TopicAndCandidatePruning

March 23, 2016

0.1 Upload data for all candidates

```
In [33]: from textstat.textstat import textstat
         import csv
         import pandas
         import matplotlib
         #matplotlib.style.use('ggplot')
         %matplotlib inline
         import ast
         pandas.options.display.max_colwidth = 100000
```

```
In [2]: 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', 'huff
```

```
In [3]: 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 [4]: 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) == st
        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(
```

0.2 Topic Processing

```
In [5]: 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]))
```

0.3 Remove Personality Topic (it's uncategorized)

```
In [6]: all_nop = all_df[all_df['top_topic']!= "Personality"]
        t = len(all_nop)
        print "TOTAL, NO P:", t
        low_nop = all_nop[all_nop[’flesch’] < 6]
        high_nop = all_nop[all_nop[’flesch’] > 12]
        mid_nop = all_nop[(all_nop[’flesch’] > 8) & (all_nop[’flesch’] < 10)]
        print "LESS THAN 6:", len(low_nop), ’%.2f’ % (100* len(low_nop)/(len(all_nop) * 1.0)), ’%’
        print "GREATER THAN 12:", len(high_nop), ’%.2f’ % (100* len(high_nop)/(len(all_nop) * 1.0)), ’%
        print "MIDDLE 8-10:", len(mid_nop), ’%.2f’ % (100* len(mid_nop)/(len(all_nop) * 1.0)), ’%’
```

```
TOTAL, NO P: 2108
LESS THAN 6: 86 4.08 %
GREATER THAN 12: 190 9.01 %
MIDDLE 8-10: 775 36.76 %
```

```
In [13]: all_nop.to_csv(’data/all_candidates_nop.csv’)
```

0.4 Export small subset of topics

```
In [9]: CANDIDATES = [’clinton’, ’sanders’, ’trump’, ’cruz’]
        TOPICS = [’Immigration’, ’Campaign Finance’, ’Foreign Policy/National Security’,
                 ’Abortion’, ’Health Care’, ’Financial Regulation’]
```

```
In [16]: filtered = all_nop[(all_nop[’top_topic’].isin(TOPICS))]
         filtered.to_csv(’data/select_topics.csv’)
```

```
In [40]: #print all_nop[all_nop[’title’] == "Best of ’State of the Union’: Trump, Clinton and Sanders"]
```

```
In [24]: len(filtered)
         filtered[’candidate’].value_counts()
         filtered.columns
```

```
Out[24]: Index([u’title’, u’url’, u’org’, u’date_written’, u’byline’, u’body’, u’topic’,
                u’candidate’, u’gunning_fog’, u’flesch’, u’readability’, u’topic_dict’,
                u’top_topics’, u’topic_list’, u’top_topic’],
               dtype=’object’)
```

```
In [27]: for c in CANDIDATES:
             print c.upper()
             print filtered[filtered[’candidate’] == c][’top_topic’].value_counts()
             filtered[filtered[’candidate’] == c].to_csv(’data/filtered_’ + c + ’.csv’, columns=[’title
                                                  ’top_topic’, ’flesch’, ’gunning_fog’])
             print
```

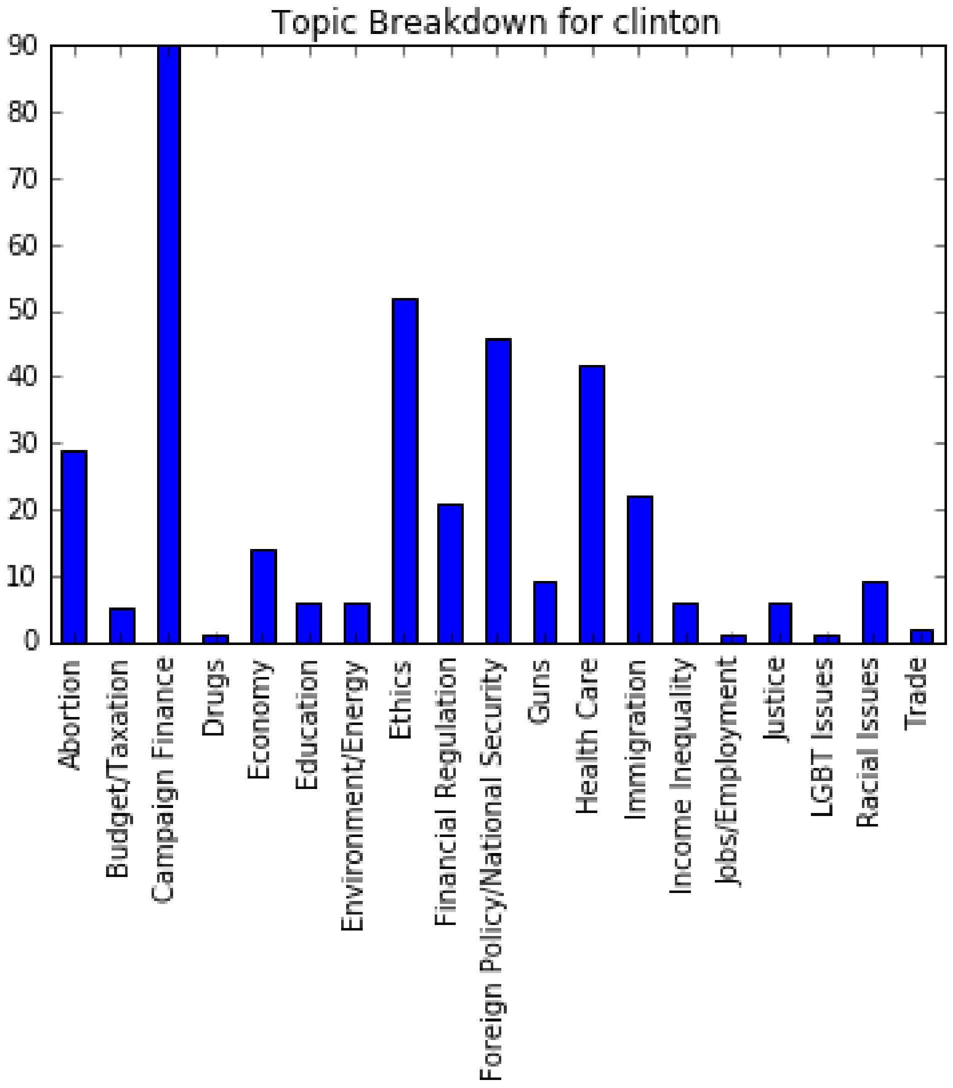
```
CLINTON
Campaign Finance                    90
Foreign Policy/National Security    46
Health Care                         42
Abortion                            29
Immigration                         22
Financial Regulation                21
Name: top_topic, dtype: int64

SANDERS
Campaign Finance                    84
Health Care                         46
```

```
Foreign Policy/National Security    40
Financial Regulation                22
Immigration                         19
Abortion                            16
Name: top_topic, dtype: int64

TRUMP
Immigration                         284
Foreign Policy/National Security    175
Campaign Finance                    153
Abortion                             99
Health Care                          38
Financial Regulation                 10
Name: top_topic, dtype: int64

CRUZ
Immigration                         120
Campaign Finance                     95
Foreign Policy/National Security     76
Abortion                             65
Health Care                          13
Financial Regulation                  7
Name: top_topic, dtype: int64
```

0.5 Topic Breakdown Per Candidate

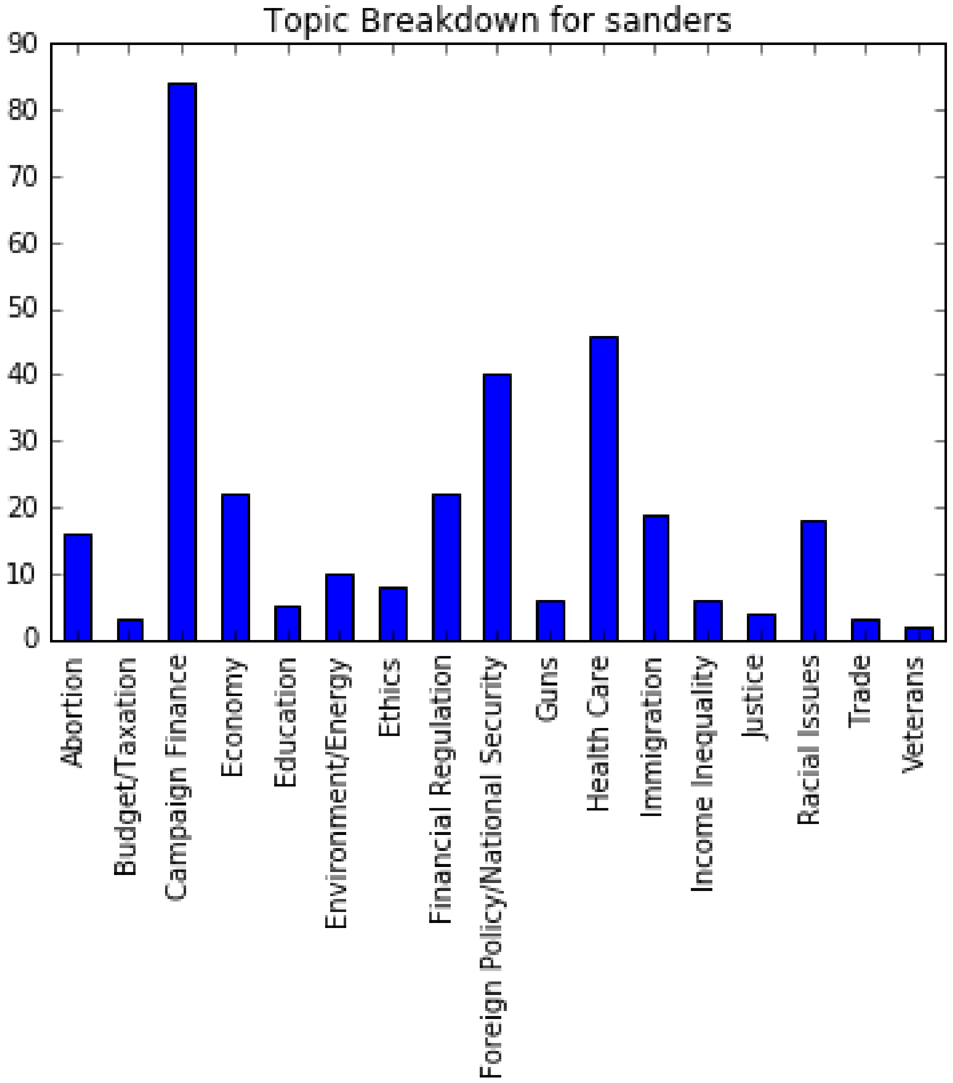
```
In [82]: for c in CANDIDATES:
             #all_nop[all_nop['candidate'] == c]['top_topic'].value_counts().plot(kind="bar", title="To
             #matplotlib.pyplot.show()
             print "TOTAL STORIES", len(all_nop[all_nop['candidate'] == c])
             all_nop[(all_nop['candidate'] == c)]['top_topic'].value_counts()\
                                         .sort_index().plot(kind="bar", title="Topic Breakdown for " + c)
             matplotlib.pyplot.show()
             print all_nop[(all_nop['candidate'] == c)]['top_topic'].value_counts()\
                                         .sort_index()
             print
```

```
TOTAL STORIES 368
```



