In [131]:

```
import pandas as pd
from pandas import Series,DataFrame
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
sns.set_style('whitegrid')
%matplotlib inline
from __future__ import division
import requests
```

In [132]:

```
from io import StringIO
```

In [133]:

```
url = "http://elections.huffingtonpost.com/pollster/2012-general-election-romney-vs-obama.csv"
source = requests.get(url).text
poll_data = StringIO(source)
```

In [134]:

```
poll_df = pd.read_csv(poll_data)
poll_df.head()
```

Out[134]:

	Pollster	Start Date	End Date	Entry Date/Time (ET)	Number of Observations	Population	Mode	Obama	Romney	Undecided	Other	
0	Politico/GWU/Battleground	2012-11-04	2012-11-05	2012-11-06T08:40:26Z	1000.0	Likely Voters	Live Phone	47.0	47.0	6.0	NaN	http
1	YouGov/Economist	2012-11-03	2012-11-05	2012-11-26T15:31:23Z	740.0	Likely Voters	Internet	49.0	47.0	3.0	NaN	http
2	Gravis Marketing	2012-11-03	2012-11-05	2012-11-06T09:22:02Z	872.0	Likely Voters	Automated Phone	48.0	48.0	4.0	NaN	http
3	IBD/TIPP	2012-11-03	2012-11-05	2012-11-06T08:51:48Z	712.0	Likely Voters	Live Phone	50.0	49.0	NaN	1.0	http
4	Rasmussen	2012-11-03	2012-11-05	2012-11-06T08:47:50Z	1500.0	Likely Voters	Automated Phone	48.0	49.0	NaN	NaN	http

In [135]:

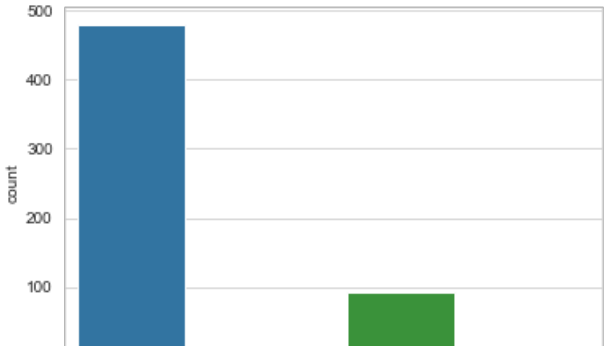
```
poll_df['Affiliation'].value_counts()
```

Out[135]:

```
None      480
Dem        93
Rep         9
Other       4
Name: Affiliation, dtype: int64
```

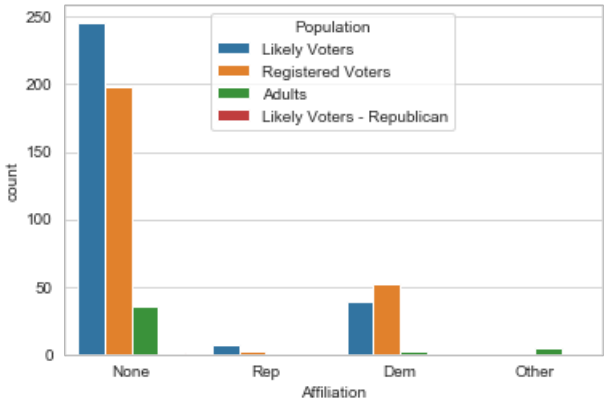
In [136]:

```
sns.countplot(poll_df['Affiliation']);
```



In [137]:

```
sns.countplot(poll_df['Affiliation'], hue=poll_df['Population']);
```



In [138]:

