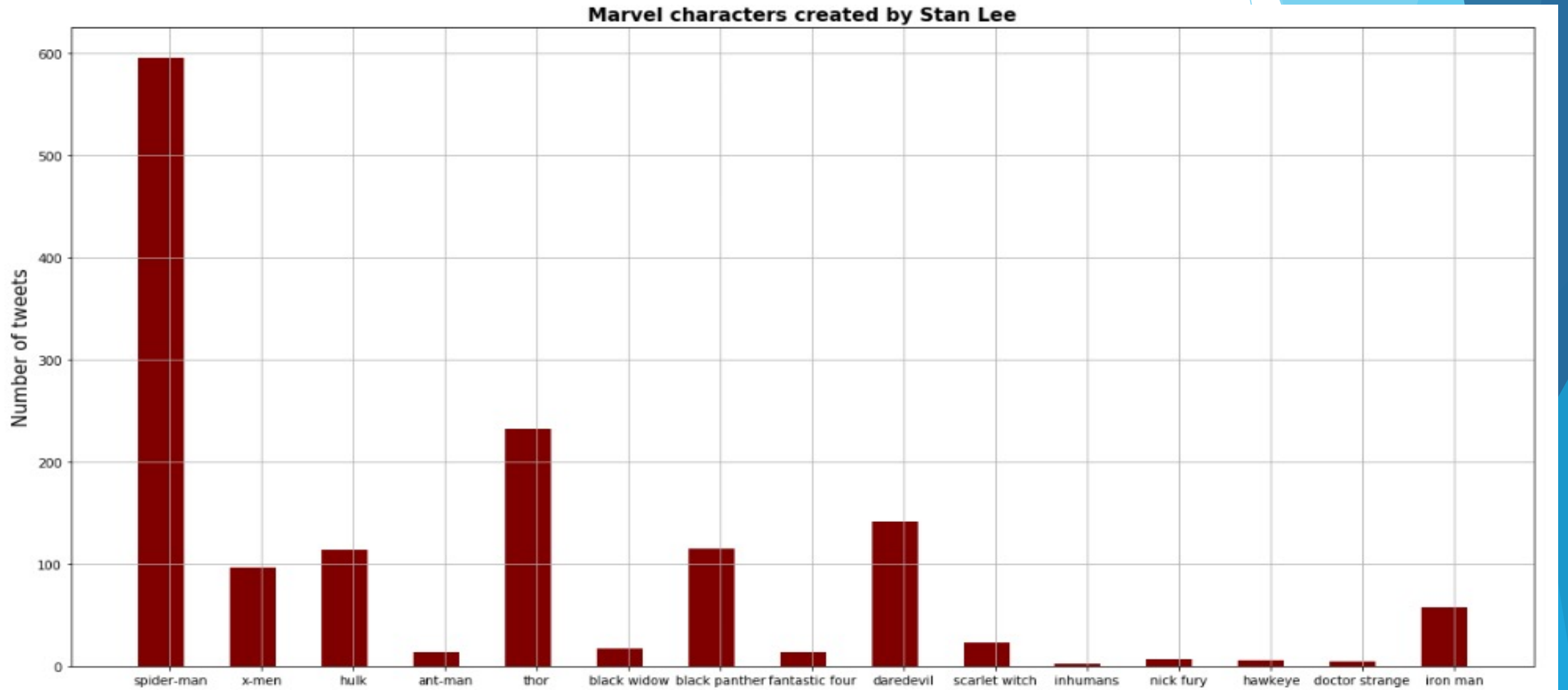
- ▶ Add required columns to panda dataframe
- ▶ Get relevant tweets which contains the top 15 characters created by Stan Lee
- ▶ Counts the tweets

spider-man: 595, x-men: 96, hulk: 113,
ant-man: 12, thor: 232,
black widow: 17, black panther: 115,
fantastic four: 14, daredevil: 141,
scarlet witch: 23, inhumans: 2, nick
fury: 7, hawkeye: 6, doctor strange: 4,
iron man: 57

	text	relevant	lang
23	RT @ComicBookNOW: MARVEL Fans Campaigning NETF...	True	en
24	PlayStation 4 PS4 Slim 1TB Marvel's Spider-Man...	True	en
43	Amazing Spider-Man #36 v2 CGC 9.6 9/11 World T...	True	en
59	RT @ComicBookNOW: MARVEL Fans Campaigning NETF...	True	en
78	@lokithorodinson @amazonheroicon And Cap Marve...	True	en