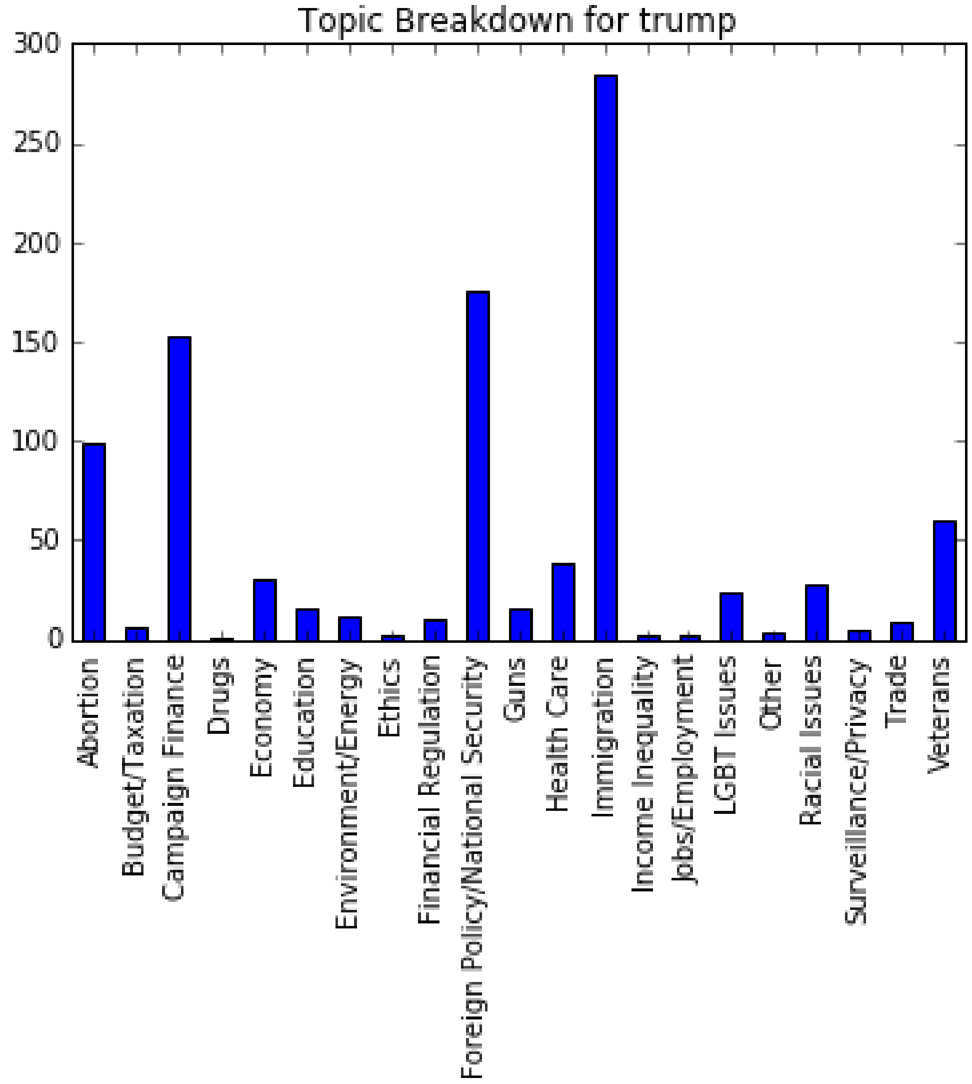
```
Abortion                            29
Budget/Taxation                      5
Campaign Finance                    90
Drugs                                1
Economy                             14
Education                            6
Environment/Energy                   6
Ethics                              52
Financial Regulation                21
Foreign Policy/National Security    46
Guns                                 9
Health Care                         42
Immigration                         22
Income Inequality                    6
Jobs/Employment                      1
Justice                              6
```

```
LGBT Issues                          1
Racial Issues                        9
Trade                                2
Name: top_topic, dtype: int64

TOTAL STORIES 314
```



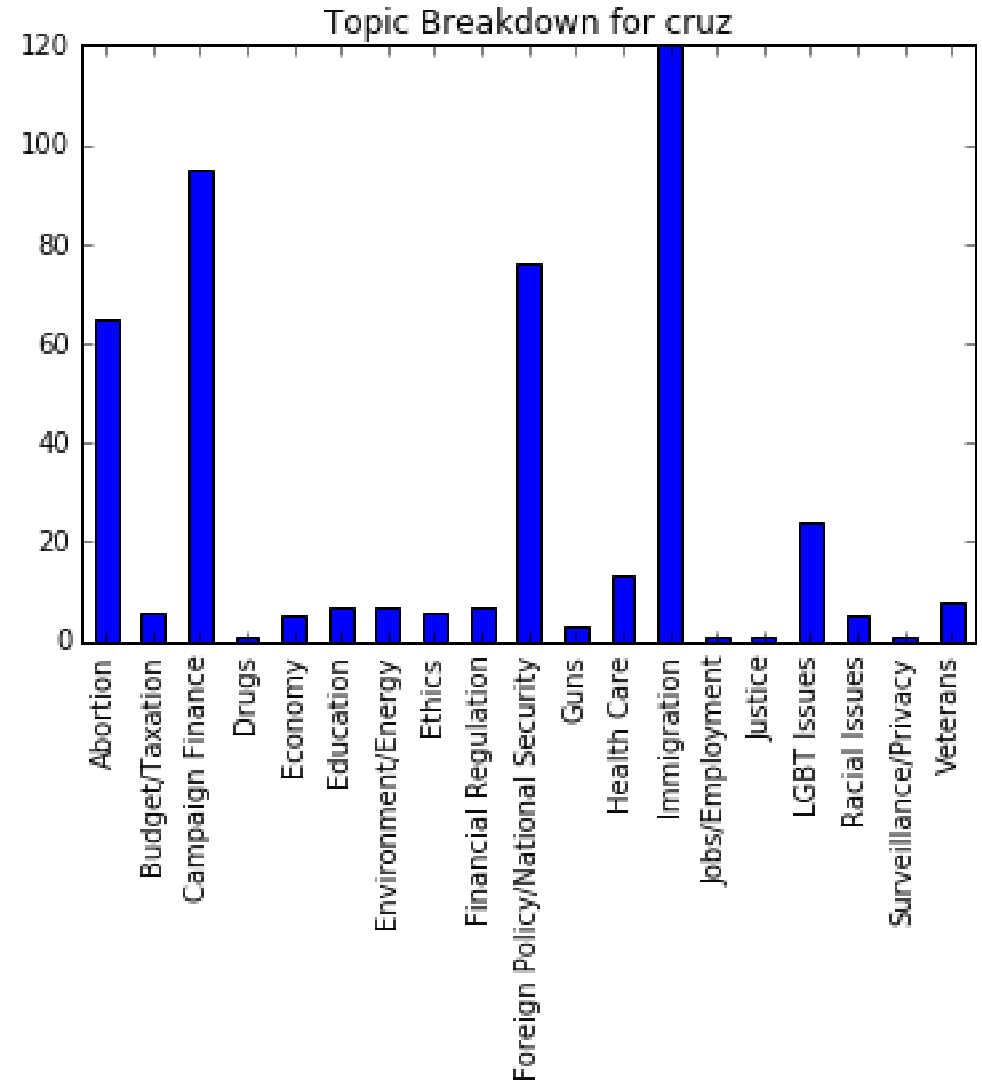
```
Abortion                            16
Budget/Taxation                      3
Campaign Finance                    84
Economy                             22
Education                            5
Environment/Energy                  10
Ethics                               8
Financial Regulation                22
Foreign Policy/National Security    40
```

```
Guns                              6
Health Care                      46
Immigration                      19
Income Inequality                 6
Justice                           4
Racial Issues                    18
Trade                             3
Veterans                          2
Name: top_topic, dtype: int64

TOTAL STORIES 975
```



```
Abortion                           99
Budget/Taxation                     6
Campaign Finance                  153
Drugs                               1
```

```
Economy                             30
Education                           16
Environment/Energy                  12
Ethics                               2
Financial Regulation                10
Foreign Policy/National Security   175
Guns                                16
Health Care                         38
Immigration                        284
Income Inequality                    2
Jobs/Employment                      2
LGBT Issues                         24
Other                                3
Racial Issues                       28
Surveillance/Privacy                 5
Trade                                9
Veterans                            60
Name: top_topic, dtype: int64

TOTAL STORIES 451
```



```
Abortion                             65
Budget/Taxation                       6
Campaign Finance                     95
Drugs                                 1
Economy                               5
Education                             7
Environment/Energy                    7
Ethics                                6
Financial Regulation                  7
Foreign Policy/National Security     76
Guns                                  3
Health Care                          13
Immigration                         120
Jobs/Employment                       1
Justice                               1
LGBT Issues                          24
```

```
Racial Issues                        5
Surveillance/Privacy                 1
Veterans                             8
Name: top_topic, dtype: int64
```

0.6 Finding Duplicate Titles. Note I may still want to keep dupes.

```
In [54]: # Drop dupes?
         deduped_title = filtered.drop_duplicates(['title'])
         deduped_url = filtered.drop_duplicates(['url'])
         deduped_drop = filtered.drop_duplicates(['title'], keep=False)
```

```
In [58]: print len(filtered)
         print len(deduped_title)
         print len(deduped_url)
         print len(deduped_drop)
         print
         print deduped_title['candidate'].value_counts()
         print
         print deduped_drop['candidate'].value_counts()
```

```
1612
1285
1285
963

trump      759
clinton    230
cruz       188
sanders    108
Name: candidate, dtype: int64

trump      550
cruz       188
clinton    118
sanders    107
Name: candidate, dtype: int64
```