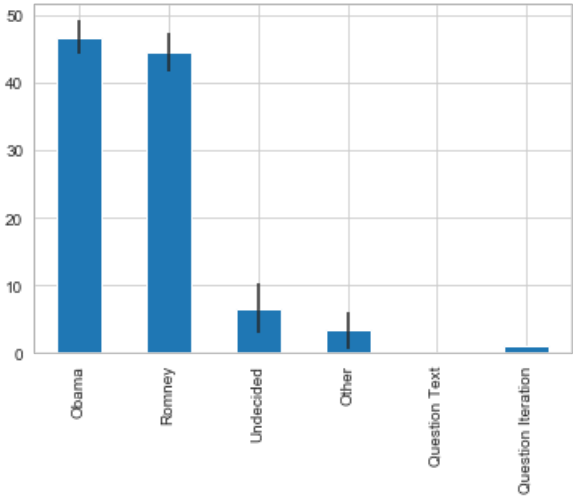
```
avg = pd.DataFrame(poll_df.mean())
avg = avg.drop('Number of Observations', axis=0)
```

In [139]:

```
std = pd.DataFrame(poll_df.std())
std = std.drop('Number of Observations', axis=0)
```

In [140]:

```
avg.plot(yerr=std, kind='bar', legend=False);
```



In [141]:

```
poll_avg = pd.concat([avg, std], axis=1)
poll_avg.columns = ['Average', 'Standard Deviation']
```

In [142]:

```
poll_avg.head()
```

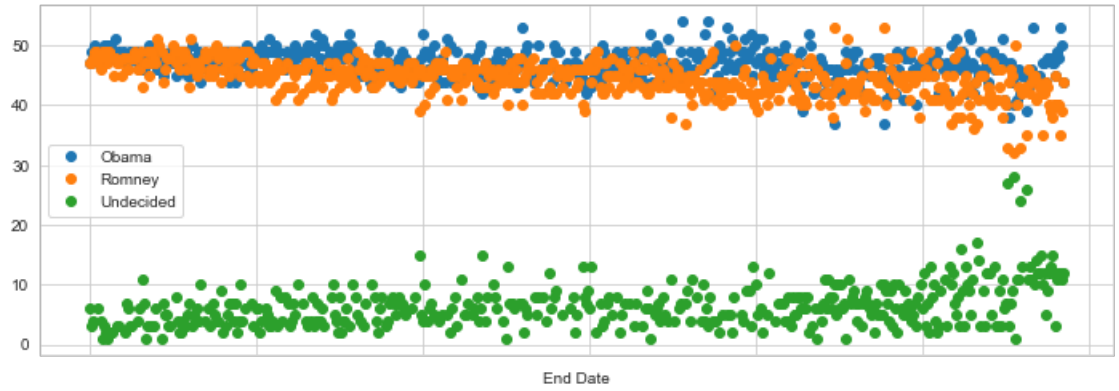
Out[142]:

	Average	Standard Deviation
Obama	46.805461	2.422058
Romney	44.614334	2.906180
Undecided	6.550827	3.701754
Other	3.376238	2.692726
Question Text	NaN	NaN

	Average	Standard Deviation

In [143]:

```
poll_df.plot(x='End Date', y=['Obama', 'Romney', 'Undecided'], linestyle='', marker='o', figsize=(12, 4
));
```



In [144]:

```
from datetime import datetime
```

In [145]:

```
poll_df['Difference'] = (poll_df.Obama - poll_df.Romney) / 100
poll_df.head()
```

Out[145]:

	Pollster	Start Date	End Date	Entry Date/Time (ET)	Number of Observations	Population	Mode	Obama	Romney	Undecided	Other	
0	Politico/GWU/Battleground	2012-11-04	2012-11-05	2012-11-06T08:40:26Z	1000.0	Likely Voters	Live Phone	47.0	47.0	6.0	NaN	http
1	YouGov/Economist	2012-11-03	2012-11-05	2012-11-26T15:31:23Z	740.0	Likely Voters	Internet	49.0	47.0	3.0	NaN	http
2	Gravis Marketing	2012-11-03	2012-11-05	2012-11-06T09:22:02Z	872.0	Likely Voters	Automated Phone	48.0	48.0	4.0	NaN	http
3	IBD/TIPP	2012-11-03	2012-11-05	2012-11-06T08:51:48Z	712.0	Likely Voters	Live Phone	50.0	49.0	NaN	1.0	http
4	Rasmussen	2012-11-03	2012-11-05	2012-11-06T08:47:50Z	1500.0	Likely Voters	Automated Phone	48.0	49.0	NaN	NaN	http