Marvel Character Analysis - Marvel Character

- ▶ "Marvel character" topic tweets



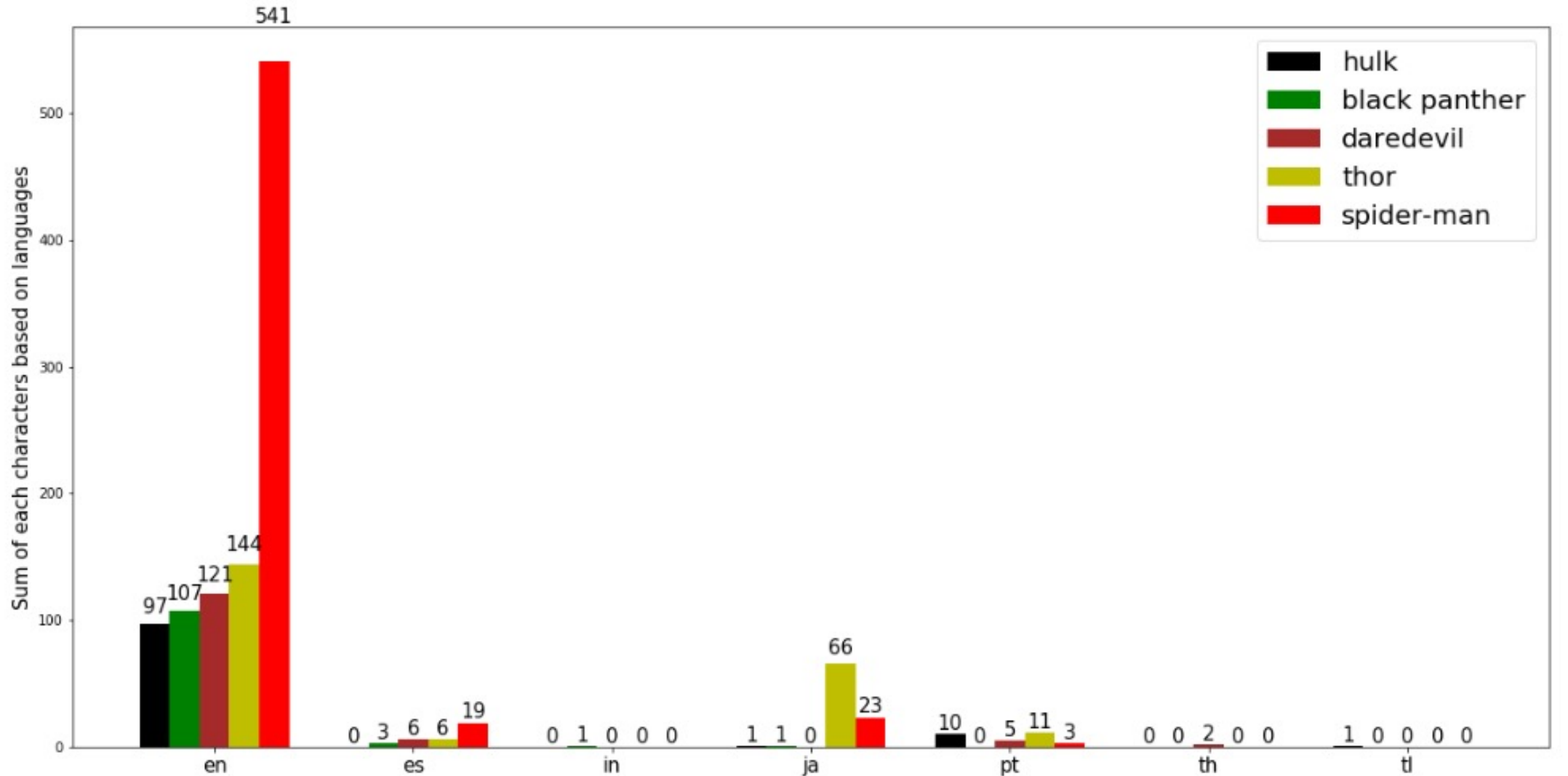
Marvel Character Analysis - Marvel character