0.7 Filter into Single Candidate Stories

```
In [85]: re_all = 'hillary|clinton|bernie|sanders|marco|rubio|donald|trump|ted|cruz|john|kasich'
         len(deduped_title[(~deduped_title['candidate'].str.contains('hillary|clinton'))])
```

```
Out[85]: 1055
```

```
In [91]: clinton_only = deduped_title[(~deduped_title['title'].str.contains('bernie|sanders|marco|rubio
         clinton_only.to_csv('data/clinton_only.csv',  columns=['title', 'url', 'org',\
                                            'top_topic', 'flesch', 'gunning_fog'])
```

```
In [92]: trump_only = deduped_title[(~deduped_title['title'].str.contains('hillary|clinton|bernie|sande
         trump_only.to_csv('data/trump_only.csv',  columns=['title', 'url', 'org',\
                                            'top_topic', 'flesch', 'gunning_fog'])
```

```
In [93]: sanders_only = deduped_title[(~deduped_title['title'].str.contains('hillary|clinton|marco|rubi
         sanders_only.to_csv('data/sanders_only.csv',  columns=['title', 'url', 'org',\
                                            'top_topic', 'flesch', 'gunning_fog'])
```

```
In [94]: cruz_only = deduped_title[(~deduped_title['title'].str.contains('bernie|sanders|hillary|clinto
         cruz_only.to_csv('data/cruz_only.csv',  columns=['title', 'url', 'org',\
                                                 'top_topic', 'flesch', 'gunning_fog'])
```

0.8 Topic Breakdown

```
In [113]: print "TOTAL:", len(clinton_only)
          clinton_only['top_topic'].value_counts()
```

```
TOTAL: 107
```

```
Out[113]: Campaign Finance                    35
          Foreign Policy/National Security    20
          Abortion                            19
          Immigration                         12
          Health Care                         12
          Financial Regulation                 9
          Name: top_topic, dtype: int64
```

```
In [114]: print "TOTAL:", len(trump_only)
          trump_only['top_topic'].value_counts()
```

```
TOTAL: 500
```

```
Out[114]: Immigration                         199
          Foreign Policy/National Security    121
          Campaign Finance                     98
          Abortion                             54
          Health Care                          22
          Financial Regulation                  6
          Name: top_topic, dtype: int64
```

```
In [112]: print "TOTAL:", len(cruz_only)
          cruz_only['top_topic'].value_counts()
```

```
TOTAL: 136
```

```
Out[112]: Campaign Finance                    50
          Immigration                         35
          Foreign Policy/National Security    21
          Abortion                            18
          Health Care                          7
          Financial Regulation                 5
          Name: top_topic, dtype: int64
```

```
In [111]: print "TOTAL:", len(sanders_only)
          sanders_only['top_topic'].value_counts()
```

```
TOTAL: 97
```

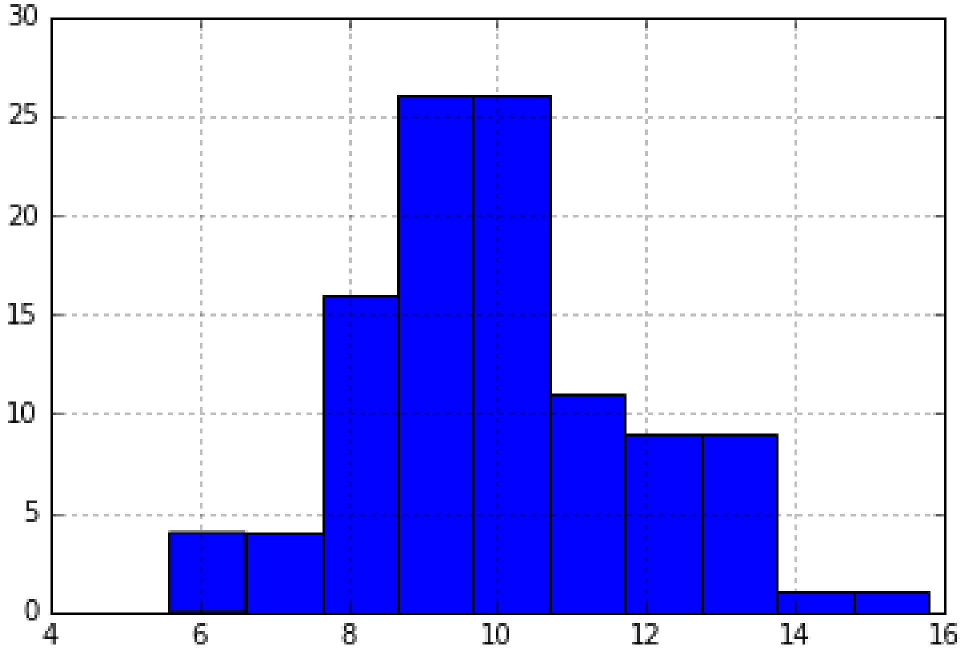
```
Out[111]: Campaign Finance                    39
          Foreign Policy/National Security    15
          Health Care                         15
          Financial Regulation                10
          Immigration                          9
          Abortion                             9
          Name: top_topic, dtype: int64
```

0.9 Flesch Breakdown

```
In [129]: print "TOTAL:", len(clinton_only)
          clinton_only['flesch'].hist(bins=10)
```

```
TOTAL: 107
```

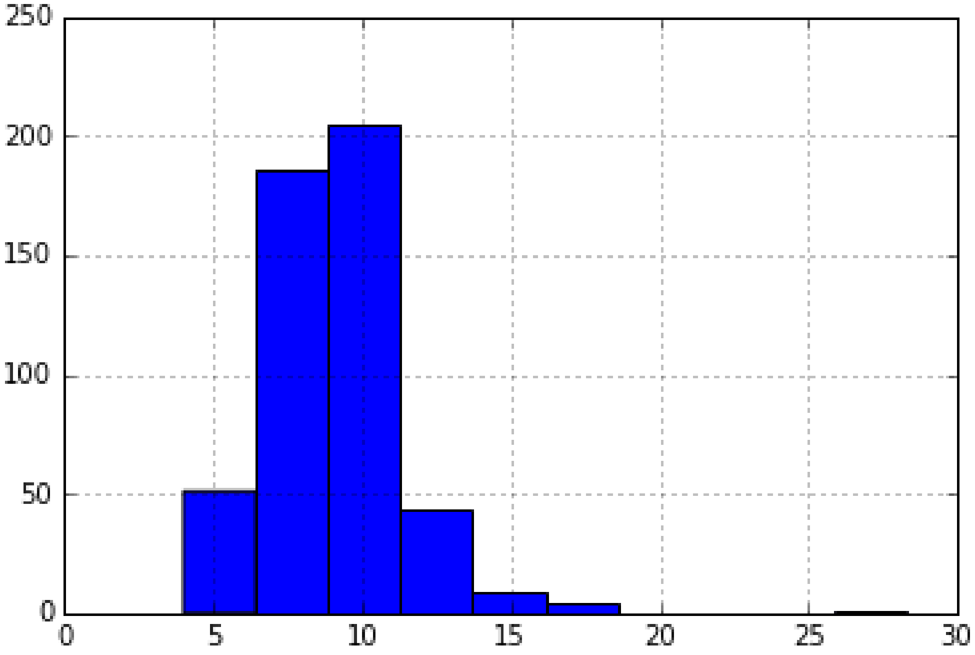
```
Out[129]: <matplotlib.axes._subplots.AxesSubplot at 0x1182b2710>
```



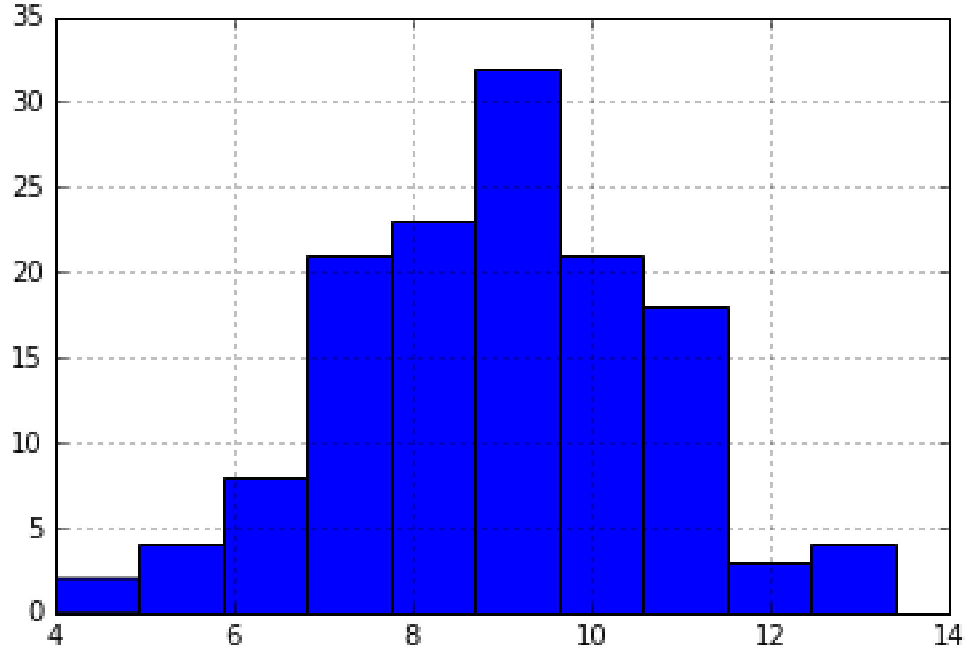
```
In [128]: print "TOTAL:", len(trump_only)
          trump_only['flesch'].hist(bins=10)
```

```
TOTAL: 500
```

```
Out[128]: <matplotlib.axes._subplots.AxesSubplot at 0x118280610>
```



