AllCandidatesTopicAnalysis

March 16, 2016

```
In [6]: from textstat.textstat import textstat
        import csv
        import pandas
        import matplotlib
        #matplotlib.style.use('ggplot')
        %matplotlib inline
        import ast
```

```
In [30]: trump_df = pandas.read_csv('data/all_trump_w_topics.csv')
         trump_df['candidate'] = 'trump'
         clinton_df = pandas.read_csv('data/all_clinton_w_topics.csv')
         clinton_df['candidate'] = 'clinton'
         sanders_df = pandas.read_csv('data/all_sanders_w_topics.csv')
         sanders_df['candidate'] = 'sanders'
         cruz_df = pandas.read_csv('data/all_cruz_w_topics.csv')
         cruz_df['candidate'] = 'cruz'
         ORGS = ['nyt', 'wsj', 'cnn', 'fox', 'ap', 'reuters', 'politico', 'mcclatchy', 'buzzfeed', 'huf
```

```
In [31]: n = len(clinton_df)
         clinton_df.index = xrange(len(trump_df), (len(trump_df) + n))
         m = len(sanders_df)
         sanders_df.index = xrange(max(clinton_df.index), max(clinton_df.index) + m)
         c = len(cruz_df)
         cruz_df.index = xrange(max(sanders_df.index), max(sanders_df.index) + c)
```

```
In [32]: all_df = pandas.concat([trump_df,clinton_df, sanders_df, cruz_df])
         all_df['gunning_fog'] = all_df['body'].apply(lambda x: textstat.gunning_fog(x) if type(x) == s
         all_df['flesch'] = all_df['body'].apply(lambda x: textstat.flesch_kincaid_grade(x) if type(x) =
         all_df['readability'] = all_df['body'].apply(lambda x: textstat.flesch_reading_ease(x) if type
```

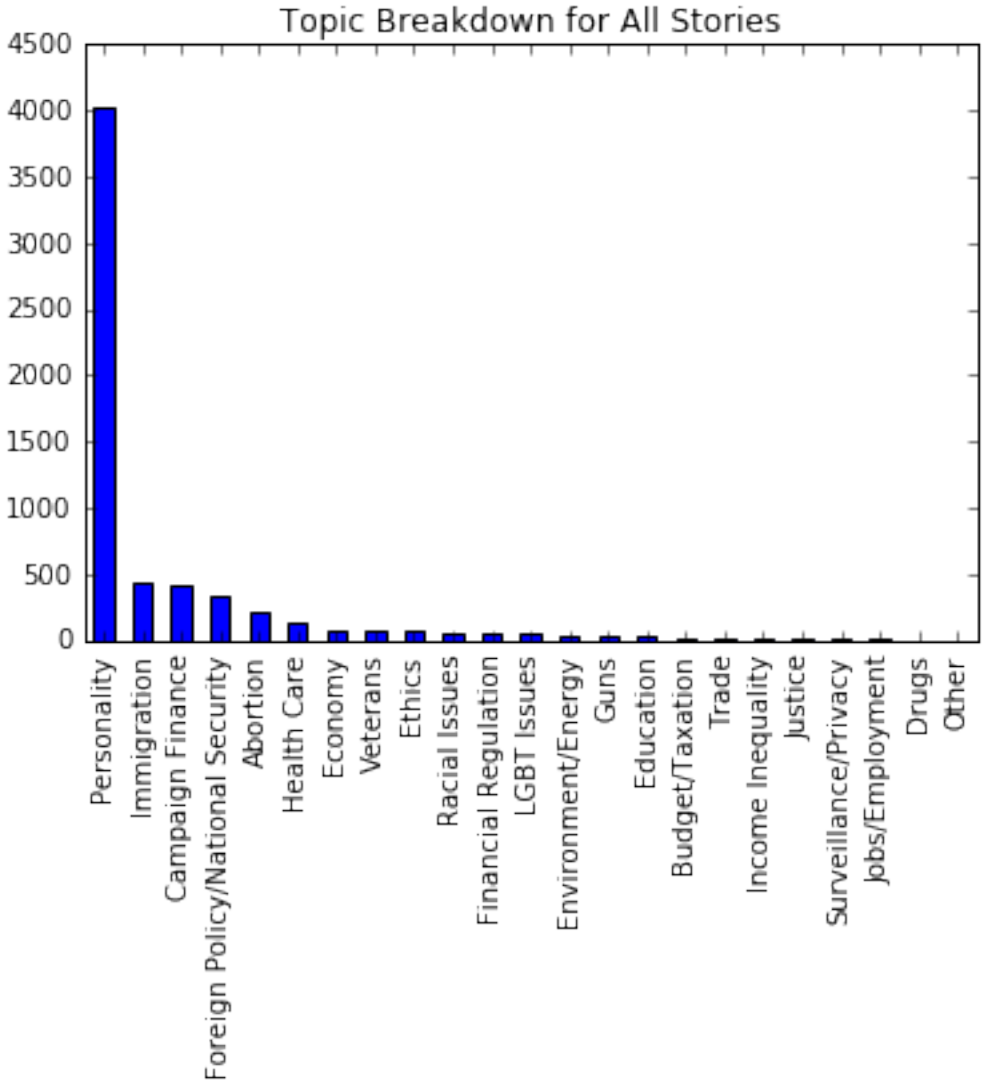
1 Convert topics to Dict and Filter by > 0.1

```
In [34]: all_df['topic_dict'] = all_df['topic'].apply(lambda d: ast.literal_eval(d))
         all_df['top_topics'] = all_df['topic_dict'].apply(lambda d: {k:v for k, v in d.iteritems() if v
         all_df['topic_list'] = all_df['top_topics'].apply(lambda d: d.keys())
         all_df['top_topic'] = all_df['topic_dict'].apply(lambda d: max(d, key=lambda i: d[i]))
```