- It shows the sum of each characters based on the languages

	relevant	fantastic four	daredevil	scarlet witch	inhumans	nick fury	black panther	hawkeye	doctor strange	ant-man	black widow	hulk	thor	iron man	x-men	spider-man
lang																
en	1178	13	121	21	2	7	107	6	3	13	17	97	144	44	72	541
es	41	1	6	0	0	0	3	0	1	0	0	0	6	3	5	19
in	3	0	0	0	0	0	1	0	0	0	0	0	0	2	0	0
ja	96	0	0	0	0	0	1	0	0	1	0	1	66	1	3	23
pt	29	0	5	0	0	0	0	0	0	0	0	10	11	0	4	3
th	10	0	2	0	0	0	0	0	0	0	0	0	0	0	8	0
tl	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0

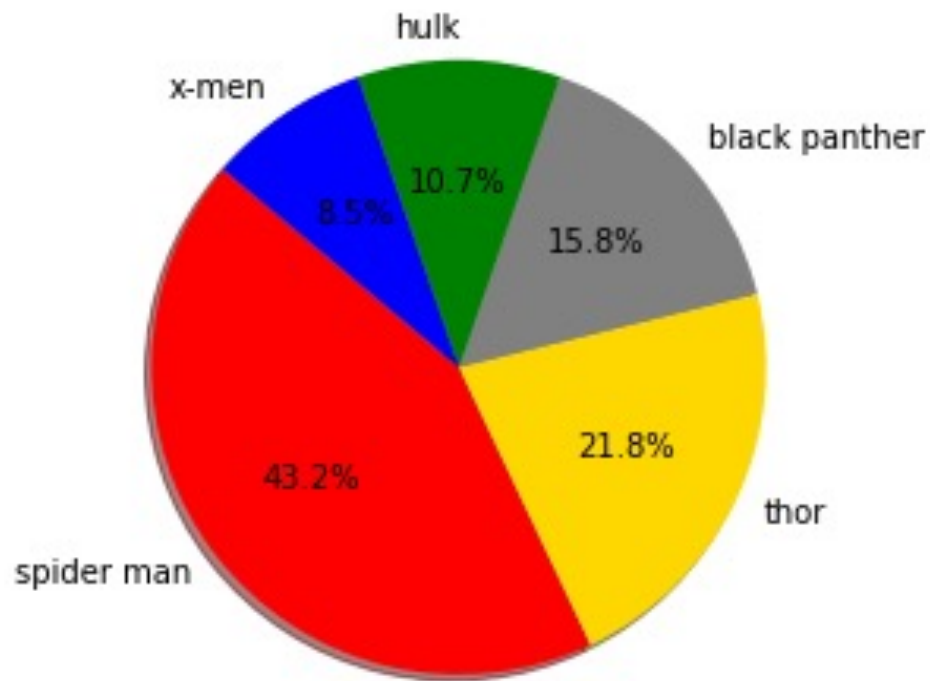
Marvel Character Analysis - Marvel character

► Characters by languages

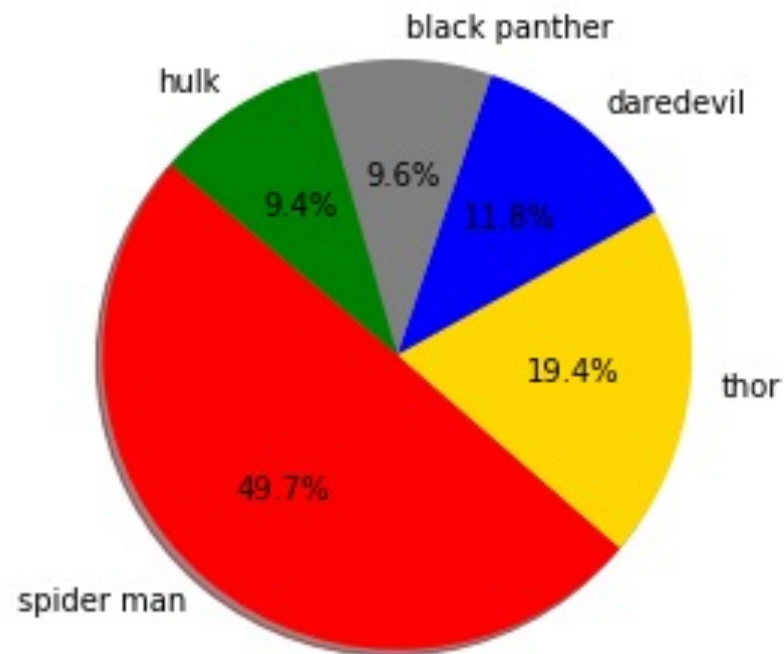


The top 5 Marvel characters in each tweet

► Stan Lee topic tweets



► Marvel Character topic tweets



Marvel Character Analysis - Marvel character

- ▶ Create bag of words
- ▶ Remove URLs, punctuation, 'RT', numbers and username
- ▶ Remove stop words