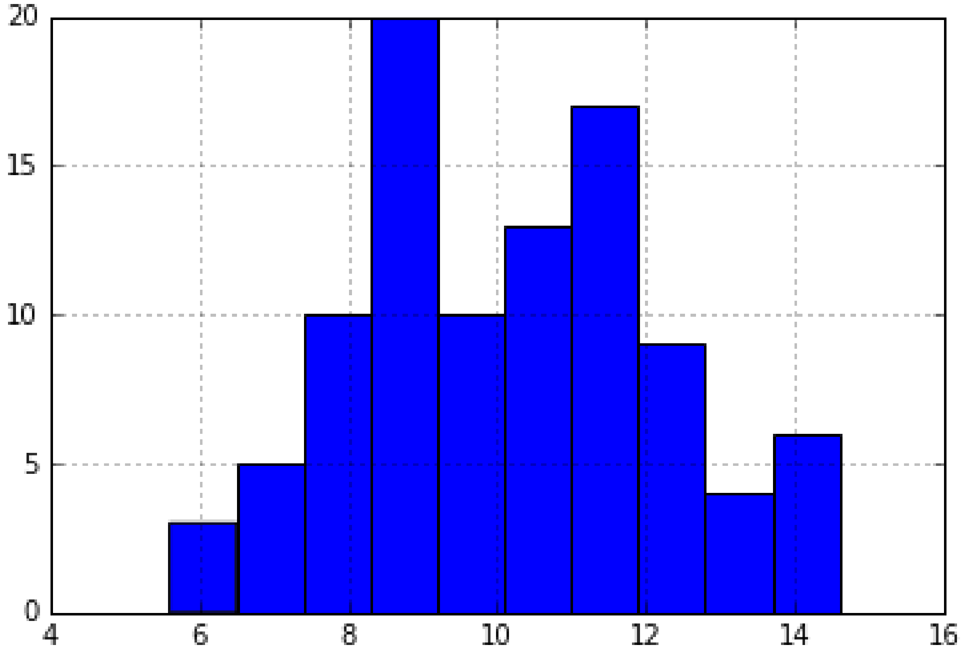
```
In [130]: print "TOTAL:", len(cruz_only)
          cruz_only['flesch'].hist(bins=10)

TOTAL: 136

Out[130]: <matplotlib.axes._subplots.AxesSubplot at 0x118432910>
```



```
In [131]: print "TOTAL:", len(sanders_only)
          sanders_only['flesch'].hist()
```

```
TOTAL: 97
```

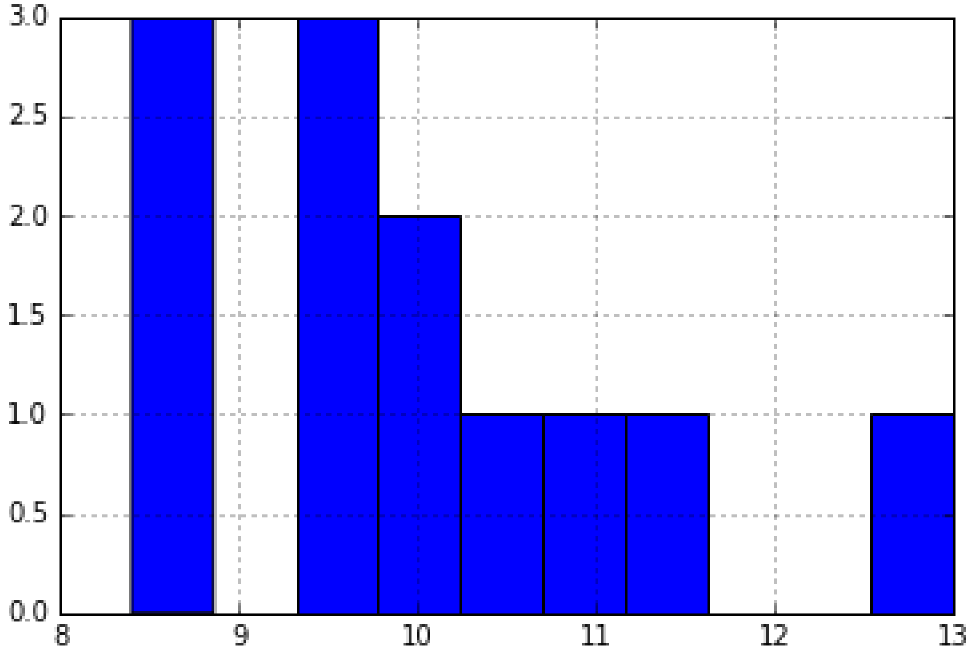
```
Out[131]: <matplotlib.axes._subplots.AxesSubplot at 0x1185c4690>
```



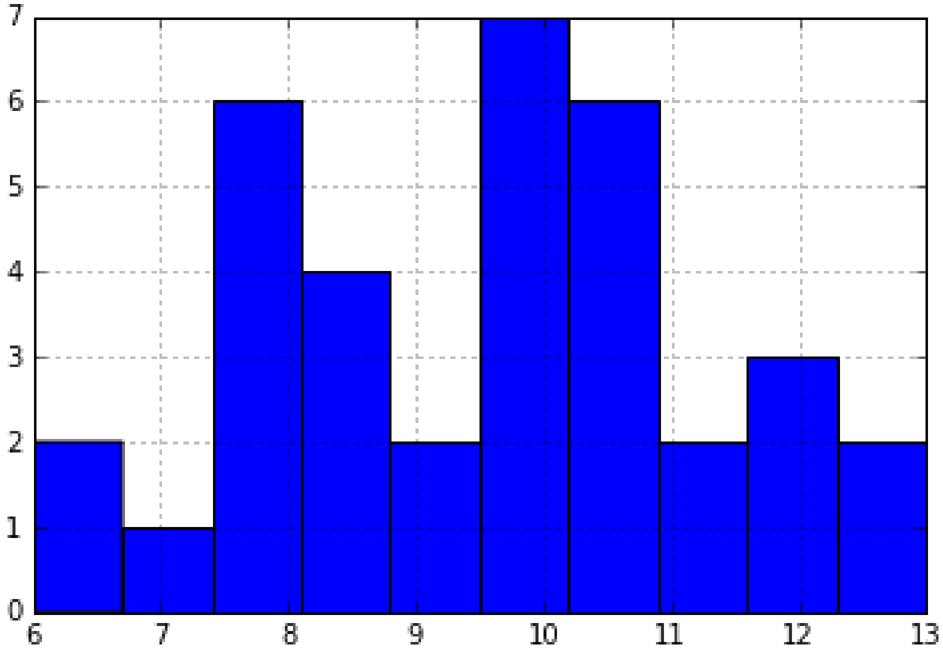
0.10 Is there Topic Bias for Reading Level?

```
In [142]: for t in TOPICS:
              print t
              clinton_only[clinton_only['top_topic'] == t]['flesch'].hist()
              matplotlib.pyplot.show()
```