In [146]:

```
poll_df = poll_df.groupby(['Start Date'], as_index=False).mean()
```

In [147]:

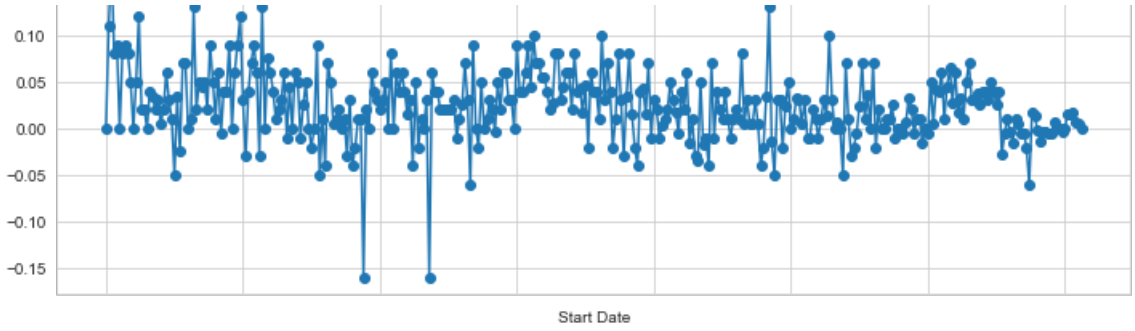
```
poll_df.head()
```

Out[147]:

	Start Date	Number of Observations	Obama	Romney	Undecided	Other	Question Text	Question Iteration	Difference
0	2009-03-13	1403.0	44.0	44.0	12.0	NaN	NaN	1	0.00
1	2009-04-17	686.0	50.0	39.0	11.0	NaN	NaN	1	0.11
2	2009-05-14	1000.0	53.0	35.0	12.0	NaN	NaN	1	0.18
3	2009-06-12	638.0	48.0	40.0	12.0	NaN	NaN	1	0.08
4	2009-07-15	577.0	49.0	40.0	11.0	NaN	NaN	1	0.09

In [148]:

```
poll_df.plot('Start Date', 'Difference', figsize=(12, 4), marker='o', linestyle='-');
```



In [149]:

```
row_in = 0
xlimit = []

for date in poll_df['Start Date']:
    if date[0:7] == '2012-10':
        xlimit.append(row_in)
        row_in += 1
    else:
        row_in += 1

print(min(xlimit))
print(max(xlimit))
```