	text	lang
23	RT @ComicBookNOW: MARVEL Fans Campaigning NETF...	en
24	PlayStation 4 PS4 Slim 1TB Marvel's Spider-Man...	en
43	Amazing Spider-Man #36 v2 CGC 9.6 9/11 World T...	en
59	RT @ComicBookNOW: MARVEL Fans Campaigning NETF...	en
78	@lokithorodinson @amazonheroicon And Cap Marve...	en

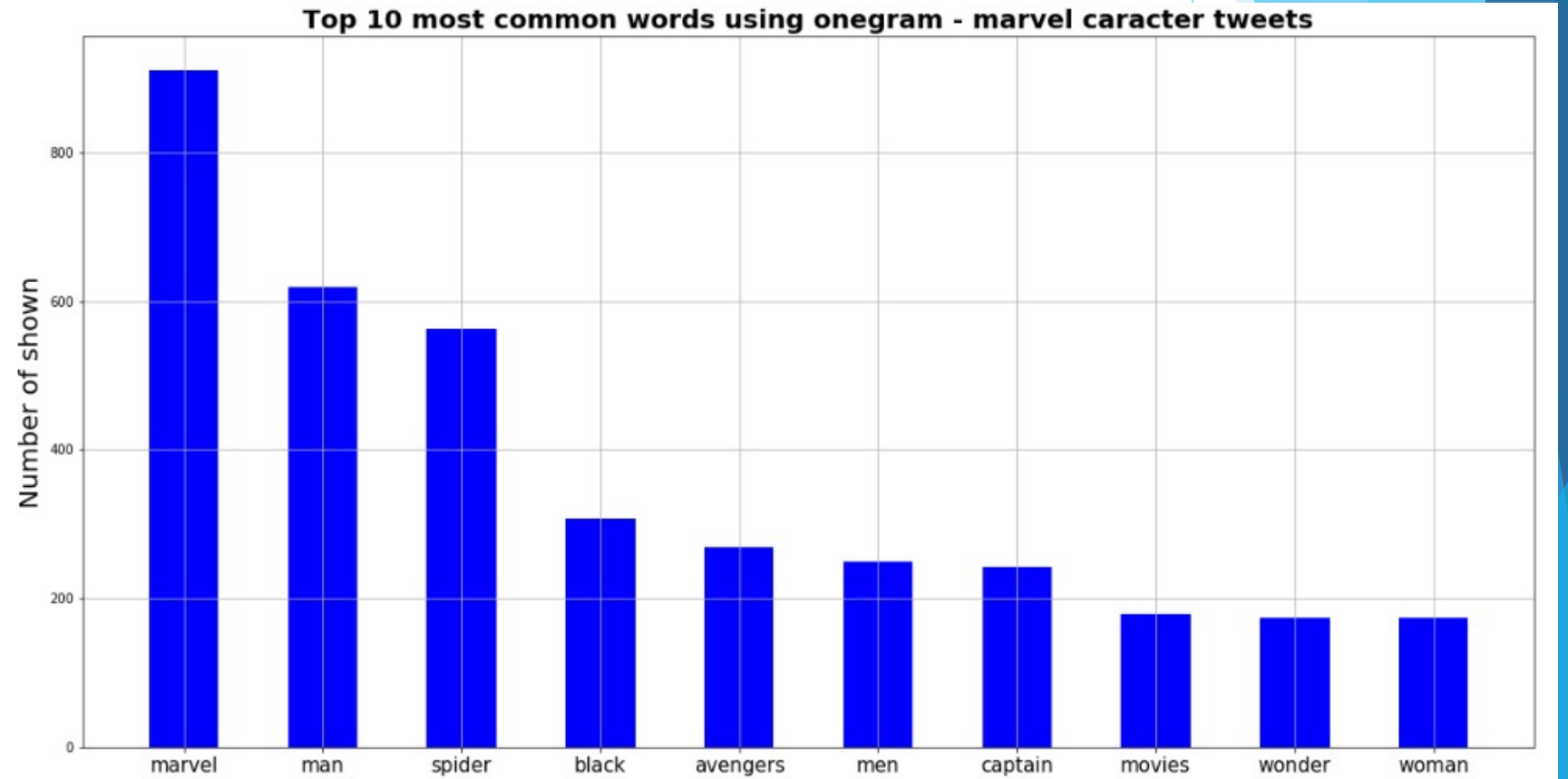
```
'marvel fans campaigning netflix renew dared  
'playstation ps slim tb marvel spider man b  
'amazing spider man v cgc world trade center  
'marvel fans campaigning netflix renew dared  
'lokithorodinson amazonheroicon cap marvel a  
'nigga saying would rather watch spider man
```