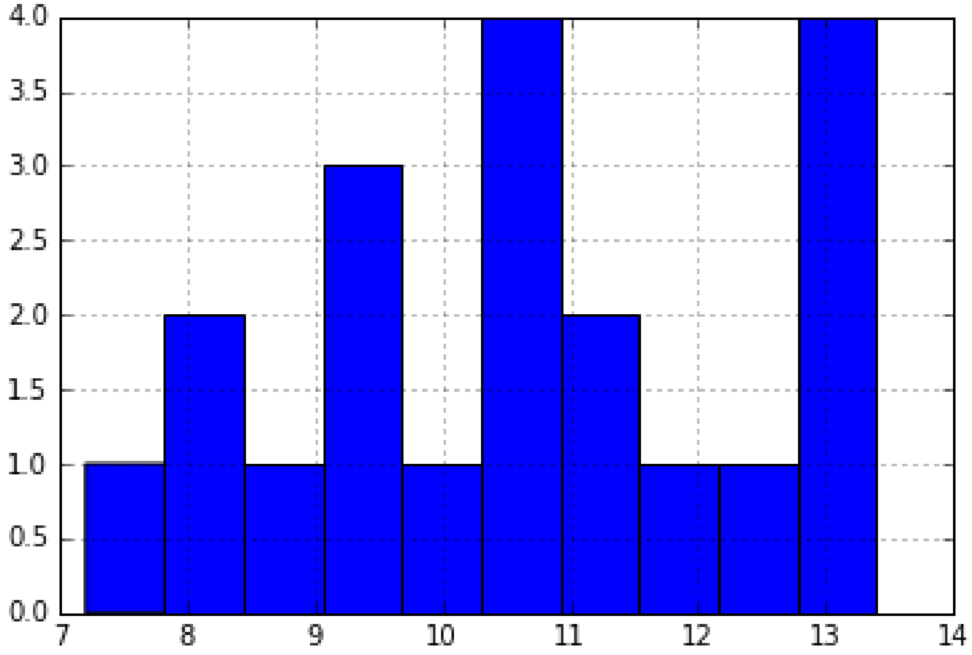
```
Immigration
```



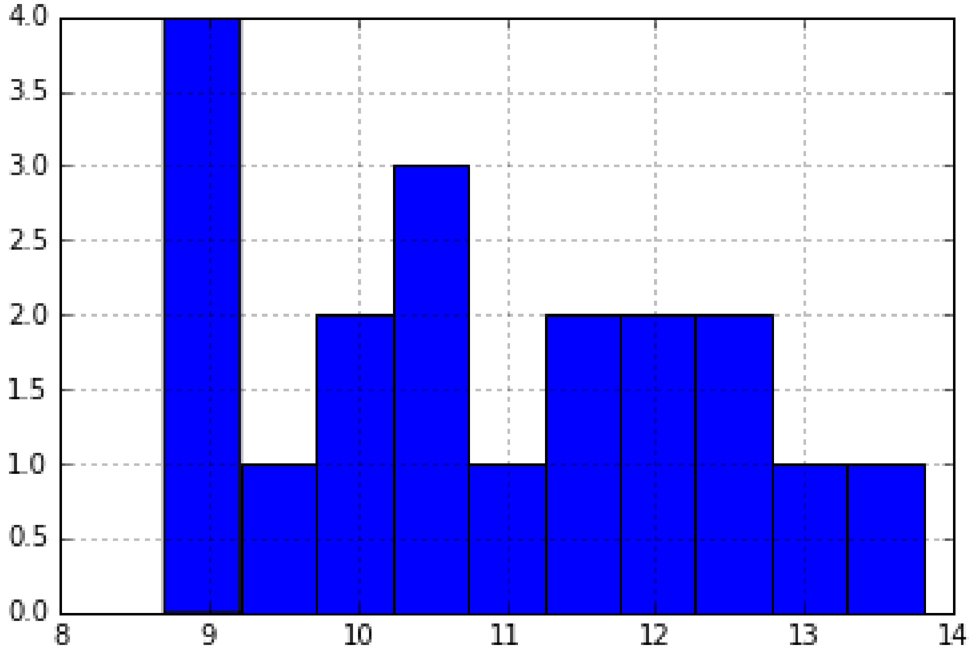
Campaign Finance



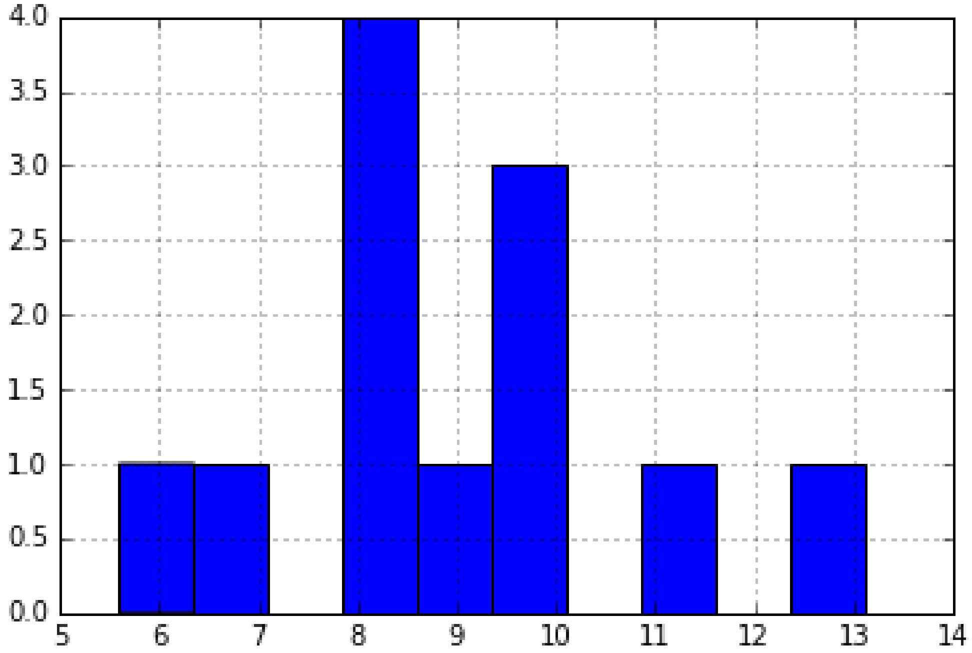
Foreign Policy/National Security



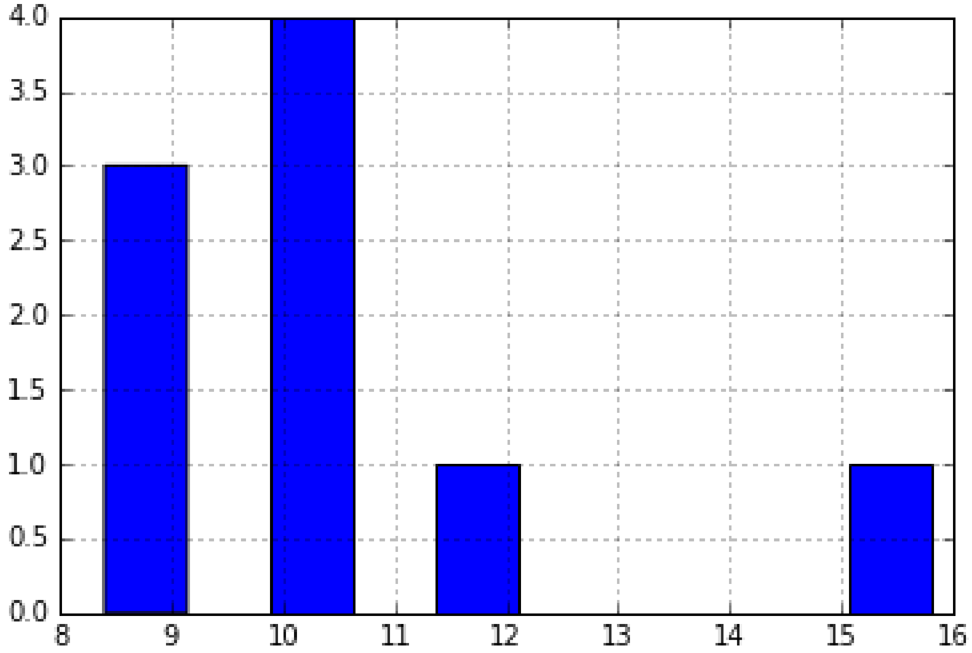
Abortion



Health Care



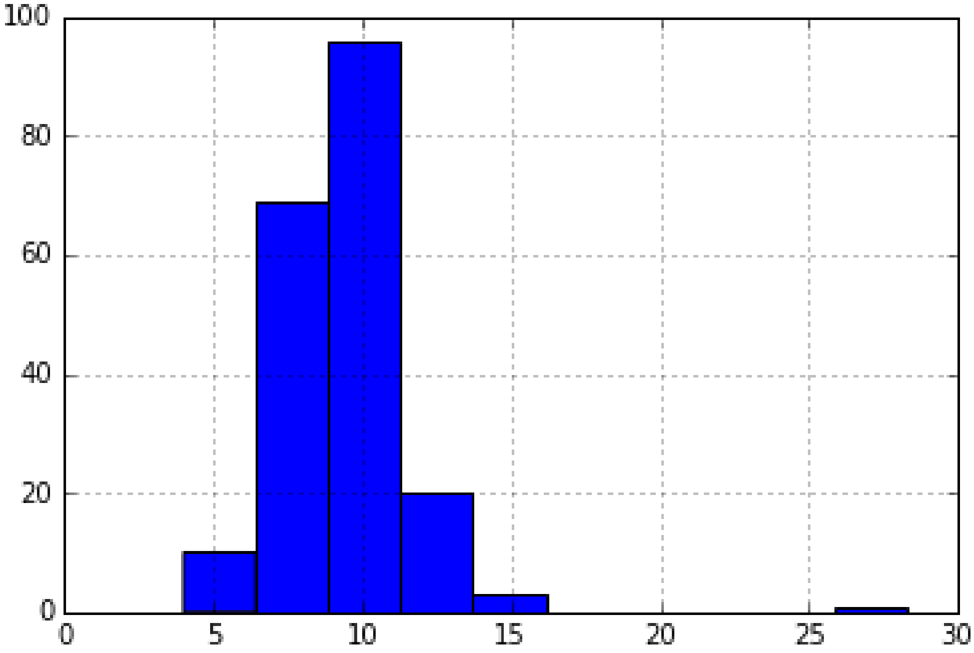
```
Financial Regulation
```



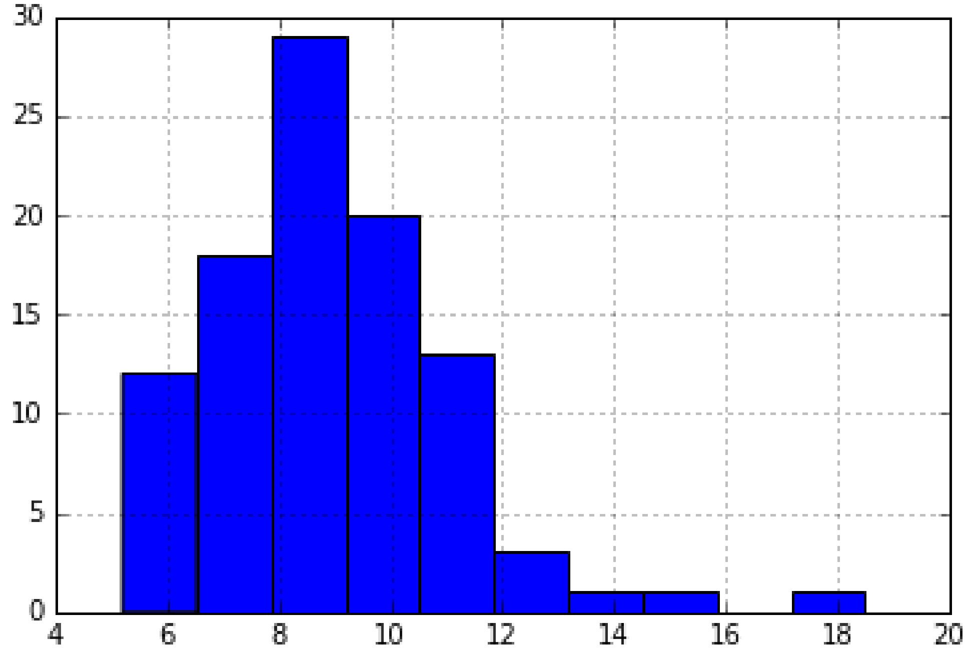
```
In [143]: for t in TOPICS:
              print t
```

```
        trump_only[trump_only['top_topic'] == t]['flesch'].hist()
        matplotlib.pyplot.show()
```