2 Breakdown of Story Topics

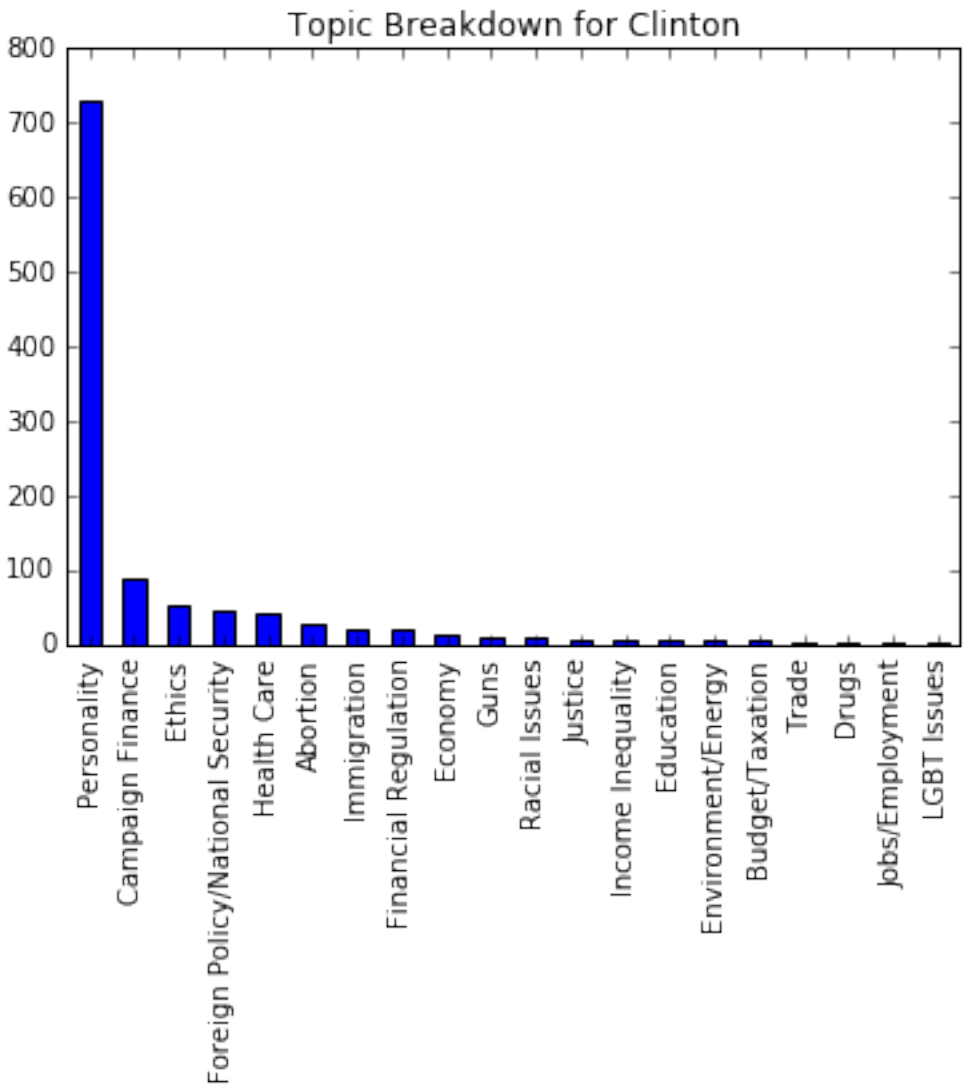
```
In [35]: all_df['top_topic'].value_counts().plot(kind="bar", title="Topic Breakdown for All Stories")
         # Top 10: Personality, Immigration, Campaign Finance, Foreign Policy/National Security, Aborti
         # Health Care, Economy, Veterans, Ethics, Racial Issues
```