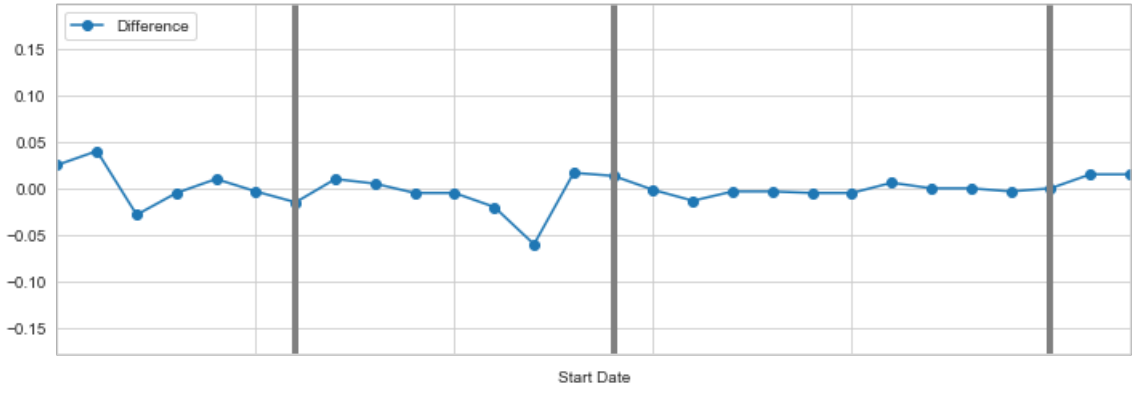
```
325
352
```

In [150]:

```
poll_df.plot('Start Date', 'Difference', figsize=(12, 4), marker='o', linestyle='-', xlim=(325, 352));
# oct 3
plt.axvline(x=329+2, linewidth=4, color='gray')
# oct 11
plt.axvline(x=329+10, linewidth=4, color='gray')
# oct 22
plt.axvline(x=329+21, linewidth=4, color='gray')
```

Out[150]:

```
<matplotlib.lines.Line2D at 0x1a25a3de10>
```



In [151]:

```
donor_df = pd.read_csv('Election_Donor_Data.csv')
```

```
/Users/sudeng/anaconda3/lib/python3.7/site-packages/IPython/core/interactiveshell.py:2785: DtypeWarning
: Columns (6) have mixed types. Specify dtype option on import or set low_memory=False.
  interactivity=interactivity, compiler=compiler, result=result)
```

In [152]:

```
donor_df.head()
```

Out[152]:

	cmte_id	cand_id	cand_nm	contbr_nm	contbr_city	contbr_st	contbr_zip	contbr_employer	contbr_occupation	con
0	C00410118	P20002978	Bachmann, Michelle	HARVEY, WILLIAM	MOBILE	AL	3.6601e+08	RETIRED	RETIRED	

	cmte_id	cand_id	cand_nm	contbr_nm	contbr_city	contbr_st	contbr_zip	contbr_employer	contbr_occupation	con
1	C00410118	P20002978	Bachmann, Michelle	HARVEY, WILLIAM	MOBILE	AL	3.6601e+08	RETIRED	RETIRED	
2	C00410118	P20002978	Bachmann, Michelle	SMITH, LANIER	LANETT	AL	3.68633e+08	INFORMATION REQUESTED	INFORMATION REQUESTED	
3	C00410118	P20002978	Bachmann, Michelle	BLEVINS, DARONDA	PIGGOTT	AR	7.24548e+08	NONE	RETIRED	
4	C00410118	P20002978	Bachmann, Michelle	WARDENBURG, HAROLD	HOT SPRINGS NATION	AR	7.19016e+08	NONE	RETIRED	

In [153]:

```
donor_df.shape
```

Out[153]:

```
(1001731, 16)
```

In [154]:

```
donor_df['contb_receipt_amt'].value_counts().head(10)
```

Out[154]:

```
100.0     178188
50.0      137584
25.0      110345
250.0      91182
500.0      57984
2500.0     49005
35.0       37237
1000.0     36494
10.0       33986
200.0      27813
Name: contb_receipt_amt, dtype: int64
```

In [155]:

```
don_mean = donor_df['contb_receipt_amt'].mean()
don_std = donor_df['contb_receipt_amt'].std()

print('The average donation was %.2f with a std of %.2f'%(don_mean,don_std))
```

```
The average donation was 298.24 with a std of 3749.67
```

In [156]:

```
top_donor = donor_df['contb_receipt_amt'].copy()
```

In [157]:

```
top_donor = top_donor[top_donor > 0]
```

In [158]:

```
top_donor.sort_values(axis=0, ascending=False).head(10)
```

Out[158]:

```
325136    2014490.51
326651    1944042.43
344539    1679114.65
344419    1511192.17
319478     526246.17
335187     512710.91
257270     451726.00
114754      33300.00
217891      25800.00
823345      25000.00
Name: contb_receipt_amt, dtype: float64
```

In [159]:

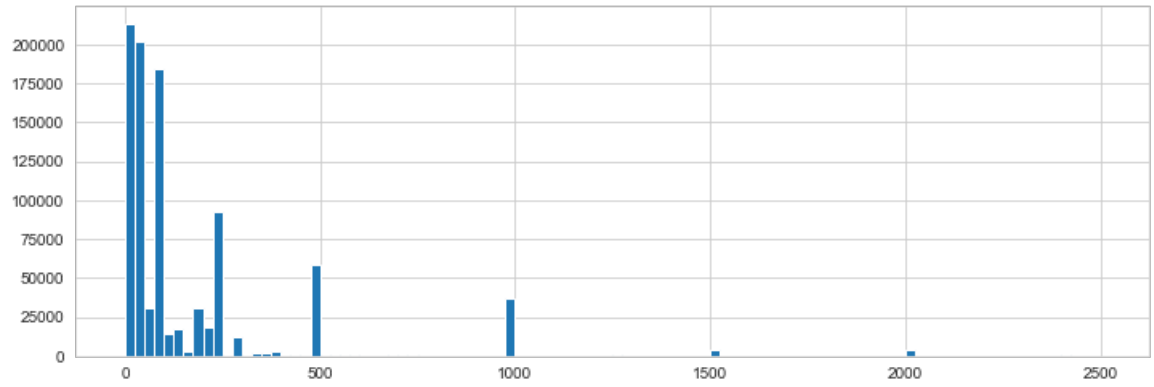
```
top_donor.value_counts().head()
```

Out[159]:

```
100.0    178188
50.0     137584
25.0     110345
250.0     91182
500.0     57984
Name: contb_receipt_amt, dtype: int64
```

In [160]:

```
com_don = top_donor[top_donor < 2500]
com_don.hist(bins=100, figsize=(12, 4));
```



In [161]:

```
candidates = donor_df.cand_nm.unique()
candidates
```

Out[161]:

```
array(['Bachmann, Michelle', 'Romney, Mitt', 'Obama, Barack',
       "Roemer, Charles E. 'Buddy' III", 'Pawlenty, Timothy',
       'Johnson, Gary Earl', 'Paul, Ron', 'Santorum, Rick',
       'Cain, Herman', 'Gingrich, Newt', 'McCotter, Thaddeus G',
       'Huntsman, Jon', 'Perry, Rick'], dtype=object)
```

In [162]:

```
party_map = {'Bachmann, Michelle': 'Republican',
           'Cain, Herman': 'Republican',
           'Gingrich, Newt': 'Republican',
           'Huntsman, Jon': 'Republican',
           'Johnson, Gary Earl': 'Republican',
           'McCotter, Thaddeus G': 'Republican',
           'Obama, Barack': 'Democrat',
           'Paul, Ron': 'Republican',
           'Pawlenty, Timothy': 'Republican',
           'Perry, Rick': 'Republican',
           "Roemer, Charles E. 'Buddy' III": 'Republican',
           'Romney, Mitt': 'Republican',
           'Santorum, Rick': 'Republican'}
donor_df['Party'] = donor_df.cand_nm.map(party_map)
```

In [163]:

```
donor_df = donor_df[donor_df.contb_receipt_amt > 0]
```

In [164]:

```
donor_df.head()
```

Out[164]:

	cmte_id	cand_id	cand_nm	contbr_nm	contbr_city	contbr_st	contbr_zip	contbr_employer	contbr_occupation	con
0	C00410118	P20002978	Bachmann, Michelle	HARVEY, WILLIAM	MOBILE	AL	3.6601e+08	RETIRED	RETIRED	
1	C00410118	P20002978	Bachmann, Michelle	HARVEY, WILLIAM	MOBILE	AL	3.6601e+08	RETIRED	RETIRED	
2	C00410118	P20002978	Bachmann, Michelle	SMITH, LANIER	LANETT	AL	3.68633e+08	INFORMATION REQUESTED	INFORMATION REQUESTED	
3	C00410118	P20002978	Bachmann,	BLEVINS,	PIGGOTT	AR	7.24548e+08	NONE	RETIRED	

	cmte_id	cand_id	cand_nm	contbr_nm	contbr_city	contbr_st	contbr_zip	contbr_employer	contbr_occupation	con
			Michelle	DARONDA						
4	C00410118	P20002978	Bachmann, Michelle	WARDENBURG, HAROLD	HOT SPRINGS NATION	AR	7.19016e+08	NONE	RETIRED	