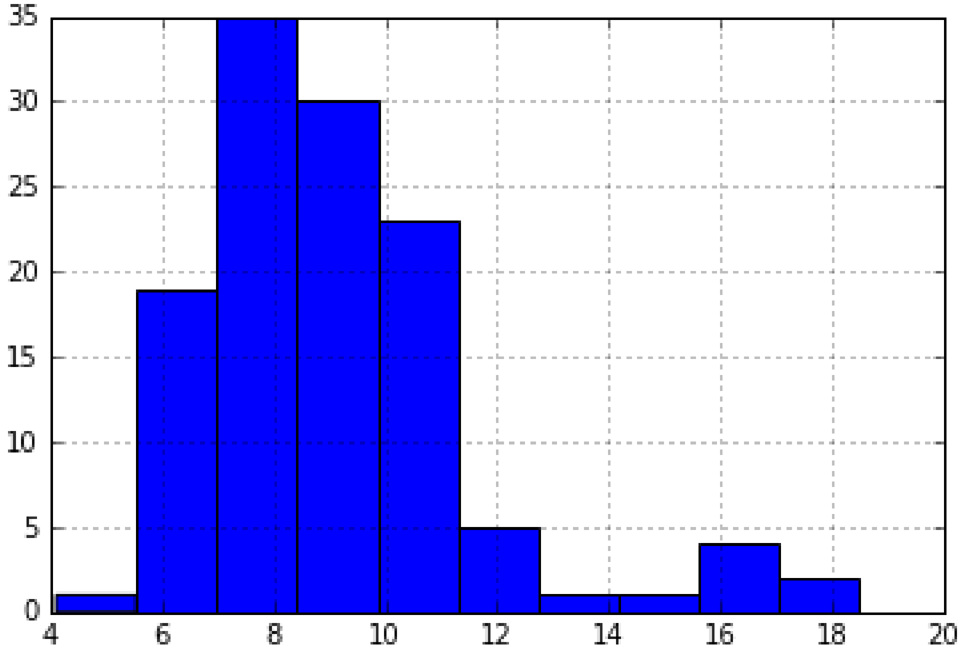
```
Immigration
```



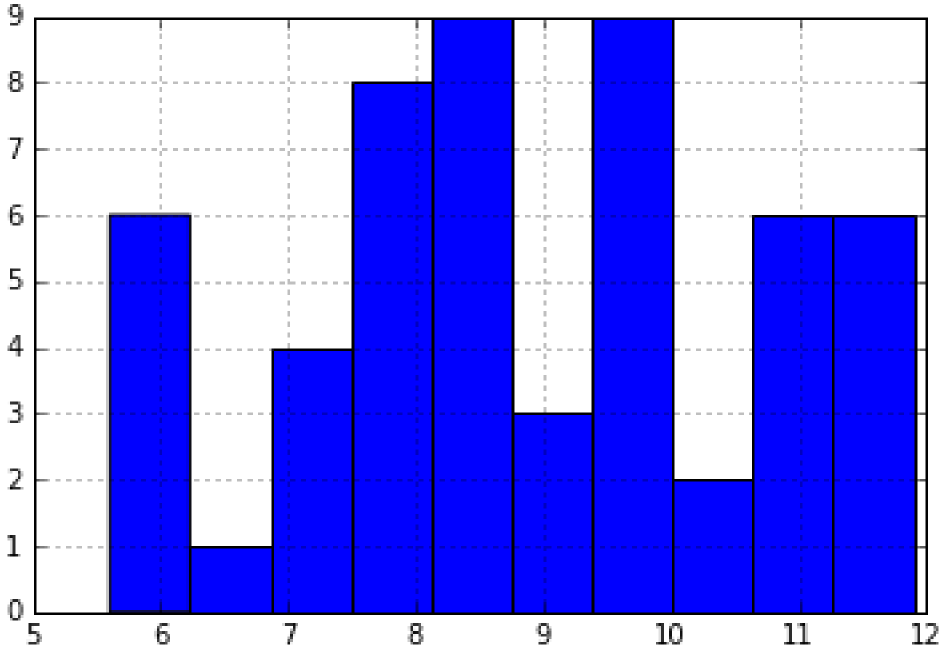
```
Campaign Finance
```



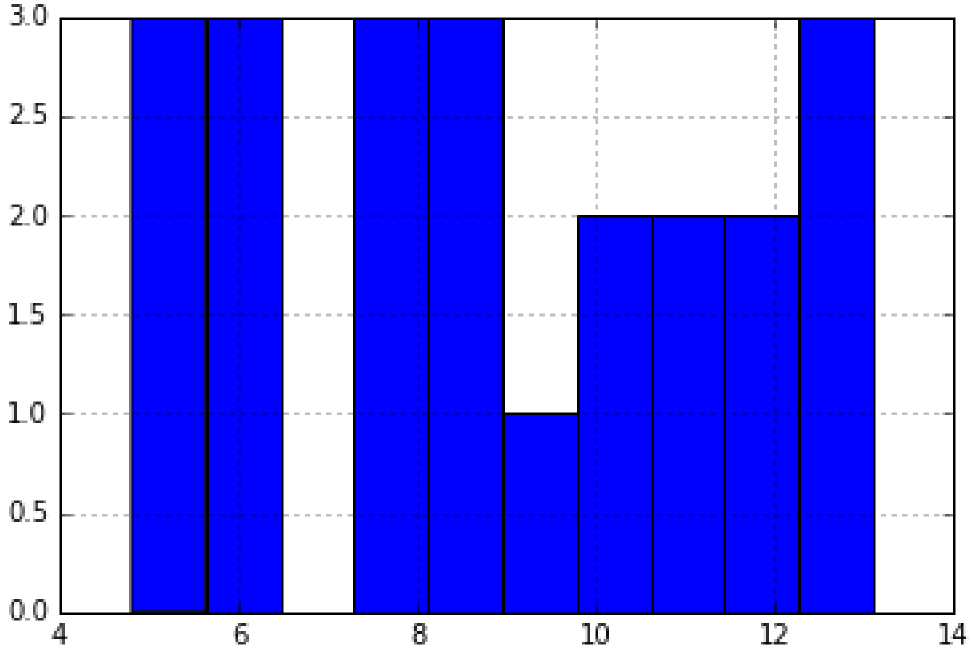
Foreign Policy/National Security



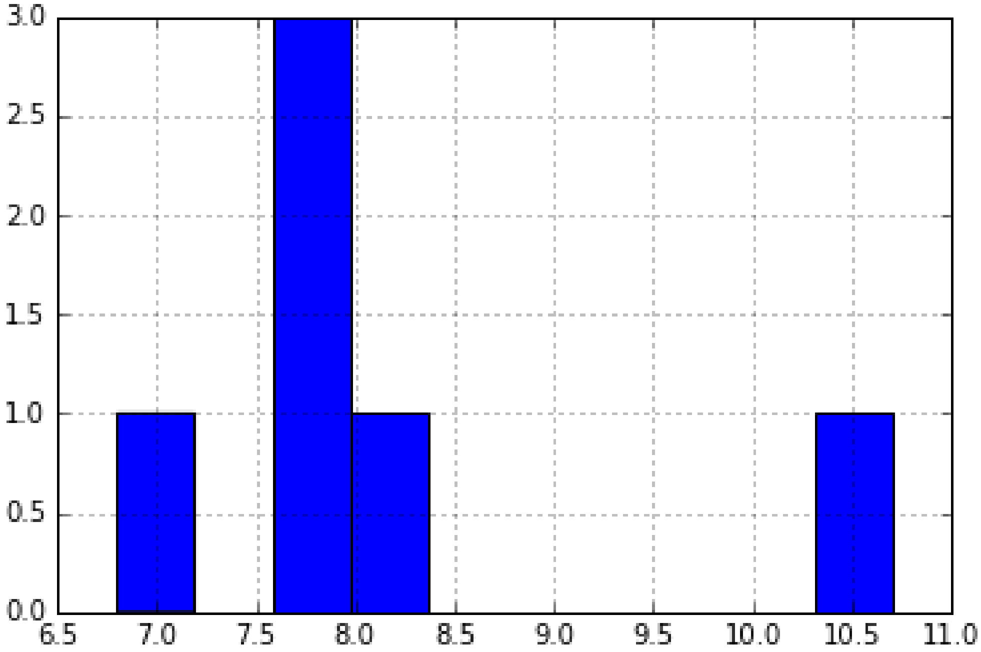
Abortion



Health Care

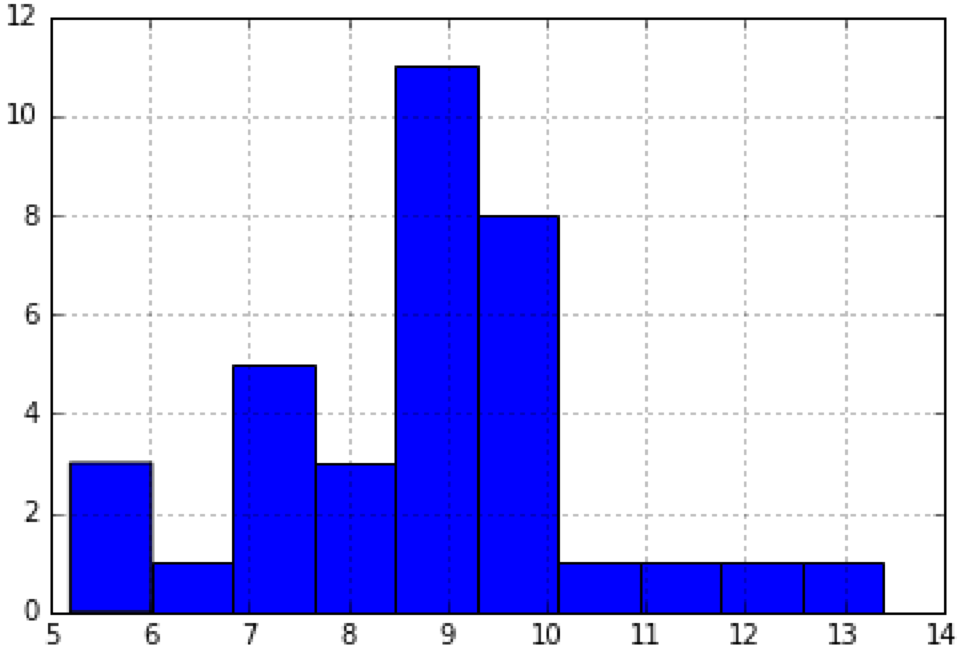


Financial Regulation

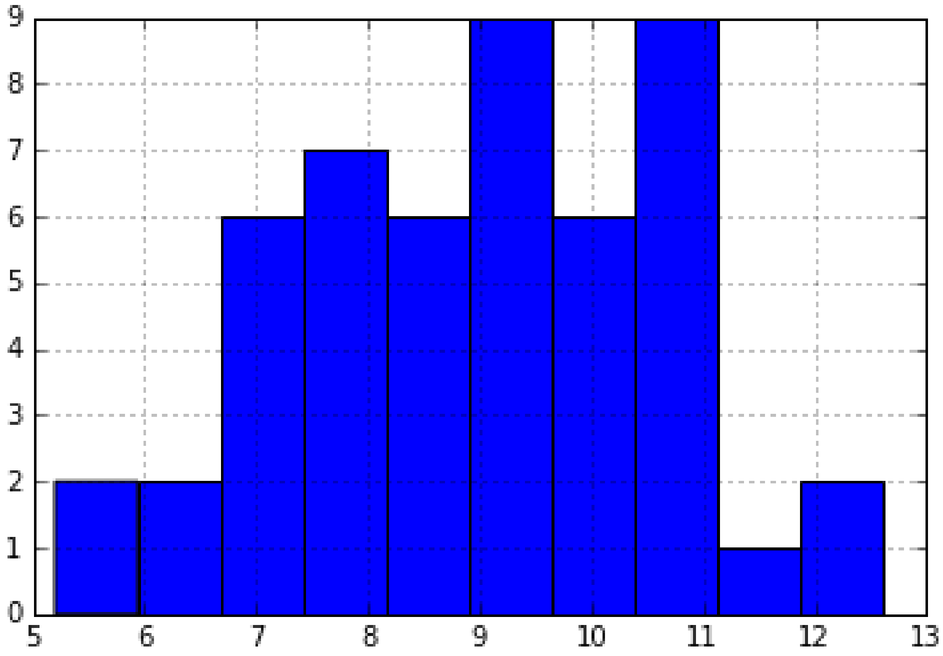


```
In [144]: for t in TOPICS:
              print t
              cruz_only[cruz_only['top_topic'] == t]['flesch'].hist()
              matplotlib.pyplot.show()
```