Out[35]: <matplotlib.axes._subplots.AxesSubplot at 0x1153c8b10>



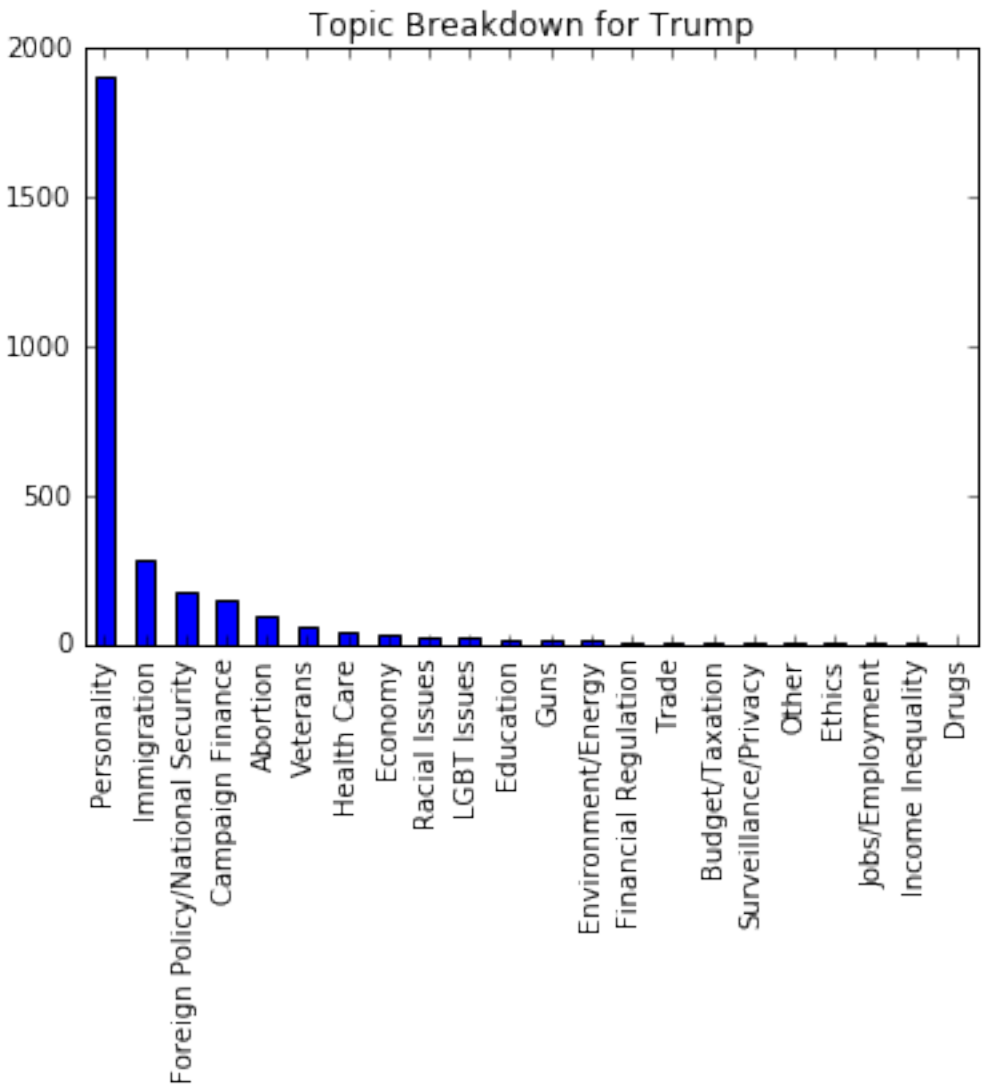
In [41]: all_df[all_df['candidate'] == 'clinton']['top_topic'].value_counts().plot(kind="bar", title="T