In [165]:

```
donor_df.groupby('cand_nm')['contb_receipt_amt'].count()
```

Out[165]:

```
cand_nm
Bachmann, Michelle                13082
Cain, Herman                      20052
Gingrich, Newt                    46883
Huntsman, Jon                      4066
Johnson, Gary Earl                 1234
McCotter, Thaddeus G                 73
Obama, Barack                     589127
Paul, Ron                         143161
Pawlenty, Timothy                  3844
Perry, Rick                       12709
Roemer, Charles E. 'Buddy' III     5844
Romney, Mitt                      105155
Santorum, Rick                     46245
Name: contb_receipt_amt, dtype: int64
```

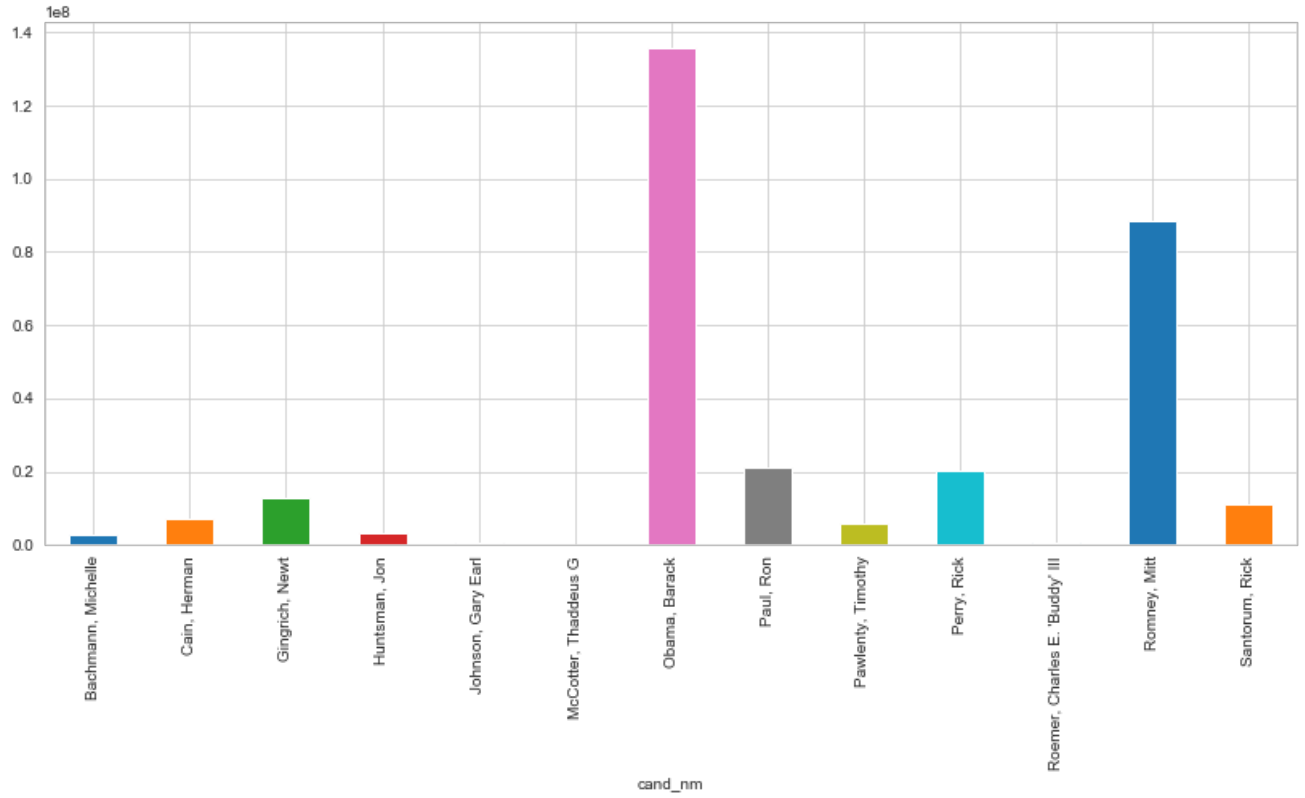
In [166]:

```
cand_amount = donor_df.groupby('cand_nm')['contb_receipt_amt'].sum()
i = 0
for don in cand_amount:
    print(" The candidate %s raised %.0f dollars " %(cand_amount.index[i],don))
    print('\n')
    i += 1
```

```
 The candidate Bachmann, Michelle raised 2711439 dollars


 The candidate Cain, Herman raised 7101082 dollars


 The candidate Gingrich, Newt raised 12832770 dollars


 The candidate Huntsman, Jon raised 3330373 dollars


 The candidate Johnson, Gary Earl raised 566962 dollars


 The candidate McCotter, Thaddeus G raised 39030 dollars


 The candidate Obama, Barack raised 135877427 dollars


 The candidate Paul, Ron raised 21009620 dollars


 The candidate Pawlenty, Timothy raised 6004819 dollars


 The candidate Perry, Rick raised 20305754 dollars


 The candidate Roemer, Charles E. 'Buddy' III raised 373010 dollars


 The candidate Romney, Mitt raised 88335908 dollars


 The candidate Santorum, Rick raised 11043159 dollars
```