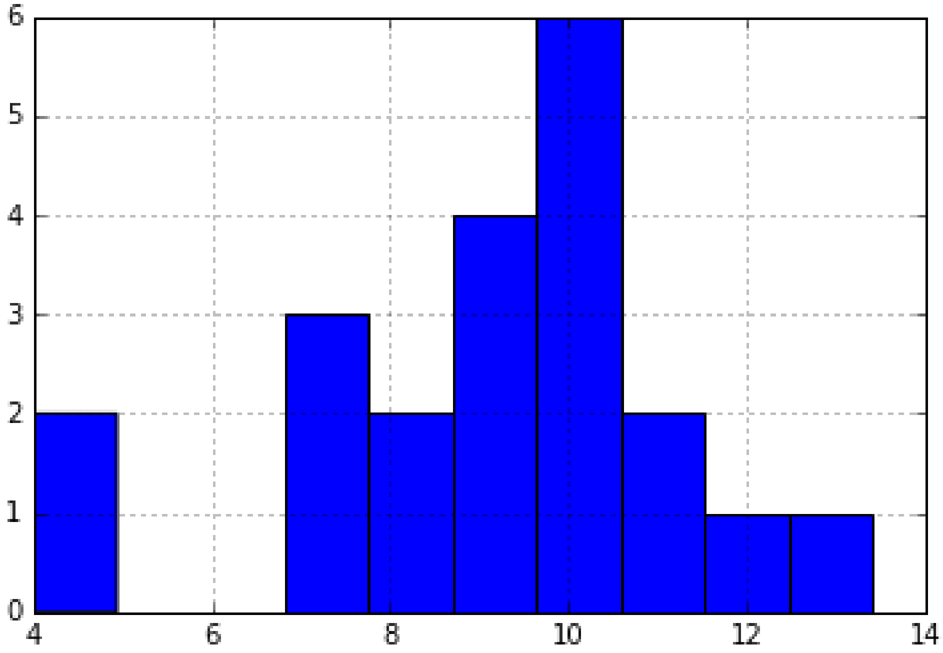
```
Immigration
```



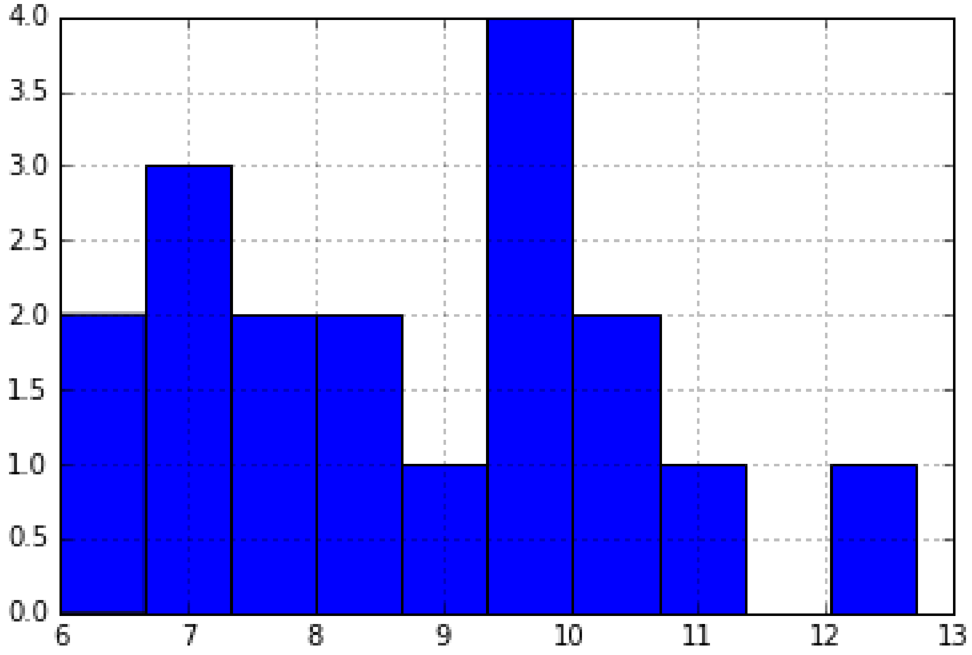
```
Campaign Finance
```



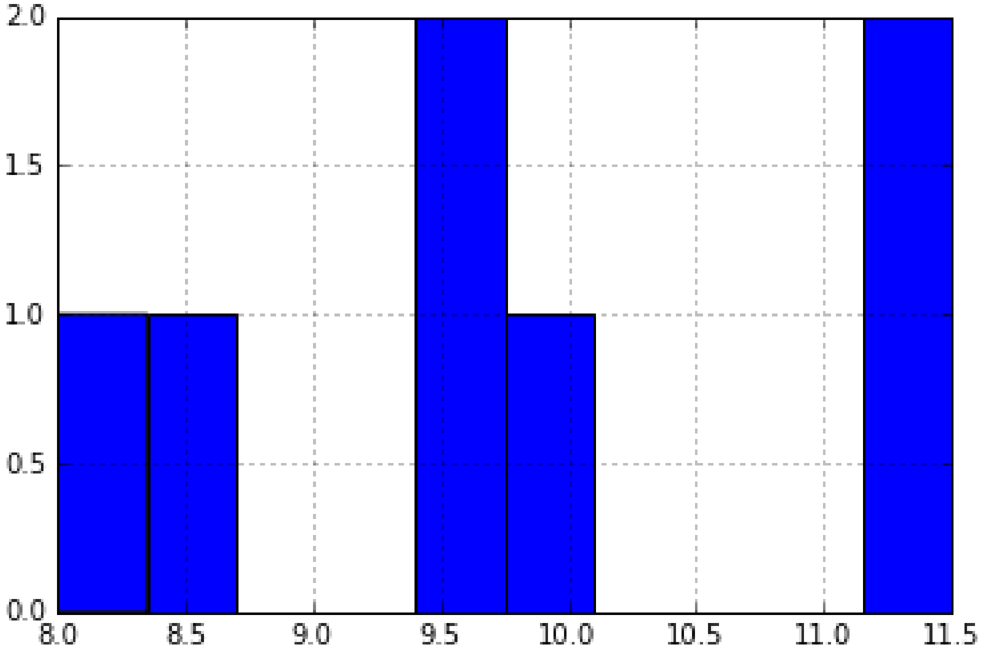
Foreign Policy/National Security



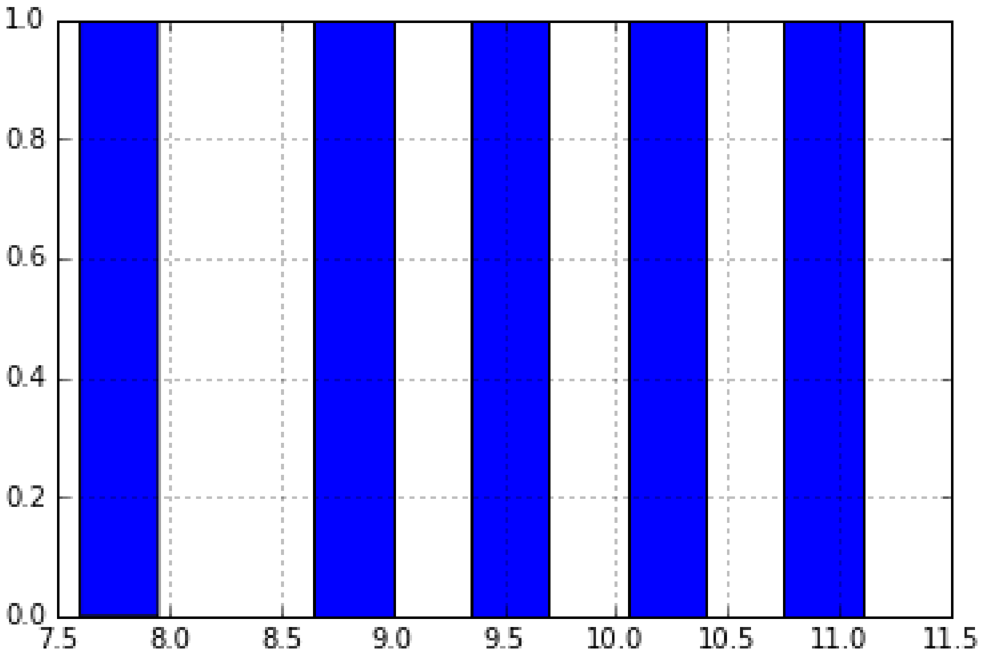
Abortion



Health Care

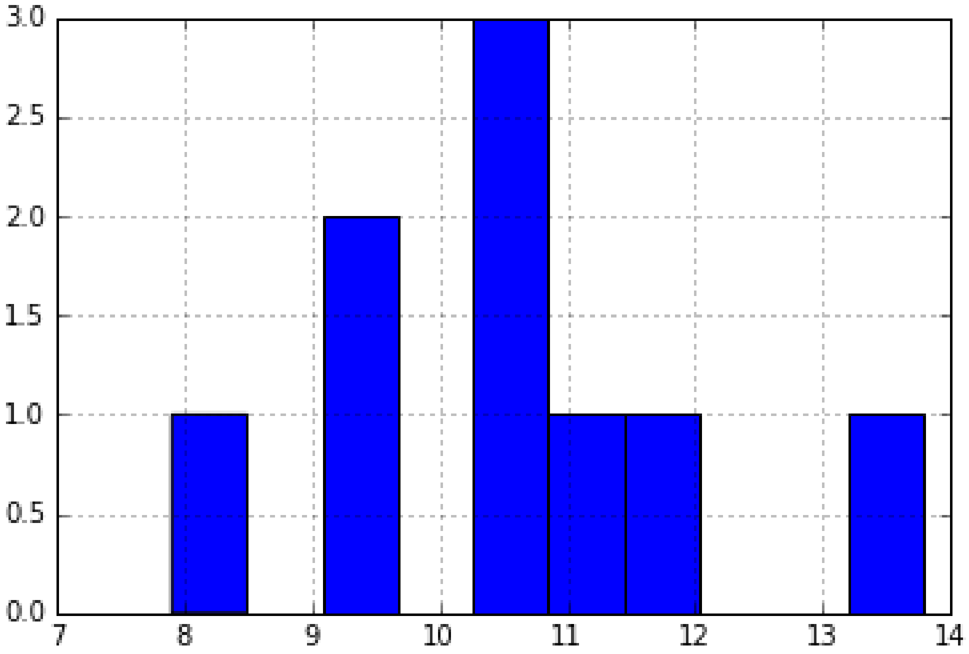


Financial Regulation

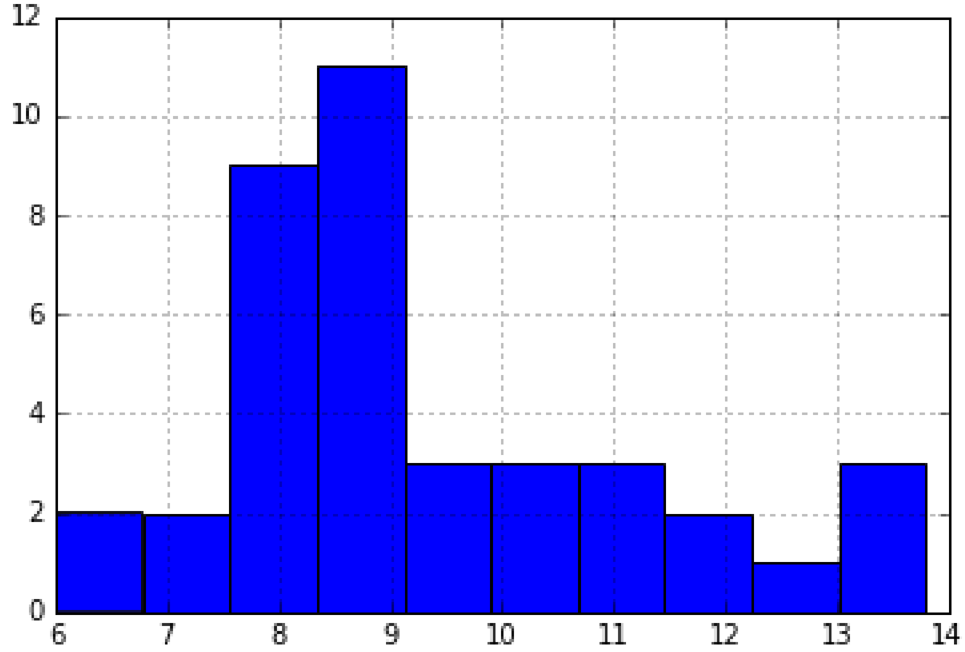


```
In [145]: for t in TOPICS:
              print t