Out[41]: <matplotlib.axes._subplots.AxesSubplot at 0x116fd8f50>



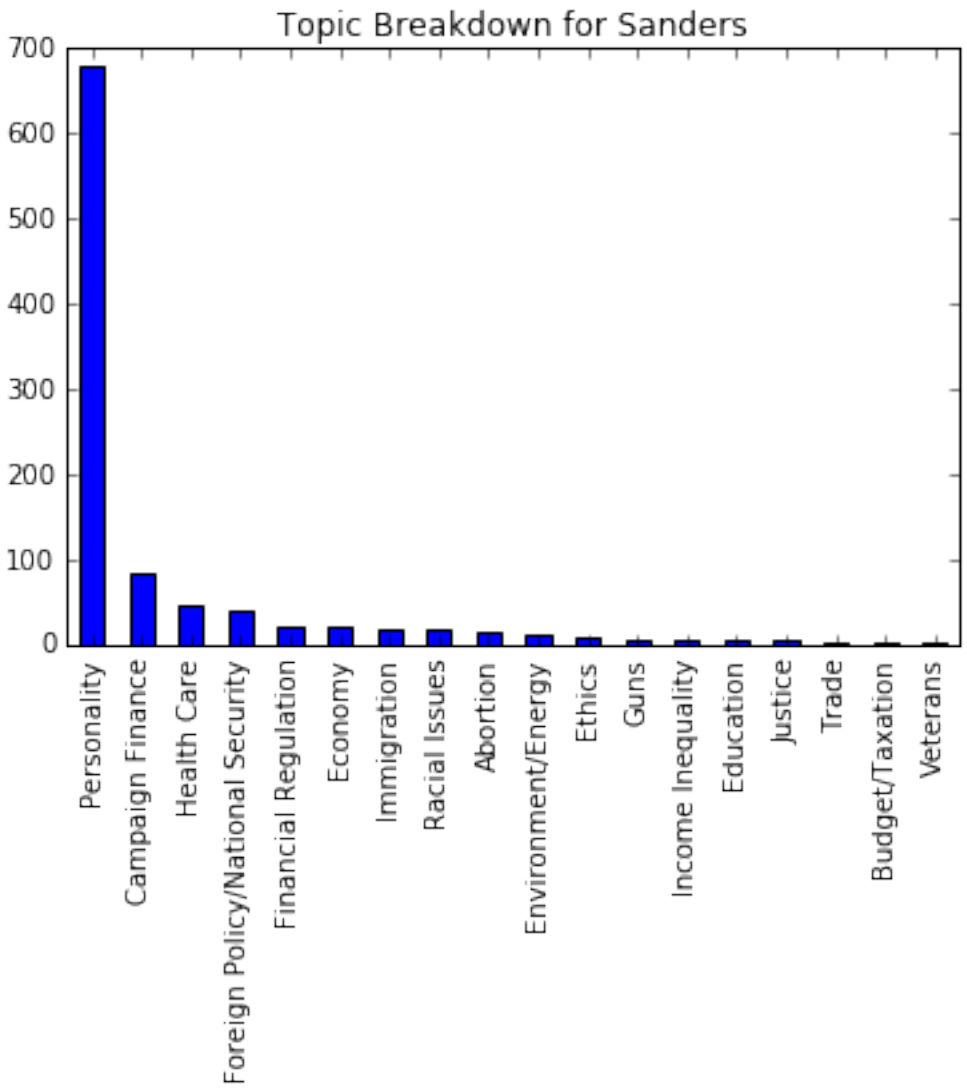

```
In [42]: all_df[all_df['candidate'] == 'trump']['top_topic'].value_counts().plot(kind="bar", title="Top
```

```
Out[42]: <matplotlib.axes._subplots.AxesSubplot at 0x114af8250>
```