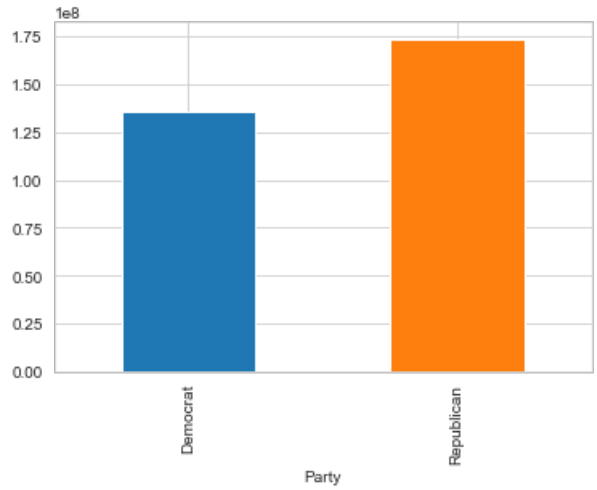
In [167]:

```
cand_amount.plot(kind='bar', figsize=(14, 6));
```



In [168]:

```
donor_df.groupby('Party')['contb_receipt_amt'].sum().plot(kind='bar');
```



In [169]:

```
occupation_df = donor_df.pivot_table('contb_receipt_amt', index='contbr_occupation', columns='Party', a
ggfunc='sum')
occupation_df.head()
```

Out[169]:

Party	Democrat	Republican
contbr_occupation		
MIXED-MEDIA ARTIST / STORYTELLER	100.0	NaN
AREA VICE PRESIDENT	250.0	NaN
RESEARCH ASSOCIATE	100.0	NaN
TEACHER	500.0	NaN
THERAPIST	3900.0	NaN

In [170]:

In [170]:

```
occupation_df.shape
```

Out[170]:

```
(45067, 2)
```

In [171]:

```
occupation_df = occupation_df[occupation_df.sum(1) > 500000]
```

In [172]:

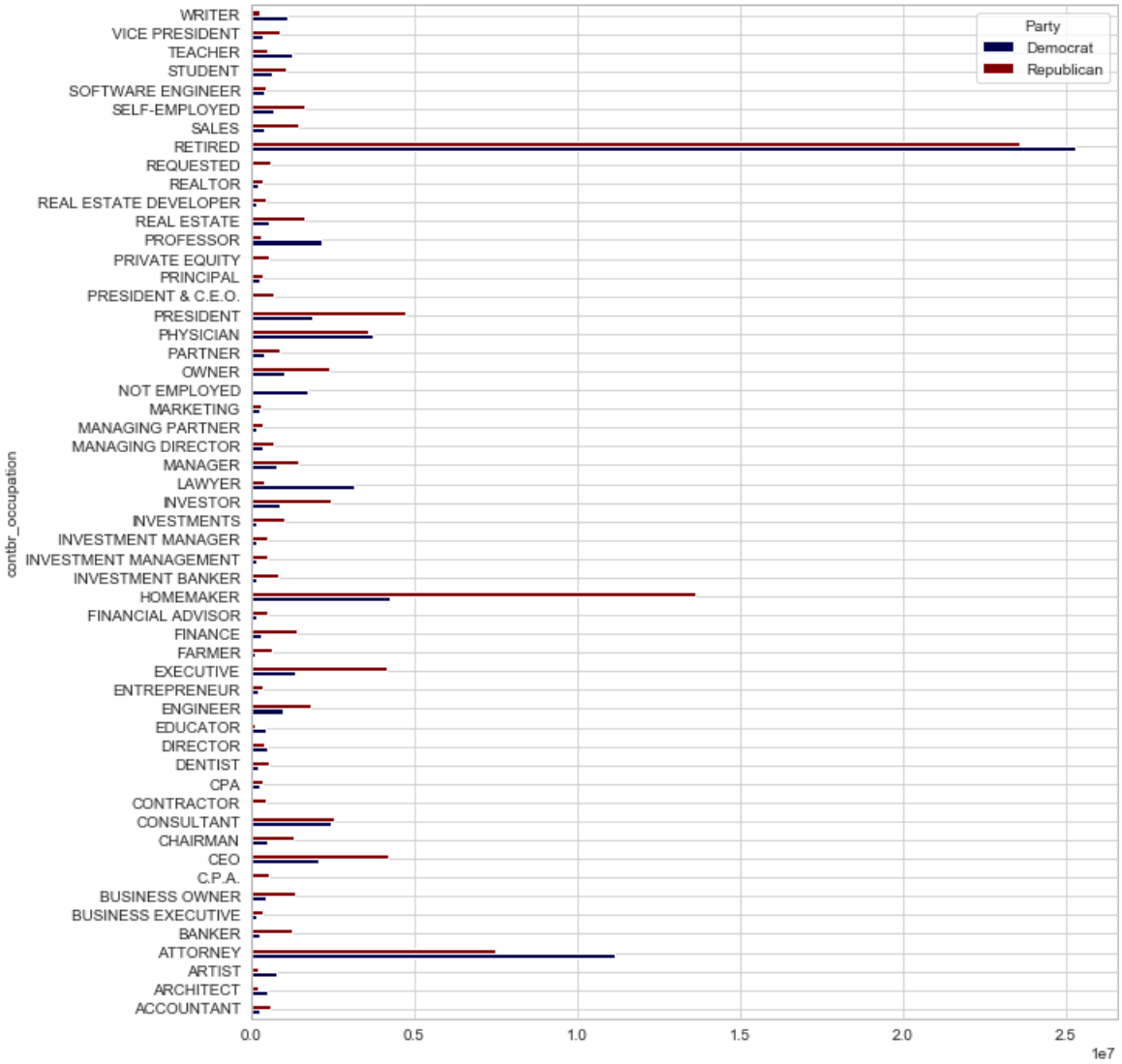
```
occupation_df.loc['CEO'] = occupation_df.loc['CEO'] + occupation_df.loc['C.E.O.']
```

In [173]:

```
occupation_df = occupation_df.drop(['INFORMATION REQUESTED PER BEST EFFORTS','INFORMATION REQUESTED',
'C.E.O.'],axis=0)
```

In [174]:

```
occupation_df.plot(kind='barh', figsize=(10, 12), cmap='seismic');
```



In [ ]:

```
```