Marvel Character Analysis - Marvel character

One-gram

```
onegram_result[:10]
```

```
[('marvel', 911),  
 ('man', 619),  
 ('spider', 562),  
 ('black', 307),  
 ('avengers', 269),  
 ('men', 250),  
 ('captain', 242),  
 ('movies', 179),  
 ('wonder', 174),  
 ('woman', 173)]
```

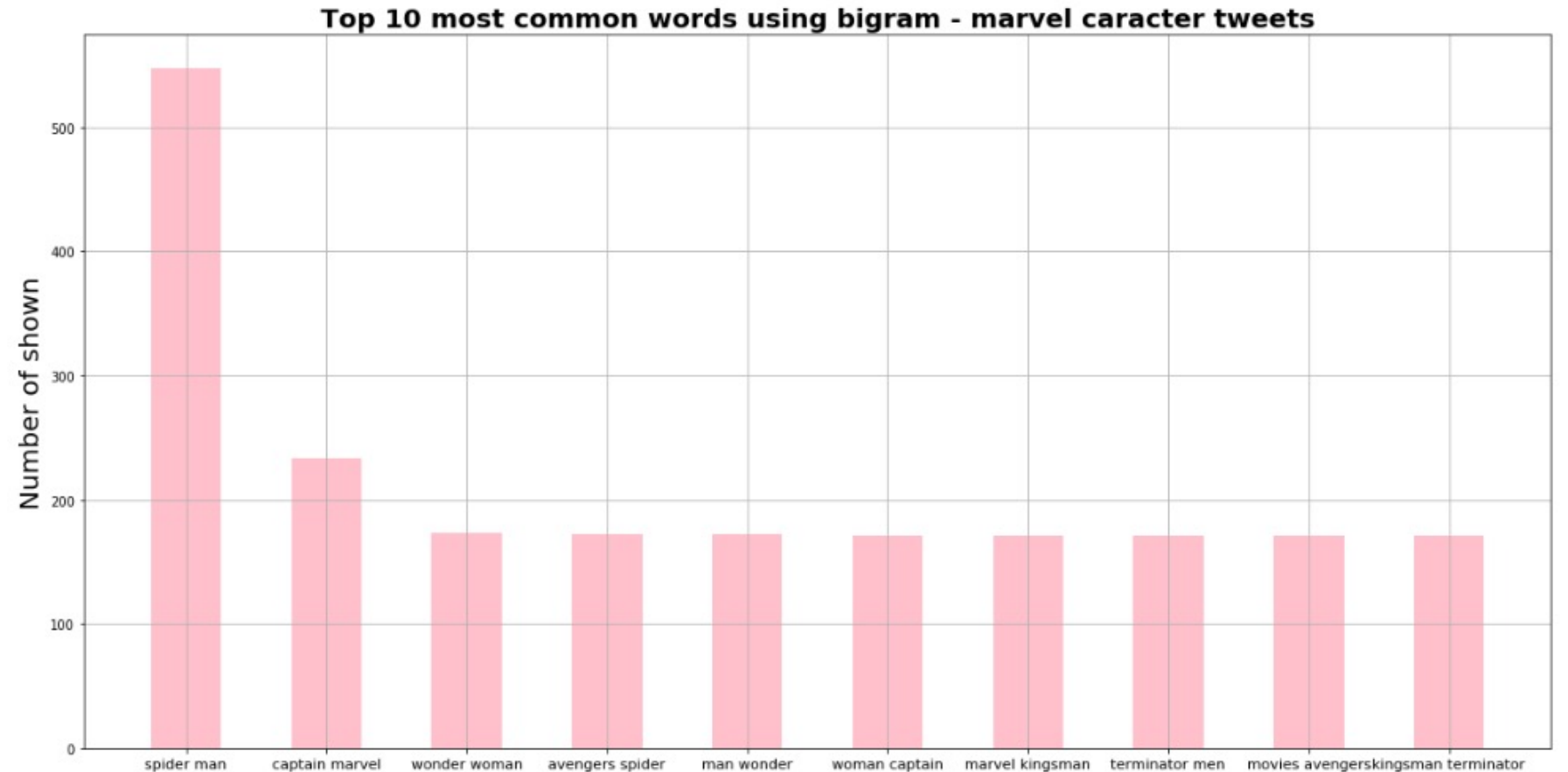


Marvel Character Analysis - Marvel character

bi-gram

```
bigram_result[:10]
```

```
[('spider man', 547),  
 ('captain marvel', 233),  
 ('wonder woman', 173),  
 ('avengers spider', 172),  
 ('man wonder', 172),  
 ('woman captain', 171),  
 ('marvel kingsman', 171),  
 ('terminator men', 171),  
 ('movies avengers', 171),  
 ('kingsman terminator', 171)]
```