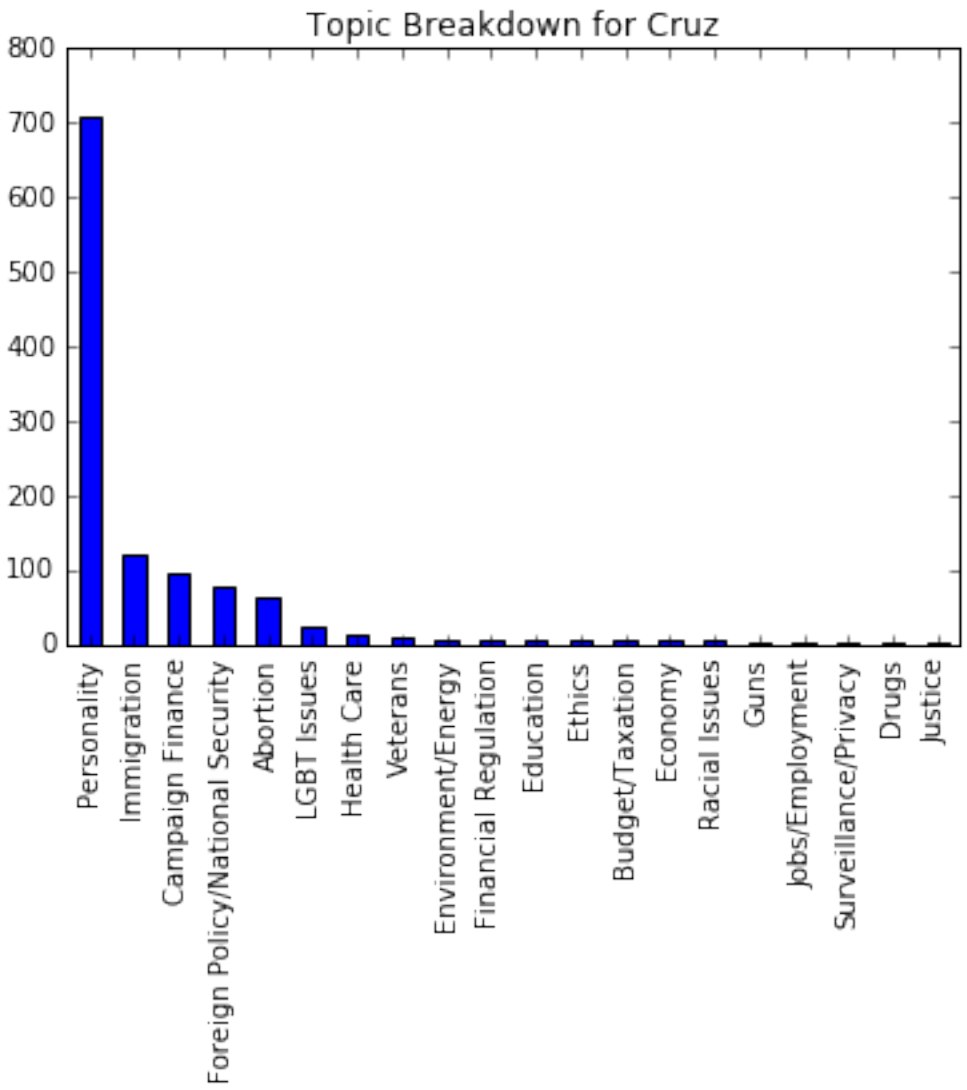

```
In [43]: all_df[all_df['candidate'] == 'sanders']['top_topic'].value_counts().plot(kind="bar", title="T
```

```
Out[43]: <matplotlib.axes._subplots.AxesSubplot at 0x1153b6810>
```




```
In [64]: all_df[all_df['candidate'] == 'cruz']['top_topic'].value_counts().plot(kind="bar", title="Topi
```

```
Out[64]: <matplotlib.axes._subplots.AxesSubplot at 0x1177e2450>
```



2.1 Reading Level Breakdown by Topic

```
In [65]: # Top 10: Personality, Immigration, Campaign Finance, Foreign Policy/National Security, Aborti
         # Health Care, Economy, Veterans, Ethics, Racial Issues

         TOPICS = ['Personality', 'Immigration', 'Campaign Finance', 'Foreign Policy/National Security'
                   'Abortion', 'Health Care', 'Economy', 'Veterans', 'Ethics', 'Racial Issues']

         print "Average Flesch Scores by Topic"
         for t in TOPICS:
             df_t = all_df[all_df['top_topic'] == t]
             print t, ":", '%.2f' % df_t['flesch'].mean()
```

```
Average Flesch Scores by Topic
Personality : 9.02
Immigration : 9.28
```

```
Campaign Finance : 9.01
Foreign Policy/National Security : 9.19
Abortion : 9.08
Health Care : 9.86
Economy : 9.75
Veterans : 9.06
Ethics : 10.90
Racial Issues : 9.93
```