              sanders_only[sanders_only['top_topic'] == t]['flesch'].hist()
              matplotlib.pyplot.show()
```

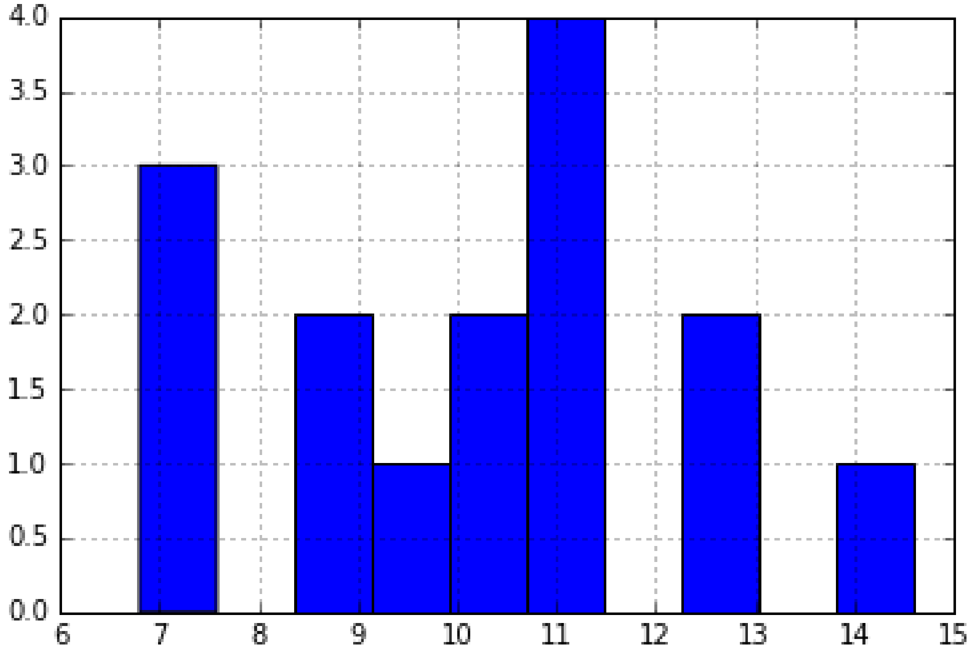
```
Immigration
```



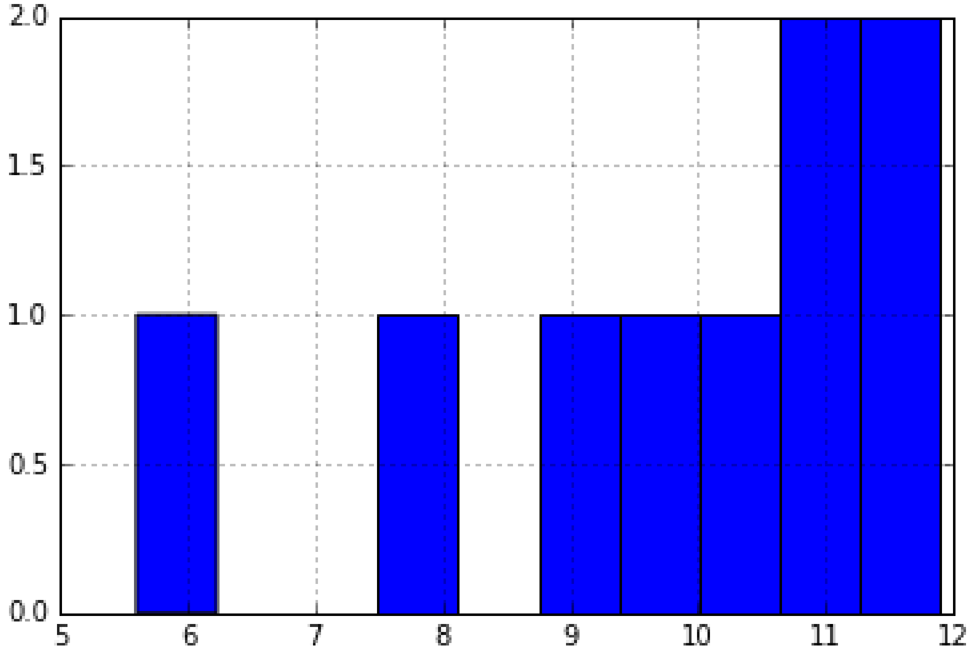
Campaign Finance



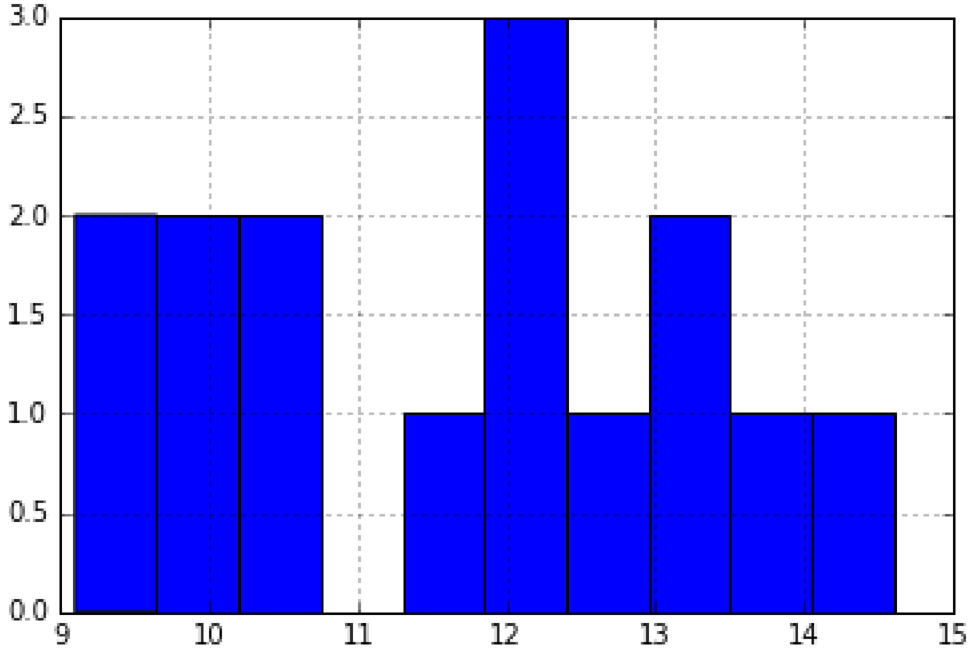
Foreign Policy/National Security



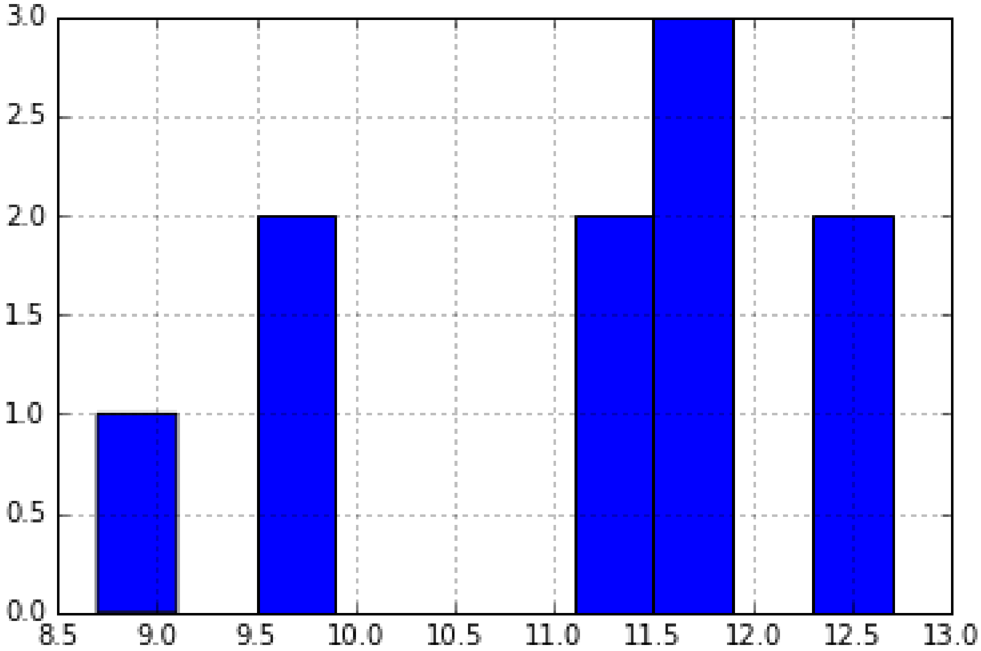
Abortion



Health Care



```
Financial Regulation
```



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