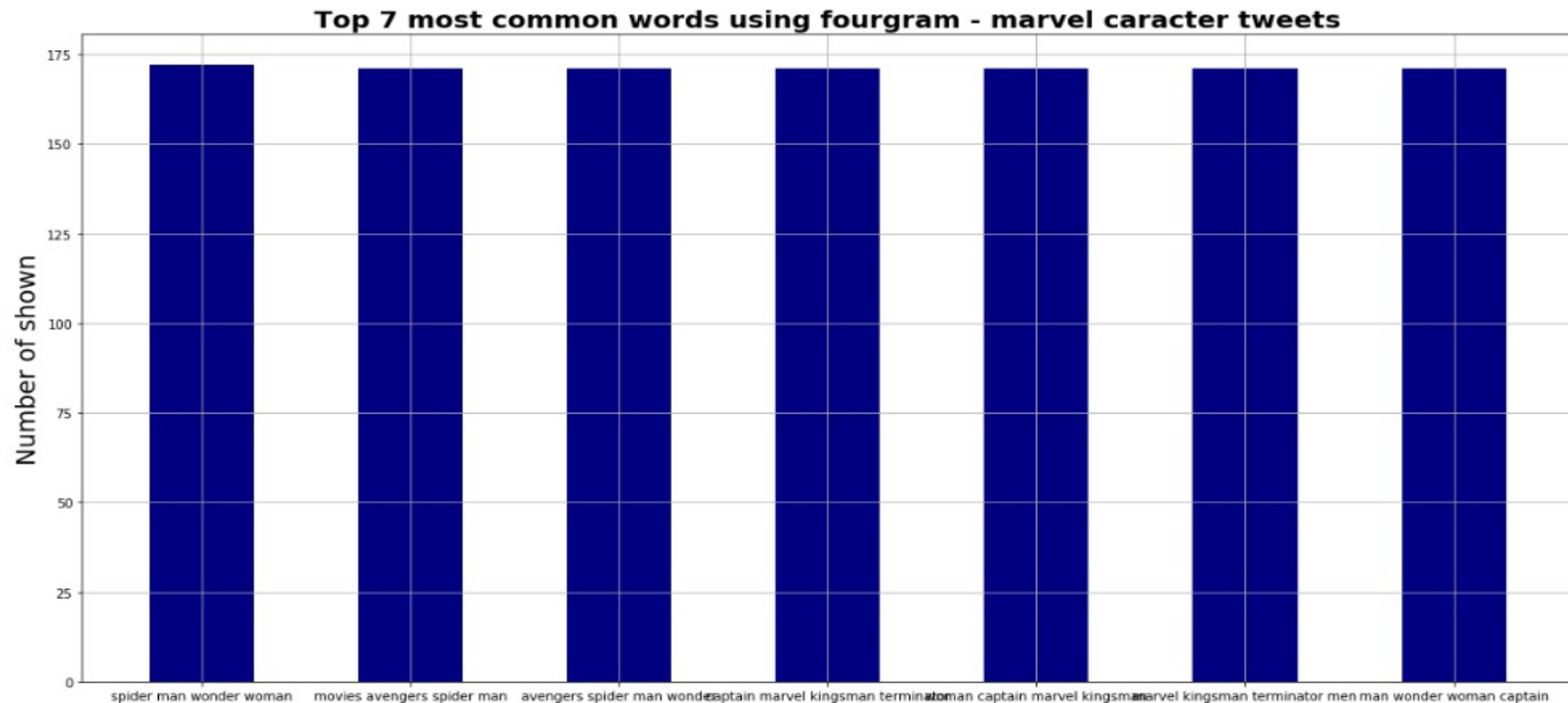


Marvel Character Analysis - Marvel character

four-gram

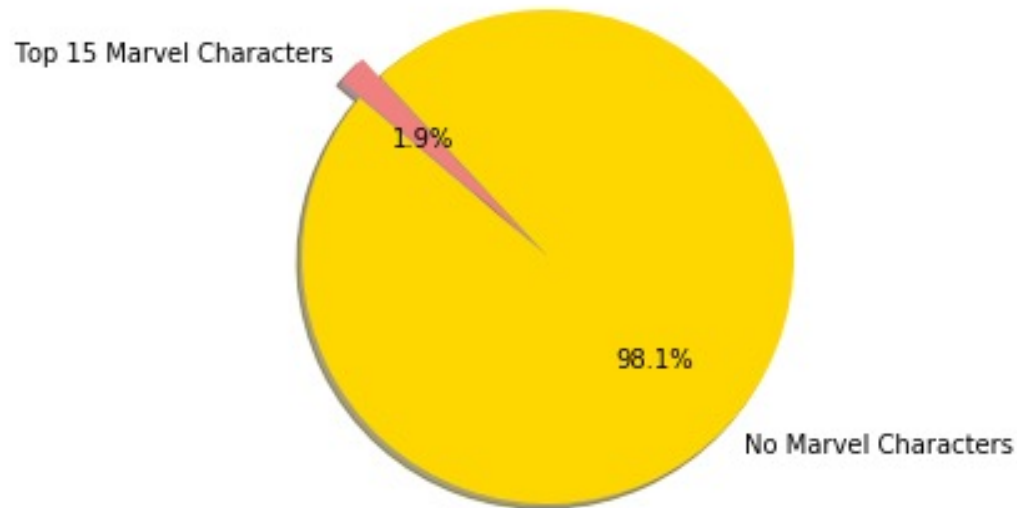
```
fourgram_result[:7]
```

```
[('spider man wonder woman', 172),  
 ('movies avengers spider man', 171),  
 ('avengers spider man wonder', 171),  
 ('captain marvel kingsman terminator', 171),  
 ('woman captain marvel kingsman', 171),  
 ('marvel kingsman terminator men', 171),  
 ('man wonder woman captain', 171)]
```

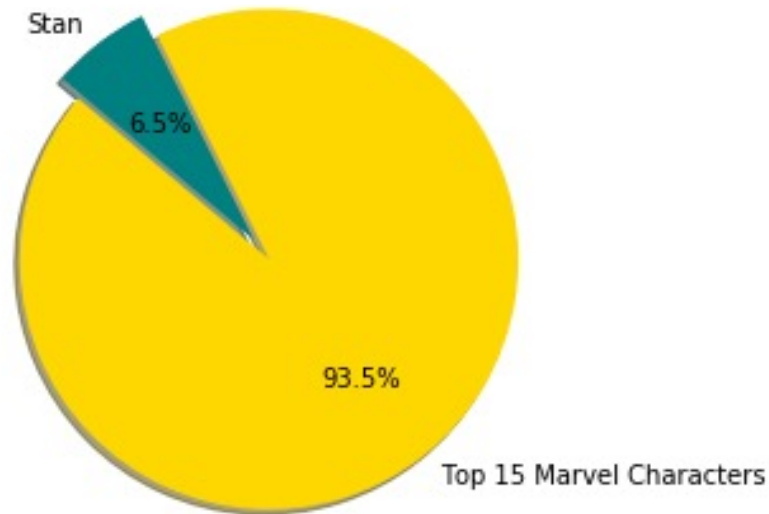


Marvel Characters in Stan Lee topic tweets vs Stan in Marvel character topic tweet

► Stan Lee topic tweets



► Marvel Character topic tweets



Sentiment Analysis

- ▶ Manual sentiments for training dataset
- ▶ Three categories:
 - ▶ Positive tweets
 - ▶ Negative tweets
 - ▶ Neutral tweets