2.2 Topic Breakdown By Candidate

```
In [85]: CANDIDATES = ['clinton', 'sanders', 'trump', 'cruz']
         for c in CANDIDATES:
             print c, 'average Flesch score', '%.2f' % all_df[all_df['candidate'] == c]['flesch'].mean()
             print
             print 100* all_df[all_df['candidate'] == c]['top_topic'].value_counts(normalize=True)[:5]
             print
```

```
clinton average Flesch score 9.55

Personality                          66.453965
Campaign Finance                      8.204193
Ethics                                4.740201
Foreign Policy/National Security      4.193254
Health Care                           3.828624
Name: top_topic, dtype: float64

sanders average Flesch score 9.55

Personality                          68.442211
Campaign Finance                      8.442211
Health Care                           4.623116
Foreign Policy/National Security      4.020101
Financial Regulation                  2.211055
Name: top_topic, dtype: float64

trump average Flesch score 8.94

Personality                          66.110532
Immigration                           9.871394
Foreign Policy/National Security      6.082725
Campaign Finance                      5.318040
Abortion                              3.441084
Name: top_topic, dtype: float64

cruz average Flesch score 8.85

Personality                          61.154177
Immigration                          10.335917
Campaign Finance                      8.182601
Foreign Policy/National Security      6.546081
Abortion                              5.598622
Name: top_topic, dtype: float64
```

2.3 Average Reading Scores by Candidate per Topic

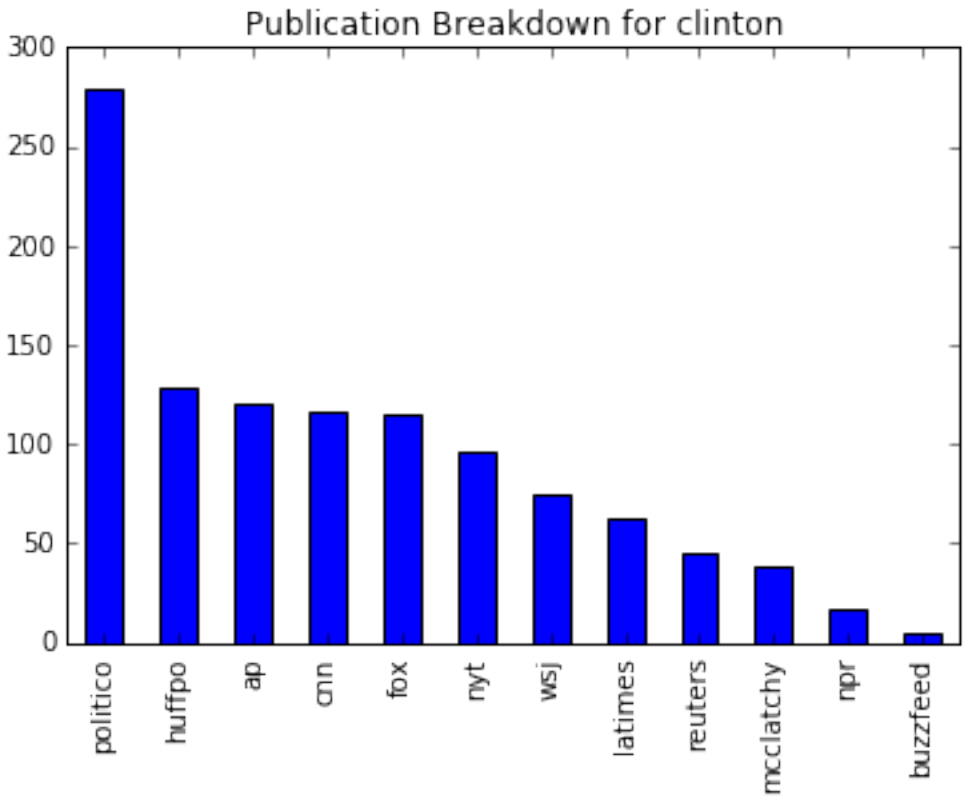
In [94]:
```
CANDIDATES = ['clinton', 'sanders', 'trump', 'cruz']
for t in TOPICS:
    print t
    for c in CANDIDATES:
        print c, '%.2f' % all_df[(all_df['candidate'] == c) & (all_df['top_topic'] == t)]['fles
    print
```

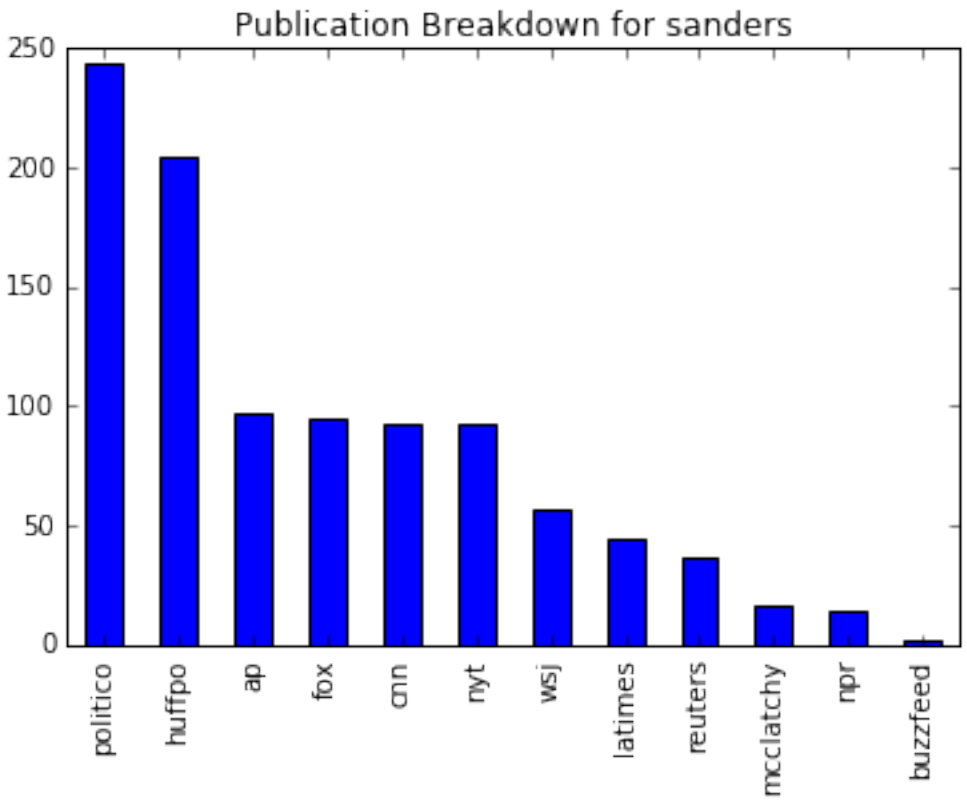
```
Personality
clinton 9.30
sanders 9.35
trump 8.87
cruz 8.79

Immigration
clinton 10.09
sanders 10.19
trump 9.31
cruz 8.91

Campaign Finance
clinton 9.34
sanders 9.40
trump 8.79
cruz 8.73

Foreign Policy/National Security
clinton 10.16
sanders 9.77
trump 8.93
cruz 8.89

Abortion
clinton 10.19
sanders 9.45
trump 8.81
cruz 8.90

Health Care
clinton 9.85
sanders 10.52
trump 9.16
cruz 9.55

Economy
clinton 10.42
sanders 9.98
trump 9.48
cruz 8.50

Veterans
clinton nan
sanders 8.30
trump 9.08
```

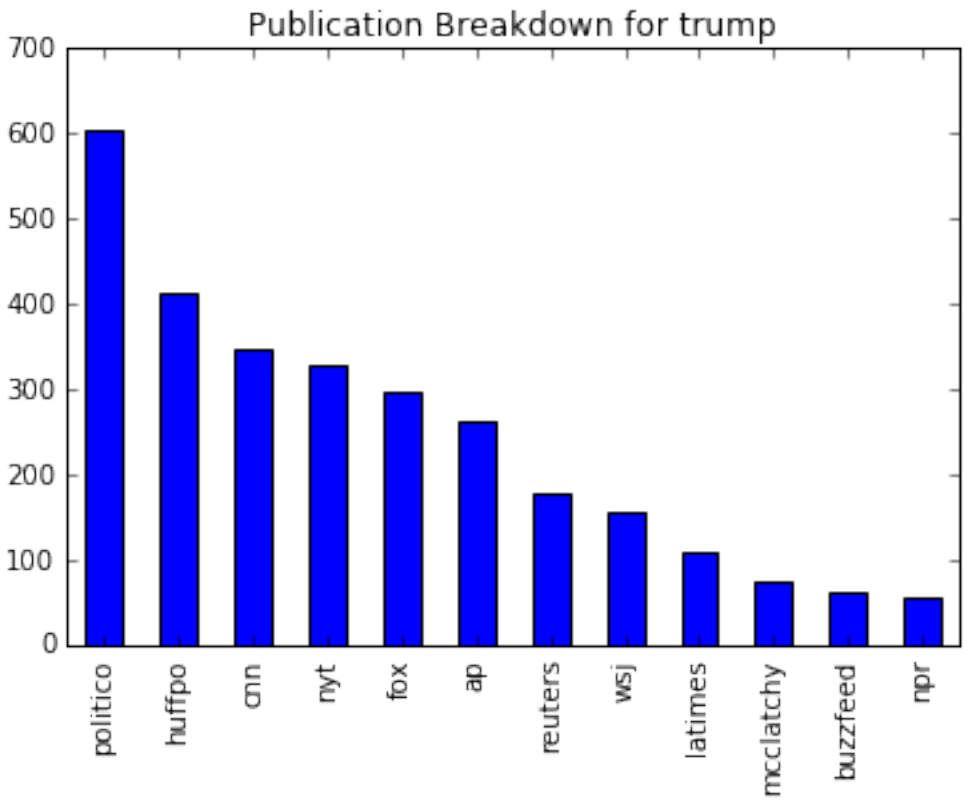
```
cruz 9.07

Ethics
clinton 10.86
sanders 11.11
trump 11.10
cruz 10.88

Racial Issues
clinton 10.76
sanders 10.99
trump 9.20
cruz 8.66
```

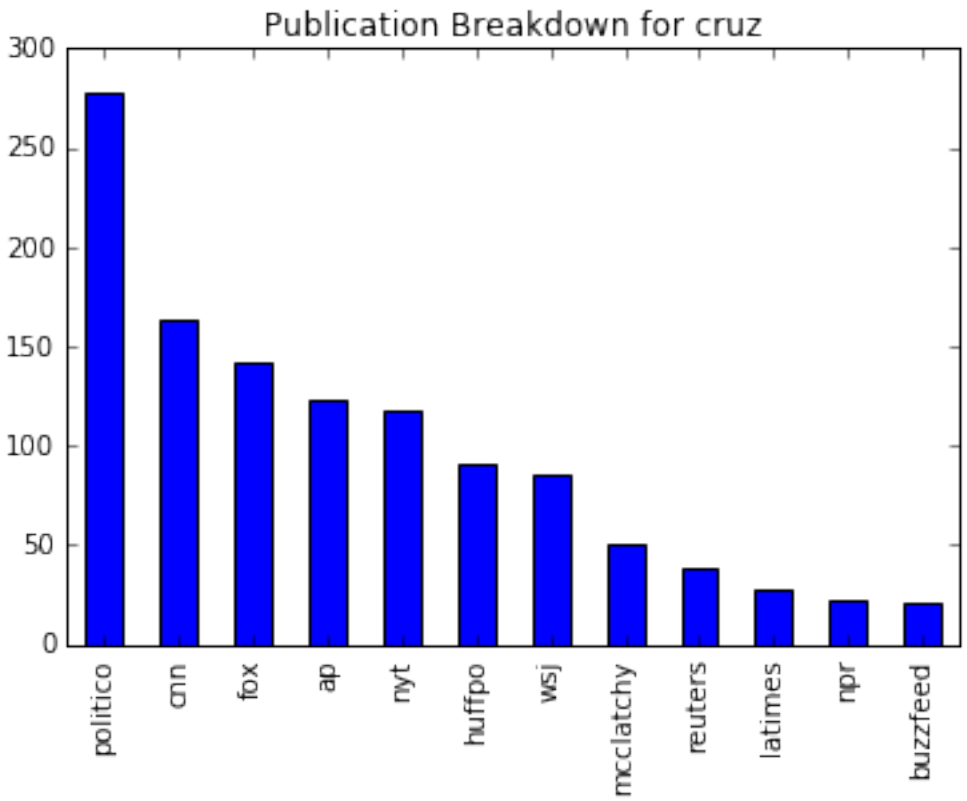
2.4 Story Distrubtion Per Candidate

```
In [111]: CANDIDATES = ['clinton', 'sanders', 'trump', 'cruz']

          for c in CANDIDATES:
              all_df[all_df['candidate'] == c]['org'].value_counts().plot(kind="bar", title="Publicatio
              matplotlib.pyplot.show()
```




Publication Breakdown for sanders
250
200
150
100
50
0
politico
huffpo
ap
fox
cnn
nyt
wsj
latimes
reuters
mcclatchy
npr
buzzfeed


Publication Breakdown for trump
700
600
500
400
300
200
100
0
politico
huffpo
cnn
nyt
fox
ap
reuters
wsj
latimes
mcclatchy
buzzfeed
npr


Publication Breakdown for cruz
300
250
200
150
100
50
0
politico
cnn
fox
ap
nyt
huffpo
wsj
mcclatchy
reuters
latimes
npr
buzzfeed

In [ ]: